interest to the user, priority and/or importance of information, time (of day, week, month, year) at which information is displayed, and any combinations thereof.

[0078] The mechanism of PID application 112 for providing the user access to and interaction with, for example, information 122 and/or any other information is referred to as a "channel." That is, the channel is a conduit for delivering information to a user (e.g., providing access to and interaction with information), and is an elemental feature (basic building-block) of PID application 112. With respect to the PID application 112, the channel two pieces (1) a visualization piece that is presented on the client device (e.g., user devices 118) and (2) the integration piece residing at the server (e.g., application server 110). More details of the channel with respect to PID application 112 are described with reference to Figures 2, 3, 4, and 5.

[0079] Referring to Figure 2, a functional block diagram of an example of a channel 200 of PID application 112 for providing users access to and interaction with information is presented. PID application 112 may provide at least one channel 200. Preferably, PID application 112 provides one or more function-specific channels 200. There may be a server portion of channel 200 that is resident at application server 110 and a client portion of channel 200 that is resident at each user device 118. The client side portion of channel 200 is for presenting and interacting with content. There is a server side portion of channel 200 provides services and that are always running. More details of the client architecture and server architecture underlying the client and server portions of any channel 200 are described with reference to Figures 5 through 11.

[0080] Any channel 200 of PID application 112 provides a gateway to content, such as information 122 of information sources 114. Additionally, each channel 200 has a built in eventing and alerting feature, which will be described in subsequent text. Each channel 200 may include a visual component 210 that is formed of a touchlet 212 and a channel application 214. Additionally, channel 200 may include one or more service components 216 and a configuration component 218.

[0081] Visual component 210 may be any text and/or graphic element that may be presented to users 116 for viewing on the display, screen, and/or GUI of any user device 118. With respect to a certain function-specific channel 200, the design and implementation of visual component 210 may be channel-specific. That is, visual

component 210 may be used to visually render at least some of the function-specific information on a GUI of a user device 118 via one or more text and/or graphic elements, and provide for interaction with the displayed channel information. The invention is not limited to presenting information to users 116 in a visual fashion only. Other ways (not shown) of conveying information to users 116 may be, for example, audible indicators (i.e., sound) and/or tactile indicators (e.g., vibration).

[0082] Channel application 214 may be any application software that is designed to perform singular and/or multiple related specific tasks and/or functions of a certain channel 200. Channel application 214 is used to manage the visual rendering of at least some of the channel-specific information on a GUI of a user device 118. Channel application 214 is also designed and used to manage user interaction with the displayed channel information.

[0083] Some channel applications 214 support implementation of the channel in a "full screen mode" on the GUI of a user device 118 once the channel 200 is deployed on the platform of PID application 112 and a channel 200 is invoked by a user (i.e., selected by the user to operate in substantially full-screen mode). A user invokes a certain channel 200 via its respective touchlet 212. Touchlet 212 includes a graphic element associated with its channel 200 that appears on a portion of the GUI of a user device 118, as part of the presentation framework, to provide a gateway/portal to its channel 200. A touchlet 212 has multiple behaviors as described with reference to Figure 3. Examples of function-specific channels 200 and their associated touchlets 212 are described with reference to Figure 3. Additionally, Figure 3 shows an example presentation framework of channels 200 on the GUI of a user device 118. More details of an example of a function-specific channel 200 with its visual components 210, touchlet 212, and channel application 214 are described with reference to Figure 4.

[0084] The one or more service components 216 of a channel 200 are used to access information from outside the environment of PID application 112. For example, service components 216 are used to retrieve the information 122 from the authorized information source(s) 114 and securely provide the retrieved information 122 to any visual components 210 of a channel 200 for display to user. Additionally, service components 216 may be used to monitor/process the channel information

(e.g., via event processing and/or complex event processing (CEP)) to derive "secondary" information (e.g., events–particular changes in state or content of channel information), and provide secondary information to any visual components 210 for conveying to the user (e.g., alerts).

[0085] Every channel 200 has at least one service that is invokes via service components 216. For example, one service is an identity service. The identity service may be used for (1) authenticating and authorizing users 116 to use a channel 200 and (2) authenticating channels 200 to invoke one or more services (at the server) in order to access content from, for example, authorized information source(s) 114. Every service has identity. The authorization and authentication is by channel, in this way authorization and authentication does not have to occur for each information request.

[0086] Configuration component 218 of any channel 200 includes information that defines the behaviors and "personality" of the channel 200. Configuration component 218 also includes user preferences. Further, the information in configuration component 218 defines the services being used, the data being used, alerts, user preferences for the content and alerts, state information, synchronization information, versioning information, and the like.

[0087] There are additional authorization aspects of each channel 200. For example, user authorization may be based on user identity, user role, user device, user/device location, time, date, day of week, and the like. For example, a certain user 116 is authorized to access certain content at his/her workplace location between 8am and 8pm, and only with his/her laptop computer that has a certain MAC address. At application server 110, configuration queries the identity subsystem (shown in Figure 6) to understand any user permissions. The user may be generally authorized to use a channel 200, but there may be conditions.

[0088] Because there is two pieces to each channel 200, the client side visualization piece and the server side integration piece, an aspect of the invention is that there is operational persistence at the server. Client devices may be shut down, but the channels are still operating on the server and services are still being run. As client devices become available, content will begin to stream.

EX. 1002
LG Electronics, Inc. / Page 403 of 3523

[0089] A "presentation framework" is the manner in which information (generally multiple types or classes of information) is visually rendered (displayed to a user via a GUI of a user device 118) by PID application 112. The presentation framework is customized at least in part based on a user context (e.g., user attributes and/or preferences) and the presentation framework may sometimes purposefully constrain the scope and/or type of the information displayed on a GUI of a user device at any given time. The presentation framework thereby allows a user to interact with more limited information that may be particularly important to them in a given user context. This purposeful limitation on displayed information facilitates the user's ability to meaningfully absorb and respond to the information (e.g., take real-time action and/or make decisions in response to the displayed information).

[0090] PID application 112 provides a presentation framework that is homogenous amongst different user platforms so as to facilitate user familiarity and ease of interaction with available information; i.e., the presentation framework "follows a user around" from user device 118 to user device 118 and appears the same or substantially the same to the user on any GUI of any user device 118 on which the "client portion" of PID application 112 is installed.

[0091] A presentation framework includes one or more user-selectable items, or "touchlets" that are selectable by a user (e.g., via touch-screen and/or point and click, sound recognition, movement recognition or image recognition user interfaces) so as to invoke a "channel," through which one or more particular types of information are displayed to the user on the GUI of the user platform in a substantially full-screen mode. More details of one example of a presentation framework of PID application 112 are described with reference to Figure 3, as well as other Figures to follow.

[0092] Referring to Figure 3, a screenshot of an example of a client GUI 300 is presented that shows an example of a channel grid, which is one example of a presentation framework of PID application 112. Client GUI 300 may include, for example, a main viewing panel 310. Additionally, a taskbar 312 may be provided along the top of main viewing panel 310 and a navigation bar 314 may be provided along the bottom of main viewing panel 310.

[0093] Taskbar 312 may include, for example, standard calendar, time, window controls, and the like. Navigation bar 314 may include, for example, icons for

EX. 1002
LG Electronics, Inc. / Page 404 of 3523

launching other applications, icons of other user devices 118, and the like. For example, navigation bar 314 may include a developer icon 320, a catalog icon 322, and certain device icons 326. The developer icon 320 may be used to launch a "developer environment" that may be built into the framework of PID application 112. The catalog icon 322 may be used to launch an "application store" by which users 116 may acquire (e.g., purchase) and then install and synchronize specific channels 200. Device icons 326 may depict any types, brands, and/or models of user devices 118 in the user's P2P network, such as a mobile phone, a tablet device, any computing device, a television, and the like.

[0094] Once acquired from the application store, the user's preferences may cause the acquired channel(s) 200 to automatically load and synchronize across all user devices 118. Alternatively, a user 116 may drag and drop any channel 200 (e.g., drag and drop its touchlet 316) from the current user device 118 to, for example, the telephone device icon 326, the tablet device icon 326, the television device icon 326, and so on. Thereby, installing and synchronizing or copying the channel 200 on another user device 118. Therefore, an aspect of the invention is that any channel on any user device can be quickly replicated and synchronized on any other user devices.

[0095] Client GUI 300 shows an example of a presentation framework that is organized into a grid for presenting channels 200 to a user 116 on any user device 118. In this example, multiple touchlets 316 are presented in a 3x4 channel grid 318 in the main viewing panel 310 of client GUI 300. For example, 3x4 channel grid 318 includes touchlets 316A through 316L. Each touchlet 316 in the 3x4 channel grid 318 of client GUI 300 represents a channel 200 of a specific purpose and/or function. User 116 may have multiple channel grids of information, which are accessible via the navigation bar 314. For example, navigation bar 314 may include certain channel grid icons 324, which are icons of other channel grids of the user. In one example, channel grid icons 324 may include an "At Home" channel grid icon, a "My TV" channel grid icon, and an "At Work" channel grid icon. A user 116 may specify a certain default channel grid in his/her profile. Additionally, as defined in the user's profile, the default channel grid may change based upon, for example, device type, time, location, prior activities, and the like. Further, user 116 may be presented an option of several different channel girds from which to select. In one example, the

channel grid 318 shown in main viewing panel 310 of client GUI 300 of Figure 3 may be the user's "At Work" channel grid.

[0096] Presentation of channel grids may change based upon user context or preferences. Generally, PID application 112 is capable to combine, screen, and/or synthesize information in any way to present information in an intelligent manner to the user. The invention is not limited to presenting content in a 3x4 or any other n x n channel grid. Other presentation styles are possible. For example, the touchlets of channels may be presented in a tiled fashion on a 3D cube, a tiled fashion on a 3D globe, a stacked tiled fashion, and the like.

[0097] Each touchlet 316 in the 3x4 channel grid 318 of client GUI 300 represents a channel 200 of a specific purpose and/or function. In one example, channel grid 318 includes a "News Reader" touchlet 316A, a "Stock Watch" touchlet 316B, another "Stock Watch" touchlet 316C, a "Business CRM" touchlet 316D, a "Currency" touchlet 316E, a "Banking" touchlet 316F, a "Live News" touchlet 316G, a "Business Calendar" touchlet 316H, an "Email" touchlet 316I, a "Personal Calendar" touchlet 316J, a "Business Finance" touchlet 316K, and an "Around Me" touchlet 316L. Further to the example, more details of the "Around Me" touchlet 316L and its associated channel application are described with reference to Figure 4.

[0098] Each touchlet 316 of client GUI 300 is an example of a touchlet 212 of channel 200 of Figure 2. Additionally, each touchlet 316 of client GUI 300 as well as the 3x4 channel grid 318 itself are examples of visual components 210 of channel 200 of Figure 2.

[0099] A touchlet 212 of channel 200 of Figure 2, such as touchlets 316A through 316L of Figure 3, has multiple behaviors – (1) a touchlet 212 may serve as an icon to launch its associated channel application 214 to full screen mode, (2) a touchlet 212 may receive dynamically streaming data, such as audio and video data, sensor data, any web-services data, RSS feeds, eventing and alerting, raw data, any type of information, and the like. Data may be pushed to the channel 200 and its touchlet 212 in near real time, and (3) a touchlet 212 may serve as a viewer for presenting information dynamically in near real time.

[00100] Additionally, a touchlet 212 may include substantially all the functionality of a full channel application. The "touchlet information" typically is related to or derived from the channel information provided by the corresponding channel associated with the touchlet, so that when visually rendered, the touchlet information provides a more limited but nonetheless intuitive representation of the channel information. Therefore, an aspect of the invention is that the construct of a channel 200 includes two levels of presentation (1) information that is streaming and/or displayed at the touchlet level and (2) information that is streaming and/or displayed at the full screen level that is launched via the touchlet.

[00101] Unlike standard icons and windows that are static and have little or no built-in intelligence, touchlets 212 have both static and dynamic behaviors, as well as intelligence. For example, touchlets 212 can provide information in context (e.g., context based on certain relationships between different data sources, time of day, day of week, geographic location, devices, users, user's role, and the like). Therefore, an aspect of the invention is that touchlets may be designed to present only information that is most interesting and/or meaningful to the user, and with context. Another aspect of the invention is that touchlets provide mechanisms for taking action and/or making decisions on that information.

[00102] An aspect of the invention is that multiple touchlets in a channel grid may be displaying near real-time dynamic content to the user simultaneously. For example, the twelve touchlets 316 in 3x4 channel grid 318 of client GUI 300 may be displaying near real-time dynamic content simultaneously (e.g., 12 streaming videos) to the user 116. Again, the content presented in each touchlet is designed to present only what is important to the user without saturating the user with content he/she does not want or need.

[00103] Another purpose and/or function of a touchlet 212, such as touchlets 316A through 316L of Figure 3, is that a touchlet 212 is capable of visually presenting static and/or dynamic content to a user 116 in a small window, until such time that the user 116 launches the associated channel application 214 in full-screen mode. For example, in near real time, application server 110 is pushing dynamic information from any sources to one or more touchlets 316 in near real time.

[00104] For example, in near real time, application server 110 is pushing dynamic information from a news web-service to "News Reader" touchlet 316A, dynamic stock information to "Stock Watch" touchlet 316B and "Stock Watch" touchlet 316C, streaming video data to "Live News" touchlet 316G, and so on. Further to the example and referring to Figure 4, various screenshots of certain components of an example of an "Around Me" channel 400 of PID application 112 are presented.

[00105] Figure 4 shows the "Around Me" touchlet 316L, which is an example of a visual component 210 of a channel 200. The "Around Me" touchlet 316L displays a pin marker on a map to visually represent to the user that "Around Me" channel 400 may be a mapping application. When a user touches, clicks on, or otherwise selects the "Around Me" touchlet 316L of channel grid 318, the underlying "Around Me" channel application 214 is launched and renders a substantially full-screen GUI of the "Around Me" channel 400. The "Around Me" channel 400 then presents substantially more information to the user than shown in the "Around Me" touchlet 316L alone.

[00106] The substantially full-screen display of any channel application, such as an "Around Me" channel application 214, may include, for example, a main viewing panel 410. Additionally, a taskbar 412 may be provided along the top of main viewing panel 410 and a navigation bar 414 may be provided along the bottom of main viewing panel 410. Navigation bar 414 may include, for example, a set of mini-touchlets 416, which are substantially the same as, for example, touchlets 316 of channel grid 318 of Figure 3 but presented in miniature form. A user may navigate directly to any channel application by selecting one of the mini-touchlets 416.

[00107] Main viewing panel 410 of "Around Me" channel 400 may include, for example, a visual mapping component 418 and a search component 420. The GUI itself, along with its visual mapping component 418 and search component 420 are all examples of visual components 210 of a channel 200. While contextually related to one another and able communicate to one another, the "Around Me" channel GUI and the "Around Me" touchlet 316L are two separate and distinct entities.

[00108] "Around Me" channel 400 first acquires geo-location information. In one example, current geo-location information is automatically acquired from a user device 118 (e.g., geo-location data of a cell phone). In another example, geo-location

information is acquired by the user 116 manually entering an address. Once the "Around Me" channel 400 has acquired the geo-location information, a map of the user's location is presented via the visual mapping component 418. Additionally, search component 420 may be used for locating places of interest (restaurants, gas station, hospital, ATM, theater, etc) near this location. If the user selects certain places of interest using search component 420, these places of interest are highlighted or otherwise indicated on the map. Further, if the user selects a particular place of interest, driving directions may be indicated on the map. The driving directions may be presented in text form, image form (e.g., displayed pictures and/or videos), and/or audible form (e.g., spoken directions).

[00109] In order to accomplish the aforementioned functionality, certain services may be associated with "Around Me" channel 400. For example, associated with "Around Me" channel 400 may be an IP location service component 422, a destination service component 424, and a speech service component 426. Additionally, the operation of "Around Me" channel 400 is an example of using intra-client interactions as well as client-server interactions. Any interaction with the components of "Around Me" channel 400 is passing messages through what may be termed a "GUI conversation."

[00110] For example, when the user 116 pushes a "Find Me" button on the GUI a message is passed (via the GUI conversation) to the IP location service component 422. The IP location service component 422 then communicates with its related server channel component at application server 110. For example, IP location service component 422 passes the IP address to the server and requests the corresponding geographic location information. The related server channel component queries a mapping service (e.g., Bing) and returns a location (e.g., Syracuse, NY) to the IP location service component 422. The IP location service component 422 passes this Syracuse, NY mapping data (via the GUI conversation) back to the visual mapping component 418 of the "Around Me" channel 400.

[00111] Similarly, when the user requests driving directions, a message is passed (via the GUI Conversation) to the destination service component 424. The destination service component 424 then communicates with its related server channel component at application server 110. The related server channel component queries a mapping

service (e.g., Bing) and returns turn-by-turn driving directions to the destination service component 424. The destination service component 424 passes the turn-by-turn driving directions data (via the GUI conversation) back to the visual mapping component 418 of the "Around Me" channel 400 and a driving route is indicated. Additionally, a text-to-speech conversion may be performed remotely at application server 110 and the results passed to speech service component 426 of the "Around Me" channel 400. The user then hears audible driving directions accordingly.

[00112] The "Around Me" channel 400 also illustrates the capability of performing updates without interrupting the device and/or service (i.e., "hot" updates). For example, the default visual mapping component 418 may be supported by the Bing Maps web-service. However, the visual mapping component 418 may include a selector that allows the user and/or developer to select from a list of map services, such as Google Maps, Yahoo Maps, MapQuest, and the like. If Google Maps is selected, the Google Maps data is automatically sent to the visual mapping component 418 with no client interaction. As a result, the visual mapping component 418 is updated with no device and/or service interruption.

[00113] Referring to Figure 5, a functional block diagram of an example of a client runtime environment 500 is presented, which is the runtime environment of user devices 118 of PID application 112. Client runtime environment 500 may include a cross-operating system application 510. In one example, when user devices 118 of PID application 112 are Adobe AIR-enabled devices, cross-operating system application 510 is based on Adobe® AIR®, which is described in Figure 1. Therefore, client runtime environment 500 of user devices 118 may take advantage of all the capabilities that come with Adobe AIR, such as, but not limited to, HTML, Flash, Adobe AIR APIs, messaging, and the like. For example, Flash allows access the Hulu website to play streaming videos and because Adobe AIR includes a web browser, it can run HTML. Further, the Adobe AIR runtime is suitable for use with many different operating systems. For example, the Adobe AIR runtime is suitable for use with desktop operating systems, such as Mac, Windows, and Linux; mobile operating systems, such as RIM, WebOS, Windows Phone7, Symbian, and Android; and TV-related operating systems, such as Internet Protocol Television (IPTV) operating systems.

[00114] Referring to Figure 6, a functional block diagram of an example of a PID application architecture 600 for supporting the Flex presentation framework is presented. PID application architecture 600 is an example of the application architecture of the server side of PID application 112. PID application architecture 600 may include a facilitation layer 610 through which all messaging of user devices 118 (the clients) pass, an integration and process layer 612, and an integrated services and applications layer 614.

[00115] Facilitation layer 610 further includes a facilitation server 616 and certain other servers 628. Generally, facilitation server 616 manages the communication between the client (e.g., user devices 118) and the server (e.g., application server 110). Facilitation server 616 serves as the gate keeper. In a sense, facilitation server 616 introduces the client to the integration and process server 646 and then goes away. Facilitation server 616 serves as the client representative to the rest of the server stack. In one example, facilitation server 616 is implemented using a Java server component that provides a set of real-time data management and messaging capabilities. One example of this Java server component may be Adobe® LiveCycle® Data Services.

[00116] Facilitation server 616 of the facilitation layer 610 may include, for example, a client gateway 618, proxy services 620, invocation services 622, inter-client messaging/synchronization 624, and a facilitation processor 626.

[00117] Client gateway 618 may be the direct interface with the client (e.g., user devices 118) for handling messaging operations. In one example, client gateway 618 uses Action Message Format (AMF) and/or Java Message Service (JMS) for exchanging messages and/or data between the client and server and/or between one client and another client.

[00118] Servers 628 of the facilitation layer 610 may include, for example, a channel server 630, a content delivery server 632, a collaboration media server 634 (e.g., video conferencing server), a stream sync server 636, an analytics server 638, an advertising server 640, a transcoding server 642, and a media server 644.

[00119] Generally, channel server 630 is used for the creation and consumption of channels 200. Channel server 630 is not utilized in the operation of channels 200.

For example, channel server 630 may include a repository of channels 200, a channel application catalog 631, and a developer module 633. Channel application catalog 631 may be an "application store" of available channels 200 from which users 116 may acquire (e.g., purchase), download, and install and synchronize specific channels 200. An example of channel application catalog 631 is shown in Figure 12.

[00120] Developer module 633 may be the "developer environment" that may be built into the framework of PID application 112. For example, developer module 633 may be used by software developers to design specific channels 200. In one example, the developer icon 320 of client GUI 300 of Figure 3 may be used to launch the developer module 633. Therefore, an aspect of the invention is that PID application 112 provides a developer environment (e.g., developer module 633) in the same framework as the user environment and without having to exit the user environment.

[00121] Content delivery server 632 may be a server for storing and/or managing any other content that is not managed by, for example, collaboration media server 634, advertising server 640, and media server 644. Collaboration media server 634 is used to facilitate video conferencing. Stream sync server 636 is the server that integrates with advertising and analytics as it relates to the client and content that is being presented. An example of using stream sync server 636 is synchronizing and/or relating ads on one user device 118 (e.g., TV) with ads on another user device 118 (e.g., tablet). Analytics server 638 is used to configure and administer analytics applications. Advertising server 640 may be a dedicated server for storing and/or managing advertising content. Media server 644 may be a dedicated server for storing and/or managing various digital media, such as digital videos/movies, audio/music, and picture files.

[00122] Transcoding server 642 may be a dedicated server for performing transcoding operations. Transcoding is the ability to adapt digital files so that content can be viewed on different playback devices. Working like an interpreter, a transcoder translates files to a suitable format for the end user. Transcoding servers (e.g., transcoding server 642) and services reformat material that would otherwise have to be developed separately for different platforms. Transcoding servers and services are commonly used for adapting content for mobile devices or serving video.

[00123] Integration and process layer 612 may be organized in a standard service-oriented architecture (SOA). Integration and process layer 612 further includes an integration and process server 646 along with certain hosting applications 674, hosted communications applications 676, and integral identity provider SSO provider 678. Integration and process server 646 of integration and process layer 612 further includes certain platform service components 648 and certain server channel components 662.

[00124] Platform service components 648 may include, but are not limited to, a data management subsystem 650, an eventing and alerting subsystem 652, a configuration server 654, a session manager 656, an administration subsystem 658, and an identity subsystem 660.

[00125] Data management subsystem 650 performs the master data management operations of PID application architecture 600. Master data management may include, for example, correlating user ID (which user are you?) to content and/or correlating user devices (user has 6 phones, which phone are you?) to content. Associated with data management subsystem 650 may be an operational data store (ODS) (not shown) and/or a data warehouse (not shown) for storing temporary data or long term data. The ODS may serve two purposes (1) the ODS is used to store data for historical purposes, because data may not persist or be stored at the source. For example, a channel 200 may poll a service every few minutes and store the data in the ODS; and (2) the ODS is used in general application usage. For example, there is a background process of any channel 200 of PID application 112 that is retrieving data and pushing it to the ODS. Therefore, any data that is presented to the user at the user device 118 (i.e., at the client device) may be supplied by the ODS. This ensures good response time for the end-user because the network will not have to be continually interrogated for information.

[00126] Eventing and alerting subsystem 652 is used to collect and/or analyze information from any one or more disparate data sources with respect to certain predetermined or dynamic event conditions. Example of types of information that may be evaluated/monitored by eventing and alerting subsystem 652 may include, but are not limited to, text information, graphic information, one or more pictures, one or more videos, audio or digital sound, streaming data, audio or video, content associated

with an executing computer application, voice-over-IP communication, instant messaging/SMS information, video-conferencing information, environmental monitoring information, financial services information, enterprise resource planning information, enterprise content management information, building information, project management information, product lifecycle management information, RSS reader information, remote device control/interaction information, a three-dimensional graphic visualization of one or more objects and/or immersive environments, one or more word processing documents, one or more spreadsheets, one or more presentation/slide shows, email, address book information, and any combinations thereof. CEP systems may also be utilized to evaluate/monitor event conditions.

[00127] Upon detecting the presence of an event condition, eventing and alerting subsystem 652 transmits alert notifications to users 116 via one or more user devices 118. Eventing and alerting subsystem 652 may include, for example, an event manager component, a notification manager, and a complex event processor. Further, events maybe stored for delivery at a later time or for use in a CEP system.

[00128] Once an event is registered in the event manager of the eventing and alerting subsystem 652, the event manager uses CEP (e.g., via complex query language (CQL) programming) to continually monitor the ODS of data management subsystem 650 based on event(s) that have been set and/or to perform a direct query of any external system and/or service.

[00129] Once the event manager recognizes that a certain event condition is present, the notification manager checks the user's configuration, which is at configuration server 654, as well as the user's session information at session manager 656 in order to determine how best to notify the end-user. Then, the alert notification is pushed through the client gateway 618 of the facilitation server 616 (e.g., via AMF) and to one or user devices 118 (client devices). As a result, the one or user devices 118 receive the alert notification and the alert presented to the user 116 via one or user devices 118.

[00130] Example of types of alerts that may be generated by eventing and alerting subsystem 652 may include, but are not limited to, visual alerts, auditory alerts, tactile

alerts, email messages, SMS text messages, activation of at least one channel of a plurality of channels, and notifications to a law enforcement agency.

[00131] A main aspect of a channel 200 is that eventing and alerting subsystem 652 provides actionable eventing and alerting capability to the user 116. That is, channels 200 of PID application 112 provide users the ability to take action upon receiving an alert, in which the mechanism for user response to an alert may be conveniently built into the channel itself.

[00132] Configuration server 654 manages device configurations, user profiles, data configurations, application configurations, and the like. Configuration server 654 is the counterpart to configuration component 218 of any channel 200.

[00133] Session manager 656 performs session management and/or handles state. Session manager 656 may include, for example, a session module and a policy module. In one example of managing state, a user 116 is watching TV (one user device 118) and decides to pause the TV show and resume watching the TV show on his/her laptop computer (another user device 118). Session manager 656 stores state information and communicates this state information between user devices 118 so that the user 116 can resume watching the TV show at his/her laptop computer from the same point in the broadcast.

[00134] Administration subsystem 658 is used to perform standard system administration tasks. For example, when a channel 200 is accepted into the channel application catalog 631, the administration subsystem 658 associates what users 116 are allowed to access the channel. With respect to authorizations, channels are assigned to groups and users. For example, anyone working in the accounting department of a company has access to a certain channel or only a certain user's family members are allowed access to a certain channel.

[00135] Identity subsystem 660 manages the authorization of users, places, times, and things. Identity subsystem 660 may include, for example, an authorize module and an authenticate module. For example, users must be authorized for content and services must be authorized for content. Accordingly, services check to ensure that users are authorized to access their services.

[00136] A main aspect of PID application 112 of the invention is single sign-on (or universal sign-on) capability, wherein once the user 116 is activated on the system, the user 116 is automatically authenticated when accessing any applications that normally require user login, i.e., unified access to all applications. That is, once the user 116 logs into information delivery system 100, the user will not be prompted for any other login operations when accessing information and/or services via PID application 112. For example, the user 116 may have one or more secure email services, one or more secure banking and/or financial accounts, one or more secure web-services accounts, and the like. Login information of all the user's secure accounts is stored, for example, identity subsystem 660. When a user access these secure accounts, identity subsystem 660 automatically provides the necessary login credentials to the requesting entity, thereby automatically logging in the user with no further action on the user's part. Because multiple user devices 118 may be associated with a user 116, PID application 112 requires that the user 116 login on each of his/her user devices 118 as they become available in order to ensure the identity of the user 116.

[00137] In a location-based example, a user 116 is authorized to use a certain user device 118 and/or service only when inside his/her place of business. Therefore, upon leaving the building the authorization is revoked. In a time-based example, a user 116 is authorized to use a certain user device 118 and/or service only at a certain time of day, perhaps during off-peak hours. Therefore, during off-peak hours the authorization is allowed, but during peak hours the authorization is revoked.

[00138] Generally, server channel components 662 are used to perform the integration. Server channel components 662 may include Java-based components, such as, but not limited to, a Camel server channel component 664, a Spring server channel component 666, a Java server channel component 668, a JavaScript server channel component 670, a business process execution language (BPEL) server channel component 672.

[00139] Camel server channel component 664 may be, for example, the Apache Camel server channel component (available from The Apache Software Foundation). Camel server channel component 664 is used for the orchestration and integration of services. Spring server channel component 666 is used for implementing Inversion of

Control (IoC) and aspect-oriented programming (AOP). For example, when passing information from one component to another, the components involved have placeholders for data to be injected (or inserted). Spring server channel component 666 is used to manage this process. Java server channel component 668 may be implemented via (e.g., Java 2 Platform Standard Edition (J2SE)). JavaScript server channel component 670 is used for running JavaScript on the server side of PID application 112. BPEL server channel component 672 is used to export and import information by using web service interfaces.

[00140] With respect to integration and process layer 612, certain unique tasks are possible, independent of the source of the content. For example, sensor data and streaming media data are being normalized, which allows the capability to combine content. Therefore, a main aspect of the invention is that PID application 112 is agnostic to the source of the content and agnostic to the user device on which it is presented. From a client perspective, PID application 112 is agnostic to what content sources are connected.

[00141] The components of PID application architecture 600 communicate via an enterprise service bus 680 of integration and process server 646. Enterprise service bus 680 manages "calls" in and out of the PID application architecture 600. A set of adaptors 682 are connected to enterprise service bus 680 for interfacing with entities of integrated services and applications layer 614, which are outside of the environment of application server 110. That is, adaptors 682 are connected to enterprise service bus 680 for handling various communication protocols.

[00142] Integrated services and applications layer 614 may include, but is not limited to, one or more third-party services 684, one or more relational database management systems (RDBMS) 686, Parlay X 688 (i.e., a set of standard Web service APIs for the telephone network), one or more IP multimedia subsystem (IMS) servers 690, basic wireline telecommunication 692, one or more communications modules 694 (e.g., instant message, calendar, mail/SMS, address book), and one or more directory servers 696, which may be examples of information sources 114.

[00143] An aspect of the invention is that PID application 112 provides built in security at the application server 110, which inherently provides security at each user device 118. Any applications running in the PID application 112 environment are

checked for viruses, spyware, and the like. In this way, it is ensure that users 116 are operating in a secure environment.

[00144] Referring to Figure 7, a functional block diagram of an example of client architecture 700 of PID application 112 for supporting the Flex presentation framework is presented. Client architecture 700 is an example of the application architecture of the client side of PID application 112. That is, client architecture 700 is the application architecture of any user device 118.

[00145] Figure 7 shows a channel 200, which includes visual component 210, touchlet 212, channel application 214, and service component 216. Associated with a channel 200 are certain sub-components, such as assets 710, code 712, models 714, conversations 716, as well as configuration 718.

[00146] Assets 710 may be, for example, images, descriptive language for the layout of the channel, and the like. Code 712 is the actual programming code for the channel 200. A channel service 720 on the client side communicates with the channel server 630 on the server side. Code 712 interacts with channel service 720 in the client. Additionally, code 712 is cached in client cache 750 and then transmitted via a client bus 760 to identity subsystem 660 (performing authentication and authorization) and then to channel server 630. Any channels 200 that are installed on a user device 118 originate from channel server 630 (e.g., from channel application catalog 631).

[00147] Models 714 may be the data models for the channel 200. A model system 730 on the client side may include user-defined models, persistent models, synchronized persistent models, synchronized models, and the like. Associated with model system 730 may be a persistence service 732 and a synchronization service 734. Models 714 interact with persistence service 732 and synchronization service 734 in the client. Persistence service 732 on the client side communicates with the data management subsystem 650 on the server side. Synchronization service 734 on the client side communicates with the inter-client messaging/synchronization 624 on the server side. Additionally, models 714 are cached in client cache 750 and then transmitted via client bus 760 to identity subsystem 660 (performing authentication and authorization) and then to inter-client messaging/synchronization 624.

[00148] Conversations 716 may be any communication over the bus between client components and/or server components. Conversations 716 on the client side are transmitted via client bus 760 to the eventing and alerting subsystem 652 on the server side.

[00149] Configuration 718 may define, for example, the position of the touchlet on the channel grid, that the channel now monitoring a certain data stream, the user is receiving data and needs to be synchronized, the user has multiple devices that need to be synchronized, when any application is installed perform synchronization, location, ID, the channel is a synchronizable channel, the channel is an alertable channel, and the like. Configuration 718 includes any channel attributes that convey the "personality" or functionality of the channel. Certain information in configuration 718 may be selected by the user.

[00150] A configuration service 740 on the client side communicates with the configuration server 654 on the server side. Configuration 718 interacts with configuration service 740 in the client. Additionally, configuration 718 is transmitted via client bus 760 to identity subsystem 660 (performing authentication and authorization) and then to configuration server 654.

[00151] Client architecture 700 of the client side of PID application 112 is architected similar to an SOA for an enterprise stack. The client services use the idea of GUI conversations to exchange messages between client components and/or server components, all using the client bus and/or server bus. Therefore, an aspect of the invention is a sophisticated client architecture, similar to an SOA, that allows complex processing to occur locally at the client as well as at the server (yet without relying on the server), thereby enabling a rich user experience. Additionally, with respect to PID application architecture 600 and/or client architecture 700, more details of examples of certain process flows are described with reference to Figures 10 and 11.

[00152] Referring to Figure 8, a functional block diagram of an example of a communication flow 800 between the client side and the server side of PID application 112 is presented. For example, certain components may be bypassed in order to achieve efficiency. Communication flow 800 shows that components of client channels 200 may communicate directly with platform service components 648 (albeit through facilitation server 616). Additionally, components of client channels

200 may communicate with platform service components 648 through the server channel components 662 (again through facilitation server 616). This is important because certain tasks do not require going through the server channel components 662. Therefore, it may be more efficient to communicate directly with platform service components 648. For example, maybe when a components requesting permission to do something, the client channel 200 may communicate directly with identity subsystem 660.

[00153] Referring to Figure 9, a functional block diagram of an example of a communication flow 900 between components at the server side of PID application 112 is presented. For example, in integration and process server 646, the server channel components 662 may bypass the platform service components 648 and communicate directly with enterprise service bus 680. This scenario may be called "performant direct calling."

[00154] Referring again to Figures 8 and 9, an aspect of the invention is that PID application 112 provides flexibility in the messaging operations.

[00155] Referring to Figure 10, illustrates a functional block diagram of a portion of PID application architecture 600 and a process of performing a user login operation is presented. In this example, the process of performing a user login operation may include, but is not limited to, the following steps.

[00156] At step 1, the client (user device 118) is activated, the application is launched at the client and, therefore, the channel grid is started at the client.

[00157] At step 2, the channel grid at the client connects via AMF to client gateway 618 of the facilitation server 616 at the server.

[00158] At step 3, client gateway 618 then authenticates. For example, client gateway 618 passes the credentials (user ID and password) to the authenticate module of identity subsystem 660.

[00159] At step 4, using a session module of session manager 656, the session is checked to see whether there is already an existing session. This is done because the user 116 may have multiple user devices 118.

[00160] At step 5, using a personal profile module of configuration server 654, the user's personal profile is checked with respect to the user device 118. This is done to ensure that the presentation frame work (e.g., channel grid, tabs) that is delivered matches the user device 118. The user's personal profile is also checked with respect to the location.

[00161] At step 6, an event manager module of the eventing and alerting subsystem 652 checks to see whether the user has any alerts present in case any alerts have occurring during the transition state of the user device 118.

[00162] At step 7, the channel grid at the client checks to see whether the channels are cached locally at the client. If not cached, the channel grid at the client requests its channels from the channel server 630.

[00163] At step 8, using an authorize module of identity subsystem 660, the channel server 630 checks to see whether the user is authorized to have the requested channels.

[00164] At step 9, channel server 630 responds to the client with the allowed channels (sometimes updating, sometimes responding already up-to-date).

[00165] At step 10, the channel grid is populated with channels and presented at the client (user device 118).

[00166] An aspect of the invention is that PID application 112 provides a universal login feature. That is, once a user 116 is logged into PID application 112, no further login actions are required for accessing any information and/or services. For example, configuration server 654 and/or identity subsystem 660 may contain a record of all login information of every user 116, which is automatically applied upon accessing any information and/or services with no further action by the user 116.

[00167] Referring to Figure 11, illustrates a functional block diagram of a portion of PID application architecture 600 and a process of performing data management and eventing and alerting is presented. In this example, the process of performing data management and eventing and alerting may include, but is not limited to, the following steps.

[00168] At step 1, a certain sensor channel is created and the ODS of the data management subsystem 650 begin to collect data.

[00169] At step 2, the source of the data is an entity at integrated services and application layer 614, therefore, the ODS collects the data through, for example, a REST adaptor, which is one of adaptors 682. In one example, a web-service call is issued.

[00170] At step 3, using, for example, the web-service call, an external sensor service (which is also REST) is interrogated. In one example, the external sensor service is a "temperature & humidity" service.

[00171] At step 4, in this example, the external sensor service collects the current temperature and humidity data, reports this data back to ODS of the data management subsystem 650, and this data is stored at the ODS for historical views. In the case of eventing, this data may be sent directly to the requesting service and/or channel, if no historical records needed.

[00172] At step 5, a CEP engine of the eventing and alerting subsystem 652, which is monitoring the data at the ODS, detects an event. For example, the CEP may be monitoring the temperature and humidity data for certain threshold values that may indicate a certain condition is present.

[00173] At step 6, the CEP of the eventing and alerting subsystem 652 queries the event manager of the eventing and alerting subsystem 652 to see whether any user 116 has set an alert that corresponds to the current temperature and humidity condition.

[00174] At step 7, it is determined that, yes, some user 116 has set an alert that corresponds to the current temperature and humidity condition. Therefore, the user's personal profile at configuration server 654 is checked to see the user's notification preferences.

[00175] At step 8, it is checked to determine whether the user 116 has an active session in order to determine the appropriate way(s) to alert the user by considering the user's connectivity, location, time, and the like. It may be determined that the user is connected via the client via a laptop computer.

EX. 1002
LG Electronics, Inc. / Page 422 of 3523

[00176] At step 9, the event manager of the eventing and alerting subsystem 652 is queried again to determine whether any other events are present in the event queue for this user. If yes, any other alerts may also be sent along with the temperature and humidity alert.

[00177] At step 10, the notification manager of the eventing and alerting subsystem 652 dispatches the notification through user's logical event queue which results in the client gateway 618 of the facilitation server 616 sending the information via JMS to the user's current channel grid.

[00178] At step 11, the message comes across the client bus of the user device 118, then a channel receives and displays the alert to the user. In this example, the alert may include information about the current temperature and humidity at some location.

[00179] With respect to the operation and/or use of PID application 112, this method may be summarized as follows. Certain services are written; certain complex query language is written; certain events and alerts are registered; sensor data at ODS is monitored as it related to events and alerts; if a match is detected, the event is correlated to a user; user profile and session information is queried; and the alert is transmitted to the user.

[00180] Referring to Figure 12, a screenshot of an example of the GUI of channel application catalog 631 of PID application 112 is presented, by which users may acquire channels for use with their devices. In this example, the GUI presents a selection of available function- and/or purpose-specific channels 200. For each channel 200, its title, category, and certain details about the channel may be displayed. A navigation bar 1210 may be presented along the bottom of the GUI, by which users may scroll from page to page of the catalog.

[00181] Referring to both Figure 3 and 12, examples of titles of channels 200 that may be found in channel application catalog 631 may be News Reader Channel, Stock Watch Channel, Business CRM Channel, Currency Channel, Banking Channel, Live News Channel, Business Calendar Channel, Email Channel, Personal Calendar Channel, Business Finance Channel, and Around Me Channel.

[00182] An aspect of the invention is that when the user 116 selects "install application" from channel application catalog 631, because the user's ID is known

and authentication is already done, the purchase transaction is processed automatically and the selected channel 200 automatically installs and synchronizes on the user's channel grid.

[00183] NON-LIMITING EXAMPLES OF EVENTING AND ALERTING

[00184] Referring to Figure 13, another screenshot of client GUI 300 of Figure 3 that includes channel grid 318 is presented. However, in this view of client GUI 300, the touchlet 316L location of channel grid 318 is empty. Touchlet 316B is a "Stock Watch" touchlet that is associated with a "Stock Watch" channel (e.g., "Stock Watch" channel 1400 of Figure 14). The "Stock Watch" channel may provide a mechanism by which a user 116 may monitor a certain company's stock and/or financial information. In this example, the "Stock Watch" channel is monitoring the stock and/or financial information of Brocade Communications Systems, Inc (BRCD).

[00185] Referring to Figure 14, screenshots of certain components of an example of a "Stock Watch" channel 1400 of PID application 112 is presented. Figure 14 shows "Stock Watch" channel 1400 operating in a substantially full-screen mode. "Stock Watch" touchlet 316B is provided for presenting dynamic information of, interacting with, and/or launching "Stock Watch" channel 1400. "Stock Watch" channel 1400 provides a mechanism for monitoring and/or reporting certain stock and/or financial information of a company of interest. In this example, "Stock Watch" channel 1400 is monitoring Brocade Communications Systems, Inc (BRCD).

[00186] The main viewing panel 410 of the "Stock Watch" channel 1400 may include, for example, an overview window 1420, one or more information windows 1422, and a trading window 1424.

[00187] In this example, overview window 1420 shows a plot of the BRCD stock price over some selectable period of time (e.g., last hour, day, week, month, etc), as well as other statistical information about the BRCD stock. Figure 14 shows two information windows 1422. For example, one information window 1422 displays information about the latest news. The other information window 1422 displays stock information about certain other companies (i.e., companies related to BRCD in some manner). Trading window 1424 provides mechanisms by which the user 116 may perform stock trading transactions (e.g., buying and selling stock).

[00188] The "Stock Watch" channel 1400 is a good example of a channel application that to the user is seemingly a single application, but is in fact pulling publicly available information from multiple disparate data sources. For example, the real-time stock price display information in "Stock Watch" touchlet 316B and in the overview window 1420 may originate from the "Yahoo! Finance" web service, the related companies display information in an information window 1422 may also originate from the "Yahoo! Finance" web service, the plot and other statistical information in the overview window 1420 may originate from the "The Motley Fool" web service, and the "Latest News" information in an information window 1422 may originate from the "Google Finance" web service, trading window 1424 may be supported by the "TD Ameritrade" web service, and the like.

[00189] Additionally, the functions of trading window 1424 is an example of using the single sign-on (or universal sign-on) capability of PID application 112. In this example, the user 116 is already authenticated at PID application 112. Therefore, the user 116 is not prompted for any further login credentials when using trading window 1424, which may be supported by an online trading web-service, such as, but not limited to, TD Ameritrade. In this example, the user's TD Ameritrade login information is already stored in the user's profile/configuration and is automatically provided as needed by any channel application of information delivery system 100. The capability of the single sign-on (or universal sign-on) feature is not limited to user login information, user banking and/or credit card information may also be stored in the user's profile/configuration. Additionally, the single sign-on (or universal sign-on) feature my include login credentials with respect to the user's different user devices 118. As a result, payments information may be automatically provided as needed. In the example of TD Ameritrade, any transactions performed via trading window 1424 are handled without prompting the user 116 for payments information. The aforementioned features of PID application 112 provide convenience to the user.

[00190] The "Stock Watch" channel 1400 may provide mechanisms by which the user 116 may wish to respond to the alert. For example, the trading window 1424 of "Stock Watch" channel 1400 may provide mechanisms by which the user 116 may perform stock transactions, such as buying and selling stock. This is yet another example of channels of PID application 112 providing users the ability to take action

upon receiving an alert. That is, PID application 112 provides actionable eventing and alerting capability.

[00191] Information sources 114 that support "Stock Watch" channel 1400 may include, for example, one or more stocks and/or financial services, one or more news services, and the like. Any information sources 114 may be accessed through integrated services and applications layer 614 of PID application 112. Additionally, the servers of PID application 112 at application server 110 that support "Stock Watch" channel 1400 may include, but are not limited to, content delivery server 632, an analytics server 638, and a media server 644.

[00192] Referring to Figures 15 through 18, screenshots of client GUI 300 of PID application 112 and an example of a process of eventing and alerting using PID application 112 is presented. In this example, with respect to "Stock Watch" touchlet 316B and "Stock Watch" channel 1400, the user 116 sets an alert for when the BRCD share price rises above a certain value, as follows.

[00193] Figure 14 shows that by hovering the mouse over the "Stock Watch" touchlet 316B, helper window 330 is displayed to the user 116. To set an alert with respect to "Stock Watch" touchlet 316B, the user selects the "Alerts" button. As a result of selecting the "Alerts" button of helper window 330, an alerts window 334 is displayed to the user 116, as shown in Figure 16. Alerts window 334 provides a mechanism by which the user 116 may create an alert that is based, for example, on share price. As shown in Figure 16, alerts window 334 provides an entry field for entering a share price. The share price that the user enters is an example of a threshold condition or parameter for triggering an alert notification. Other controls are provided in alerts window 334 to generate the alert when the share price is "less than," "equal to," or "greater than" the share price that is entered. In one example, the user sets up an alert to occur when the share price is "less than" $9.23. To activate this eventing and alerting process, the user 116 may select an "Apply" button of alerts window 334, which closes the window and automatically registers the event in the event manager of the eventing and alerting subsystem 652 (see Figure 6).

[00194] Accordingly, the event manager of the eventing and alerting subsystem 652 begins monitoring the data stream associated, in this example, with the BRCD stock. Figures 17 and 18 show examples of the visual components for this eventing

and alerting process. For example, the event manager of the eventing and alerting subsystem 652 monitors the BRCD data stream and when the BRCD share price is approaching the alert set point (e.g., near $9.23), Figure 16 shows that the "Stock Watch" touchlet 316B may display a warning state to the user 116. An example of the warning state is to change the color of the border of the "Stock Watch" touchlet 316B from, for example, black to yellow. The event manager of the eventing and alerting subsystem 652 continues to monitor the BRCD data stream and when the BRCD share price is "less than" $9.23, Figure 18 shows that the "Stock Watch" touchlet 316B may display an alert state to the user 116. An example of the alert state is to change the color of the border of the "Stock Watch" touchlet 316B to red.

[00195] In this example, the alert is delivered according to the user's configuration (notification preferences) and session. In summary, the event manager registers the event; the event manager monitors the bus, using CEP and CQL the event manager recognizes a certain condition is present; the notification manager checks the user's configuration and session; once it is determined how to notify the end-user the notification is pushed through the facilitation manager gateway (using AMF) and to the user device (client device); the client device is monitoring the client bus and receives the notification; and the notification is displayed to the user on the client device (e.g., yellow border, red border).

[00196] Referring to Figures 19 through 26, screenshots of certain channels of PID application 112 and an example of a process of combining two or more independent channels to create a new channel (and touchlet) and a process of eventing off of the combined data is presented. In this example, a user 116 may be a stock broker that hears that Cisco Systems, Inc is interested in buying Brocade Communications Systems, Inc. Therefore, there may be some very specific information that the user 116 wishes to be informed about regarding this potential transaction. Therefore, the user 116 may create a new channel and set up the desired alert notifications, as follows.

[00197] In this example, the process is using the "Latest News" touchlet 316A; the "Stock Watch" touchlet 316B, which is BRCD; and the "Stock Watch" touchlet 316C, which is Cisco Systems, Inc (CSCO); which are shown in Figure 18. That is, in this example the independent channels supporting "Latest News" touchlet 316A, "Stock

Watch" touchlet 316B, and "Stock Watch" touchlet 316C are combined to create a new channel (and touchlet). Then, an eventing and alerting process with respect to the new channel is set up with respect to the combined data.

[00198] Referring to Figure 19, in order to create a new channel, the user 116 selects an icon 336 on taskbar 312, which causes a create channel window 338 to be displayed to the user 116. A channels portion 340 of the create channel window 338 shows a list of available channels from which to build an alert. For example, the available channels are from the current channel grid 318 or from any other channel grid of the user 116. A query builder portion 342 of the create channel window 338 provides a query builder function to the user 116, which is used to generate the CQL that interacts with the event manager of the eventing and alerting subsystem 652 (see Figure 6).

[00199] Figure 20 shows that the user 116 may select a first channel, such as the "Latest News" channel from the channels portion 340, which causes the "Latest News" channel to appear in the query builder portion 342 of the create channel window 338. When a channel is designed, the developer exposes certain things that may be useful to users 116. In the case of the "Latest News" channel, a "keywords" field is provided to the user. User 116 enters, for example, the words "Brocade" and "Cisco." Once the channel is deployed, the news information of the "Latest News" channel is monitored for the words "Brocade" and "Cisco" (together in the same news feed) by the event manager of the eventing and alerting subsystem 652.

[00200] Figure 21 shows that the user 116 may select a second channel, such as the BRCD "Stock Watch" channel from the channels portion 340, which causes the BRCD "Stock Watch" channel to also appear in the query builder portion 342 of the create channel window 338. Now two channels are present in the query builder portion 342. Again, when a channel is designed, the developer exposes certain things that may be useful to users 116. In the case of the "Stock Watch" channel, a "share price" field is provided to the user along with a qualifiers dropdown menu (greater than, equal to, less than). User 116 selects, for example, a share price "greater than $9.26." Once the channel is deployed, the share price information of the BRCD "Stock Watch" channel is monitored for this condition by the event manager of the eventing and alerting subsystem 652. The information that the user enters in the

query builder portion 342 of the create channel window 338 is an example of threshold conditions or parameters for triggering an alert notification.

[00201] Figure 22 shows that the user 116 may select a third channel, such as the CSCO "Stock Watch" channel from the channels portion 340, which causes the CSCO "Stock Watch" channel to also appear in the query builder portion 342 of the create channel window 338. Now three channels are present in the query builder portion 342. User 116 selects, for example, a share price "greater than $23.63." Once the channel is deployed, the share price information of the CSCO "Stock Watch" channel is monitored for this condition by the event manager of the eventing and alerting subsystem 652.

[00202] The query builder portion 342 of the create channel window 338 allows Boolean operations between the selected channels. For example, the user 116 may be provided AND, OR, ANDNOT, and XOR functions. In this example, the user selects the "Latest News" channel AND the BRCD "Stock Watch" channel AND the CSCO "Stock Watch" channel. In this way, an alert is generated when the following condition is present: Both the words "Brocade" and "Cisco" are detected in the "Latest News" channel AND when a share price "greater than $9.26" is detected via the BRCD "Stock Watch" channel AND when a share price "greater than $$23.63" is detected via the CSCO "Stock Watch" channel.

[00203] The query builder portion 342 of the create channel window 338 also provides notification settings. For example, the user 116 may select notify by: Current Device, Email, IM, SMS, Mobile, and the like. The user 116 may select one or more. The query builder portion 342 of the create channel window 338 also provides channel name field. In one example, the user 116 enters "Custom Alert." When the setup is complete, the user 116 selects a "Create Channel" button to deploy the new "Custom Alert" channel. By pressing the "Create Channel" button, certain processes occur, such as, but not limited to, the channel server 630 is updated accordingly, a touchlet is created and loaded into the client, all events set up on the menu are registered with the event manager, the user's configuration is updated with the notification preferences for this channel, the event manager begins monitoring the data streams according to the query. The touchlet is updated in real time as to the status of the three variables.

[00204] In this example and referring now to Figure 23, a "Custom Alert" touchlet 316L is created and presented in channel grid 318. The "Custom Alert" touchlet 316L displays the three components that the channel is eventing off. In this view, the "Custom Alert" touchlet 316L displays the three components (e.g., news, BRCD, and CSCO), which are all in a no alert condition. In one example, the no alert condition for each component is to display the component in a green color in the "Custom Alert" touchlet 316L. Therefore, Figure 23 shows all three components in green to indicate that no alert conditions are present.

[00205] Referring now to Figure 24, two of the three alert conditions are met and the "Custom Alert" touchlet 316L displays a warning state to the user 116. In this example, the BRCD and the CSCO conditions are met, but the news condition is not yet met. Therefore, the color of the BRCD and CSCO components may be changed from green to yellow, while the news component remains green. In this way, the user 116 may perceive a warning that, while the alert condition is not yet fully met, an alert may be eminent.

[00206] Referring now to Figure 25, all three alert conditions are met and the "Custom Alert" touchlet 316L displays an alert state to the user 116. In this example, the news, BRCD, and CSCO conditions are met. Therefore, the color of the news, BRCD, and CSCO components in the "Custom Alert" touchlet 316L may be changed to red. In this way, the user 116 may receive the notification that the alert condition is fully met.

[00207] Accordingly, an aspect of the invention is that PID application 112 provides the capability to combine information of two or more channels to create a another information channel, such as combining information associated with "Latest News" channel, the BRCD "Stock Watch" channel, and the CSCO "Stock Watch" channel to create a new channel that is represented by "Custom Alert" touchlet 316L. Additionally, upon the creation of this new channel, this new channel may be automatically installed and synchronized across all of the user's user devices 118 so that that the new channel appears on all user devices 118. Optionally, the user can manually update his/her user devices 118 (e.g., via drag and drop function).

[00208] Referring again to Figure 25, in this view other alerts are presented in certain touchlets 316 of channel grid 318. For example, touchlet 316H, which may be

a business calendar channel, is displaying a "You have 4 scheduled meetings today" alert. Touchlet 316I, which may be an email channel, is displaying a "4 unread messages" alert. Both of these alerts are example of non-actionable alerts, as these are informational alerts that do not require user action. For example, the user may choose or not choose to launch the email channel and read his/her emails. However, if the user should choose to launch the email channel and read his/her emails, the "4 unread messages" alert is cleared.

[00209] Referring now to Figure 26, the "Custom Alert" channel provides an alert that is actionable. That is, upon receiving the alert via "Custom Alert" touchlet 316L, the user 116, who may be a stock broker, may take certain action. By clicking on the "Custom Alert" touchlet 316L, which may be in an alert state, the associated "Custom Alert" channel 2600 may be presented to the user 116. For example, Figure 26 shows an example of the GUI for the "Custom Alert" channel 2600. The GUI for the "Custom Alert" channel 2600 may include, for example, a query parameters portion 2610 and an actions portion 2612.

[00210] The query parameters portion 2610 allows the user 116 to, for example, adjust the query parameters, add more conditions, change conditions, remove conditions, and the like. The actions portion 2612 allows the user 116 to perform certain actions based on the alert. For example, the actions portion 2612 may provide mechanisms by which the user 116 may perform stock trading transactions (e.g., buying and selling stock), similar to trading window 1424 of "Stock Watch" channel 1400 of Figure 14, which may be supported by the "TD Ameritrade" web service.

[00211] The "Custom Alert" channel 2600 is used to generate an alert that is of particular importance to the user 116. The "Custom Alert" channel 2600 is an example of the user-centric aspect of PID application 112 in which only information that is of most importance to the user is processed and/or presented to the user 116. The aforementioned process of combining two or more independent channels to create a new channel (and touchlet) and a process of eventing off of the combined data is an example of the capability of PID application 112 to allow the user 116 to action based on disparate data that is of interest to the user and conditions set by the user.

[00212] NON-LIMITING EXAMPLES OF CONSUMER APPLICATIONS

[00213] For the purpose of illustration, Figures 27 through 51 describe non-limiting examples of channels 200 that may be suitable for consumer use. However, these examples are not limited to consumer use only. The channels described in Figures 27 through 51 may also be suitable for enterprise applications (e.g., corporate environments).

[00214] Referring to Figures 27 through 40, screenshots of an example of a "Television" channel of PID application 112 is presented. In the discussion herein, let the reader beware that the meaning of the term "channel" within the context of PID application 112 is not to be confused with the standard consumer terminology of a TV channel. When referring to the standard terminology of a TV channel, the standard TV channel is hereafter referred to as a "traditional TV channel."

[00215] Figure 27 shows a screenshot of a "Television" channel GUI 2700 that is being displayed on a tablet device 2710, which is one example of a user device 118 (i.e., a client device). The "Television" channel GUI 2700 may have been launched using a "Television" touchlet (not shown) of a certain channel grid (not shown) of a certain user 116. Upon touching, clicking, or otherwise selecting the "Television" touchlet, the underlying "Television" channel (e.g., a "Television" channel 2720 shown in Figure 28) is launched, which in turn launches "Television" channel GUI 2700 to be presented to the user. "Television" channel GUI 2700 displays yet another television-specific channel grid, such as a channel grid 2712.

[00216] The "Television" channel is designed to impart certain capabilities to any user device 118, such as tablet device 2710, with respect to viewing and/or interacting with content on a television. For example, tablet device 2710 is capable to provide a TV remote control function, capable to display any dynamic content to the user 116, capable of allowing user interaction with the content, and the like.

[00217] For example, a set of TV controls 2714 that provide interfacing features are rendered on the display of tablet device 2710. Preferably, the display of tablet device 2710 is a touch screen. Therefore, TV controls 2714 are touch controls. TV controls 2714 may include, for example, pause and play controls, fast forward and

rewind, volume up/down controls, mute, 50% mute, traditional TV channel up/down controls, and TV on/off controls. TV controls 2714 may be rendered in any position on the display that provide ease of use for the user. For example, TV controls 2714 may be arranged on one side of the display, on both sides of the display, along the top of the display, and the like.

[00218] Channel grid 2712 contains multiple touchlets for presenting dynamic information of, interacting with, and/or launching any content that a user 116 may be likely to watch on his/her TV set, which is itself another user device 118 (i.e., another client device). For example, channel grid 2712 may include, for example, touchlets for TV shows, touchlets for movies, touchlets for TV service providers, touchlets for movies providers, touchlets for any streaming video content, and the like. In one example, the user 116 may select a "Master Chef" touchlet 2730 (shown in Figure 28), which launches an underlying channel application in substantially full-screen mode, as shown in Figure 28, by which the user may watch the Master Chef TV show.

[00219] For example, Figure 28 shows "Television" channel 2720 operating in a substantially full-screen mode. "Television" channel 2720 is launched from channel grid 2712 by, for example, using the "Master Chef" touchlet 2730. Figure 28 also shows a TV 2740 by which the user 116 is able to watch the Master Chef TV show. While TV 2740 is displaying the Master Chef TV show itself, the user 116 may select a "What's On" button (not shown) in order to view episode information about the Master Chef TV show on tablet device 2710. The TV services provider's electronic programming guide (EPG) may be the source of this episode information. Additionally, an ad window 2750 is included in the display. Dynamic and/or static information from any source may be displayed in ad window 2750. While contextually related to one another, the main display showing the episode information and the ad window 2750 are two separate and distinct entities.

[00220] The user 116 may use any of the TV controls 2714 (e.g., pause/play, volume, traditional TV channel up/down) for controlling TV 2740 from tablet device 2710. Additionally, the user 116 may interact with the "Bon Appetit" magazine ad that is displayed in ad window 2750. Further, user 116 may select a certain "Simul-Stream" button 2760 to play the TV show on both TV 2740 and tablet device 2710.

EX. 1002
LG Electronics, Inc. / Page 433 of 3523

[00221] Figure 29 shows that the user 116 may decide to switch to another show. Therefore, the user 116 touches the channel up/down control to locate a TV show called Fringe.

[00222] Figure 30 shows that the user 116 may decide to watch Fringe instead. As a result, Fringe episode information is displayed on tablet device 2710, while the TV show is playing at TV 2740. Figure 30 also shows that a Coke Zero ad is playing on TV 2740. By querying the metadata associated with the digital TV broadcast, PID application 112 is able to detect (1) that a commercial is playing on TV 2740 and (2) that the ad content is about Coke Zero. Therefore, other Coke Zero ad information may be displayed in ad window 2750 at tablet device 2710 substantially concurrently to the Coke Zero ad running on TV 2740. This is an example of synchronization feature of PID application 112, which may be performed using stream sync server 636 of PID application architecture 600 of Figure 6.

[00223] Referring again to Figure 30, the user 116 may choose to pause the TV show from tablet device 2710 and interact with the Coke Zero ad in ad window 2750. For example, the user 116 touches the "Play the Coke Zero Football Challenge" text in ad window 2750 and the game is then launched and displayed as shown in Figure 31. This is an example of user interaction with information that is delivered by information delivery system 100 to the user 116 on a user device 118. More specifically, this is an example of interactive ads and games.

[00224] Figure 32 shows that the user 116 may finish playing the Coke Zero game and decide to resume watching the TV show Fringe on TV 2740. Again, Fringe episode information is displayed on tablet device 2710. Figure 32 also shows that a Ford ad is playing on TV 2740. Again, PID application 112 is able to detect (1) that a commercial is playing on TV 2740 and (2) that the ad content is about Ford. In this example, while a national Ford ad is playing on TV 2740, a local Ford dealer ad information may be displayed in ad window 2750 substantially concurrently to the Ford ad running on TV 2740. This is another example of synchronization feature of PID application 112, which may be performed using stream sync server 636 of PID application architecture 600 of Figure 6. More specifically, this is an example of synchronizing a local ad in the ad window 2750 at tablet device 2710 with a content-related national ad playing on TV 2740. Referring again to Figures 27 through 40,

"Television" channel 2720 demonstrates that an aspect of the invention is that PID application 112 may facilitate presentation of synchronized ad information.

[00225] Figures 33 through 36 illustrate a social feature of "Television" channel 2720. For example, Figure 33 shows that an alert notification appears on the display of tablet device 2710. The alert notification is informing the user 116 that a friend is also watching Fringe. This is an example of the configuration server 654, eventing and alerting subsystem 652, and session manager 656 of PID application 112 working together to determine whether an event has occurred that may trigger an alert of the user 116, then to determine whether the user 116 has an active session and at what user device 118, and then to determine the preferred alert notification method. This is an example of the eventing and alerting features of PID application 112.

[00226] The user 116 may touch a "Chat" button 2764 to launch a "Social" component of "Television" channel 2720, as shown in Figure 34. For example, Figure 34 shows a chat window 2752 that may display a list of the friends of user 116. The one or more friends that are watching the same TV show as the user 116 may be indicated to the user 116 by, for example, a color bar. Additionally, a show discussion may appear in the chat window 2752.

[00227] Figure 35 shows that the user 116 may decide to look at a Social Guide that is displayed in social guide window 2754. For example, the social guide window 2754 may display what all of user 116's friends are watching as well as what everyone else is watching. Figure 36 shows that the user 116 may access the TV show as well as chat from the social guide window 2754. This is an example of channels of PID application 112 providing users the ability to take action upon receiving an alert. That is, PID application 112 provides actionable eventing and alerting capability. For example, the user 116 responds to the alert by selecting the Social Guide and chatting with his/her friend.

[00228] Figure 37 shows a search feature of "Television" channel 2720. For example, Figure 37 shows a search window 2756 by which the user 116 may enter the name of a TV show and the airing days and times for that TV show may be displayed at tablet device 2710.

[00229] Figure 38 shows the electronic programming guide (EPG) feature of "Television" channel 2720. For example, the user may select the programming guide and the TV service provider appears in an EPG window 2758. The program listings for certain traditional TV channels for the current day and time slot are displayed. The user 116 may scroll to other pages of the programming guide.

[00230] Figure 39 shows that the user 116 may return to the Social Guide, which is displayed in social guide window 2754, and then decides to watch the TV show called The Mentalist.

[00231] Figure 40 shows that the user 116 is watching The Mentalist on TV 2740, while The Mentalist episode information is displayed on tablet device 2710. Figure 40 also shows an alert that another friend is also watching The Mentalist.

[00232] Referring again to Figures 27 through 40, "Television" channel 2720 demonstrates that an aspect of the invention is that PID application 112 may facilitate social interactions. That is, because of the system integration, PID application 112 knows what users are consuming what content and at what time.

[00233] Referring yet again to Figures 27 through 40, information sources 114 that support "Television" channel 2720 may include, but are not limited to, digital TV service providers, social networking providers, national and local advertising providers, and the like. Any information sources 114 may be accessed through integrated services and applications layer 614 of PID application 112. Additionally, the servers of PID application 112 at application server 110 that support "Television" channel 2720 may include, but are not limited to, content delivery server 632, stream sync server 636, analytics server 638, advertising server 640, transcoding server 642, and media server 644.

[00234] Referring to Figures 41 through 44, various screenshots of certain components and operations of an example of a "Home Security" channel 4300 of PID application 112 and a process of alerting a user is presented.

[00235] Figure 41 shows a screenshot of an example of a client GUI 4100 of PID application 112 that includes a set of touchlets 4110 in channel grid 318 of main viewing panel 310. Among the touchlets of channel grid 318 is a "Home Security" touchlet 4110J for presenting dynamic information of, interacting with, and/or

launching the "Home Security" channel 4300 (shown in Figure 43). "Home Security" touchlet 4110J is shown in a "no alert present" state. In one example, in the "no alert present" state "Home Security" touchlet 4110J displays an image of a green shield. By contrast, Figure 42 shows "Home Security" touchlet 4110J in an "alert present" state. In one example, when the "alert present" state occurs, the color of the "Home Security" touchlet 4110J changes to red and displays information about the alerts, such as a "Motion Detected" message.

[00236] Figure 43 shows "Home Security" channel 4300 operating in a substantially full-screen mode. "Home Security" channel 4300 provides a mechanism for monitoring and/or reporting information about the user 116's home security system. Main viewing panel 410 of "Home Security" channel 4300 may include, for example, a status window 4310 and one or more video feed windows 4312. In this example, four video feeds from four cameras in four respective locations in the user's home are presented. The video feed that is related to a particular alert condition may be color coded to stand out the viewer. For example, Figure 43 shows the backyard video feed highlighted in red, while the others are not highlighted in red. The status window 4310 shows in text form any alert conditions that are present as well as any useful control buttons. For example, a keypad button 4314 may be provided for launching a keypad window 4316, as shown in Figure 44. The keypad window 4316 provides a mechanism by which the user may interact remotely with his/her home security system via any user device 118. This is another example of channels of PID application 112 providing users the ability to take action upon receiving an alert. That is, PID application 112 provides actionable eventing and alerting capability. For example, by viewing the video feed, the user 116 may determine that the motion detected was caused by an animal in his/her backyard. Therefore, the user 116 may use keypad window 4316 to clear the alert condition.

[00237] Information sources 114 that support "Home Security" channel 4300 may include, for example, one or more home security services. Any information sources 114 may be accessed through integrated services and applications layer 614 of PID application 112. Additionally, the servers of PID application 112 at application server 110 that support "Home Security" channel 4300 may include, but are not limited to, content delivery server 632 and media server 644.

[00238] Referring to Figure 45, tablet device 2710 of Figure 27 and certain components of an example of a "NetFlix" channel 4500 of PID application 112 is presented. In this example, "NetFlix" touchlet 4510 may be used for presenting dynamic information of, interacting with, and/or launching the "NetFlix" channel 4500. In this example, "NetFlix" channel 4500 is designed simply to access NetFlix via its URL address (https://www.netflix.com/) on the Internet, then simply wrap the content that is returned in a web browser, and then present the content on the display of tablet device 2710 (i.e., a user device 118). The user may interact with the NetFlix web content as if interacting using any computer.

[00239] The use of "NetFlix" channel 4500 is an example of the user taking advantage of the single login (or universal login) capabilities of information delivery system 100. Outside of the PID application 112 environment, a user would be asked to login to the NetFlix website. However, in the PID application 112 environment, the login operation is performed automatically by the identity subsystem 660, with no user actions.

[00240] Information sources 114 that support "NetFlix" channel 4500 may include, for example, the NetFlix web service. Any information sources 114 may be accessed through integrated services and applications layer 614 of PID application 112. Additionally, the servers of PID application 112 at application server 110 that support "NetFlix" channel 4500 may include, but are not limited to, content delivery server 632, stream sync server 636, advertising server 640, and a media server 644.

[00241] Referring to Figures 46 and 47, screenshots of certain components of an example of a "Remote Healthcare" channel 4600 of PID application 112 is presented. Figures 46 and 47 show "Remote Healthcare" channel 4600 operating in a substantially full-screen mode. A "Remote Healthcare" touchlet 4610 is provided for presenting dynamic information of, interacting with, and/or launching "Remote Healthcare" channel 4600. "Remote Healthcare" channel 4600 provides a video conferencing service between any entities related to healthcare, such as, but not limited to, patients, patients' family members, doctors, nurses, pharmacists, and the like.

[00242] Main viewing panel 410 of "Remote Healthcare" channel 4600 may include, for example, a video feed window 4612, a health questions window 4614,

and a health overview window 4616. Video feed window 4612 may display a video feed of any persons, for example, participating in a medical consultation session. For example, Figure 46 shows a video feed of the patient only, while Figure 47 shows both the patient and the doctor are conferenced in. In this example, the patient is one user 116 and the doctor is another user 116 of information delivery system 100.

[00243] Health questions window 4614 may contain a questionnaire. The patient may interact with the questionnaire, thereby providing important medical information for those joining the medical consultation session. Additionally, health overview window 4616 may provide various current, historical and trend sensor information related to the patient health (e.g., sensor data that is returned from certain devices that are used by the patent). One example is a USB-enabled blood pressure device. In this example, the patient's blood pressure, pulse rate, and oxygen levels are reported in health overview window 4616.

[00244] Via the video feed and audio feed capabilities of "Remote Healthcare" channel 4600, a patient may receive advice from his/her healthcare providers without an actual visit to the healthcare provider's office. Additionally, family members of the patient may also participate in the session remotely, again avoiding travel. As a result of the medical consultation using "Remote Healthcare" channel 4600, the doctor may wish to prescribe certain medication. Accordingly, a channel of PID application 112 for managing a patient's treatment regimen is described with reference to Figure 50.

[00245] Referring to Figure 48, screenshots of certain components of an example of a "My Medicine Cabinet" channel 4800 of PID application 112 is presented. Figure 48 shows "My Medicine Cabinet" channel 4800 operating in a substantially full-screen mode. A "My Medicine Cabinet" touchlet 4810 is provided for presenting dynamic information of, interacting with, and/or launching "My Medicine Cabinet" channel 4800. "My Medicine Cabinet" channel 4800 provides a mechanism for managing a treatment regimen of a patient and is suitable for use by, for example, patients, patients' family members, doctors, nurses, pharmacists, and the like.

[00246] Main viewing panel 410 of "My Medicine Cabinet" channel 4800 may include, for example, a treatment regimen window 4812 and a calendar window 4814. Treatment regimen window 4812 displays, for example, a daily view of any

medications that have been prescribed to a certain user 116 and dosage information. Alerts may be generated base on the dosage information (e.g., as to when a patent is due to take a certain medication). Calendar window 4814 may display, for example, a monthly view of any medications that have been prescribed to a certain user 116. Alerts may be generated base on this information (e.g., as to when a certain prescription needs to be refilled).

[00247] Information sources 114 that support "Remote Healthcare" channel 4600 and/or "My Medicine Cabinet" channel 4800 may include any healthcare service provider databases, where the healthcare service providers may be, for example, doctors, hospitals, pharmaceutical companies, pharmacies, and the like. Any information sources 114 may be accessed through integrated services and applications layer 614 of PID application 112. Additionally, the servers of PID application 112 at application server 110 that support "Remote Healthcare" channel 4600 and/or "My Medicine Cabinet" channel 4800 may include, but are not limited to, content delivery server 632, collaboration media server 634, analytics server 638, and a media server 644.

[00248] Referring to Figure 49, screenshots of certain components of an example of an "MS Word" channel 4900 of PID application 112 is presented. Figure 49 shows "MS Word" channel 4900 operating in a substantially full-screen mode. A "MS Word" touchlet 4910 is provided for presenting dynamic information of, interacting with, and/or launching "MS Word" channel 4900. "MS Word" channel 4900 provides a mechanism for processing MS Word documents to users 116.

[00249] Main viewing panel 410 of "MS Word" channel 4900 may include, for example, a viewing/editing window 4912, in which a user 116 may open, view, and/or edit MS Word documents. "MS Word" channel 4900 is an example of accessing an application that may already be installed and running on a user device 118. For example, "MS Word" channel 4900 may launch the local MS Word application running as a native application on a laptop or desktop computer and then present the Word document to the user 116.

[00250] Referring to Figure 50, screenshots of certain components of an example of an "Email" channel 5000 of PID application 112 is presented. Figure 50 shows "Email" channel 5000 operating in a substantially full-screen mode. An "Email"

touchlet 5010 is provided for presenting dynamic information of, interacting with, and/or launching "Email" channel 5000. "Email" channel 5000 provides an email service to the user 116.

[00251] Main viewing panel 410 of "Email" channel 5000 may include an inbox window 5012 and a folders window 5014. The inbox window 5012 displays emails in the user's inbox. Folders window 5014 may display various email folders including the user's address book. Figure 50 shows that the information about the sender of the email currently being viewed may be displayed, including a photo.

[00252] Information sources 114 that support "Email" channel 5000 may include at least one email provider or a combination of multiple email providers. Any information sources 114 may be accessed through integrated services and applications layer 614 of PID application 112. Additionally, the servers of PID application 112 at application server 110 that support "Email" channel 5000 may include, but are not limited to, content delivery server 632, analytics server 638, and media server 644.

[00253] Referring to Figure 51, screenshots of certain components of an example of a "News Reader" channel 5100 of PID application 112 is presented. Figure 51 shows "News Reader" channel 5100 operating in a substantially full-screen mode. A "News Reader" touchlet 5110 is provided for presenting dynamic information of, interacting with, and/or launching "News Reader" channel 5100. "News Reader" channel 5100 provides a news presentation service to users 116.

[00254] Main viewing panel 410 of "News Reader" channel 5100 may include, for example, a subscriptions window 5112 and a news story window 5114. Subscriptions window 5112 may display, for example, folders of any news feeds to which the user 116 is subscribed. News story window 5114 may display, for example, any news content of the day. Alerts may be set to notify the user, for example, when any subscriptions are due to expire. Upon receiving such an alert, "News Reader" channel 5100 may provide mechanism by which the user 116 may renew subscriptions. This is another example of channels of PID application 112 providing users the ability to take action upon receiving an alert. That is, PID application 112 provides actionable eventing and alerting capability.

[00255] The use of "News Reader" channel 5100 may be an example of the user taking advantage of the single login (or universal login) capabilities of information delivery system 100. Outside of the PID application 112 environment, a user would be asked to login to the news service provider. However, in the PID application 112 environment, the login operation is performed automatically by the identity subsystem 660, with no user actions.

[00256] Information sources 114 that support "News Reader" channel 5100 may include, for example, any news web service. Any information sources 114 may be accessed through integrated services and applications layer 614 of PID application 112. Additionally, the servers of PID application 112 at application server 110 that support "News Reader" channel 5100 may include, but are not limited to, content delivery server 632, stream sync server 636, analytics server 638, advertising server 640, and a media server 644.

[00257] NON-LIMITING EXAMPLES OF ENTERPRISE APPLICATIONS

[00258] For the purpose of illustration, Figures 52 through 72 describe non-limiting examples of channel grids 318 and channels 200 that may be suitable for enterprise use (e.g., corporate and business environments and/or across business ecosystems, such as supplier and contractor networks). However, these examples are not limited to enterprise use only. The channels described in Figures 52 through 72 may also be suitable for consumer and/or other applications. A certain enterprise may provide a suite of channel grids 318 and channels 200 that may be useful for performing any tasks related to the enterprise. In one example, the suite of channels 200 may be arranged in a suite of channel grids 318 in which each channel grid 318 includes a unique set of related touchlets 316 for accessing the underlying channels 200. The availability and/or functionality of the channels 200 and/or touchlets 316 may vary based on groups, functions, roles, tasks and/or individuals in the enterprise.

[00259] Currently, the data associated with an enterprise may originate from legacy systems. Examples of legacy applications may include, but are not limited to Human Resource Management (HRM), Enterprise Resource Management (ERP), Product Life Cycle Management (PLM), Customer Relationship Management (CRM) systems and tools. However, these tools and systems are optimized for certain corporate uses and to serve internal corporate reporting needs and often work poorly for management

decision making purposes. These legacy tools may work well for generating monthly corporate reports, but may not work well for performing real-time analysis for decision makers. For example in managing customer sales accounts, information may be required in real-time from the ERP, PLM and CRM systems. Additionally, useful information may be available from legacy systems, but may be very difficult to access and present in a way that is meaningful to the user to understand and take action on. As an example a sales account manager looking for a global weekly sales estimate, may spend a lot of time searching for customer sales information across different corporate systems instead of acting on the information and visiting customers who sales are trending downward. Further, there is typically more information available than a user can easily find, interpret, and organize in a meaningful way.

[00260] Therefore, an aspect of the invention is that PID application 112 of information delivery system 100 may be used in combination with legacy tools that are deployed to process data in the legacy enterprise environment. In this way, certain channels 200 may be created to provide user-centric content and insights in the enterprise environment. That is, the channels 200 may provide content and insights that are tailored to the needs of users116, by presenting content meaningful to the user. Additionally, PID application 112 of information delivery system 100 may be used to extract, aggregate or consolidate legacy data across multiple legacy systems and then organize and present the data in a meaningful way via a channel 200.

[00261] Enterprises may have analytic teams that produce useful analytical reports from legacy systems, but information available via these analytical reports may be very detailed, for a narrow audience, difficult to interpret, and may be out of date by the time the data is accessed. Therefore, an aspect of the invention is that PID application 112 of information delivery system 100 allows data to be readily consumed, with insights and with narrow windows, and allows users 116 to take rapid action, thereby adding value to this data. The system also allows for the user to interrogate data drawing further insights into the enterprise.

[00262] Referring to Figure 52, a screenshot of an example of an enterprise client GUI 5200 is presented that includes an example of a login window. In this example, the taskbar 312 of enterprise client GUI 5200 may include a company name field 313. In one example, the company name field 313 is populated with "PQR Corporation."

In the corporate and/or business environment, users 116 may be, for example, employees, contractors, suppliers, regulators, government officials, and/or any other individuals authorized to access enterprise client GUI 5200. In order to gain access to the system, a user login window 5210 may be presented in main viewing panel 310 by which the user may enter his/her username and password. Once the user and and/or the device is authenticated, a suite of channels and/or channel grids may be presented to the user 116. Examples of channel grids that may be associated with an enterprise are shown in Figures 53 and 54.

[00263] Referring to Figures 53 and 54, screenshots of enterprise client GUI 5200 showing two example channel grids that may be related to the enterprise are presented. For example, Figure 53 shows a channel grid 318a that is displayed when the user 116 selects a channel grid icon 324a of the navigation bar 314. Figure 54 shows a channel grid 318b that is displayed when the user 116 selects a channel grid icon 324b of the navigation bar 314. Channel grid 318a of Figure 53 is used to display a first set of touchlets 316 (e.g., touchlets 316A through 316L) that are associated with a first set of channels 200 (not shown). Likewise, channel grid 318b of Figure 55 is used to display a second set of touchlets 316 (e.g., touchlets 316M through 316X) that are associated with a second set of channels 200 (not shown). In one example, channel grid 318a of Figure 53 may be used to display a set of touchlets 316 that are related to enterprise as a whole, such as to PQR Corporation as a whole. By contrast, channel grid 318b of Figure 54 may be used to display a set of touchlets 316 that are related to a certain division, group and/or sales account of the enterprise, such as a certain division, group and/or sales account of PQR Corporation.

[00264] Referring now to Figure 53, by way of example channel grid 318a may include an "Email" touchlet 316A, a "Personal Calendar" touchlet 316B, a "My Company in the Press" touchlet 316C, a "News Reader" touchlet 316D, a "New Technologies" touchlet 316E, a "What is Selling" touchlet 316F, an "Analytics Tool Set" touchlet 316G, a "myNet" touchlet 316H, a "Channel Catalog" touchlet 316I, a "My HR" touchlet 316J, a "My Performance" touchlet 316K, and a "Currency Converter" touchlet 316L.

[00265] "Email" touchlet 316A of channel grid 318a may be associated with an "Email" channel, such as, but not limited to, "Email" channel 5000 of Figure 50. The

"Email" channel may be the users' corporate email application or a consolidation of various user email accounts. The "Email" channel may include additional features such as connecting an email address to an address book entry with a picture of the contact.

[00266] "Personal Calendar" touchlet 316B of channel grid 318a may be associated with a "Personal Calendar" channel, such as, but not limited to, a "Personal Calendar" channel 5500 of Figure 55. The "Personal Calendar" channel may, for example, provide a listing of all commitments, meetings, to do lists and the like. "Personal Calendar" channel may use active alerts to notify the user of upcoming events, such as a meeting.

[00267] "My Company in the Press" touchlet 316C of channel grid 318a may be associated with a "My Company in the Press" channel (not shown). The "My Company in the Press" channel may provide, for example, live videos; streaming news feeds; access to news archive by hour, day, week, and/or month; access to YouTube; and any combinations thereof. Examples of content on the "My Company in the Press" channel may include, but are not limited to, news interviews, company advertisements, product reviews, and annual shareholder meetings.

[00268] "News Reader" touchlet 316D of channel grid 318a may be associated with a "News Reader" channel, such as, but not limited to, the "News Reader" channel 5100 of Figure 51. For example, the "News Reader" channel 5100 may provide company RSS feeds (e.g., PQR Corporation RSS feeds) from multiple internal and external sources, such as from an internal Twitter account and the New York Times.

[00269] "New Technologies" touchlet 316E of channel grid 318a may be associated with a "New Technologies" channel (not shown). For example, the "New Technologies" channel may provide access to a forum for company product announcements, a recap of latest insights from the company research and development group, thought provoking concepts in the industry, promotional and training video, and the like.

[00270] "What is Selling" touchlet 316F of channel grid 318a may be associated with a "What is Selling" channel (not shown). For example, the "What is Selling"

channel may provide information about certain products, for example, product orders by hour, day, week, month, and/or quarter, information about client wins or loses, information about top sales managers, sales recognitions, and the like.

[00271] "Analytics Tool Set" touchlet 316G of channel grid 318a may be associated with an "Analytics Tool Set" channel (not shown). For example, the "Analytics Tool Set" channel may provide a set of Statistical Analysis Software (SAS) products and/or related analytic products for users to analyze specific trends in data sets, access to business analytics services, drill down capability, report generation and the like.

[00272] "myNet" touchlet 316H of channel grid 318a may be associated with a "myNet" channel, such as, but not limited to, a "myNet" channel 5600 of Figure 56. For example, the "myNet" channel 5600 may provide a compilation of company-specific social sites (e.g., PQR Corporation-specific social sites). The "myNet" channel 5600 may provide simple tools to enable posting of a comment to multiple forums.

[00273] "Channel Catalog" touchlet 316I of channel grid 318a may be associated with a channel application catalog, such as, but not limited to, channel application catalog 631 of Figure 12, a channel application catalog 6500 of Figure 65, and a channel application catalog 6700 of Figure 67. The channel application catalog is accessed to download certain channel grids and/or channels. The catalog may provide free and for pay channels. Channel application catalogs may be sensitive to a user's role and rights within the enterprise. More details about user roles and user groups in an enterprise are described with reference to Figures 62 through 67.

[00274] "My HR" touchlet 316J of channel grid 318a may be associated with a "My HR" channel (not shown). For example, the "My HR" channel may provide access to all personal HR-related information, such as benefits, vacation time, savings account, required training, policies and procedures, and the like. The "My HR" channel has the capability to alert users to, for example, out of boundary conditions, such as expiring vacation or the need to take health and safety training. Also, the "My HR" channel may provide access to content based on user level and user identity.

EX. 1002
LG Electronics, Inc. / Page 446 of 3523

[00275] "My Performance" touchlet 316K of channel grid 318a may be associated with a "My Performance" channel (not shown). For example, the "My Performance" channel may provide a composite of all metrics (e.g., based on user level and user identity) that are translated into incentive compensation or related reward schema. Automatic alerts may be generated when HR-defined thresholds for performance are missed and/or exceeded.

[00276] The "My HR" channel and the "My Performance" channel may be an example of using data associated with an enterprise that may originate from legacy systems, such as from a legacy HR system and ERP system, and then tailoring the data to present information to users 116 in a meaningful way that is of particular interest. For example, for each employee, the legacy HR system may provide information about each employee's department, region, level, position, role, and the like. Using information delivery system 100 of the present invention, this information may be loaded into the user profiles. Accordingly, information delivery system 100 may be used to create and assign roles and/or groups from the information of the legacy HR system. For example, HR functions may have a management group that writes performance reviews, a director group that approves the reviews, a senior management group that audits the reviews, and the like. In one example, a director will not be asked to approve a review until the manager completed the final review. The ERP system may provide information about the employee's performance (e.g. customer orders booked for the year) from the "My Performance" channel to information delivery system 100 of the present invention in order to assist the manager in creating the review.

[00277] "Currency Converter" touchlet 316L of channel grid 318a may be associated with a "Currency Converter" channel (not shown). For example, the "Currency Converter" channel may provide a real-time conversion calculator set, for example, by user identity, user location, user role, and the like. The "Currency Converter" channel may be optimized per the company finance department for metrics important to the user, such as sales by division, group, and/or employee. For example, the "Currency Converter" channel may provide internal company estimates for future sales in every country in which the company does business and in the currency most commonly used in the user's location.

[00278] Referring now to Figure 54, by way of example channel grid 318b may include a "Stock Watch" touchlet 316M, an "Account Calendar" touchlet 316N, a "News Reader" touchlet 316O, a "myNet" touchlet 316P, a "Real-time Profit & Loss" touchlet 316Q, an "Account Bookings" touchlet 316R, a "Sales Pipeline" touchlet 316S, a "Personnel Locator" touchlet 316T, a "Channel Catalog" touchlet 316U, an "Open Room" touchlet 316V, a "Security Threat Trends" touchlet 316W, and a "Room Finder" touchlet 316X.

[00279] "Stock Watch" touchlet 316M of channel grid 318b may be associated with a "Stock Watch" channel, such as, but not limited to, "Stock Watch" channel 1400 of Figure 14. For example, the "Stock Watch" channel may be configurable to deliver competitive industry performance, such as balance sheet ratios or other suitable indicators of financial health. The "Stock Watch" channel may provide real-time quotes and capability to set thresholds with alerts.

[00280] "Account Calendar" touchlet 316N of channel grid 318b may be associated with an "Account Calendar" channel (not shown). The "Account Calendar" channel may provide a sales account team calendar function that may be sales account-specific. The "Account Calendar" channel maybe used for tracking sales meetings, order entry deadlines, payment dates, quarterly close dates, any information that pertains to the sales account, and the like. Using the "Account Calendar" channel, the user may, for example, merge client sales demo events and trade show attendance dates into the "Account Calendar" channel, in order to build composite situational awareness for everything that is occurring in the sales account. The "Account Calendar" channel may provide alert mechanisms to push notifications when deadlines are approaching. The "Account Calendar" channel may also merge and/or combine with other channels. For example, the "Account Calendar" channel may merge and/or combine with the "Room Finder" channel in order to acquire information about sales meeting locations.

[00281] Similar to "News Reader" touchlet 316D of channel grid 318a, "News Reader" touchlet 316O of channel grid 318b may be associated with a "News Reader" channel, such as, but not limited to, the "News Reader" channel 5100 of Figure 51. For example, this "News Reader" channel may be a company division-, group- and/or account-specific "News Reader" channel. This "News Reader" channel may provide,

EX. 1002
LG Electronics, Inc. / Page 448 of 3523

for example, specific news that is sortable by sales account, by location, and/or by any other important attributes. This "News Reader" channel may provide company division-, group- and/or account-specific news, external reports or internal intelligence insights on client events in the news.

[00282] "myNet" touchlet 316P of channel grid 318b may be associated with a "myNet" channel, such as, but not limited to, the "myNet" channel 5600 of Figure 56. For example, the "myNet" channel 5600 may provide a compilation of company, division, group and/or account-specific social sites (e.g., divisions of and/or groups within PQR Corporation). The "myNet" channel 5600 may provide simple tools to enable posting of a comment to multiple forums. The "myNet" channel 5600 may also provide the capability to set alerts (e.g., monitoring channel information for London office AND management change) to users.

[00283] "Real-time Profit & Loss" touchlet 316Q of channel grid 318b may be associated with a "Real-time Profit & Loss" channel (not shown) that is company division- and/or group-specific. For example, the "Real-time Profit & Loss" channel may be used to create a composite of actual performance, adjusted for currency, indicating net margin contribution in real time.

[00284] "Account Bookings" touchlet 316R of channel grid 318b may be associated with a "Account Bookings" channel (not shown). For example, the "Account Bookings" channel may be a company division-, group- and/or account-specific channel that provides composite sales bookings by category, such as hardware, software, and/or services. This "Account Bookings" channel may provide timelines of booking to shipment to payment. This "Account Bookings" channel may also be merged and/or combined with the "Currency Converter" channel to analyze net booking margin – alerts may be set to thresholds.

[00285] "Sales Pipeline" touchlet 316S of channel grid 318b may be associated with a "Sales Pipeline" channel, such as, but not limited to, a "Sales Pipeline" channel 5700 of Figure 57. For example, the "Sales Pipeline" channel may provide a forecast of total account revenue by month, probability, and category, such as hardware, software, and/or services. The "Sales Pipeline" channel may provide a mean to interrogate sales pipeline information, for example, if a user wanted to understand the

composition of the hardware pipeline, an interrogation might launch the "Account Bookings" channel.

[00286] "Personnel Locator" touchlet 316T of channel grid 318b may be associated with a "Personnel Locator" channel (not shown). For example, the "Personnel Locator" channel may provide an account team and client locator function. That is, the "Personnel Locator" channel may provide a look-up utility for all company personnel associated with the client, with pictures and groupings. Additional information may also include assigned activities, deal prospects, current location, and the like. The "Personnel Locator" channel may provide a similar utility for client contacts with links to company counterparts. The "Personnel Locator" channel may provide the capability to link names and activate messaging services, such as email, SMS, and the like.

[00287] "Channel Catalog" touchlet 316U of channel grid 318b may be associated with a channel application catalog, such as, but not limited to, channel application catalog 631 of Figure 12, channel application catalog 6500 of Figure 65, and channel application catalog 6700 of Figure 67. Again, the channel application catalog is accessed to download certain channel grids and/or channels.

[00288] "Open Room" touchlet 316V of channel grid 318b may be associated with an "Open Room" channel, such as, but not limited to, an "Open Room" channel 5800 of Figure 58. For example, the "Open Room" channel may provide a mechanism for real-time collaboration and video conferencing. The "Open Room" channel may provide direct access to initiate a conference and provide relevant content. The "Open Room" channel may provide access to other channels to begin collaboration For example, the "Open Room" channel may provide assess to the "Sales Pipeline" channel or "Personal Calendar" channel to help facilitate collaboration.

[00289] "Security Threat Trends" touchlet 316W of channel grid 318b may be associated with a "Security Threat Trends" channel, such as, but not limited to, a "Security Threat Trends" channel 5900 of Figures 59, 60, and 61. For example, the "Security Threat Trends" channel may provide company intelligence service tools on security threats to the company, such as attempts to circumvent firewalls or unauthorized entry into a building facility. The "Security Threat Trends" channel may include an advanced set of utilities to set alerts relating to threats facing the

company. The "Security Threat Trends" channel may be linked to, combined with, and/or merged into other channels, such as a "News Reader" channel to provide external information relating to threats facing the company including, for example, fire and power outage information.

[00290] "Room Finder" touchlet 316X of channel grid 318b may be associated with a "Room Finder" channel (not shown). For example, the "Room Finder" channel may provide a utility to input a sales meeting location or company campus location and find a meeting room. The "Room Finder" channel may include an access-enabled room scheduling tool to set up meetings or launch "Just-In-Time" workspace software applications that may be used to schedule meeting space appropriate for the requestor (e.g., by identity/level) and may send notification to others. The "Room Finder" channel may be used to generate a visual and/or audible map to the room location using the geo-location capability of, for example, the user's client device, such as their cell phone.

[00291] Referring to Figure 55, screenshots of certain components of an example of a "Personal Calendar" channel 5500 that is suitable for use in enterprise applications is presented. Figure 55 shows "Personal Calendar" channel 5500 operating in a substantially full-screen mode. A "Personal Calendar" touchlet 316B is provided for presenting dynamic information of, interacting with, and/or launching "Personal Calendar" channel 5500. The "Personal Calendar" channel may, for example, provide a listing of the user's commitments, meetings, and the like. "Personal Calendar" channel may use active alerts to notify the user of upcoming events.

[00292] Main viewing panel 410 of "Personal Calendar" channel 5500 may include, for example, a daily view window 5512 and a monthly view window 5514. The daily view window 5512 may display, for example, a list of today's events. The monthly view window 5514 may display, for example, a full month's events in standard calendar form. Main viewing panel 410 of "Personal Calendar" channel 5500 may also include certain control buttons, such as, but not limited to, an "Events" button, a "Mail" button, an "Address Book" button, and a "Subscribe" button.

[00293] Referring to Figure 56, screenshots of certain components of an example of "myNet" channel 5600 that is suitable for use in enterprise applications is

presented. Figure 56 shows "myNet" channel 5600 operating in a substantially full-screen mode. A "myNet" touchlet 316P is provided for presenting dynamic information of, interacting with, and/or launching "myNet" channel 5600. The "myNet" channel 5600 may provide a compilation of certain social sites (e.g., company-specific, division-specific, group-specific, and/or account-specific social sites). The "myNet" channel 5600 may provide simple tools to enable posting of a commentary to multiple forums. The "myNet" channel 5600 may also provide the capability to send a variety of alert types, such as text driven alerts.

[00294] Main viewing panel 410 of "myNet" channel 5600 may include, for example, a friends window 5612 and a latest updates window 5614. The friends window 5612 may display, for example, a list of the contacts as well as their online status. The latest updates window 5614 may display, for example, one or more forums for posting comments. For example, latest updates window 5614 may include a Facebook session, a Twitter session, and a chronological log of the user's activities.

[00295] Referring to Figure 57, screenshots of certain components of an example of "Sales Pipeline" channel 5700 that is suitable for use in enterprise applications is presented. Figure 57 shows "Sales Pipeline" channel 5700 operating in a substantially full-screen mode. A "Sales Pipeline" touchlet 316S is provided for presenting dynamic information of, interacting with, and/or launching "Sales Pipeline" channel 5700. The "Sales Pipeline" channel may provide a forecast of total account revenue by month, probability, and category, such as hardware, software, and/or services. In addition, other sales metrics maybe tracked. For example, total sales opportunity, total proposals, and total contracts may be tracked. In interacting with the "Sales Pipeline" channel the user may interrogate various forecasts and metrics to obtain more information and context about the information. For example, in interrogating the sales contracts metrics the "Account Bookings" channel may be launched, combined, and/or merged with the "Sales Pipeline" channel in order to allow the user to understand exactly what accounts have booked contracts.

[00296] Main viewing panel 410 of "Sales Pipeline" channel 5700 may include, for example, a selection window 5712 and a sales forecast window 5714. The selection window 5712 allows the user to select any month of the year. Once the user selects a certain month, the selected month's sales forecast information is displayed in sales

forecast window 5714. Main viewing panel 410 of "Sales Pipeline" channel 5700 may also include certain control buttons, such as, but not limited to, a "Settings" button, as well as a search tool.

[00297] Referring to Figure 58, screenshots of certain components of an example of an "Open Room" channel 5800 that is suitable for use in enterprise applications is presented. Figure 58 shows "Open Room" channel 5800 operating in a substantially full-screen mode. An "Open Room" touchlet 316V is provided for presenting dynamic information of, interacting with, and/or launching "Open Room" channel 5800. "Open Room" channel 5800 provides a video and/or audio conferencing service to users 116.

[00298] Main viewing panel 410 of "Open Room" channel 5800 may include, for example, an attendees window 5812 and a video feed window 5814. The attendees window 5812 displays a list of any attendees that have joined the video conference and a chat feature. The video feed window 5814 displays streaming video or periodic camera shots of any attendees that have joined the video conference. Main viewing panel 410 of "Open Room" channel 5800 may also include certain control buttons for, for example, sharing documents, passing control of the video conference, and the like. Mini-touchlets 416 may include touchlets that are specifically relevant to the video conference and/or mini-touchlets that help aid collaboration of the team members. For example, a certain "Open Room" mini-touchlet 416 may be used to book a meeting room for the next team meeting. Mini-touchlets 416 may include touchlets that provide information relevant to the meeting topic. In providing information relevant to the meeting, the "Personal Calendar" channel of the meeting organizer may be interrogated to determine the subject of the meeting. If, for example, the meeting is a monthly sales meeting, one mini-touchlet 416 may be a "Sales Pipeline" mini-touchlet.

[00299] Referring to Figures 59, 60, and 61, screenshots of certain components of an example of the "Security Threat Trends" channel 5900 that is suitable for use in enterprise applications is presented. Figures 59, 60, and 61 show "Security Threat Trends" channel 5900 operating in a substantially full-screen mode. A "Security Threat Trends" touchlet 316W is provided for presenting dynamic information of, interacting with, and/or launching "Security Threat Trends" channel 5900. The

"Security Threat Trends" channel may provide company intelligence on threats facing the company from internal and external sources. For example threats to computer network security.

[00300] Main viewing panel 410 of "Security Threat Trends" channel 5900 may include, for example, a data window 5912 and a trends window 5914. The data window 5912 displays, for example, certain information about company host computer resources. Trends window 5914 includes, for example, three tabs: a "Threat Management Trend" tab, a "Vulnerability Exposure Trend" tab, and a "Security Intelligence Trend" tab. Figure 59 shows information corresponding to the "Threat Management Trend" tab. Figure 60 shows information corresponding to the "Vulnerability Exposure Trend" tab. Figure 61 shows information corresponding to the "Security Intelligence Trend" tab. Main viewing panel 410 of "Security Threat Trends" channel 5900 may also include certain control buttons, such as, but not limited to, a "Settings" button, as well as a search tool.

[00301] Referring to Figure 62, a block diagram of an example of an enterprise user hierarchy 6200 is presented that shows individual users, roles assigned to users, and/or users assigned to groups within an enterprise. The implementation of individual users, roles, and/or groups in information delivery system 100 is not limited to enterprise applications only. Individual users, roles, and/or groups are likewise applicable to consumer applications.

[00302] Users 116 in, for example, a corporate environment may be assigned to groups based, for example, on their titles, positions, levels, and/or authority in a company. Users 116 may then be assigned roles within their assigned group.

[00303] In one example, enterprise user hierarchy 6200 includes one or more users 116 that are assigned to a directors group 6210. In this example, each user 116 may have the title of director within the enterprise. However, among the users 116 in the directors group 6210, a certain user 116 (i.e., director) in the directors group 6210 may have the role of "System Administrator," while another user 116 in the directors group 6210 may have the role of "Emergency Coordinator."

[00304] In another example, enterprise user hierarchy 6200 includes one or more users 116 that are assigned to a managers group 6212. In this example, each user 116

may have the title of manager within the enterprise. However, among the users 116 in the managers group 6212, a certain user 116 (i.e., manager) in the managers group 6212 may have the role of "Performance Appraiser," while another user 116 in the managers group 6212 may have the role of "Threat Case Manager."

[00305] In yet another example, enterprise user hierarchy 6200 includes one or more users 116 that are assigned to an analysts group 6214. In this example, each user 116 may have the title of analyst within the enterprise. However, among the users 116 in the analysts group 6214, a certain user 116 (i.e., analyst) in the analysts group 6214 may have the role of "Senior Analyst," while another user 116 in the analysts group 6214 may have the role of "Associate Analyst."

[00306] Outside of the aforementioned groups and/or roles, enterprise user hierarchy 6200 may also include one or more individuals 6216, which may be any users 116 that are not necessarily assigned to a group. While not assigned to a group, each individual 6216 may be assigned a role based on their title, position, level, and/or authority in the company. For example, one individual 6216 may be the company CEO, which is his/her assigned role. Another individual 6216 may be the company CFO, which is his/her assigned role.

[00307] The content that is available to any user 116 may be group- and/or role-dependent. That is, the authorizations and/or permissions with respect to accessing and/or using channels, channel grids, and/or with respect content presented by the channels and/or channel grids may be dependent on the user's group and/or role within the enterprise. By way of example, let's apply enterprise user hierarchy 6200 of Figure 62 to an information security enterprise, such as, but not limited to, corporate security office that is responsible for safeguarding sensitive corporate information. In one example, the process of safeguarding sensitive information may include an insider threat avoidance system that is implemented using information delivery system 100. In this example, in order to detect and prevent any breach of information security, information delivery system 100 is used to monitor employee (or any insider, such as a contractor, supplier, regulator, and/or project manager) activity with respect to unauthorized access, use, disclosure, disruption, modification, perusal, inspection, recording, or destruction of sensitive information. If a potential

threat is indentified, a case may be opened to manage the investigation of the threat using "Security Threat Trends" channel 5900.

[00308] In the example of the information security enterprise, users 116 (i.e., directors) in the directors group 6210 may have the highest authorization level with respect to access and/or use of certain channels and/or content and/or with respect to permissions to perform certain actions. That is, users 116 (i.e., directors) in the directors group 6210 have full authority to perform any task and/or function. For example, a particular user 116 (i.e., director) in the directors group 6210 may have the role of "System Administrator," who has the authority to add, update, and delete users 116 and/or cases from the insider threat avoidance system, which is implemented using information delivery system 100. Under the control of the "System Administrator" the authorization status of individuals 6216 may be assigned uniquely depending upon their respective roles in the enterprise (e.g., CEO, CFO, etc).

[00309] In the information security enterprise, users 116 (i.e., managers) in the managers group 6212 may have medium level authorization with respect to access and/or use of certain channels and/or content and/or with respect to permissions to perform certain actions. Generally, users 116 in the managers group 6212 have create, update, and read authority; and also have business process control. For example, a particular user 116 (i.e., manager) in the managers group 6212 may have the role of "Threat Case Manager," who has the authority to create a case, view a case, update a case, and perform an approval step, which may promote the case to the next step in the workflow. However, the role of "Threat Case Manager" in the managers group 6212 does not allow adding and deleting users and/or cases.

[00310] In the information security enterprise, users 116 (i.e., analysts) in the analysts group 6214 may have the lowest level authorization with respect to access and/or use of certain channels and/or content and/or with respect to permissions to perform certain action. For example, a particular user 116 (i.e., analyst) in the analysts group 6214 may have the role of "Senior Analyst," who has the authority to create a case, view a case, and update a case. However, the role of "Senior Analyst" in the analysts group 6214 does not allow business process control. For example, the "Senior Analyst" in the analysts group 6214 may not perform the approval step and promote the case to the next step in the workflow.

[00311] Examples of group- and/or role-dependent content and/or actions with respect to an insider threat avoidance system, which is implemented using information delivery system 100, are described with reference to Figures 63 through 72.

[00312] Referring to Figure 63, a screenshot of an analyst client GUI 6300 is presented that includes an example of a channel grid for users 116 (i.e., analysts) in the analysts group 6214 of the enterprise. For example, when an analyst logs into the system, a channel grid 318c is displayed on the user device 118 of the analyst. The content of channel grid 318c is role-specific with respect to users 116 (i.e., analysts) in the analysts group 6214. In this example, channel grid 318c includes three touchlets 316 for which analysts are authorized. For example, channel grid 318c includes an "Alerts" touchlet 316A, a "Personnel Activity" touchlet 316B, and a "Reports" touchlet 316C.

[00313] "Alerts" touchlet 316A of channel grid 318c may be associated with an "Alerts" channel, such as, but not limited to, an "Alerts" channel 6800 of Figure 68. For example, the "Alerts" channel allows authorized analysts, managers, and/or directors to be alerted to and/or view new cases for individuals who may have performed potentially suspicious activities.

[00314] "Personnel Activity" touchlet 316B of channel grid 318c may be associated with a "Personnel Activity" channel, such as, but not limited to, a "Personnel Activity" channel 6900 of Figure 69. For example, the "Personnel Activity" channel allows authorized analysts, managers, and/or directors to view activities of personnel inside the enterprise and investigate their activities in relation to the alert and case.

[00315] "Reports" touchlet 316C of channel grid 318c may be associated with a "Reports" channel, such as, but not limited to, a "Reports" channel 7000 of Figure 70. For example, the "Reports" channel allows authorized analysts, managers, and/or directors to generate analytics reports on specific activities data. The "Reports" channel may access, merge, and/or combine with the "Personnel Activity" channel to facilitate the production of a report. For example the "Personnel Activity" channel may provide a computer log of a user's system activity that may be included in the analytics section of a report.

[00316] Referring to Figure 64, a screenshot of a manager client GUI 6400 is presented that includes an example of a channel grid for users 116 (i.e., managers) in the managers group 6212 of the enterprise. For example, when a manager logs into the system, a channel grid 318d is displayed on the user device 118 of the manager. The content of channel grid 318d is role-specific with respect to users 116 (i.e., managers) in the managers group 6212. In this example, channel grid 318d includes four touchlets 316 for which managers are authorized. For example, channel grid 318d includes the "Alerts" touchlet 316A, "Personnel Activity" touchlet 316B, and "Reports" touchlet 316C that are described in Figure 63 with respect to analysts. However, managers are further authorized to receive a "Catalog" touchlet 316D. Whereas analysts are not authorized to receive "Catalog" touchlet 316D (see channel grid 318c of Figure 63).

[00317] "Catalog" touchlet 316D of channel grid 318d may be associated with a channel application catalog, such as, but not limited to, a channel application catalog 6500 of Figure 65. The channel application catalog allows users to configure the channels that are displayed on their channel grids. Referring to Figure 65, a screenshot of an example of the channel application catalog 6500 is presented that includes content that corresponds to users 116 (i.e., managers) in the managers group 6212 of the enterprise. In this example, the content of channel application catalog 6500 is role-specific with respect to managers. That is, only channels for which managers are authorized are available in channel application catalog 6500. In this example, shown in a channel catalog window 6512, managers are authorized to receive the "Alerts" channel, "Personnel Activity" channel, "Reports" channel, and additional manager level channels from "Catalog" channel.

[00318] Referring to Figure 66, a screenshot of a director client GUI 6600 is presented that includes an example of a channel grid for users 116 (i.e., directors) in the directors group 6210 of the enterprise. For example, when a director logs into the system, a channel grid 318e is displayed on the user device 118 of the director. The content of channel grid 318e is role-specific with respect to users 116 (i.e., directors) in the directors group 6210. In this example, channel grid 318e includes six touchlets 316 for which directors are authorized. For example, channel grid 318e includes the "Alerts" touchlet 316A, "Personnel Activity" touchlet 316B, and "Reports" touchlet

316C that are described in Figure 63 with respect to analysts. Channel grid 318e also includes the "Catalog" touchlet 316D that is described in Figure 64 with respect to managers. However, directors are further authorized to receive a "User Administration" touchlet 316E and a "Catalog Administration" touchlet 316F. Whereas analysts and managers are not authorized to receive "User Administration" touchlet 316E and "Catalog Administration" touchlet 316F (see channel grid 318c of Figure 63 and channel grid 318d of Figure 64).

[00319] "User Administration" touchlet 316E of channel grid 318e may be associated with a "User Administration" channel, such as, but not limited to, a "User Administration" channel 7100 of Figure 71. For example, a particular user 116 (i.e., director) in the directors group 6210 may have the role of "System Administrator," who has the authority to set roles and groups for the system users.

[00320] "Catalog Administration" touchlet 316F of channel grid 318e may be associated with a "Catalog Administration" channel, such as, but not limited to, a "Catalog Administration" channel 7200 of Figure 72. For example, the "Catalog Administration" channel allows the "System Administrator" to manage the catalog content as it relates to roles and groups of the system users.

[00321] Referring to Figure 67, a screenshot of an example of a channel application catalog 6700 is presented that includes content that corresponds to users 116 (i.e., directors) in the directors group 6210 of the enterprise. In this example, the content of channel application catalog 6700 is role-specific with respect to directors. That is, only channels for which directors are authorized are available in channel application catalog 6700. In this example, shown in a channel catalog window 6712, directors are authorized to receive the "Alerts" channel, "Personnel Activity" channel, "Reports" channel, "Catalog" channel, "User Administration" channel, and "Catalog Administration" channel.

[00322] Referring to Figure 68, screenshots of certain components of an example of the "Alerts" channel 6800 that is suitable for use in enterprise applications is presented. Figure 68 shows "Alerts" channel 6800 operating in a substantially full-screen mode. An "Alerts" touchlet 316A is provided for presenting dynamic information of, interacting with, and/or launching "Alerts" channel 6800. The "Alerts" channel 6800 allows authorized users to view new cases for individuals who

have performed potentially suspicious activities. Certain advanced information products that provide analytic capabilities may be operating behind "Alerts" channel 6800 for flagging individuals who may be performing potentially suspicious activities. The data upon which analysis is performed may be obtained from legacy applications, such as, but not limited to, HRM, ERP, PLM, CRM systems and tools, any other management tools, and the like. For example, if a threat was detected concerning theft of customer information, the CRM legacy application may provide information to investigate the theft.

[00323] Main viewing panel 410 of "Alerts" channel 6800 may include, for example, an alerts window 6812 and an alerts detail window 6814. The alerts window 6812 displays a list of potential alerts to potentially be investigated. Once the user selects a certain alert at alerts window 6812, the details of the selected alert are displayed in alerts detail window 6814. Main viewing panel 410 of "Alerts" channel 6800 may also include certain control buttons, such as, but not limited to, a "Delete" button and an "Add New" button. An "Approved" dropdown menu may also be provided.

[00324] Referring to Figure 69, screenshots of certain components of an example of the "Personnel Activity" channel 6900 that is suitable for use in enterprise applications is presented. Figure 69 shows "Personnel Activity" channel 6900 operating in a substantially full-screen mode. A "Personnel Activity" touchlet 316B is provided for presenting dynamic information of, interacting with, and/or launching "Personnel Activity" channel 6900. The "Personnel Activity" channel 6900 allows authorized users to view activities of personnel inside the enterprise.

[00325] Main viewing panel 410 of "Personnel Activity" channel 6900 may include, for example, a personnel activity window 6912 and an activity details window 6914. The personnel activity window 6912 displays a list of personnel activities to potentially be investigated. Once the user selects a certain activity at personnel activity window 6912, the details of the selected activity is displayed in activity details window 6914. Main viewing panel 410 of "Personnel Activity" channel 6900 may also include an "Analyzing" dropdown menu. The activities data from which analysis is performed may be obtained from legacy applications, such as,

but not limited to, HRM, ERP, PLM, CRM systems and tools, any other management tools, and the like.

[00326] Referring to Figure 70, screenshots of certain components of an example of a "Reports" channel 7000 that is suitable for use in enterprise applications is presented. Figure 70 shows "Reports" channel 7000 operating in a substantially full-screen mode. A "Reports" touchlet 316C is provided for presenting dynamic information of, interacting with, and/or launching "Reports" channel 7000. The "Reports" channel 7000 allows authorized users to generate analytics reports on specific activities data.

[00327] Main viewing panel 410 of "Reports" channel 7000 may include, for example, a report types window 7012 and an activities window 7014. The report types window 7012 displays a list of different types of reports. Once the user selects a certain report type at report types window 7012, the activities related to the selected report type are displayed in activities window 7014.

[00328] Referring to Figure 71, screenshots of certain components of an example of the "User Administration" channel 7100 that is suitable for use in enterprise applications is presented. Figure 71 shows "User Administration" channel 7100 operating in a substantially full-screen mode. A "User Administration" touchlet 316E is provided for presenting dynamic information of, interacting with, and/or launching "User Administration" channel 7100. The "User Administration" channel 7100 allows, for example, the "System Administrator" of the directors group 6210 to set roles and groups for the system users.

[00329] Main viewing panel 410 of "User Administration" channel 7100 may include, for example, a user details window 7112. The user details window 7112 provides one or more information entry fields by which the "System Administrator" may enter information about a certain user 116 in a certain group. For example, user details window 7112 may be used to set the group and/or role of a certain user 116. Predetermined groups and/or roles may have certain permissions and/or parameters already defined.

[00330] Referring to Figure 72, screenshots of certain components of an example of a "Catalog Administration" channel 7200 that is suitable for use in enterprise

applications is presented. Figure 72 shows "Catalog Administration" channel 7200 operating in a substantially full-screen mode. A "Catalog Administration" touchlet 316F is provided for presenting dynamic information of, interacting with, and/or launching "Catalog Administration" channel 7200. The "Catalog Administration" channel 7200 allows the "System Administrator" in the directors group 6210 to manage the catalog content as it relates to roles and groups of the system users.

[00331] Main viewing panel 410 of "Catalog Administration" channel 7200 may include, for example, a channel details window 7212. The channel details window 7212 provides one or more information entry fields by which, for example, the "System Administrator" in the directors group 6210 may enter information about a certain channel applications, such as, but not limited to, "Alerts" channel 6800, "Personnel Activity" channel 6900, "Reports" channel 7000, and "User Administration" channel 7100. Additionally, channel details window 7212 may be used to manage the catalog content as it relates to roles and groups of the system users. For example, channel details window 7212 may be used to set "User Administration" channel 7100 to be used by the "System Administrator" in the directors group 6210, but not by users 116 in the managers group 6212 and users 116 in the analysts group 6214.

[00332] Referring again to Figures 52 through 72, while non-limiting examples of channels 200 that may be suitable for enterprise use have been described largely in the context of processing and presenting role-based content, the present invention is not limited to role-based content only. Information delivery system 100 may be used to process and present role-based content, location-based content, time-based content, activity-based content, behavior-based content, and any combinations thereof. That is, information delivery system 100 provides the framework by which a developer can create any useful information products, such as role-based product, location-based products, time-based products, activity-based products, behavior-based products, and any combinations thereof. Again, bringing to the user the information and experience that is most important to them.

[00333] Additionally, information delivery system 100 may be used to push scheduled events to users 116. For example, in the enterprise environment, a notification may be sent to users 116 that it is time for their annual training session.

Similarly, information delivery system 100 may push information to users 116 about any corporate activity, event, or news.

[00334] SYSTEM ARCHITECTURE SUPPORTING A WEB PRESENTATION FRAMEWORK

[00335] For the purpose of illustration, Figures 73 through 78 describe the system architecture of information delivery system 100 of the present invention implemented for supporting a web presentation framework. In one example, the web presentation framework is implemented using HTML5. HTML5 is a language for structuring and presenting content for the World Wide Web, a core technology of the Internet. It is the latest revision of the HTML standard and currently remains under development. Its core aims have been to improve the language with support for the latest multimedia while keeping it easily readable by humans and consistently understood by computers and devices (e.g., web browsers, parsers, etc.). As compared to previous versions, HTML5 adds many new syntactical features. These include the `<video>`, `<audio>`, and `<canvas>` elements (or tags), as well as the integration of Scalable Vector Graphics (SVG) content. These features are designed to make it easy to include and handle multimedia and graphical content on the web. Additionally, HTML5 provides support for off-line storage. Further, HTML5 includes a new protocol called WebSockets that allows bidirectional asynchronous communication.

[00336] Referring to Figure 73, a functional block diagram of an example of a PID application architecture 7300 for supporting the web presentation framework is presented. PID application architecture 7300 is another example of the application architecture of the server side of PID application 112. In this example, the user devices 118 that are used with the Flex presentation framework of PID application architecture 600 of Figure 6 are replaced by user devices 7310. That is, instead of supporting Adobe AIR-enabled devices, PID application architecture 7300 supports user devices 7310, which may be any web (or Internet) browser-enabled devices (hereafter called browser-enabled devices). For example, Figure 73 shows a web browser 7312 running on each user device 7310. Examples of web (or Internet) browsers that may be running on user devices 7310 may include, but are not limited to, Microsoft Internet Explorer® 9, Google Chrome, Mozilla Firefox 4, Apple Safari 5, and Opera 11.

[00337] Accordingly, examples of user devices 7310 may include, but are not limited to, any type, brand, and/or model of browser-enabled desktop computer; browser-enabled laptop computer; browser-enabled tablet computer; browser-enabled net-book computing device; browser-enabled handheld computing device; browser-enabled personal digital assistant; browser-enabled enterprise digital assistant; browser-enabled portable digital assistant; browser-enabled telecommunications device including one of an browser-enabled telephone, browser-enabled cell phone, and browser-enabled smart phone; browser-enabled personal navigation device; browser-enabled vehicle-based device; browser-enabled optical disk player; browser-enabled television; browser-enabled game console; and the like.

[00338] PID application architecture 7300 may include facilitation layer 610, integration and process layer 612, and integrated services and applications layer 614 of PID application architecture 600 of Figure 6, albeit with certain modifications for supporting the web presentation framework.

[00339] For example, facilitation layer 610 includes the facilitation server 616 and the certain other servers 628, such as, but not limited to, channel server 630, content delivery server 632, collaboration media server 634, stream sync server 636, analytics server 638, advertising server 640, transcoding server 642, and media server 644. However, in this embodiment, facilitation server 616 includes a client gateway 7314 instead of the client gateway 618 of PID application architecture 600 of Figure 6. Client gateway 7314 uses hypertext transfer protocol (HTTP) for communicating with the client (e.g., web browsers 7312 of user devices 7310), while using, for example, JMS protocol for communicating with the rest of the server stack. In this way, facilitation server 616 may serve as an HTTP server. Preferably, client gateway 7314 of facilitation server 616 uses HTTPS protocol, which is HTTP Secure protocol.

[00340] While facilitation server 616 manages certain communication between the client (e.g., web browsers 7312 of user devices 7310) and the server (e.g., application server 110), the use of HTTP may be have certain limitations. For example, under HTTP protocol, a client, such as a web browser, must open a connection to a server, make a request, wait for a response, and then close the connection. If the client needs more data, it must open a new connection. Likewise, if the server has new information for the client, it must wait until the client requests it rather than sending it

over instantly. Consequently, HTTP protocol may be an inefficient way to exchange data. However, HTML5 includes a new protocol called WebSockets. This protocol allows a web client to create a connection, keep it open as long as it wants, and both send and receive data continuously. WebSocket connections allow two-way communication between the client (e.g., web browsers 7312 of user devices 7310) and the server without having to use Ajax type of mechanisms, thereby providing an efficient way to exchange data.

[00341] Therefore, facilitation layer 610 of PID application architecture 7300 also includes a messaging server 7316, which uses the WebSocket technology. That is, messaging server 7316 uses WebSocket protocol for communicating with the client (e.g., web browsers 7312 of user devices 7310), while using, for example, JMS protocol for communicating with the rest of the server stack. Preferably, messaging server 7316 uses WSS protocol, which is WebSocket Secure protocol. The WSS protocol enables bidirectional message-calling capability between the browser and messaging server 7316. The WSS protocol provides the path to the enterprise service bus 680 of integration and process server 646. The messages from the client (e.g., web browsers 7312) are converted from HTTP protocol to JMS protocol. The WSS protocol rejects connections that have not been authenticated (i.e., needs a token that indicates authentication). As a result, PID application architecture 7300 uses the combination of messaging server 7316 and facilitation server 616 to manage communication between the client (e.g., web browsers 7312 of user devices 7310) and the server (e.g., application server 110).

[00342] Additionally, the relational database management system (RDBMS) 686 of integrated services and applications layer 614 of PID application architecture 7300 may include a schema-less database 7318. Schema-less database 7318 is in communication with data management subsystem 650 of integration and process layer 612 via enterprise service bus 680 and adaptors 682. A RDBMS imposes a fixed schema, while a schema-less database does not. A main advantage of a schema-less database (e.g., a NoSQL database) compared with a relational database (e.g., a SQL database) is that it is easily scalable. A schema-less database is well-suited for the web presentation framework of PID application architecture 7300 because it provides a convenient database for channel/content developers. In one example, schema-less

database 7318 may be the MongoDB available from 10gen, Inc (New York, NY). MongoDB is an open source, high performance, scalable, document-oriented database.

[00343] Referring to Figure 74, a functional block diagram of an example of client architecture 7400 of PID application 112 for supporting the web presentation framework is presented. Client architecture 7400 is another example of the application architecture of the client side of PID application 112. In this example, client architecture 7400 may include an integrated development environment (IDE) layer 7410, a runtime layer 7412, an application layer 7414, and a themes layer 7416.

[00344] IDE layer 7410 is the layer of client architecture 7400 in which developers may develop channels and/or content of PID application 112 for running in the web presentation framework. There may be a channel IDE local component, a channel IDE client component, and a channel IDE server component. Developers may use writing panels, creating panels, developing panels, views, code, and the like when developing channels and/or content.

[00345] Runtime layer 7412 provides the engine for processing the channels and/or content that is created using the IDE layer 7410. There may be a channel runtime local component, a channel runtime client component, and a channel runtime server component. There may be, for example, document object model (DOM) views in runtime layer 7412. A DOM view provides the hierarchy of a web page. With respect to the channel runtime local component and the channel IDE local component, when creating channels and/or content for information delivery system 100, a developer may, optionally, have a local copy of certain components of the server loaded and executing on his/her user device 7310. This simply provides convenience to the developer to not have to continuously access, for example, the server-side portion of PID application 112 at application server 110 when creating channels and/or content.

[00346] Application layer 7414 contains the rules for the look and feel of the PID application 112 in the browser. For example, application layer 7414 contains the rules for displaying the channel grid that contains touchlets, a taskbar, a navigation bar, and the like. Application layer 7414 processes the raw application data and organizes the data into a complete application picture for the user.

[00347] Themes layer 7416 transforms the raw application data into the actual GUI presentation in the browser to the user. For example, a theme may be a company-based theme. In one example, the theme may be the XYZ Corporation theme.

[00348] Using the web presentation framework of PID application architecture 7300 and/or client architecture 7400, a user 116 may access PID application 112 of information delivery system 100 by launching the web browser 7312 on his/her user device 7310. Then the user 116 may enter the URL address of PID application 112 (e.g., http://www.PIDapplication.com/) and perform a login process. That is, by entering the URL address of PID application 112, the user 116 is connected via HTTP to facilitation server 616, which is the HTTP server. The user 116 then enters a username and password in a login window that is presented in web browser 7312 of his/her user device 7310. During the login process, the user may be asked whether using a public or private computer. If a public computer, no information is cached on the computer. That is, once the browser is closed, no trace of the user's activity is left behind on the computer.

[00349] Once authenticated, a session begins and the user 116 may access the resources of the rest of the server stack. Web browser 7312 connects to messaging server 7316 via WSS protocol and bidirectional communication begins. Based on user identity, a certain channel grid and/or channel application is retrieved and launched in the web browser 7312 on his/her user device 7310. For example, configuration server 654 accesses the schema-less database 7318 for user configuration and preference information with regard to the user's grid, and any other information needed to render the grid. This information is passed back to the client and the grid is rendered at the web browser 7312.

[00350] Subsequently, the user 116 may access one or more channel grids to which he/she is authorized to use. The user may select a certain touchlet of a certain channel grid in web browser 7312 and interact with a certain channel within the environment of the web browser 7312. Examples of channel grids, touchlets, and/or channels that are operating in web browser 7312 per the web presentation framework are shown with reference to Figures 75 through 78.

[00351] Additionally, dynamic updates may occur. For example, there may be circumstance where the user's grid is updated. That is, the user himself makes a

change, or some other user modifies a shared grid (e.g., adds a channel). In this example, the schema-less database 7318 may be updated with the change and the change is then pushed to the user who is running the grid in their web browser 7312. Additionally, if someone updates configuration preferences in integration and process server 646, the schema-less database 7318 is updated and the changes are also pushed to other clients that are subscribed to be notified of these changes. Changes are routed through JMS (a publish/subscribe mechanism) through facilitation server 616, which is the HTTP server, to the web browser 7312. Then, the web browser 7312 refreshes to implement the changes. In one example, if a user 116 no longer has access to certain content, that user 116 is immediately blocked from the content. In another example, if a new touchlet has been added to a channel grid, a new touchlet immediately appears on the grid in the user's web browser 7312.

[00352] In another example of performing dynamic updates, a "Stock Watch" channel (e.g., a "Stock Watch" channel 7800 of Figure 78) uses dynamic updates to periodically push stock content to the "Stock Watch" channel at the web browser 7312. When first launched, an initial request is made for current stock data through messaging server 7316 via WSS protocol, and then via JMS protocol to the integration and process server 646, and then to the external data sources. The current stock data that has been archived in the schema-less database 7318 is transmitted back to the web browser 7312 and displayed. The integration and process server 646 is not passive, it polls the external feeds for updates, stores the latest data in the schema-less database 7318, and pushes the updates back to the subscribing clients. The updates are also published to the eventing and alerting subsystem 652 and analyzed with respect to certain events that have been set up and that are being monitored. If certain conditions are met, alert notifications are triggered.

[00353] Referring to Figure 75, a screenshot of an example of a web browser 7312, which is running on a user device 7310, is presented for displaying a web page of a channel grid to the user. In this example, web browser 7312 may be a Microsoft Internet Explorer® web browser, but may be any type of browser, such as, but not limited to, a Google Chrome, Firefox, Safari, or Opera web browser. The web page that is displayed in web browser 7312 shows, for example, a channel grid 7510 that includes one or more touchlets 7512. The web page in web browser 7312 also shows

EX. 1002
LG Electronics, Inc. / Page 468 of 3523

a set of one or more channel grid buttons 7514 for selecting a certain channel grid to be displayed in web browser 7312. In one example, channel grid buttons 7514 may include an "At Home" channel grid button, a "My TV" channel grid button, an "At Work" channel grid button, a "Catalog" channel grid button, and a "Developer" channel grid button. In one example, when a user selects a certain channel grid button 7514, the corresponding channel grid web page is displayed in web browser 7312. The set of touchlets 7512 shown in channel grid 7510 of web browser 7312 of Figure 75 is an example of the touchlets of the user's "At Home" channel grid, meaning the channel grid that the user is likely to use when at home. When the user 116 selects a certain touchlet 7512, the web browser 7312 is updated (i.e., refreshed) with the corresponding channel application web page.

[00354] In this example, channel grid 7510 of Figure 75 (i.e., the user's "At Home" channel grid) includes, for example, one or more television media touchlets, such as a "Fringe" touchlet 7512A, a "Lost" touchlet 7512B, a "MasterChef" touchlet 7512C, and a "So You Think You Can Dance" touchlet 7512D; one or more movie media touchlets, such as an "Avatar" touchlet 7512E, a "How To Train Your Dragon" touchlet 7512F, and a "NetFlix" touchlet 7512G; and one or more other channel application touchlets, such as an "Advertising" touchlet 7512H, a "Last Viewed" touchlet 7512I, a "Remote Care" touchlet 7512J, a "My Medicine Cabinet" touchlet 7512K, and a "Home Security" touchlet 7512L. Each touchlet 7512 is associated with its corresponding channel application. More details of an example of a "Home Security" channel that is associated with "Home Security" touchlet 7512L and that is operating in the web presentation framework are described with reference to Figure 76.

[00355] Referring to Figure 76, a screenshot of web browser 7312 displaying a web page of a "Home Security" channel 7600 that is operating in a substantially full-screen mode is presented. "Home Security" channel 7600 is the channel application associated with "Home Security" touchlet 7512L of Figure 75. "Home Security" channel 7600 provides a mechanism for monitoring and/or reporting information about the user 116's home security system. The web page of "Home Security" channel 7600 may include, for example, a status window 7610 and one or more video feed windows 7612. The status window 7610 shows in text form any alert conditions

that are present as well as any useful control buttons. For example, a keypad button 7614 may be provided for launching a keypad window (not shown).

[00356] The web page of "Home Security" channel 7600 and/or of any other channel may also include a set of mini-touchlet buttons 7616 and a return-to-grid button 7618. When the user 116 selects a certain mini-touchlet button 7616, the web browser 7312 is updated (i.e., refreshed) with the web page of the corresponding channel application. Similarly, when the user 116 selects the return-to-grid button 7618, the web browser 7312 is updated (i.e., refreshed) with the channel grid web page, such as the channel grid web page shown in Figure 75.

[00357] From the user's perspective, "Home Security" touchlet 7512L of Figure 75 and "Home Security" channel 7600 of Figure 76 are substantially the same as "Home Security" touchlet 4110J and "Home Security" channel 4300 of Figure 43. However, "Home Security" channel 7600 of Figure 76 may be implemented using the web presentation framework, while "Home Security" channel 4300 of Figure 43 may be implemented using the Flex presentation framework.

[00358] Referring to Figure 77, another screenshot of web browser 7312, which is running on a user device 7310, is presented for displaying a web page of another channel grid to the user. In this example, the web browser 7312 displays a web page that includes the user's "At Work" channel grid. That is, a channel grid 7710 displays touchlets 7712 associated with the user's "At Work" channel grid, meaning the channel grid that the user is likely to use when at work.

[00359] In this example, channel grid 7710 of Figure 77 (i.e., the user's "At Work" channel grid) includes, for example, a "News Reader" touchlet 7712A, a "Stock Watch" touchlet 7712B, another "Stock Watch" touchlet 7712C, a "Business CRM" touchlet 7712D, a "Currency" touchlet 7712E, a "Banking" touchlet 7712F, a "Live News" touchlet 7712G, a "Business Calendar" touchlet 7712H, an "Email" touchlet 7712I, a "Personal Calendar" touchlet 7712J, and a "Business Finance" touchlet 7712K. More details of an example of a "Stock Watch" channel that is associated with "Stock Watch" touchlet 7712B and that is operating in the web presentation framework are described with reference to Figure 78.

[00360] Referring to Figure 78, a screenshot of web browser 7312 displaying a web page of a "Stock Watch" channel 7800 that is operating in a substantially full-screen mode is presented. "Stock Watch" channel 7800 is the channel application associated with "Stock Watch" touchlet 7712B of Figure 77. "Stock Watch" channel 7800 provides a mechanism for monitoring and/or reporting certain stock and/or financial information of a company of interest. In this example, "Stock Watch" channel 7800 is monitoring Brocade Communications Systems, Inc (BRCD). The web page of "Home Security" channel 7800 may include, for example, an overview window 7810, one or more information windows 7812, and a trading window 7814.

[00361] From the user's perspective, "Stock Watch" touchlet 7712B of Figure 77 and "Stock Watch" channel 7800 of Figure 78 are substantially the same as "Stock Watch" touchlet 316B and "Stock Watch" channel 1400 of Figure 14. However, "Stock Watch" channel 7800 of Figure 78 may be implemented using the web presentation framework, while "Stock Watch" channel 1400 of Figure 14 may be implemented using the Flex presentation framework.

[00362] Referring to Figures 73 through 78, from the user's perspective, while implemented using the web presentation framework, the operations of channel grid 7510 and touchlets 7512 (and the underlying channel applications) of Figure 75 and of channel grid 7710 and touchlets 7712 (and the underlying channel applications) of Figure 77 are substantially the same as channel grids, touchlets, and channels that are implemented using the Flex presentation framework. For example, a web page is designed to display channel grid 7510 that contains one or more touchlets 7512 in web browser 7312. Each touchlet 7512 may be used for presenting dynamic information of, interacting with, and/or launching its underlying channel application. Once launched, a substantially full-screen view of the channel is presented via a web page in web browser 7312.

[00363] Additionally, eventing and alerting functions may occur in the web presentation framework of information delivery system 100 of the present invention. Further, both consumer and enterprise scenarios may be implemented using the web presentation framework. Further still, the web presentation framework of information delivery system 100 supports a channel/content developer environment in which

developers may create channels/content using HTML5, JavaScript, and Cascading Style Sheets (CSS), such as CSS3.

[00364] FLEX PRESENTATION FRAMEWORK VS. WEB PRESENTATION FRAMEWORK

[00365] Referring again to Figures 1 through 11, in the Flex presentation framework embodiment of information delivery system 100, the user device 118 is the "client" in the client-server system architecture. As a result, a client portion of PID application 112 must be installed on each user device 118.

[00366] Referring again to Figures 73 and 74, in the web presentation framework embodiment of information delivery system 100, the web browser (e.g., web browser 7312) is the "client" in the client-server system architecture. As a result, a web browser application must be installed on each user device 7310.

[00367] Referring again to Figures 1 through 11, when developing channels and/or content for the Flex presentation framework embodiment of information delivery system 100, developers are writing applications (i.e., channels and/or content) that are compiled into an executable. Because of this, developers are (1) limited to the APIs that are exposed through Adobe proprietary software; (2) able to easily distribute an application with little more than a double-click install; and (3) able to control the precise look and feel of the application with minimal effort at production time.

[00368] Referring again to Figures 73 and 74, when developing channels and/or content for the web presentation framework embodiment of information delivery system 100, developers are writing applications (i.e., channels and/or content) that is interpreted by the browser. Because of this, developers are (1) able to build a full scale web application with nothing more than a text editor (and a browser); (2) required to test applications in all supported browsers; and (3) unrestricted by a third party feature release schedule (except as it pertains to standards implementation). Additionally, because there is no compilation step, HTML/JavaScript/CSS is quick and easy to create/edit on the fly.

[00369] Referring again to Figures 1 through 11, when developing channels and/or content for the Flex presentation framework embodiment of information delivery system 100, such as when using Adobe's RIA development tool, there are, for

example, three ways to build an application: (1) a web-based application that is meant for distributing over HTTP; (2) an Adobe AIR-based application, which is an application that runs on the desktop; and (3) a mobile application, which is an application meant to be used in a mobile device (e.g., smart phone, tablet). The development process for these three is more or less the same. However, the developer must choose which of these "project types" to use before building the application. Although, there may be ways to convert a web-based application into an Adobe AIR-based application.

[00370] Referring again to Figures 73 and 74, when developing channels and/or content for the web presentation framework embodiment of information delivery system 100, such as when using HTML5, JavaScript, and CSS, developers have only one choice for distribution of the application, which is the web. Therefore, the application must be interpreted by a web browser application in order to be used.

[00371] Referring again to Figures 1 through 11, the Flex presentation framework embodiment of information delivery system 100, provides the capability to access any information that is exposed at the device level (e.g., to determine the presence of a camera, microphone, speaker, etc). Accordingly, channels and/or content may make use of this device level information.

[00372] Referring again to Figures 73 and 74, currently HTML5 does not provide the ability to interrogate the client device with respect to device level information (e.g., to determine the presence of a camera, microphone, speaker, etc). The HTML5 specification is not yet certified, therefore its full functionality is still to be determined. Therefore, in the web presentation framework embodiment of information delivery system 100, native applications may be written (using native code) to run on any user device 7310. For example, in order to use a camera that is present on a certain user device 7310 for a web-conferencing application, a native application may be written to activate the camera of the certain type, brand, and/or model of device. The web presentation framework of PID application 112 of information delivery system 100 can use HTML5 to interact with the native application at the user device 7310. In this example, a camera touchlet of a channel grid may be used for presenting dynamic information of, interacting with, and/or

launching its underlying camera channel application (or any channel application using the camera), which may be use to interact with the native camera application.

[00373] Further, with respect to the various examples of channel grids, touchlets, and channels shown in Figures 12 through 72 and that are depicted using the Flex presentation framework of information delivery system 100, those skilled in the art will recognize that these examples may also be implemented using the web presentation framework of information delivery system 100.

[00374] Conclusion

[00375] While various inventive embodiments have been described and illustrated herein, those of ordinary skill in the art will readily envision a variety of other means and/or structures for performing the function and/or obtaining the results and/or one or more of the advantages described herein, and each of such variations and/or modifications is deemed to be within the scope of the inventive embodiments described herein. More generally, those skilled in the art will readily appreciate that all parameters, dimensions, materials, and configurations described herein are meant to be exemplary and that the actual parameters, dimensions, materials, and/or configurations will depend upon the specific application or applications for which the inventive teachings is/are used. Those skilled in the art will recognize, or be able to ascertain using no more than routine experimentation, many equivalents to the specific inventive embodiments described herein. It is, therefore, to be understood that the foregoing embodiments are presented by way of example only and that inventive embodiments may be practiced otherwise than as specifically described. Inventive embodiments of the present disclosure are directed to each individual feature, system, article, material, kit, and/or method described herein. In addition, any combination of two or more such features, systems, articles, materials, kits, and/or methods, if such features, systems, articles, materials, kits, and/or methods are not mutually inconsistent, is included within the inventive scope of the present disclosure.

[00376] The above-described embodiments of the invention can be implemented in any of numerous ways. For example, some embodiments may be implemented via one or more controllers, which may employ hardware, software or a combination thereof. In some embodiments discussed herein, one or more controllers may be implemented, at least in part, as a state machine.

[00377] When any aspect of an embodiment is implemented at least in part in software, the software code can be executed on any suitable processor or collection of processors, whether provided in a single device or computer or distributed among multiple devices/computers.

[00378] In this respect, various aspects of the invention, may be embodied at least in part as a computer readable storage medium (or multiple computer readable storage media) (e.g., a computer memory, one or more floppy discs, compact discs, optical discs, magnetic tapes, flash memories, circuit configurations in Field Programmable Gate Arrays or other semiconductor devices, or other tangible computer storage medium or non-transitory medium) encoded with one or more programs that, when executed on one or more computers or other processors, perform methods that implement the various embodiments of the technology discussed above. The computer readable medium or media can be transportable, such that the program or programs stored thereon can be loaded onto one or more different computers or other processors to implement various aspects of the present technology as discussed above.

[00379] The terms "program" or "software" are used herein in a generic sense to refer to any type of computer code or set of computer-executable instructions that can be employed to program a computer or other processor to implement various aspects of the present technology as discussed above. Additionally, it should be appreciated that according to one aspect of this embodiment, one or more computer programs that when executed perform methods of the present technology need not reside on a single computer or processor, but may be distributed in a modular fashion amongst a number of different computers or processors to implement various aspects of the present technology.

[00380] Computer-executable instructions may be in many forms, such as program modules, executed by one or more computers or other devices. Generally, program modules include routines, programs, objects, components, data structures, etc. that perform particular tasks or implement particular abstract data types. Typically the functionality of the program modules may be combined or distributed as desired in various embodiments.

[00381] Also, the technology described herein may be embodied as a method, of which at least one example has been provided. The acts performed as part of the

method may be ordered in any suitable way. Accordingly, embodiments may be constructed in which acts are performed in an order different than illustrated, which may include performing some acts simultaneously, even though shown as sequential acts in illustrative embodiments.

[00382] All definitions, as defined and used herein, should be understood to control over dictionary definitions, definitions in documents incorporated by reference, and/or ordinary meanings of the defined terms.

[00383] The indefinite articles "a" and "an," as used herein in the specification, unless clearly indicated to the contrary, should be understood to mean "at least one."

[00384] The phrase "and/or," as used herein in the specification, should be understood to mean "either or both" of the elements so conjoined, i.e., elements that are conjunctively present in some cases and disjunctively present in other cases. Multiple elements listed with "and/or" should be construed in the same fashion, i.e., "one or more" of the elements so conjoined. Other elements may optionally be present other than the elements specifically identified by the "and/or" clause, whether related or unrelated to those elements specifically identified. Thus, as a non-limiting example, a reference to "A and/or B", when used in conjunction with open-ended language such as "comprising" can refer, in one embodiment, to A only (optionally including elements other than B); in another embodiment, to B only (optionally including elements other than A); in yet another embodiment, to both A and B (optionally including other elements); etc.

[00385] As used herein in the specification, "or" should be understood to have the same meaning as "and/or" as defined above. For example, when separating items in a list, "or" or "and/or" shall be interpreted as being inclusive, i.e., the inclusion of at least one, but also including more than one, of a number or list of elements, and, optionally, additional unlisted items. Only terms clearly indicated to the contrary, such as "only one of" or "exactly one of," or, when used in claims, "consisting of," will refer to the inclusion of exactly one element of a number or list of elements. In general, the term "or" as used herein shall only be interpreted as indicating exclusive alternatives (i.e. "one or the other but not both") when preceded by terms of exclusivity, such as "either," "one of," "only one of," or "exactly one of."

EX. 1002
LG Electronics, Inc. / Page 476 of 3523

"Consisting essentially of," when used in claims, shall have its ordinary meaning as used in the field of patent law.

[00386] As used herein in the specification, the phrase "at least one," in reference to a list of one or more elements, should be understood to mean at least one element selected from any one or more of the elements in the list of elements, but not necessarily including at least one of each and every element specifically listed within the list of elements and not excluding any combinations of elements in the list of elements. This definition also allows that elements may optionally be present other than the elements specifically identified within the list of elements to which the phrase "at least one" refers, whether related or unrelated to those elements specifically identified. Thus, as a non-limiting example, "at least one of A and B" (or, equivalently, "at least one of A or B," or, equivalently "at least one of A and/or B") can refer, in one embodiment, to at least one, optionally including more than one, A, with no B present (and optionally including elements other than B); in another embodiment, to at least one, optionally including more than one, B, with no A present (and optionally including elements other than A); in yet another embodiment, to at least one, optionally including more than one, A, and at least one, optionally including more than one, B (and optionally including other elements); etc.

[00387] In the specification above, all transitional phrases such as "comprising," "including," "carrying," "having," "containing," "involving," "holding," "composed of," and the like are to be understood to be open-ended, i.e., to mean including but not limited to. Only the transitional phrases "consisting of" and "consisting essentially of" shall be closed or semi-closed transitional phrases, respectively, as set forth in the United States Patent Office Manual of Patent Examining Procedures, Section 2111.03.

CLAIMS

1. An apparatus to provide secure user-centric information via at least one user platform operated by a user, the apparatus comprising:

at least one communication interface to facilitate wired and/or wireless communications with the at least one user platform via one or more transmission media;

at least one memory to store processor-executable instructions; and

at least one processor communicatively coupled to the at least one communication interface and the at least one memory, wherein upon execution of the processor-executable instructions by the at least one processor, the at least one processor establishes a bidirectional, asynchronous user session to manage provision of and interaction with the secure user-centric information by:

A) implementing a plurality of channels through which the user receives and/or interacts with, via the at least one user platform, respective portions of the secure user-centric information;

B) controlling the at least one communication interface to receive, from the at least one user platform, a user identity for the user and a platform identity for the at least one user platform;

C) authenticating the user and the user platform to receive the secure user-centric information based at least in part on the user identity and the platform identity; and

D) if the user and the user platform are authenticated in C), controlling the at least one communication interface so as to cause the bidirectional, asynchronous user session to be established between the apparatus and a web browser of the at least one user platform and to transmit to the at least one user platform during the user session first authenticated channel information relating to at least one authorized channel of the plurality of channels implemented in A), based at least in part on information access rights and/or security protocols respectively associated with the corresponding plurality of channels, the user, and the user platform,

wherein in D), the processor is configured to control the at least one communication interface to cause the bidirectional, asynchronous user session

to be established without requiring a separate application other than the web browser to be installed on the user platform to establish the user session.

2. The apparatus of claim 1, wherein in D), the processor is configured to control the at least one communication interface so as to cause the user session to be established by transmitting a HTML file to the user platform.

3. The apparatus of claim 2, wherein the HTML file is a HTML5 file.

4. The apparatus of claim 3, wherein in D), the processor controls the at least one communication interface so as to cause the user session to be established using a WebSocket Secure protocol.

5. The apparatus of claim 1, wherein in D), the at least one authorized channel comprises a television channel, and wherein the first authenticated channel information comprises a media program.

6. The apparatus of claim 5, wherein the first authenticated channel information comprises at least one advertisement.

7. The apparatus of claim 6, wherein the at least one advertisement is based on a context of the media program.

8. The apparatus of claim 7, wherein the context comprises one or more characteristics of the media program.

9. The apparatus of claim 8, wherein a product or service to which the at least one advertisement is directed is based on a subject matter of the media program.

10. The apparatus of claim 8, wherein a product or service to which the at least one advertisement is directed is based on a subject matter of an advertisement provided within the media program.

11. The apparatus of claim 8, wherein in D):

the at least one user platform comprises a first user platform and a second user platform;

the processor controls the at least one communication interface so as to cause the bidirectional, asynchronous user session to be established between the apparatus and a web browser of each of the first user platform and the second user platform;

the at least one advertisement comprises a first advertisement provided to the first user platform and a second advertisement provided to the second user platform; and

the first advertisement and the second advertisement include related subject matter.

12. The apparatus of claim 11, wherein:

the first advertisement provided to the first user platform is a national advertisement; and

the second advertisement provided to the second user platform is a local advertisement related to content of the national advertisement.

13. The apparatus of claim 11, in combination with the first user platform, wherein the first user platform comprises a television set or a set top box.

14. The apparatus of claim 11, in combination with the second user platform, wherein the second user platform comprises a mobile computing device.

15. The apparatus of claim 14, wherein the second user platform comprises a tablet device, a smartphone, or a laptop computer.

16. The apparatus of claim 6, wherein the at least one advertisement comprises an interactive advertisement.

17. The apparatus of claim 1, wherein the at least one memory stores at least one user profile to identify user preferences, platform identities, and service support instructions that determine how the secure user-centric information behaves on the user platform, and wherein:

C) comprises authenticating the user and the user platform based at least in part on the user profile; and

D) comprises transmitting the first authenticated channel information to the at least one user platform based at least in part on the user profile.

18. The apparatus of claim 1, wherein:

the at least one memory stores an authentication directory to provide the information access rights and/or security protocols respectively associated with the corresponding plurality of channels, the user, and the user platform;

the authentication directory includes a plurality of user accounts, a plurality of device accounts, and a plurality of application accounts; and

C) comprises authenticating the user and the user platform based at least in part on the plurality of user accounts and the plurality of device accounts included in the authentication directory.

19. A method for providing secure user-centric information via at least one user platform operated by a user, the method comprising:

A) implementing a plurality of channels through which the user receives and/or interacts with, via the at least one user platform, respective portions of the secure user-centric information; B) receiving, from the at least one user platform, a user identity for the user and a platform identity for the at least one user platform;

C) authenticating the user and the user platform to receive the secure user-centric information based at least in part on the user identity and the platform identity; and

D) if the user and the user platform are authenticated in C), causing a bidirectional, asynchronous user session to be established with a web browser of the at least one user platform and transmitting to the at least one user platform during the user session first authenticated channel information relating to at least one authorized channel of the plurality of channels implemented in A), based at least in part on information access rights and/or security protocols respectively associated with the corresponding plurality of channels, the user, and the user platform,

wherein in D), the bidirectional, asynchronous user session is established without requiring a separate application other than the web browser to be installed on the user platform to establish the user session.

20. At least one computer readable storage medium storing processor-executable instructions that, when executed by at least one processor, perform a method for providing secure user-centric information via at least one user platform operated by a user, the method comprising:

A) implementing a plurality of channels through which the user receives and/or interacts with, via the at least one user platform, respective portions of the secure user-centric information; B) receiving, from the at least one user platform, a user identity for the user and a platform identity for the at least one user platform;

C) authenticating the user and the user platform to receive the secure user-centric information based at least in part on the user identity and the platform identity; and

D) if the user and the user platform are authenticated in C), causing a bidirectional, asynchronous user session to be established with a web browser of the at least one user platform and transmitting to the at least one user platform during the user session first authenticated channel information relating to at least one authorized channel of the plurality of channels implemented in A), based at least in part on information access rights and/or security protocols respectively associated with the corresponding plurality of channels, the user, and the user platform,

wherein in D), the bidirectional, asynchronous user session is established without requiring a separate application other than the web browser to be installed on the user platform to establish the user session.

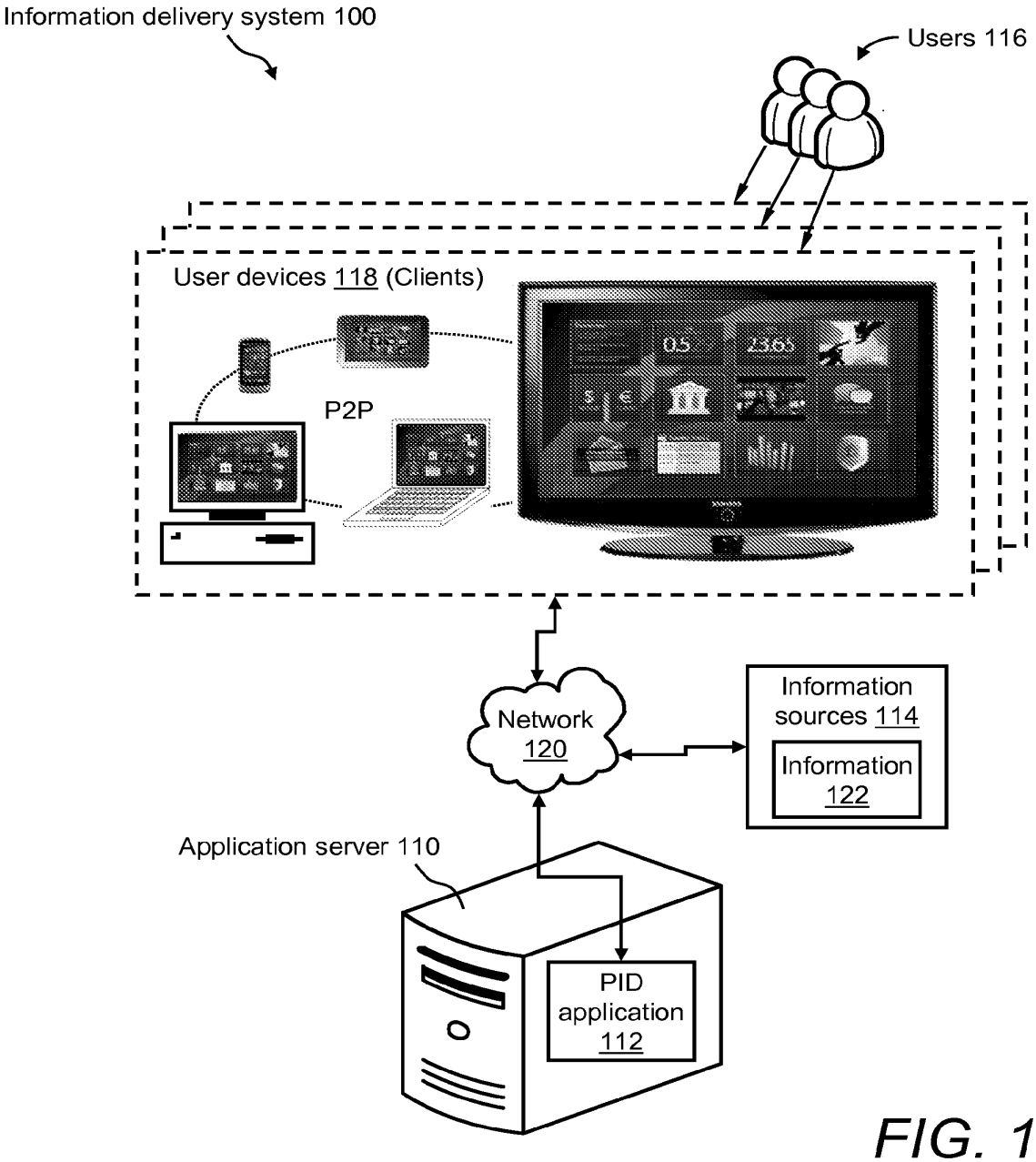

Information delivery system 100
Users 116
User devices 118 (Clients)
P2P
Network 120
Information sources 114
Information 122
Application server 110
PID application 112

FIG. 1

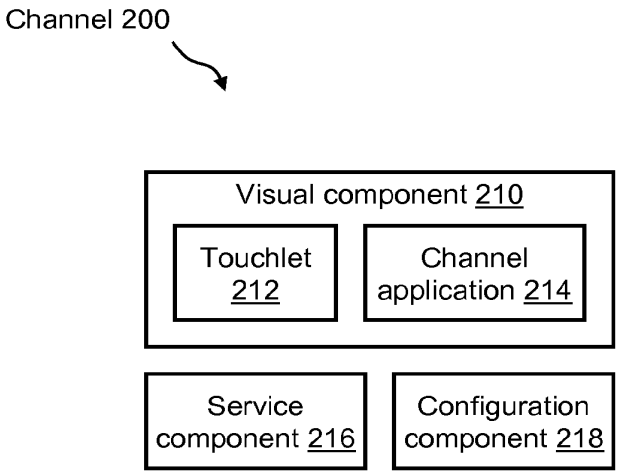

Channel 200
Visual component 210
Touchlet 212
Channel application 214
Service component 216
Configuration component 218

FIG. 2

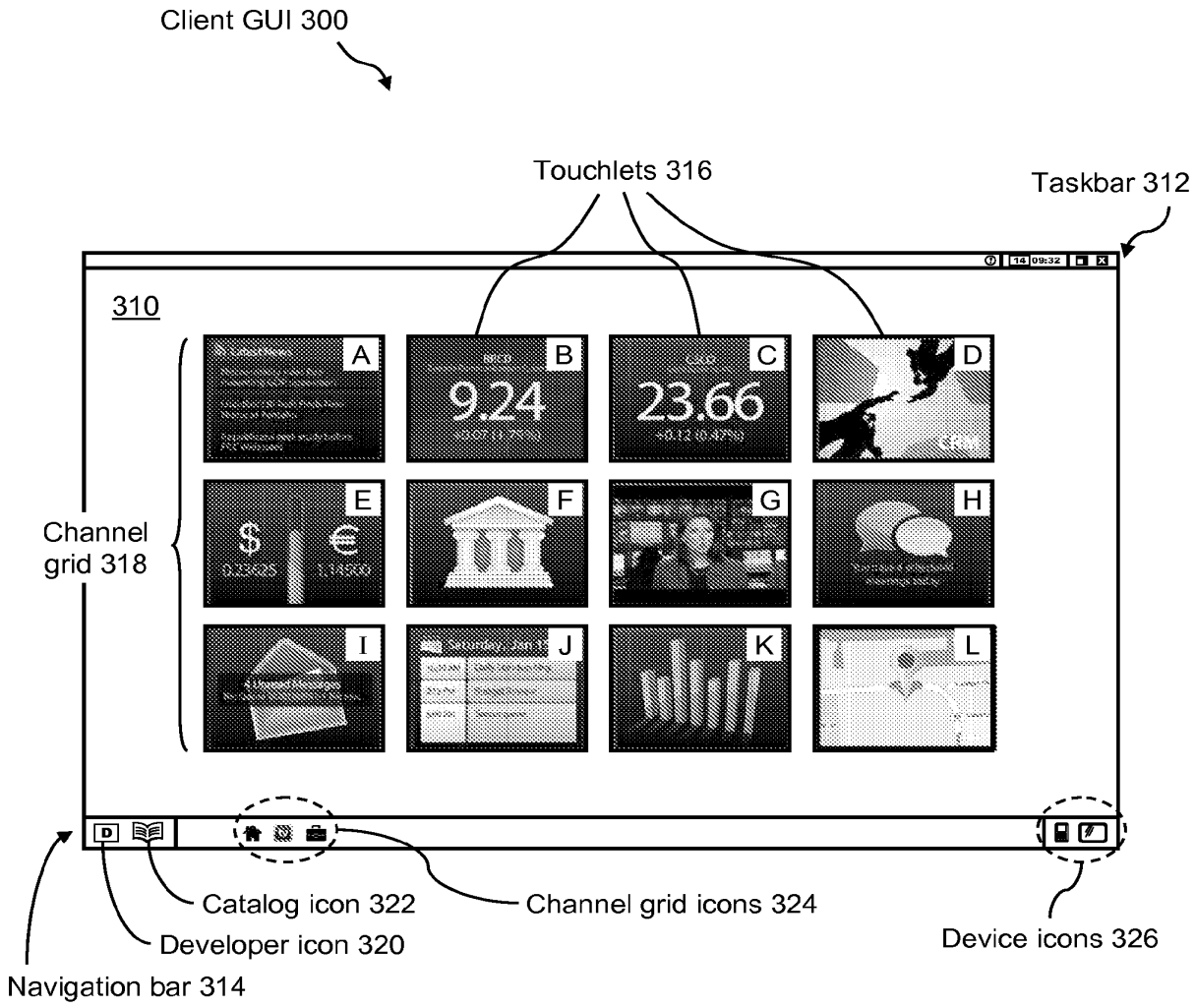

Client GUI 300
Touchlets 316
Taskbar 312
310
A
B
9.24
C
23.66
D
E
F
G
H
I
J
K
L
Channel grid 318
Catalog icon 322
Channel grid icons 324
Developer icon 320
Device icons 326
Navigation bar 314

FIG. 3

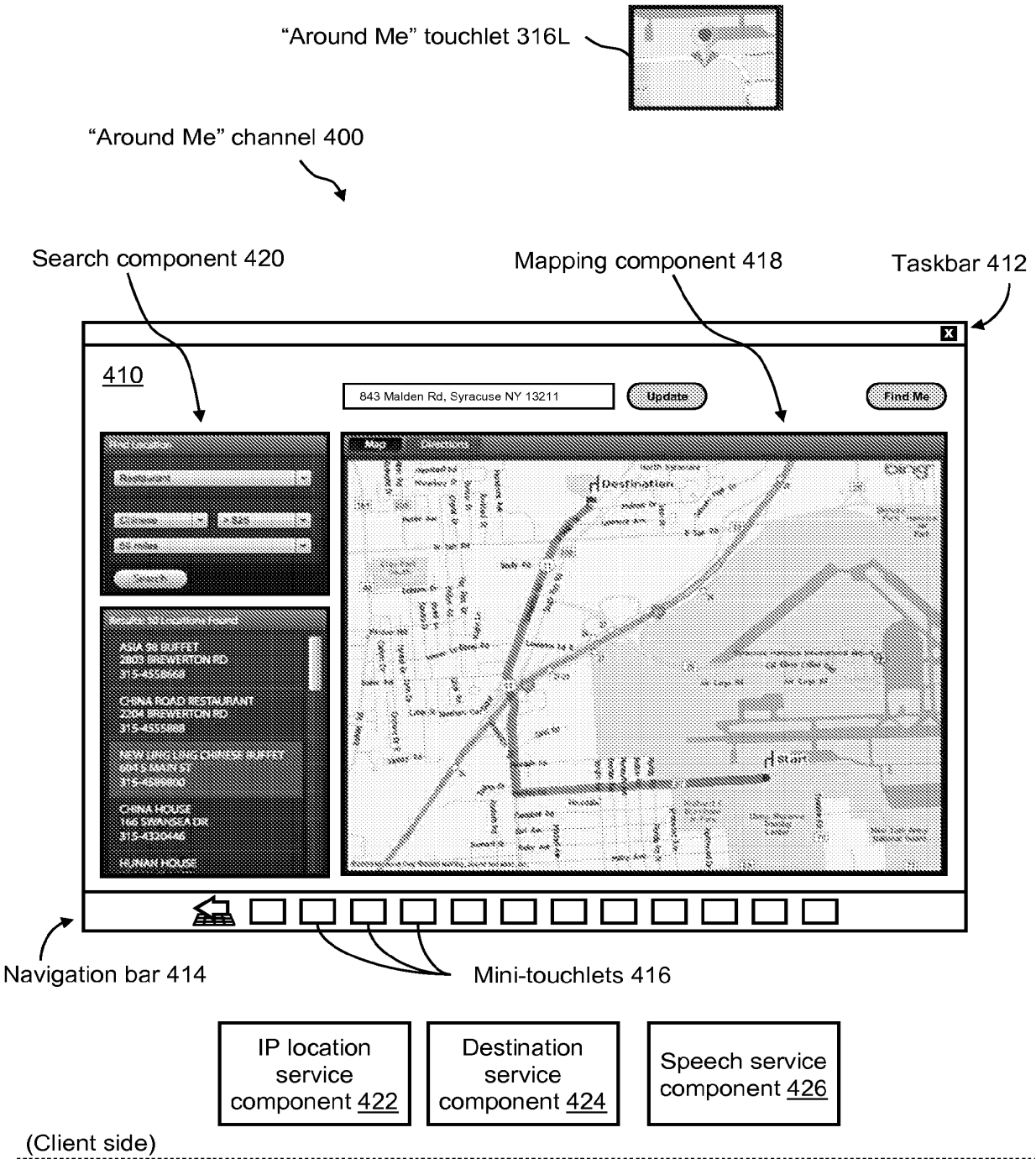

"Around Me" touchlet 316L
"Around Me" channel 400
Search component 420
Mapping component 418
Taskbar 412
410
843 Malden Rd, Syracuse NY 13211
Update
Find Me
Destination
Start
Navigation bar 414
Mini-touchlets 416
IP location service component 422
Destination service component 424
Speech service component 426
(Client side)
(Server side)

FIG. 4

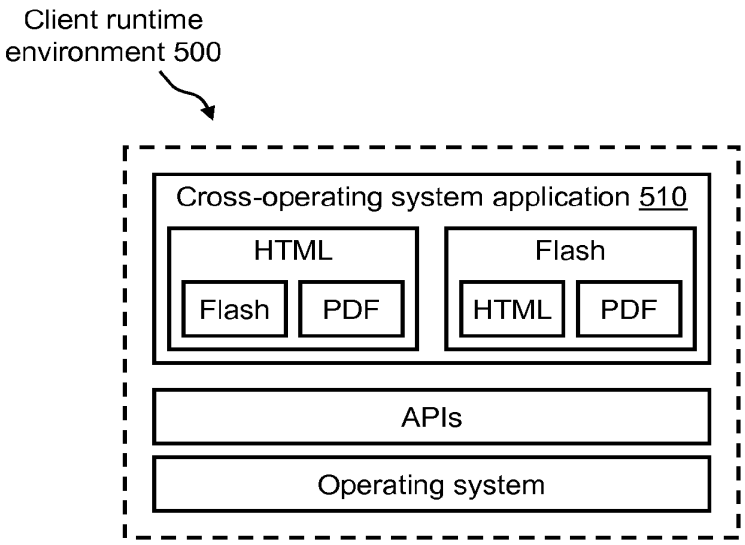

Client runtime environment 500
Cross-operating system application 510
HTML
Flash
PDF
Flash
HTML
PDF
APIs
Operating system

FIG. 5

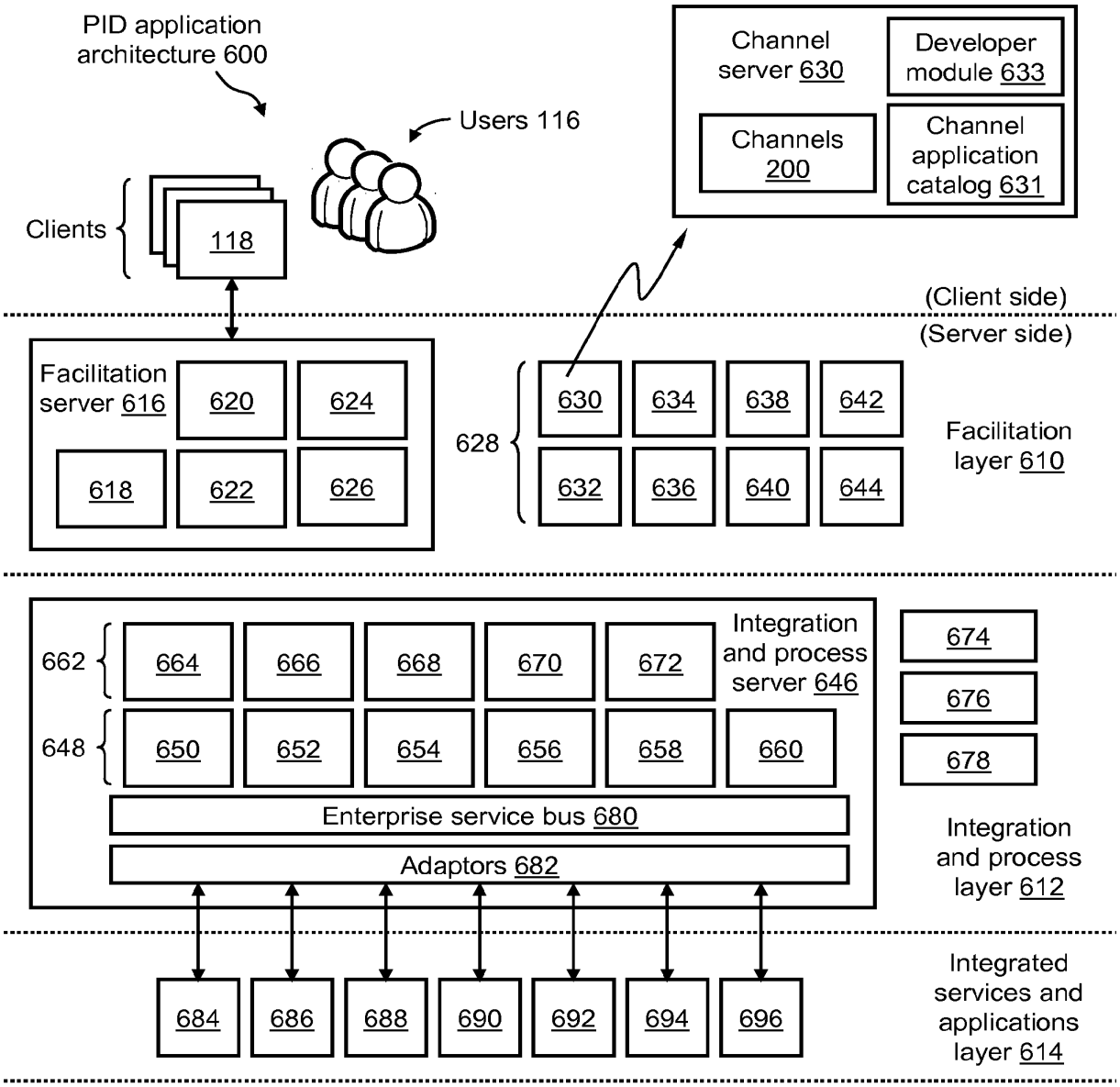

PID application architecture 600
Users 116
Clients
118
Channel server 630
Developer module 633
Channels 200
Channel application catalog 631
(Client side)
(Server side)
Facilitation server 616
620
624
618
622
626
628
630
634
638
642
632
636
640
644
Facilitation layer 610
662
664
666
668
670
672
Integration and process server 646
648
650
652
654
656
658
660
674
676
678
Enterprise service bus 680
Adaptors 682
Integration and process layer 612
684
686
688
690
692
694
696
Integrated services and applications layer 614

FIG. 6

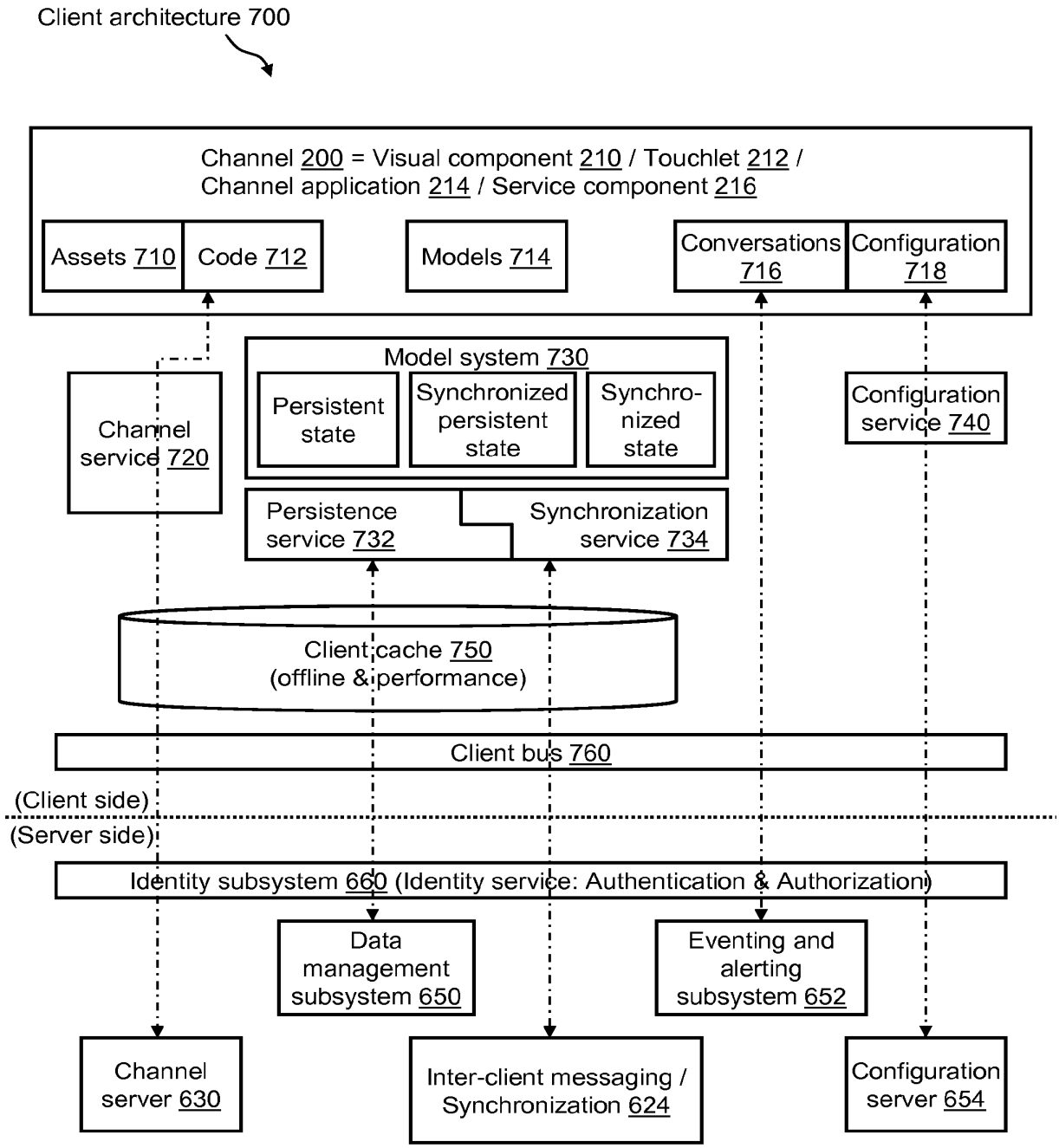

Client architecture 700
Channel 200 = Visual component 210 / Touchlet 212 /
Channel application 214 / Service component 216
Assets 710
Code 712
Models 714
Conversations 716
Configuration 718
Model system 730
Persistent state
Synchronized persistent state
Synchro-nized state
Channel service 720
Configuration service 740
Persistence service 732
Synchronization service 734
Client cache 750
(offline & performance)
Client bus 760
(Client side)
(Server side)
Identity subsystem 660 (Identity service: Authentication & Authorization)
Data management subsystem 650
Eventing and alerting subsystem 652
Channel server 630
Inter-client messaging / Synchronization 624
Configuration server 654

FIG. 7

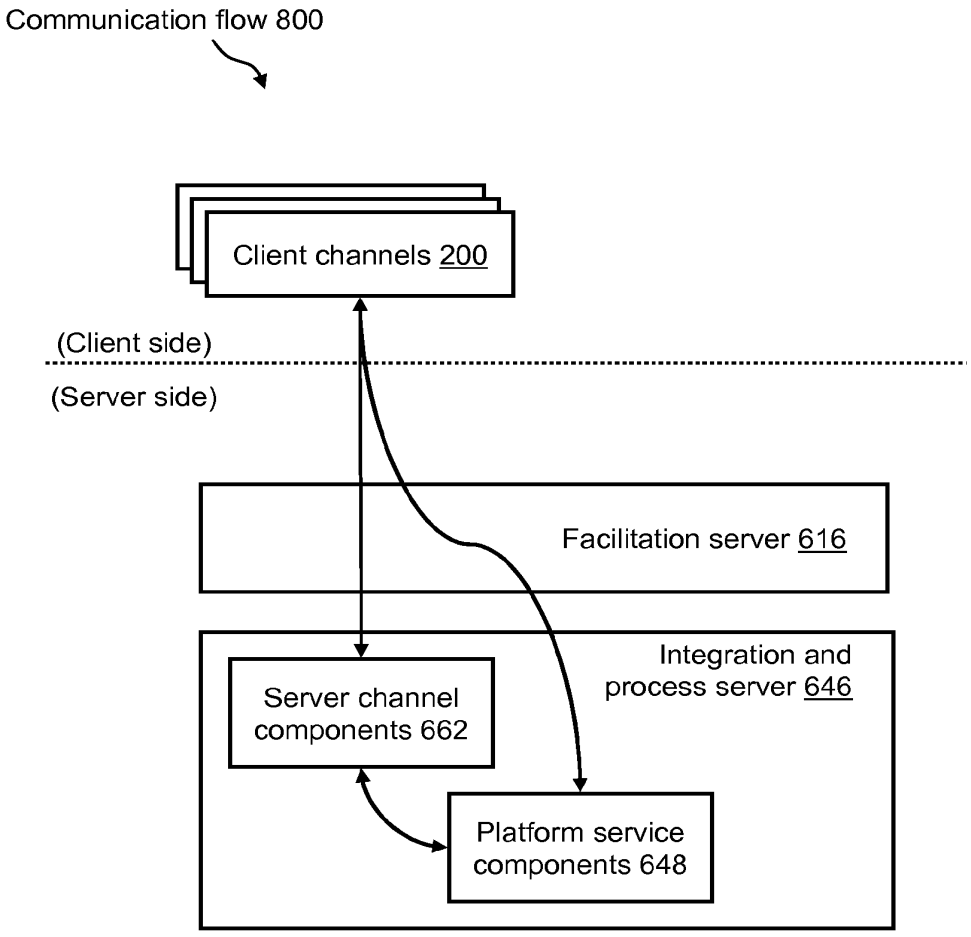

Communication flow 800
Client channels 200
(Client side)
(Server side)
Facilitation server 616
Integration and process server 646
Server channel components 662
Platform service components 648

FIG. 8

Communication flow 900

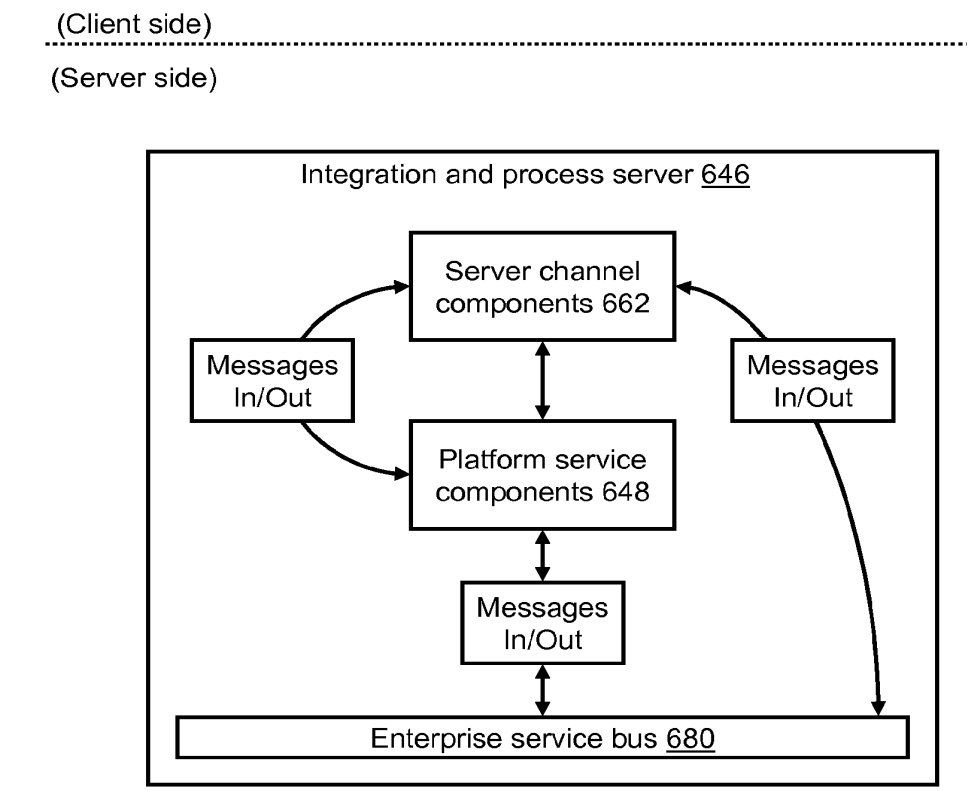


FIG. 9

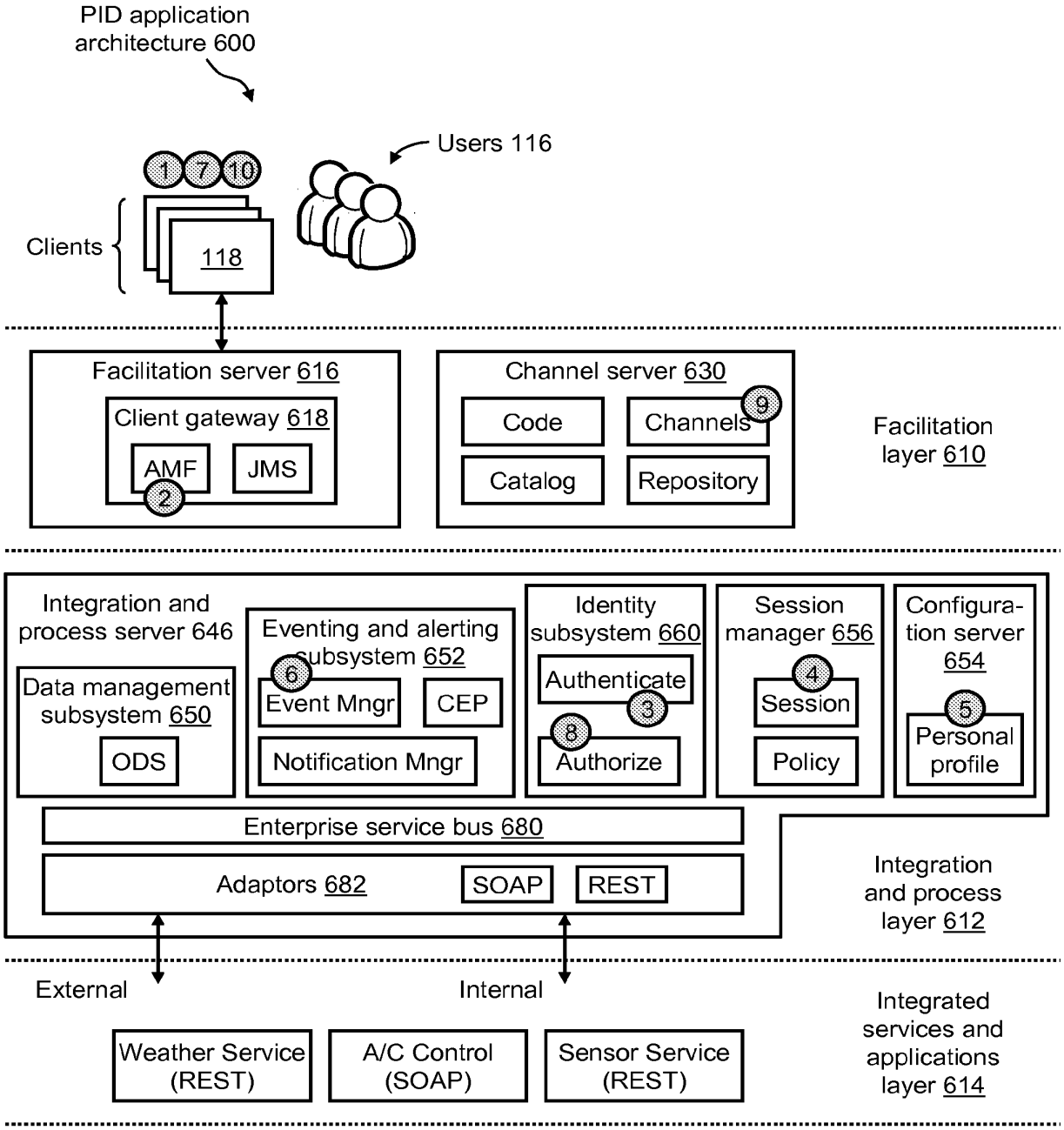

PID application architecture 600
Users 116
1
7
10
Clients
118
Facilitation server 616
Client gateway 618
AMF
JMS
2
Channel server 630
Code
Channels
9
Catalog
Repository
Facilitation layer 610
Integration and process server 646
Data management subsystem 650
ODS
Eventing and alerting subsystem 652
6
Event Mngr
CEP
Notification Mngr
Identity subsystem 660
Authenticate
3
8
Authorize
Session manager 656
4
Session
Policy
Configura-tion server 654
5
Personal profile
Enterprise service bus 680
Adaptors 682
SOAP
REST
Integration and process layer 612
External
Internal
Weather Service (REST)
A/C Control (SOAP)
Sensor Service (REST)
Integrated services and applications layer 614

FIG. 10

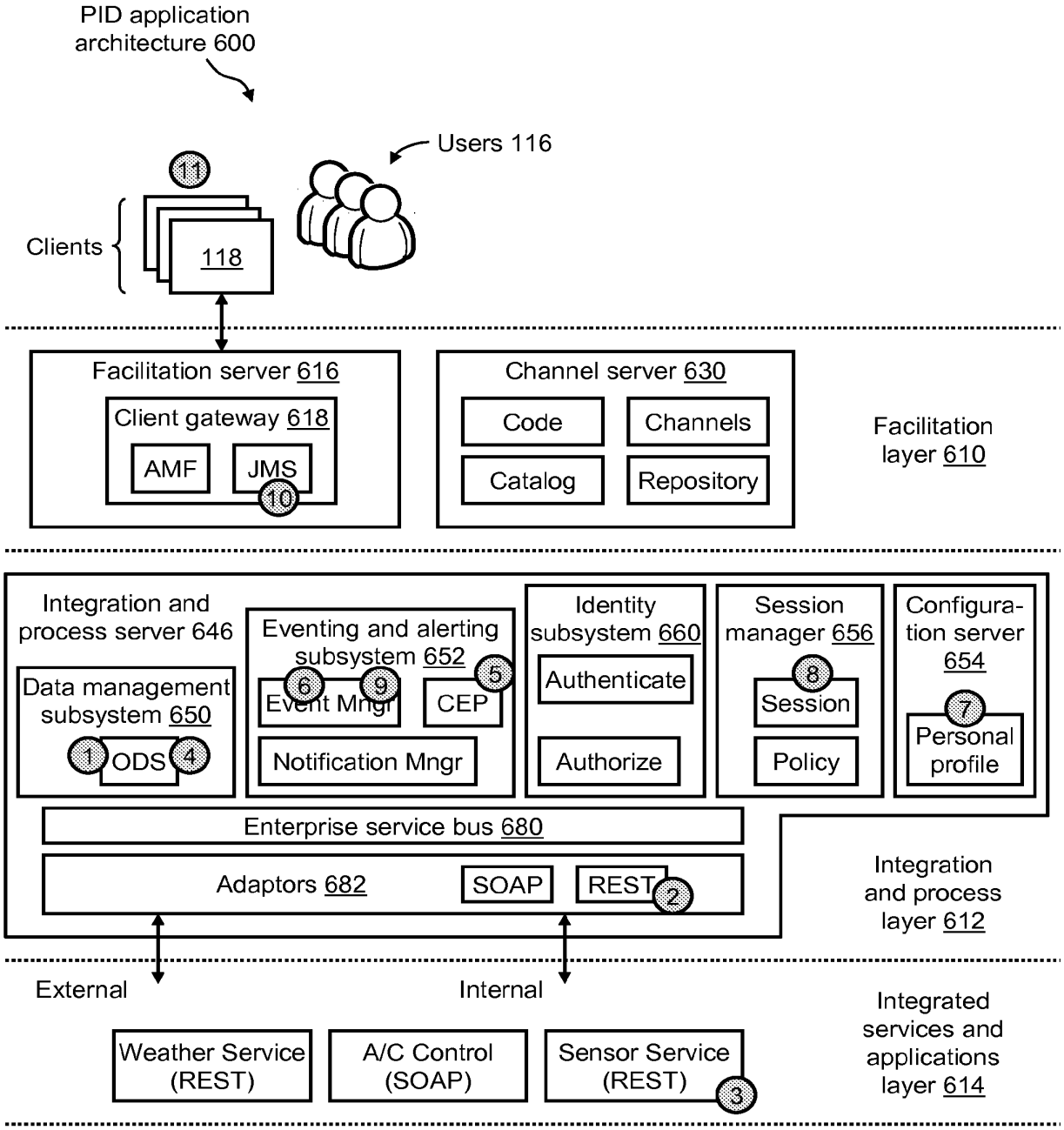

PID application architecture 600
Users 116
11
Clients
118
Facilitation server 616
Client gateway 618
AMF
JMS
10
Channel server 630
Code
Channels
Catalog
Repository
Facilitation layer 610
Integration and process server 646
Data management subsystem 650
1
ODS
4
Eventing and alerting subsystem 652
6
9
Event Mngr
CEP
5
Notification Mngr
Identity subsystem 660
Authenticate
Authorize
Session manager 656
8
Session
Policy
Configura-tion server 654
7
Personal profile
Enterprise service bus 680
Adaptors 682
SOAP
REST
2
Integration and process layer 612
External
Internal
Weather Service (REST)
A/C Control (SOAP)
Sensor Service (REST)
3
Integrated services and applications layer 614

FIG. 11

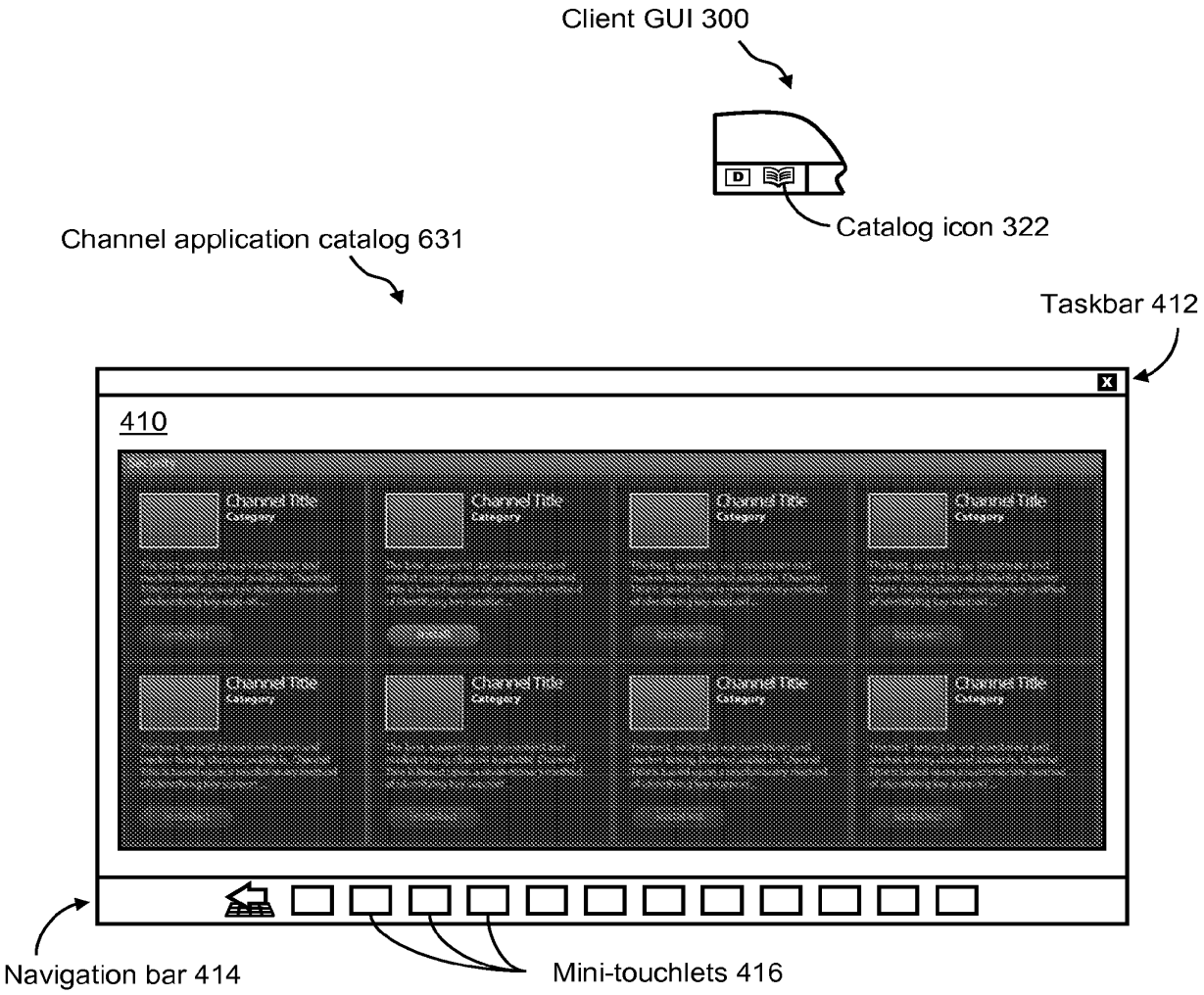

Client GUI 300
Catalog icon 322
Channel application catalog 631
Taskbar 412
410
Navigation bar 414
Mini-touchlets 416

FIG. 12

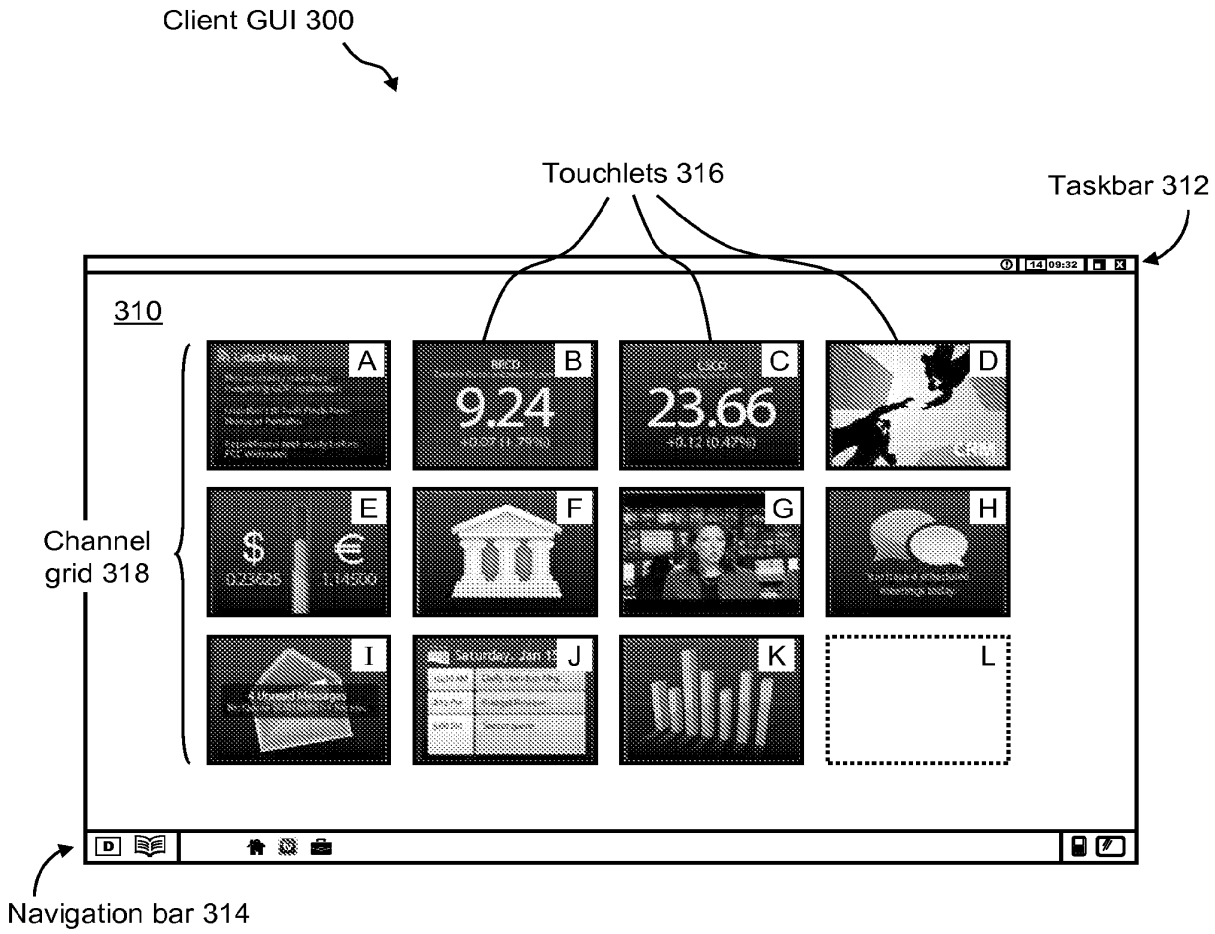

Client GUI 300
Touchlets 316
Taskbar 312
310
Channel grid 318
Navigation bar 314
A
B
9.24
C
23.66
D
E
F
G
H
I
J
K
L

FIG. 13

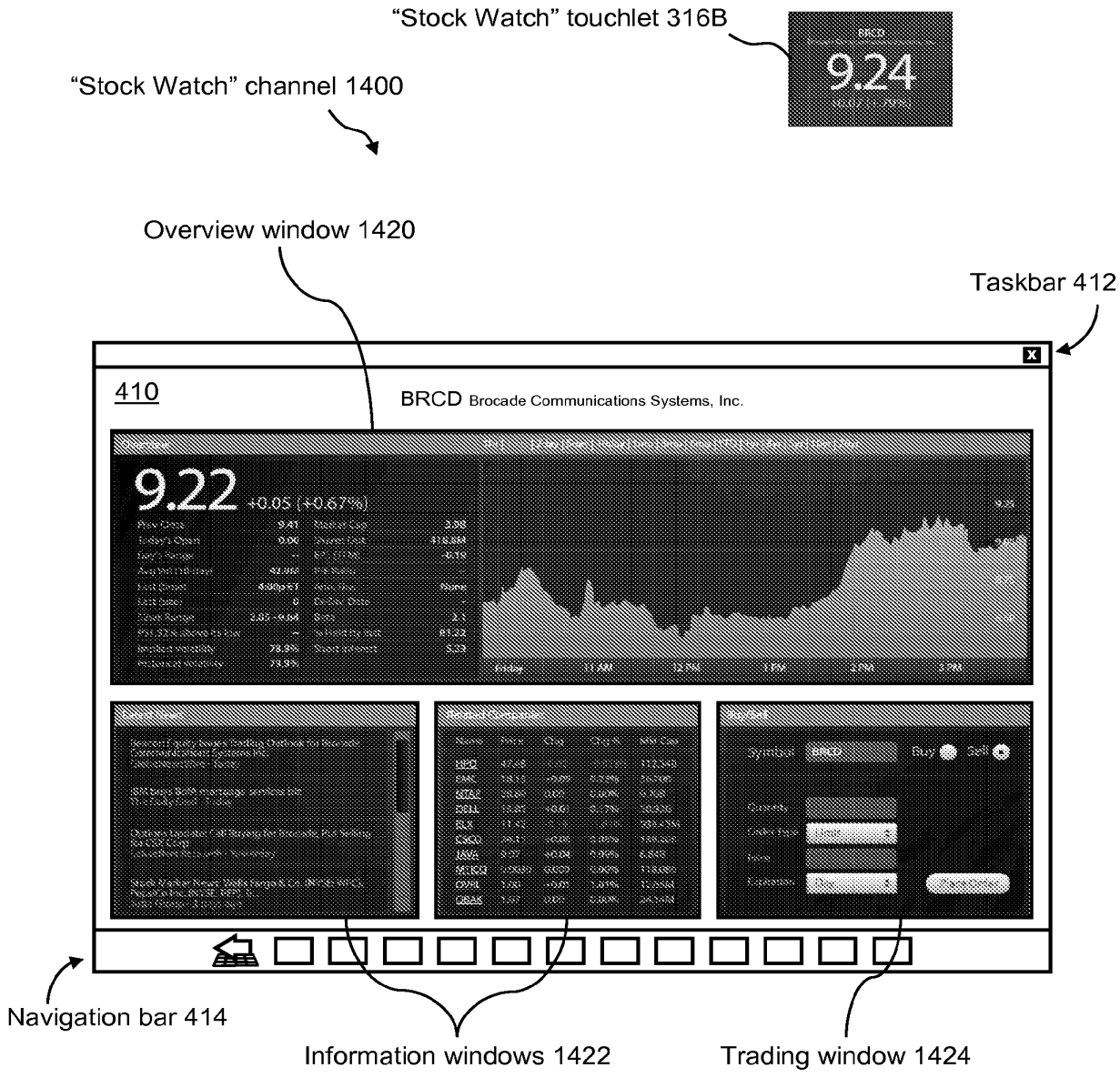

"Stock Watch" touchlet 316B
9.24
"Stock Watch" channel 1400
Overview window 1420
Taskbar 412
410
BRCD Brocade Communications Systems, Inc.
9.22
+0.05 (+0.67%)
Navigation bar 414
Information windows 1422
Trading window 1424

FIG. 14

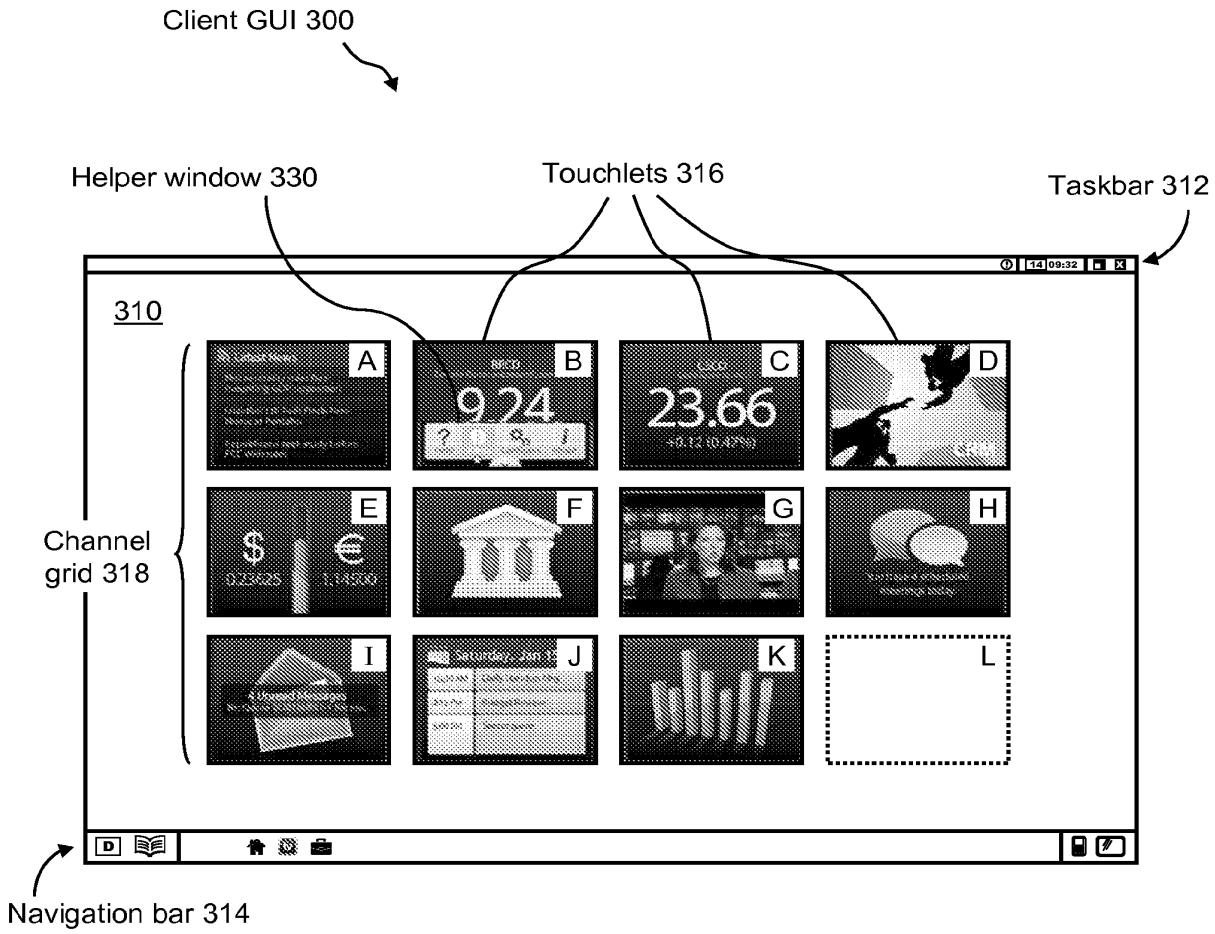

Client GUI 300
Helper window 330
Touchlets 316
Taskbar 312
310
Channel grid 318
Navigation bar 314
A
B
C
D
E
F
G
H
I
J
K
L
9.24
23.66

FIG. 15

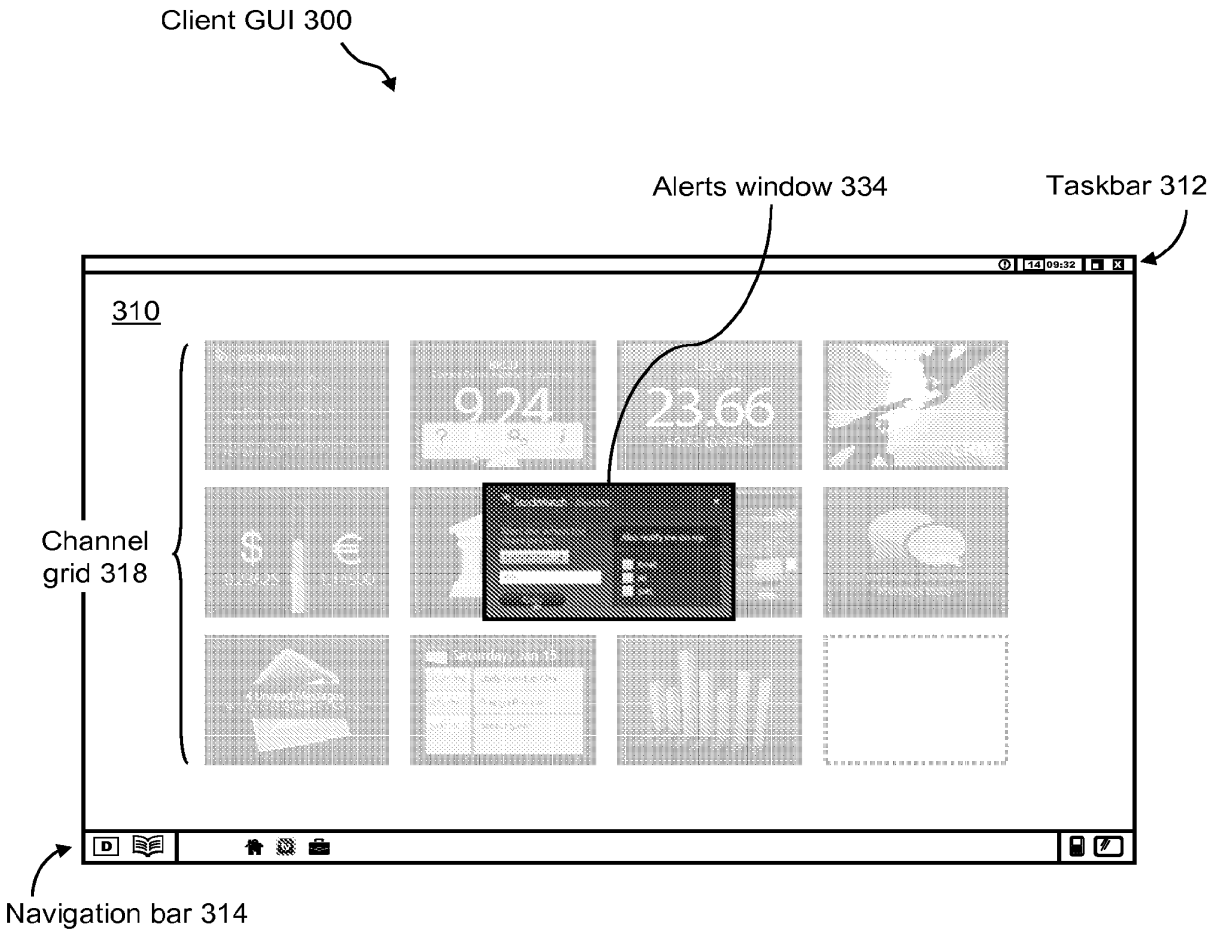

Client GUI 300
Alerts window 334
Taskbar 312
310
Channel grid 318
Navigation bar 314

FIG. 16

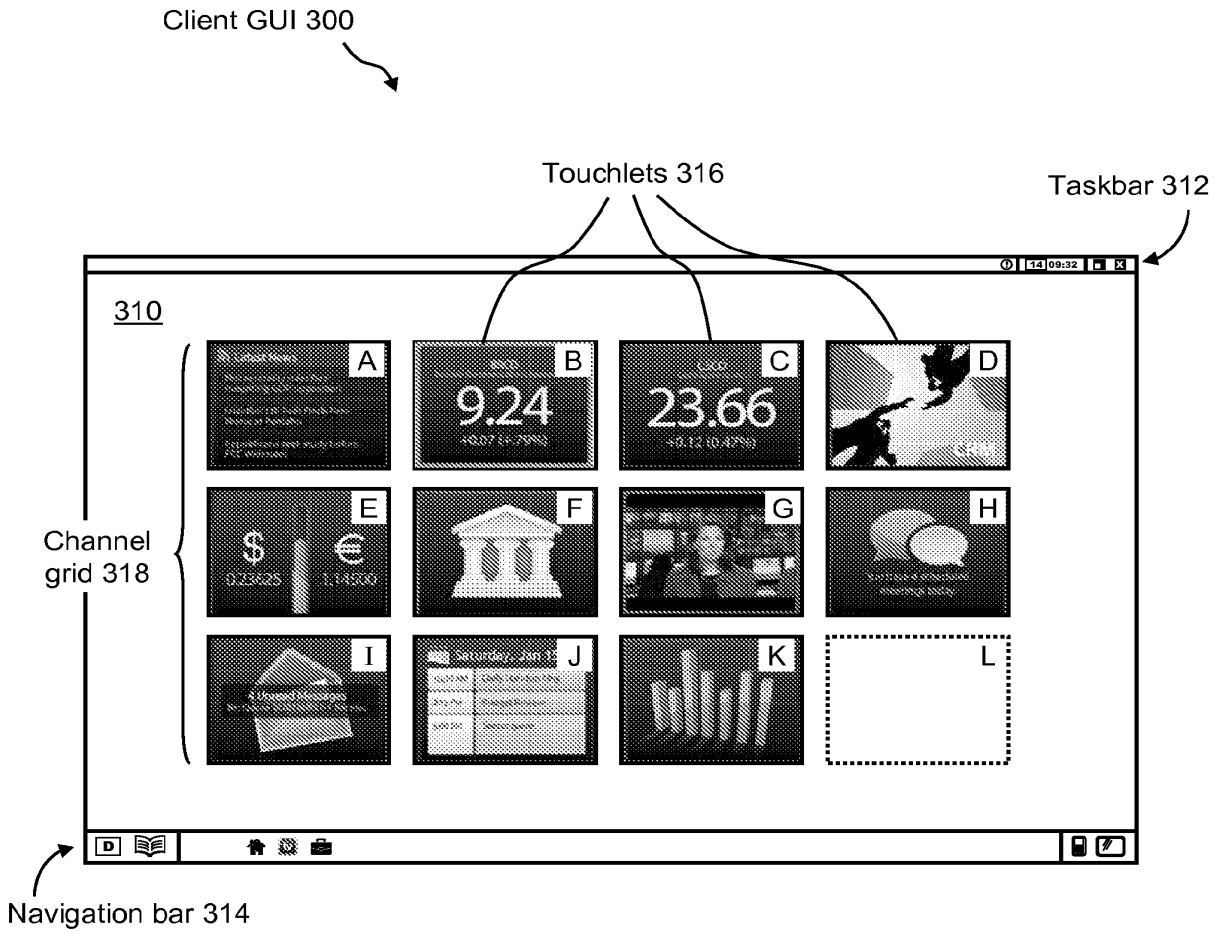

Client GUI 300
Touchlets 316
Taskbar 312
310
Channel grid 318
Navigation bar 314
A
B
9.24
C
23.66
D
E
F
G
H
I
J
K
L

FIG. 17

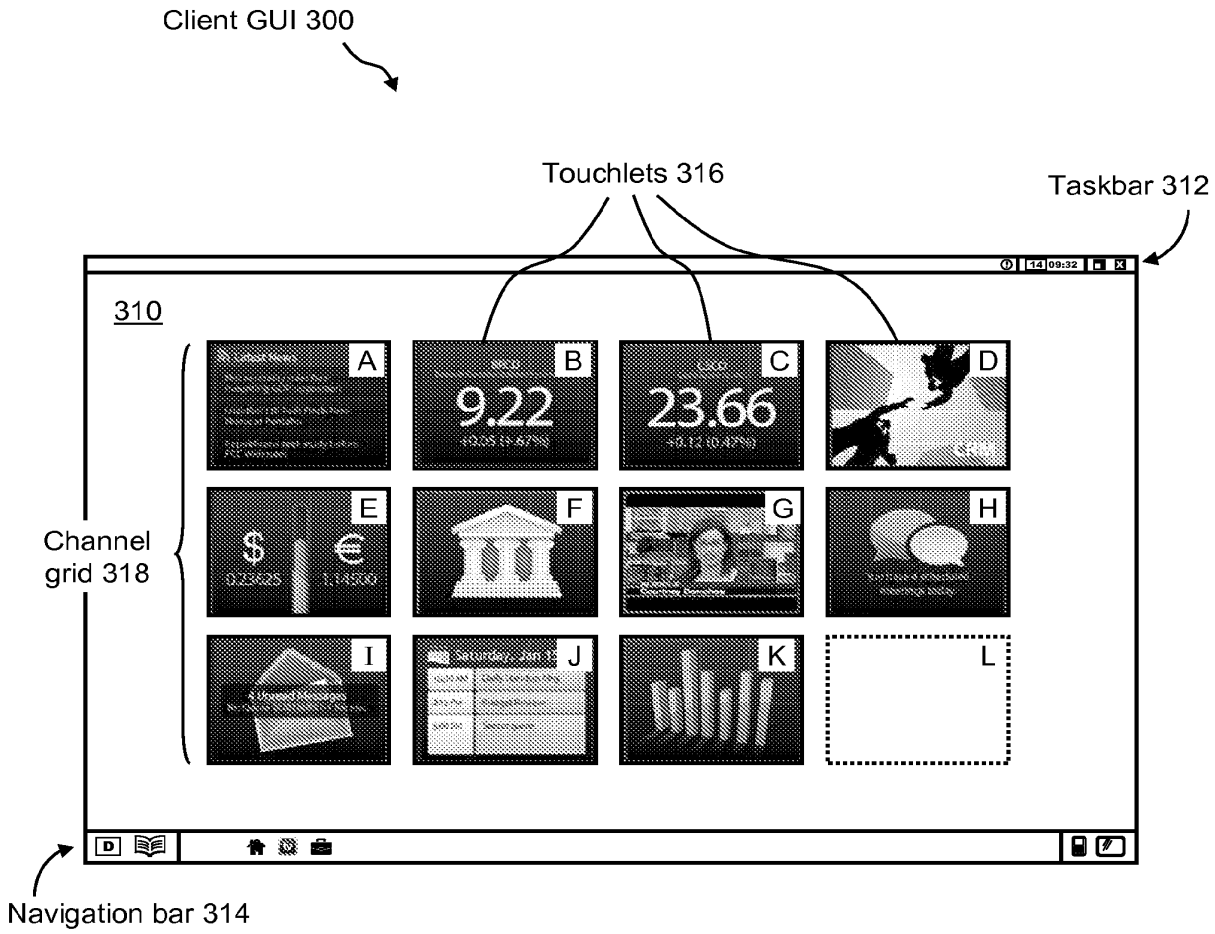

Client GUI 300
Touchlets 316
Taskbar 312
310
Channel grid 318
Navigation bar 314
A
B
C
D
E
F
G
H
I
J
K
L
9.22
23.66

FIG. 18

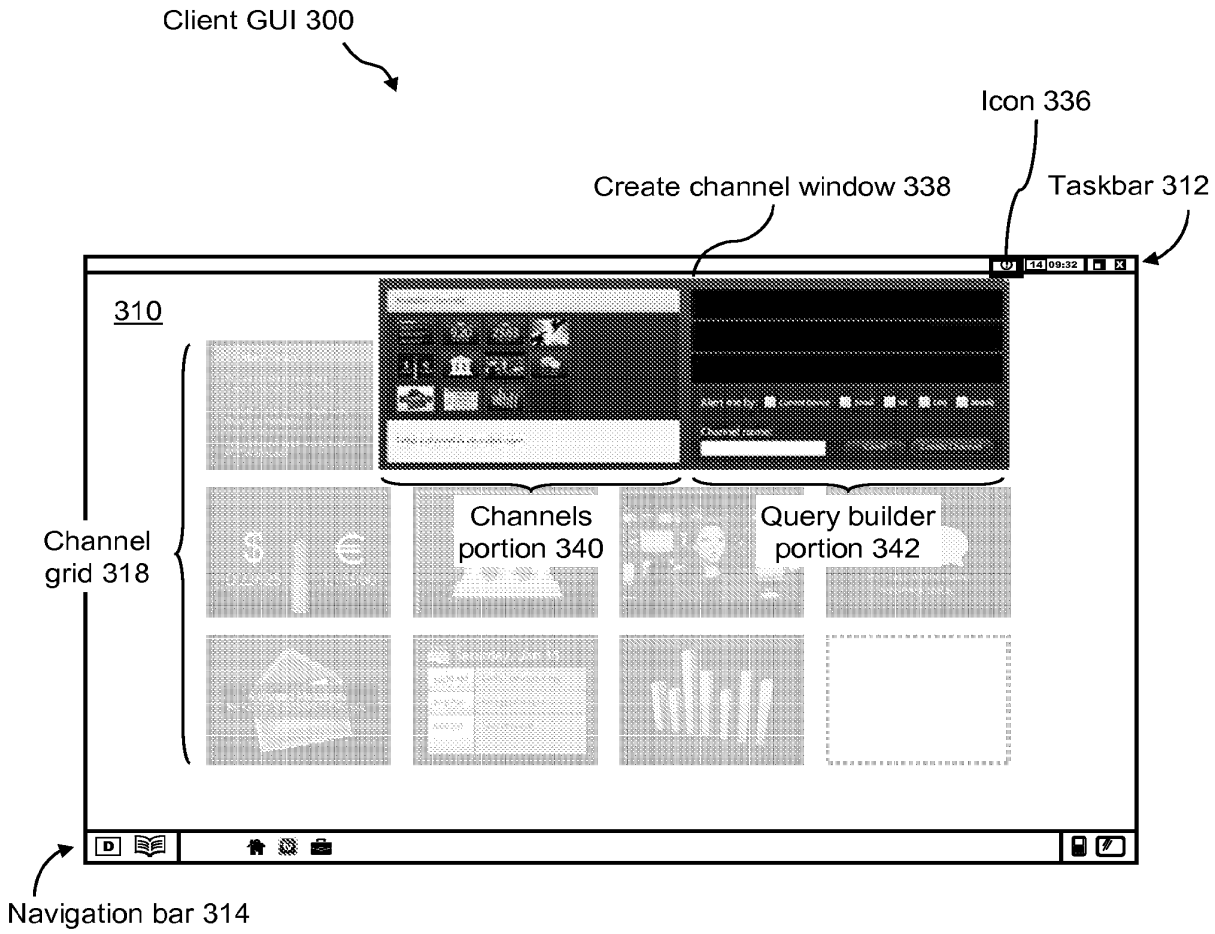

Client GUI 300
Icon 336
Create channel window 338
Taskbar 312
310
Channel grid 318
Channels portion 340
Query builder portion 342
Navigation bar 314

FIG. 19

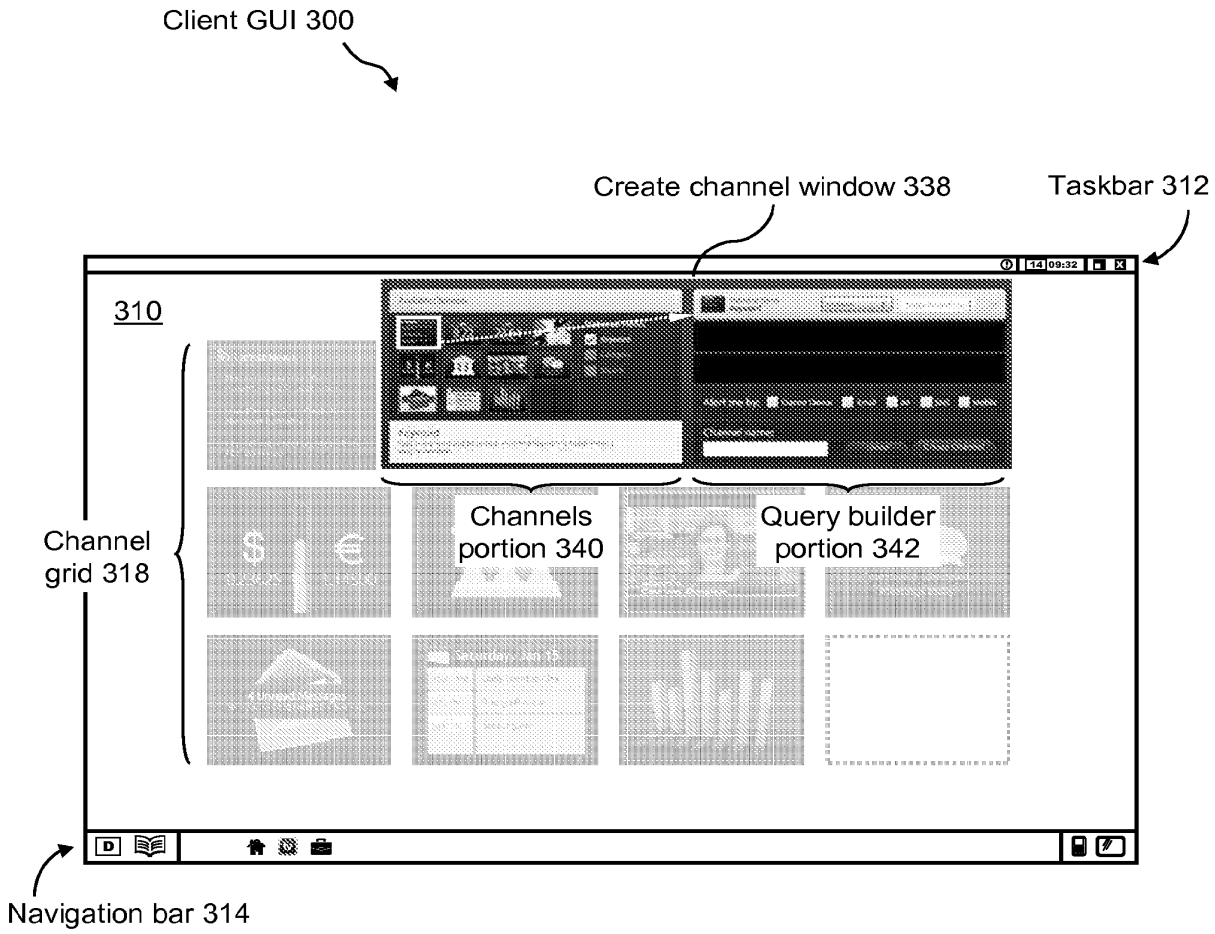

Client GUI 300
Create channel window 338
Taskbar 312
310
Channel grid 318
Channels portion 340
Query builder portion 342
Navigation bar 314

FIG. 20

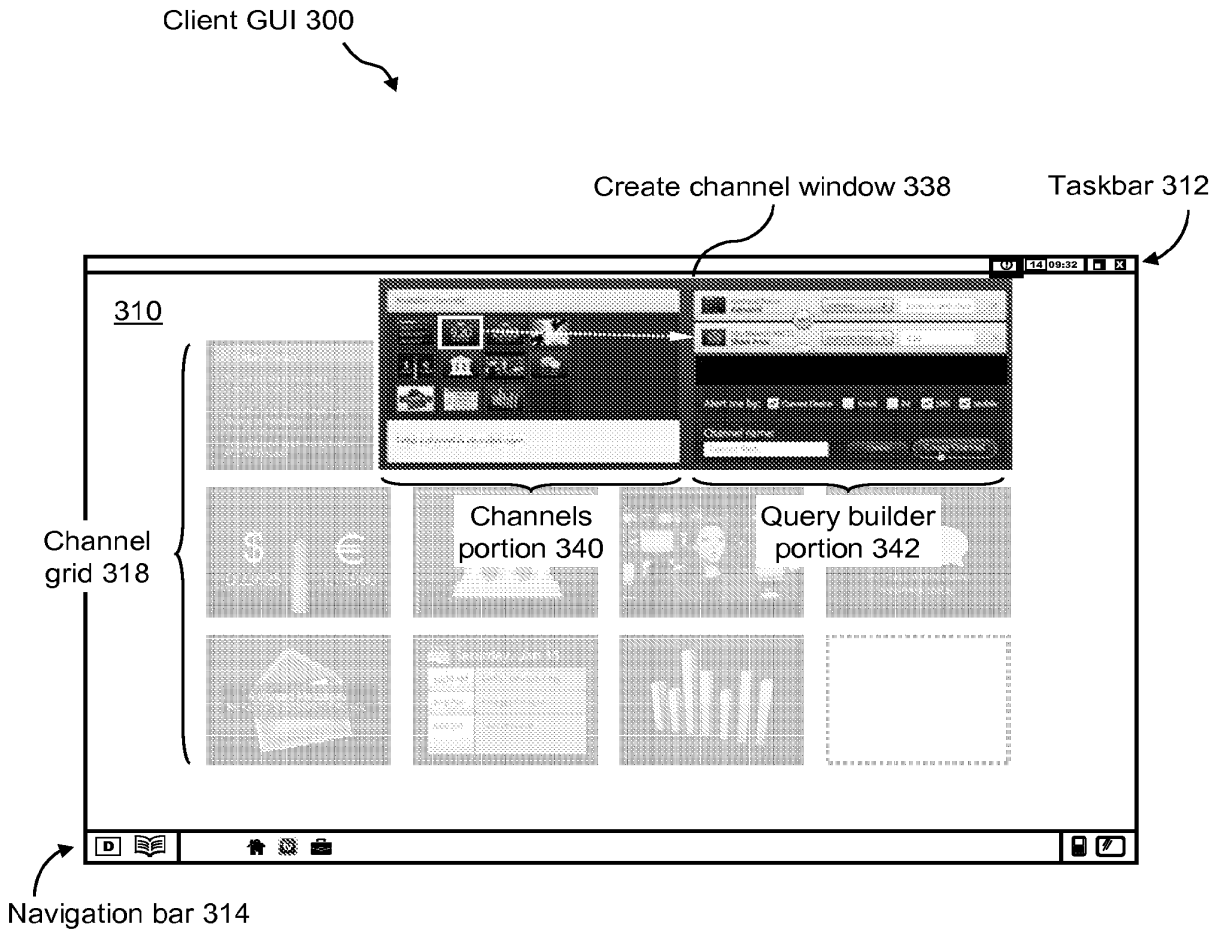

Client GUI 300
Create channel window 338
Taskbar 312
310
Channel grid 318
Channels portion 340
Query builder portion 342
Navigation bar 314

FIG. 21

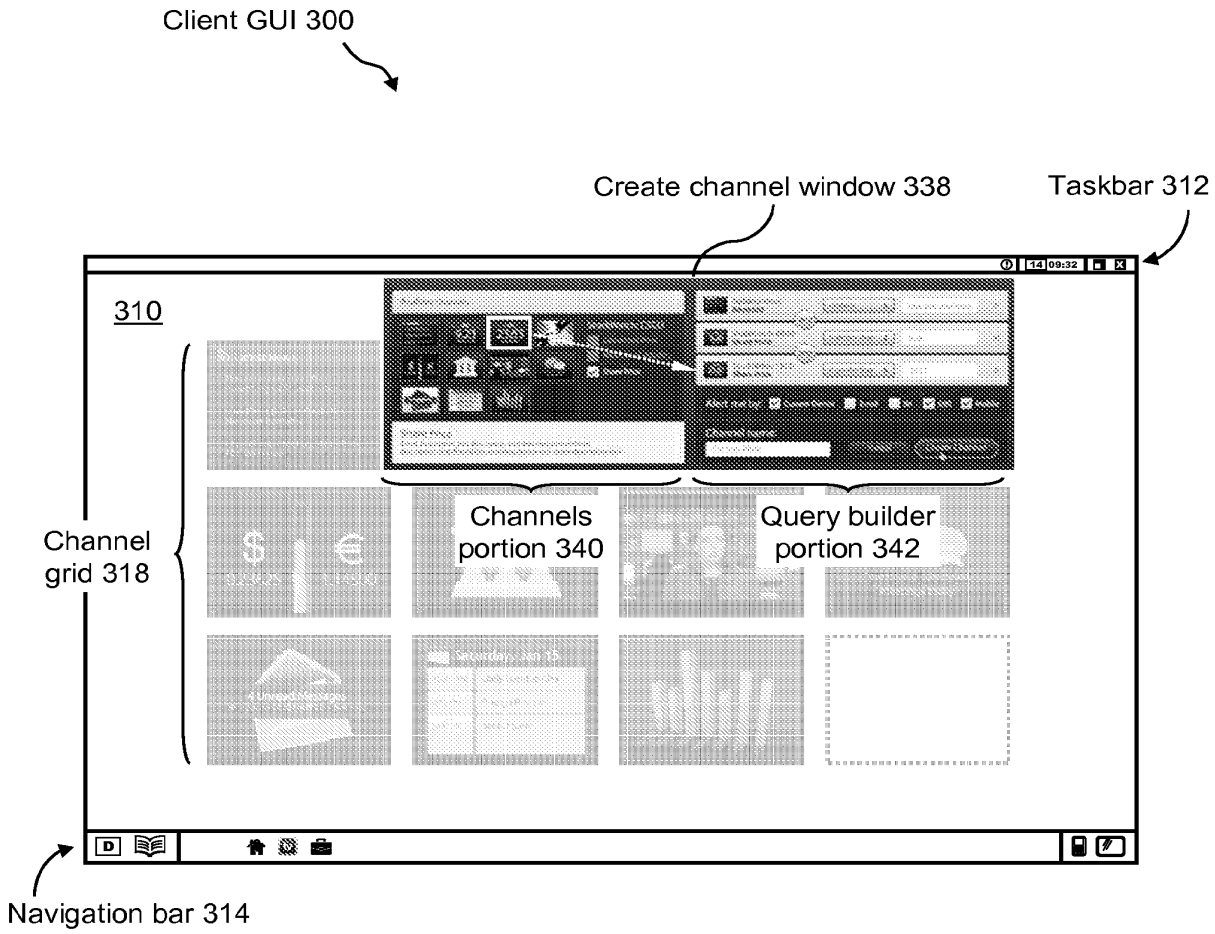

Client GUI 300
Create channel window 338
Taskbar 312
310
Channel grid 318
Channels portion 340
Query builder portion 342
Navigation bar 314

FIG. 22

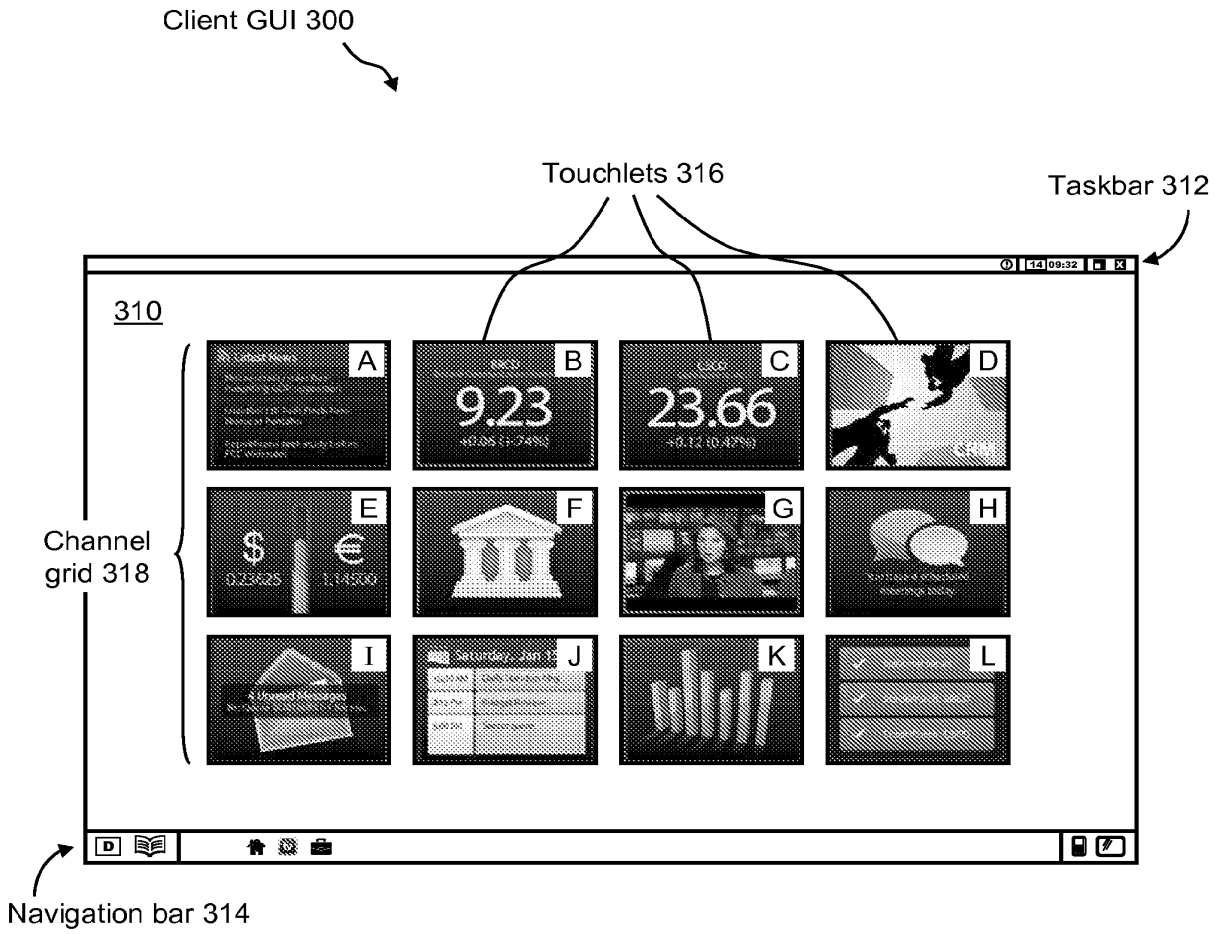

Client GUI 300
Touchlets 316
Taskbar 312
310
A
B
9.23
C
23.66
D
E
F
G
H
I
J
K
L
Channel grid 318
Navigation bar 314

FIG. 23

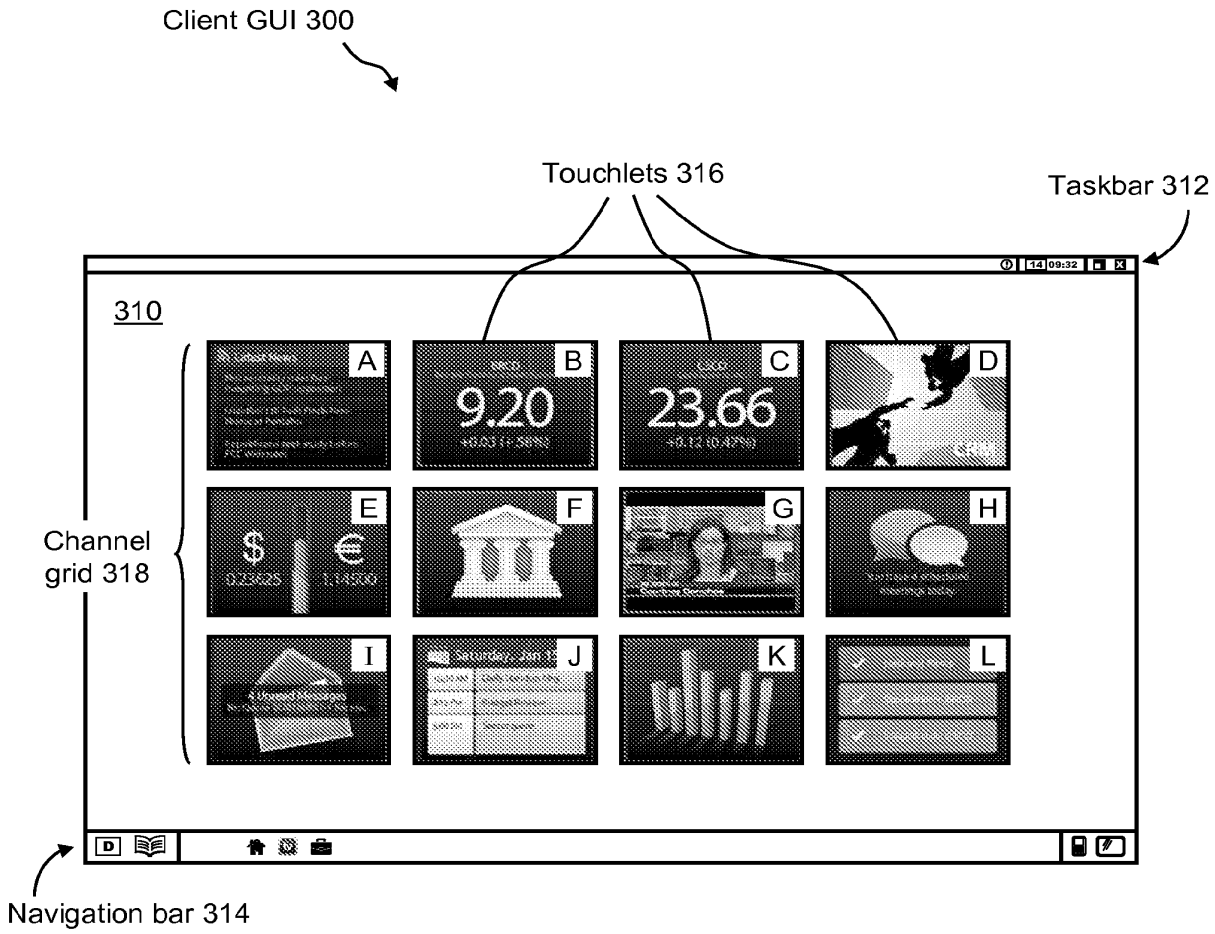

Client GUI 300
Touchlets 316
Taskbar 312
310
A
B
9.20
C
23.66
D
E
F
G
H
I
J
K
L
Channel grid 318
Navigation bar 314

FIG. 24

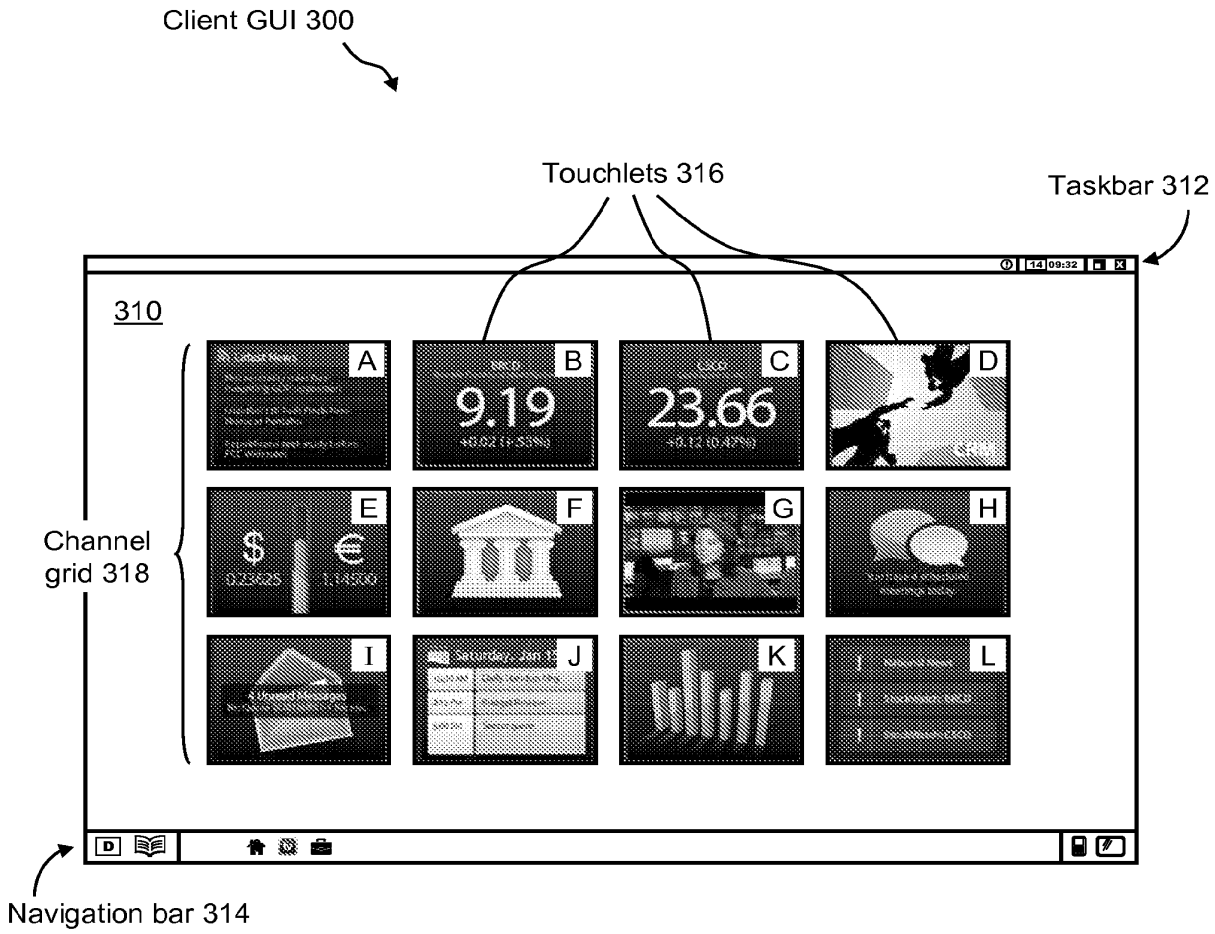

Client GUI 300
Touchlets 316
Taskbar 312
310
A
B
9.19
C
23.66
D
E
F
G
H
I
J
K
L
Channel grid 318
Navigation bar 314

FIG. 25

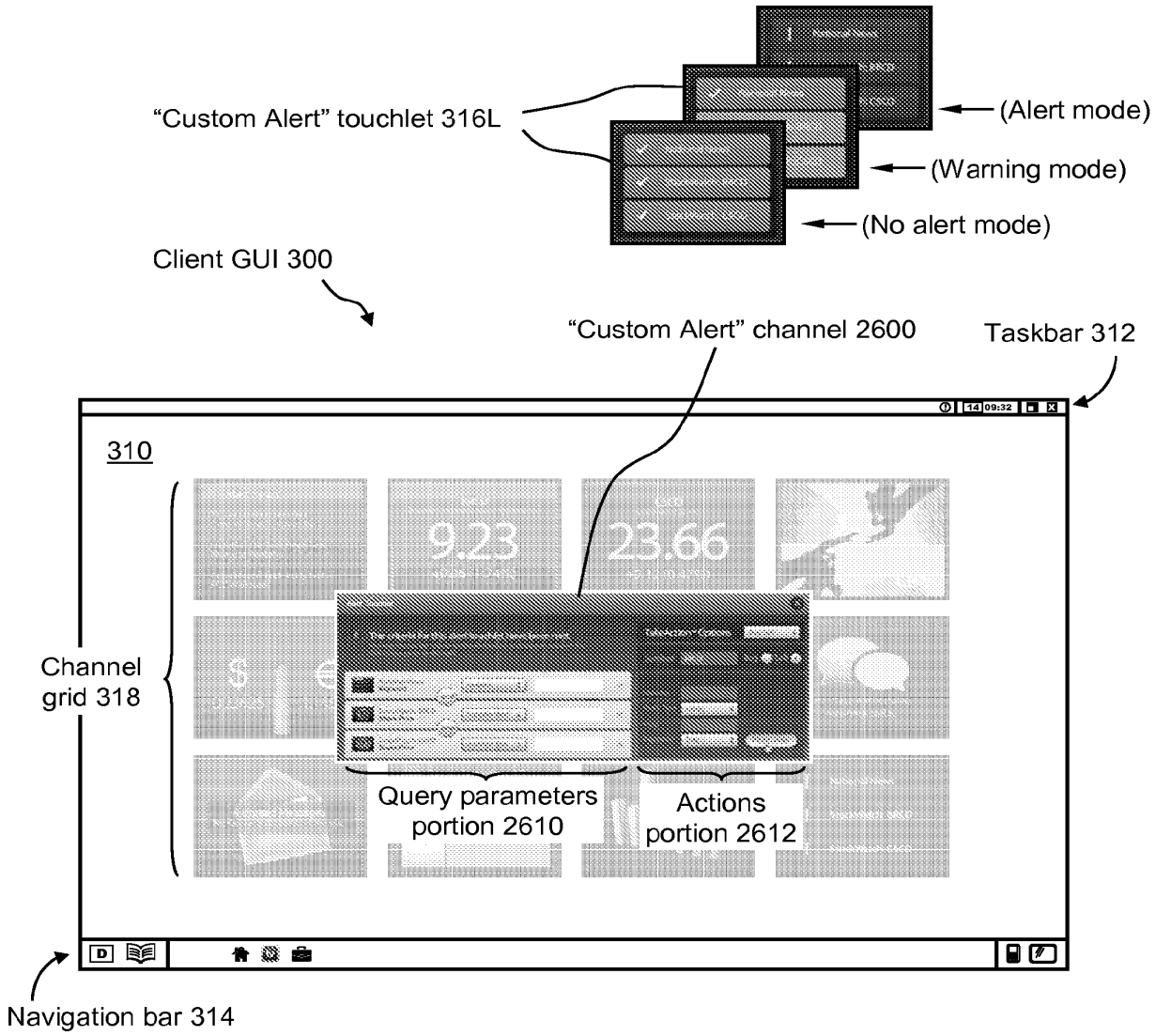

"Custom Alert" touchlet 316L
(Alert mode)
(Warning mode)
(No alert mode)
Client GUI 300
"Custom Alert" channel 2600
Taskbar 312
310
Channel grid 318
Query parameters portion 2610
Actions portion 2612
Navigation bar 314

FIG. 26

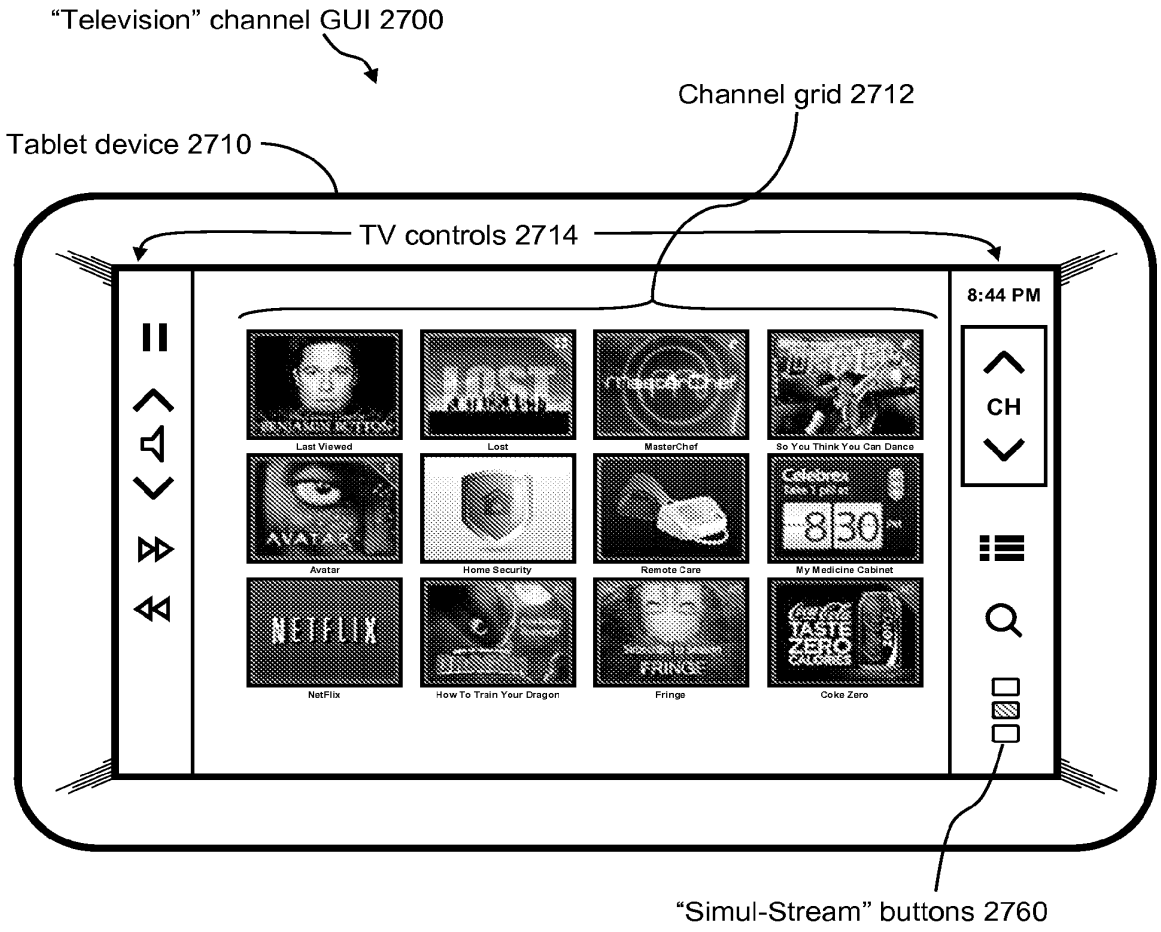

"Television" channel GUI 2700
Channel grid 2712
Tablet device 2710
TV controls 2714
8:44 PM
CH
Last Viewed
Lost
MasterChef
So You Think You Can Dance
Avatar
Home Security
Remote Care
My Medicine Cabinet
NetFlix
How To Train Your Dragon
Fringe
Coke Zero
"Simul-Stream" buttons 2760

FIG. 27

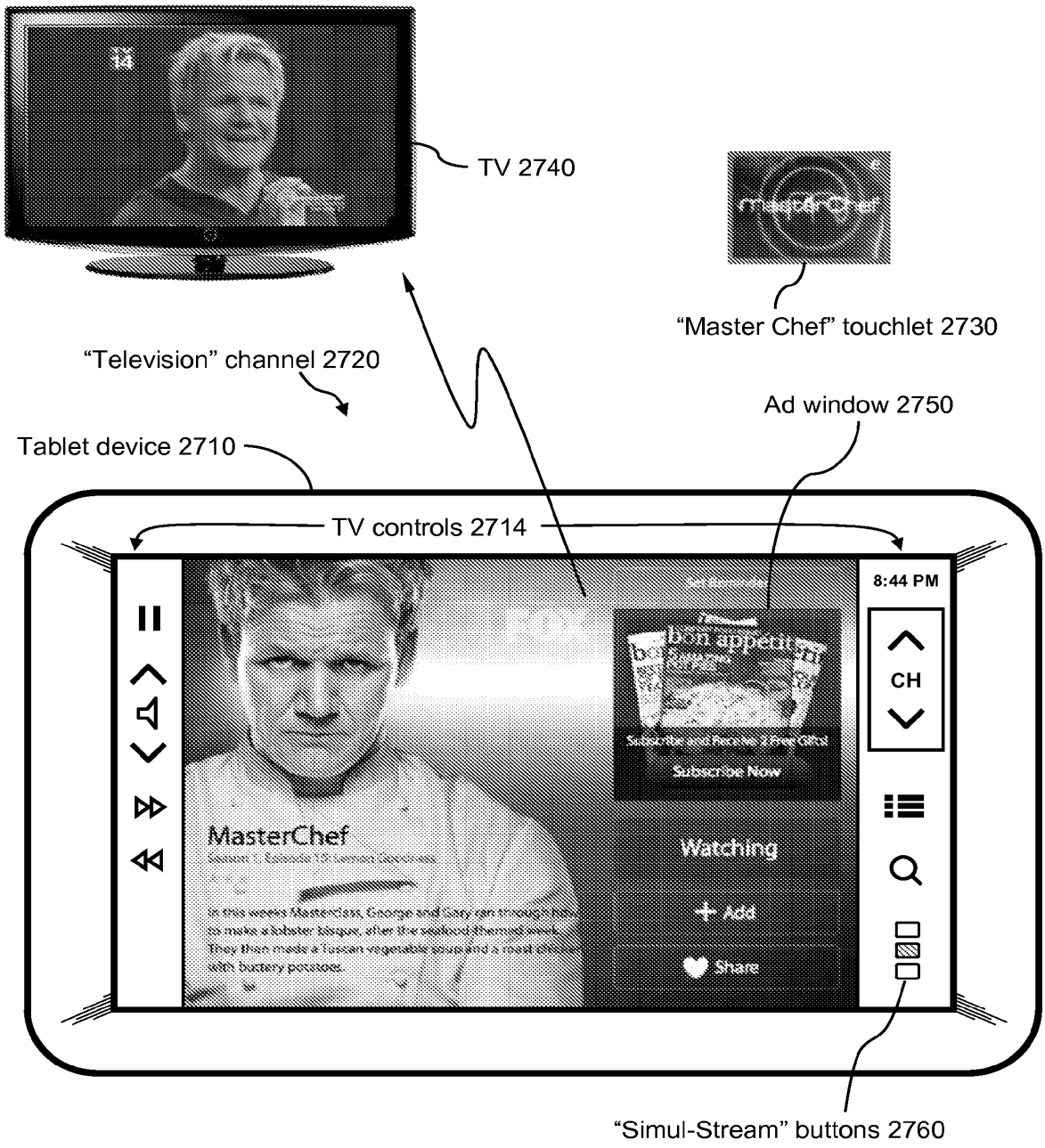

TV 2740
"Master Chef" touchlet 2730
"Television" channel 2720
Ad window 2750
Tablet device 2710
TV controls 2714
8:44 PM
CH
MasterChef
Watching
Add
Share
Subscribe Now
"Simul-Stream" buttons 2760

FIG. 28

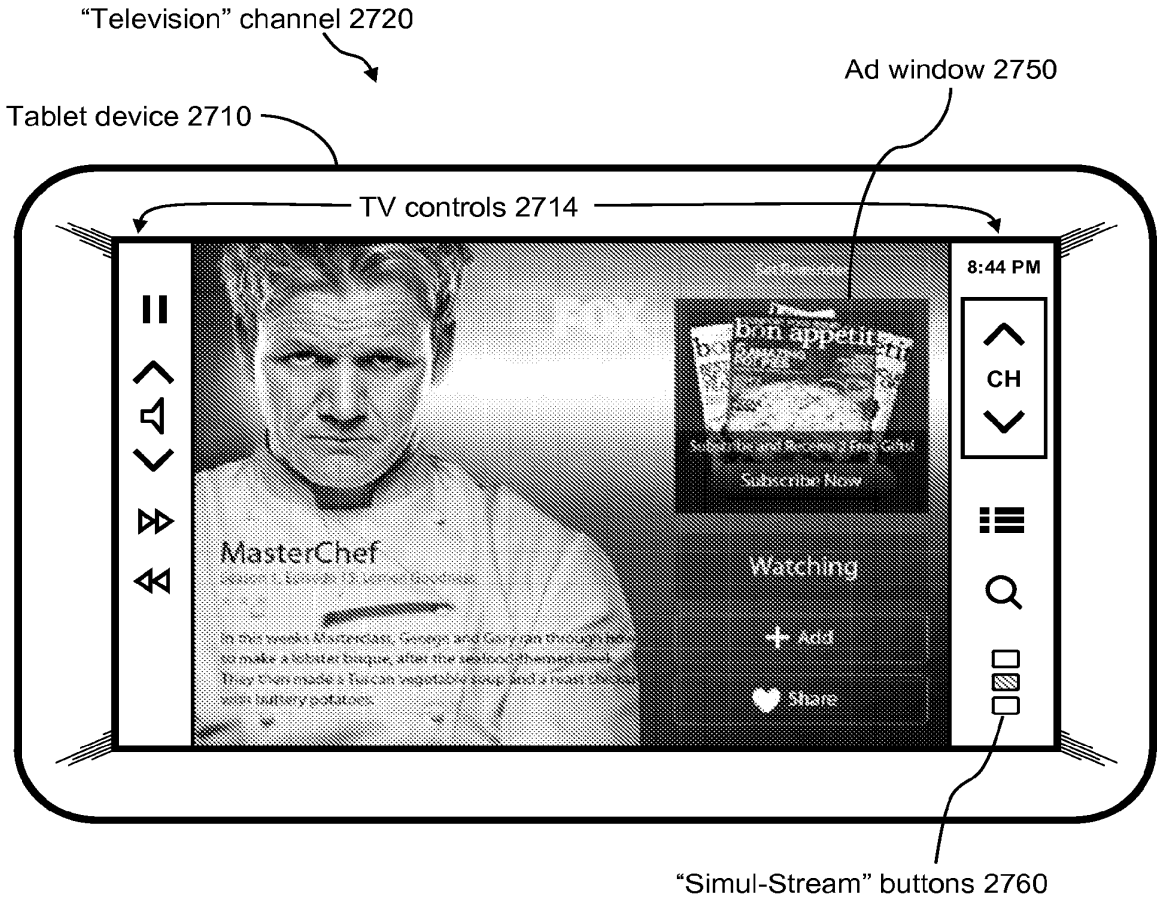

"Television" channel 2720
Ad window 2750
Tablet device 2710
TV controls 2714
8:44 PM
CH
MasterChef
Watching
Add
Share
Subscribe Now
"Simul-Stream" buttons 2760

FIG. 29

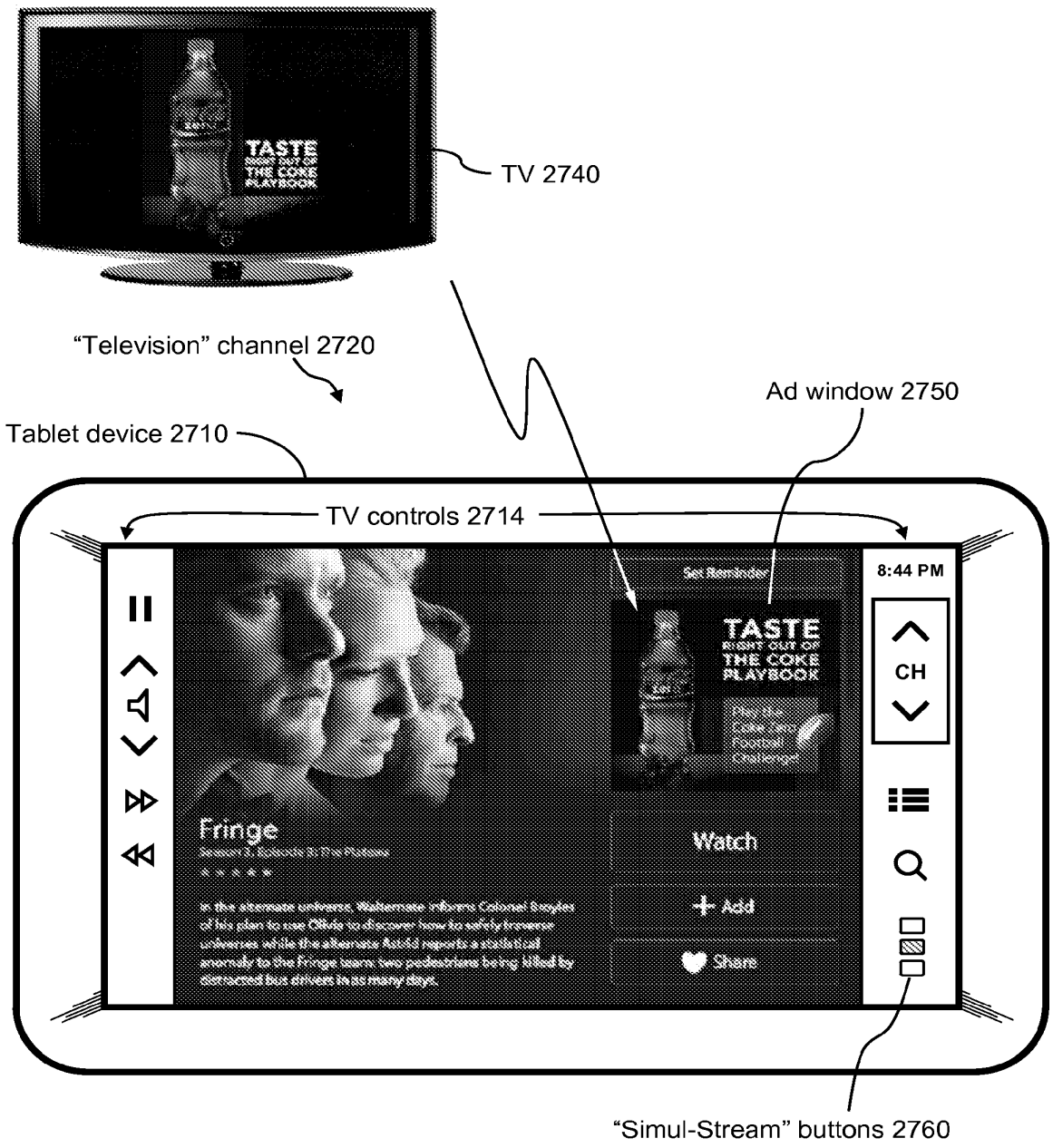

TV 2740
"Television" channel 2720
Tablet device 2710
Ad window 2750
TV controls 2714
Set Reminder
8:44 PM
TASTE
RIGHT OUT OF
THE COKE
PLAYBOOK
CH
Fringe
Watch
+ Add
Share
"Simul-Stream" buttons 2760

FIG. 30

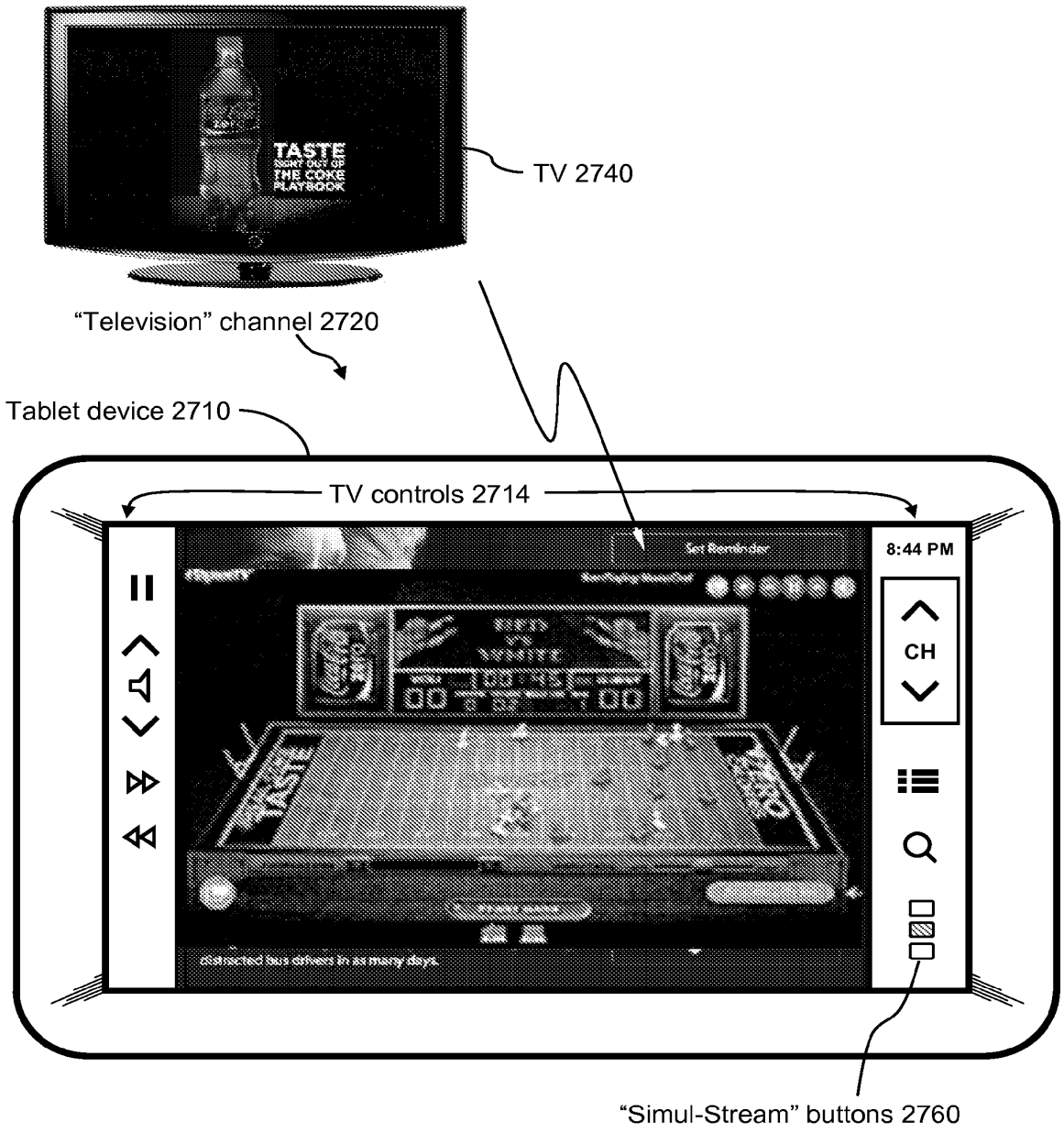

TASTE
THE COKE
PLAYBOOK
TV 2740
"Television" channel 2720
Tablet device 2710
TV controls 2714
8:44 PM
CH
"Simul-Stream" buttons 2760

FIG. 31

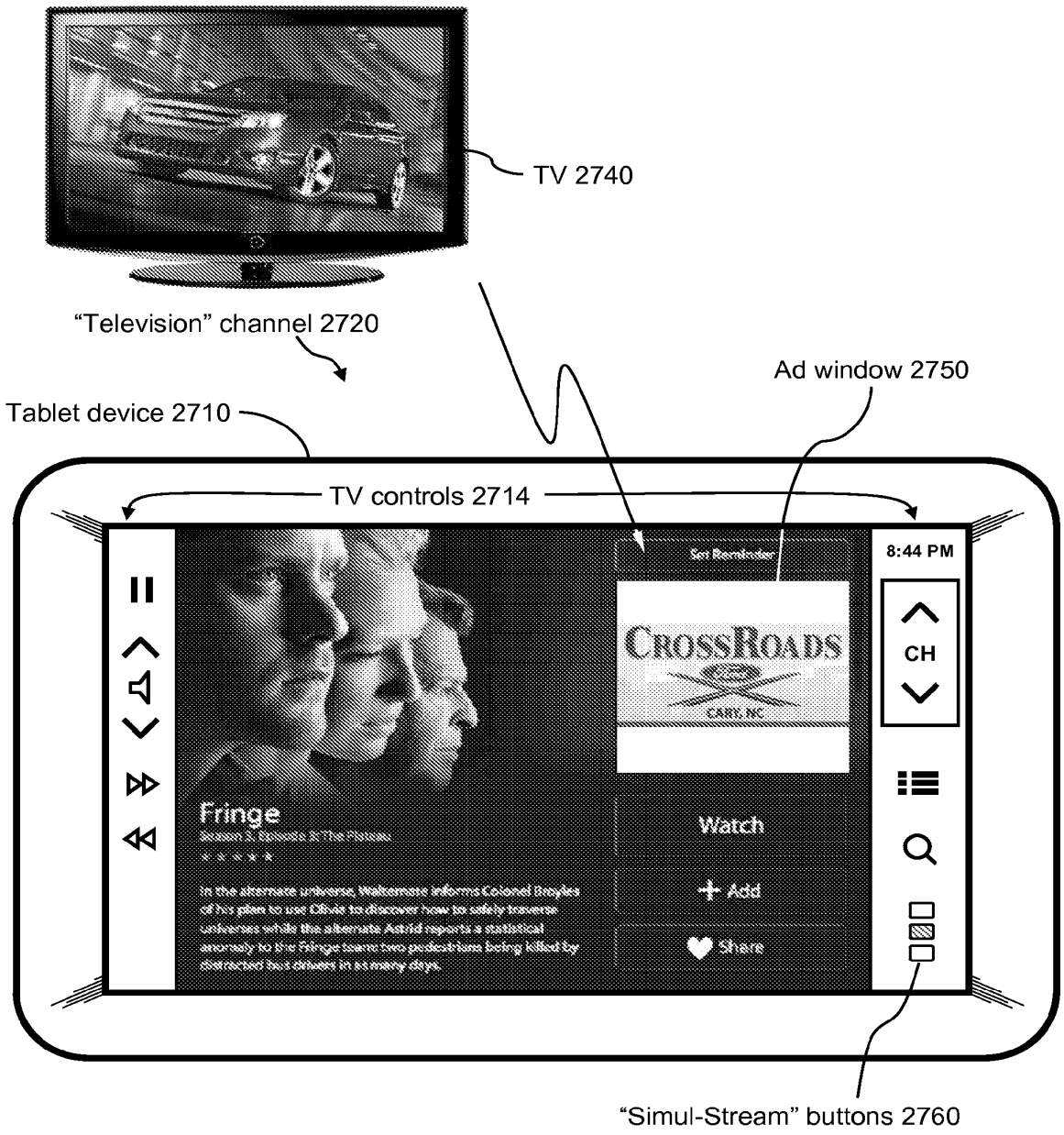

TV 2740
"Television" channel 2720
Tablet device 2710
Ad window 2750
TV controls 2714
Set Reminder
8:44 PM
CROSSROADS
CARY, NC
CH
Fringe
Watch
Add
Share
"Simul-Stream" buttons 2760

FIG. 32

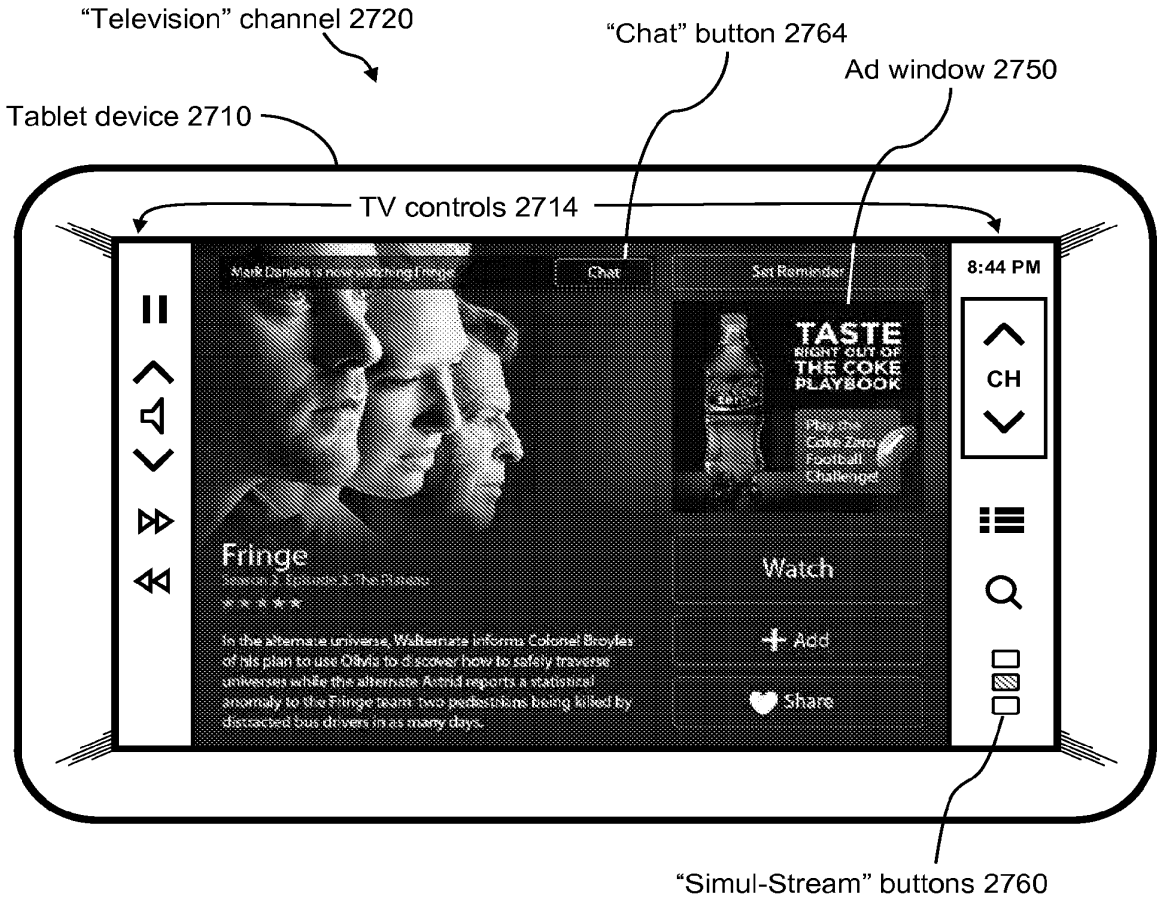

"Television" channel 2720
"Chat" button 2764
Ad window 2750
Tablet device 2710
TV controls 2714
Chat
Set Reminder
8:44 PM
TASTE
RIGHT OUT OF
THE COKE
PLAYBOOK
CH
Fringe
Watch
Add
Share
"Simul-Stream" buttons 2760

FIG. 33

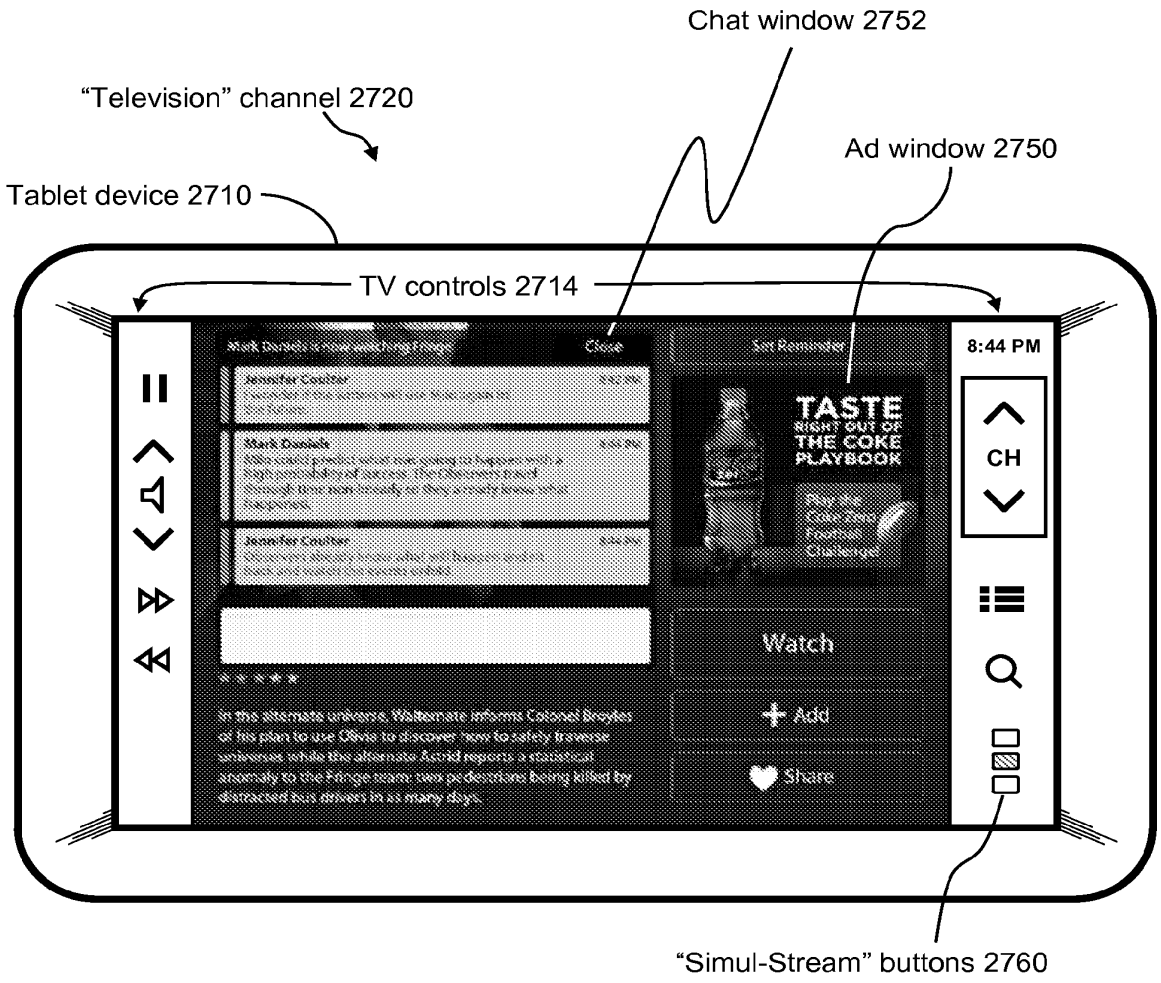

Chat window 2752
"Television" channel 2720
Ad window 2750
Tablet device 2710
TV controls 2714
Close
Set Reminder
8:44 PM
TASTE
RIGHT OUT OF
THE COKE
PLAYBOOK
CH
Watch
Add
Share
"Simul-Stream" buttons 2760

FIG. 34

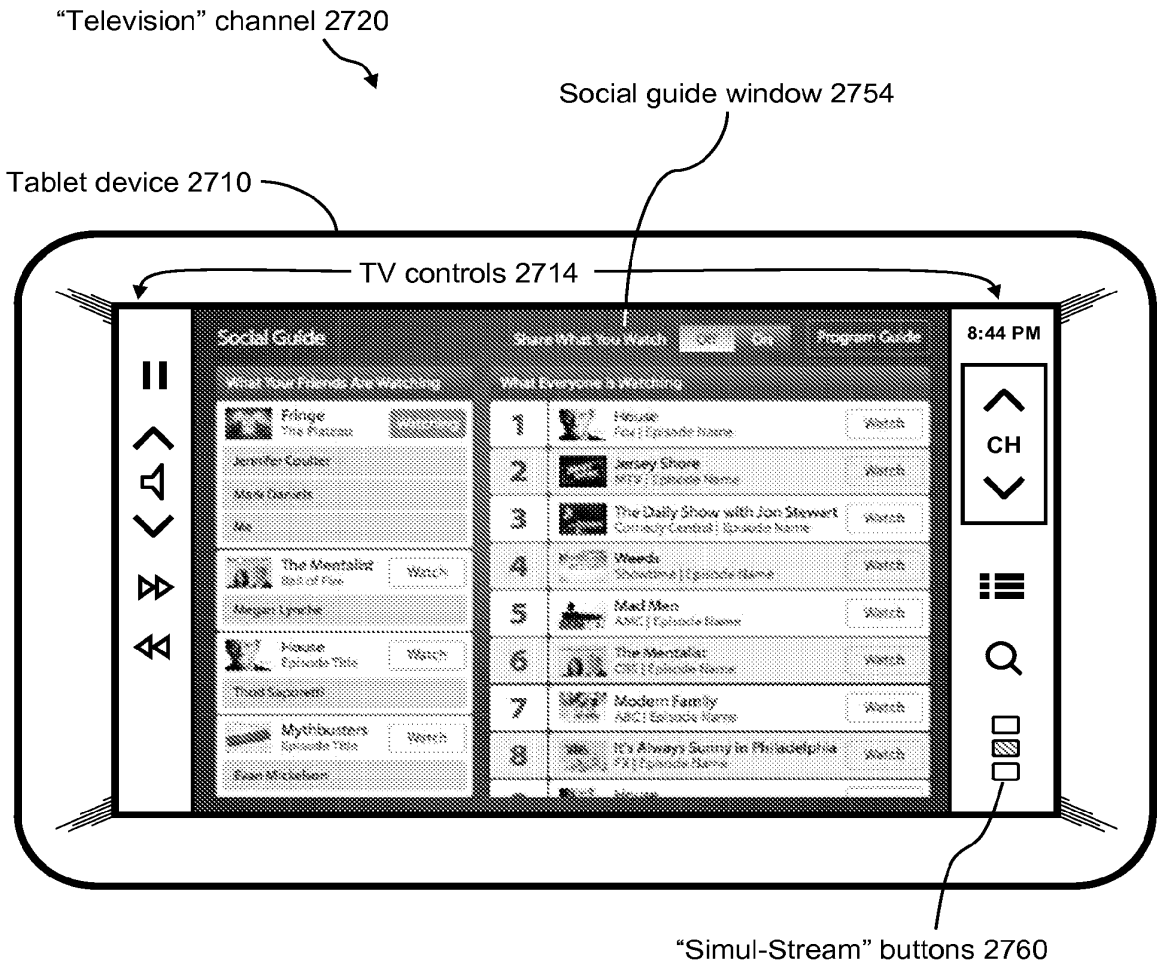

"Television" channel 2720
Social guide window 2754
Tablet device 2710
TV controls 2714
Social Guide
8:44 PM
CH
"Simul-Stream" buttons 2760

FIG. 35

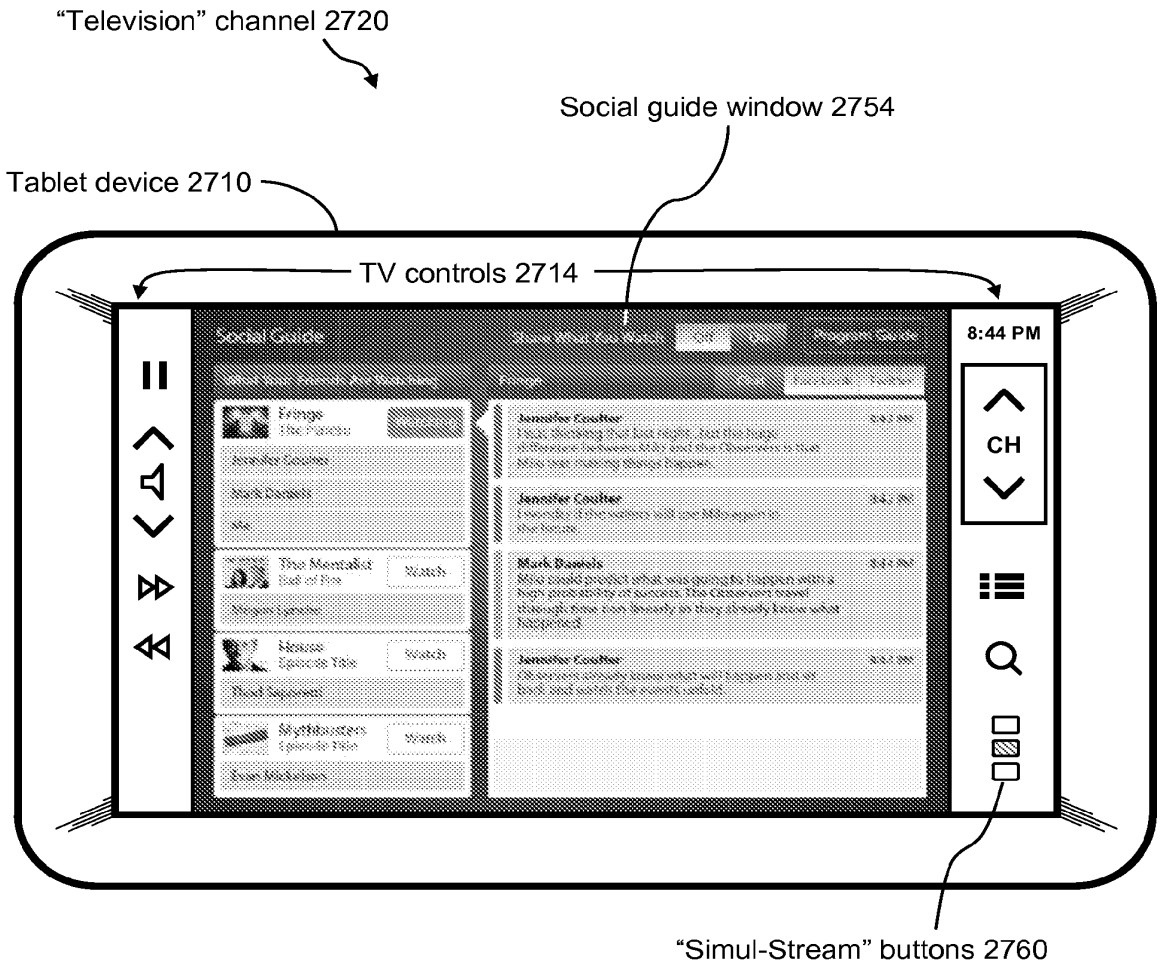

"Television" channel 2720
Social guide window 2754
Tablet device 2710
TV controls 2714
Social Guide
8:44 PM
CH
"Simul-Stream" buttons 2760

FIG. 36

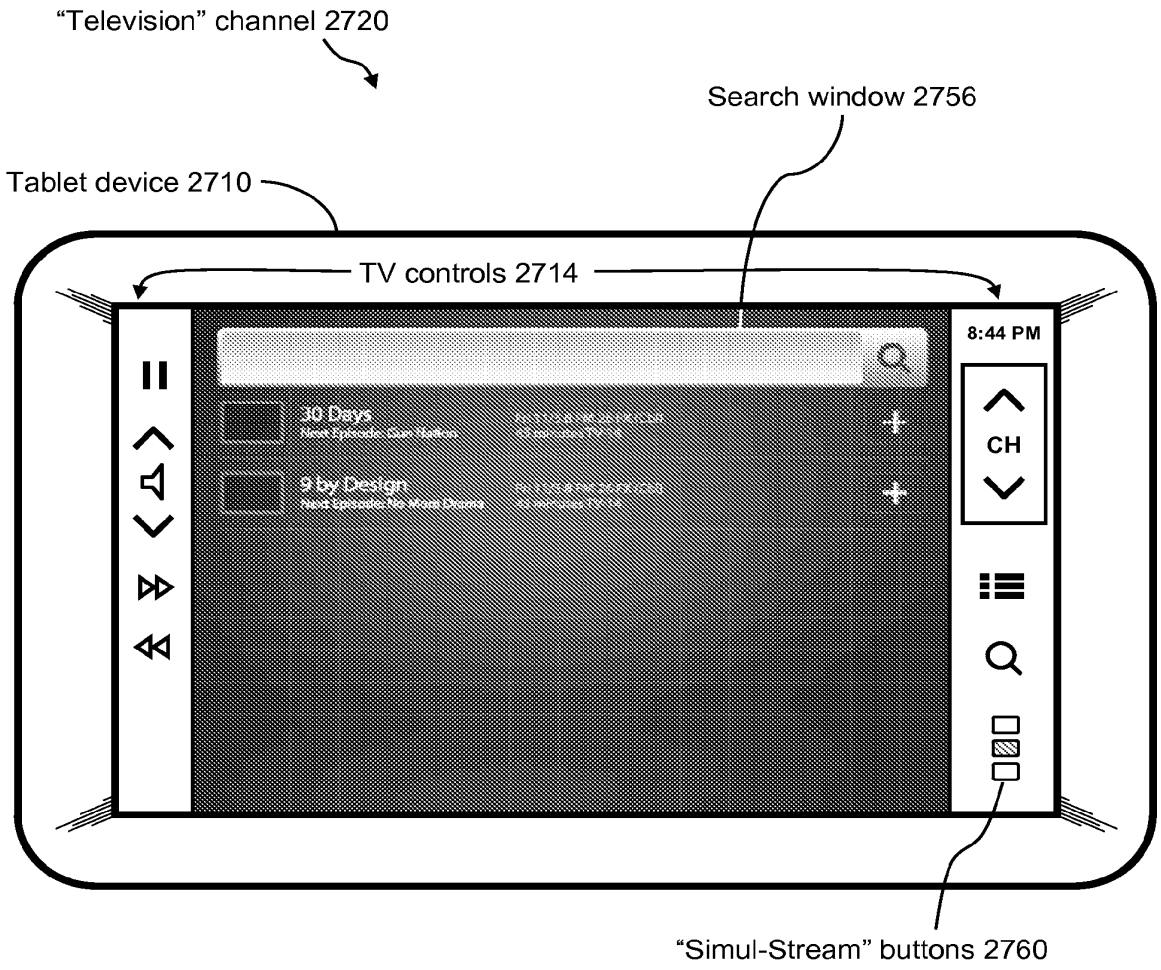

"Television" channel 2720
Search window 2756
Tablet device 2710
TV controls 2714
8:44 PM
CH
30 Days
9 by Design
"Simul-Stream" buttons 2760

FIG. 37

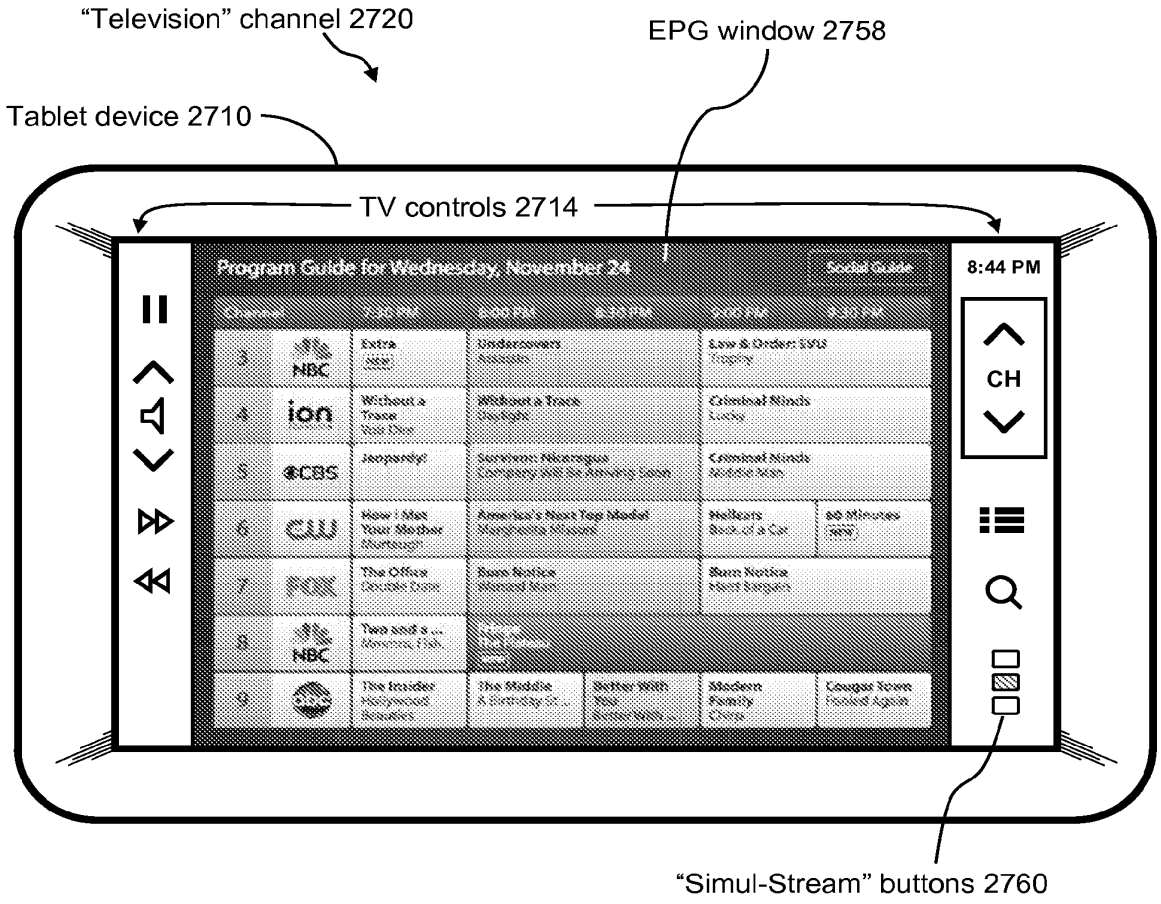

"Television" channel 2720
EPG window 2758
Tablet device 2710
TV controls 2714
Program Guide for Wednesday, November 24
8:44 PM
CH
"Simul-Stream" buttons 2760

FIG. 38

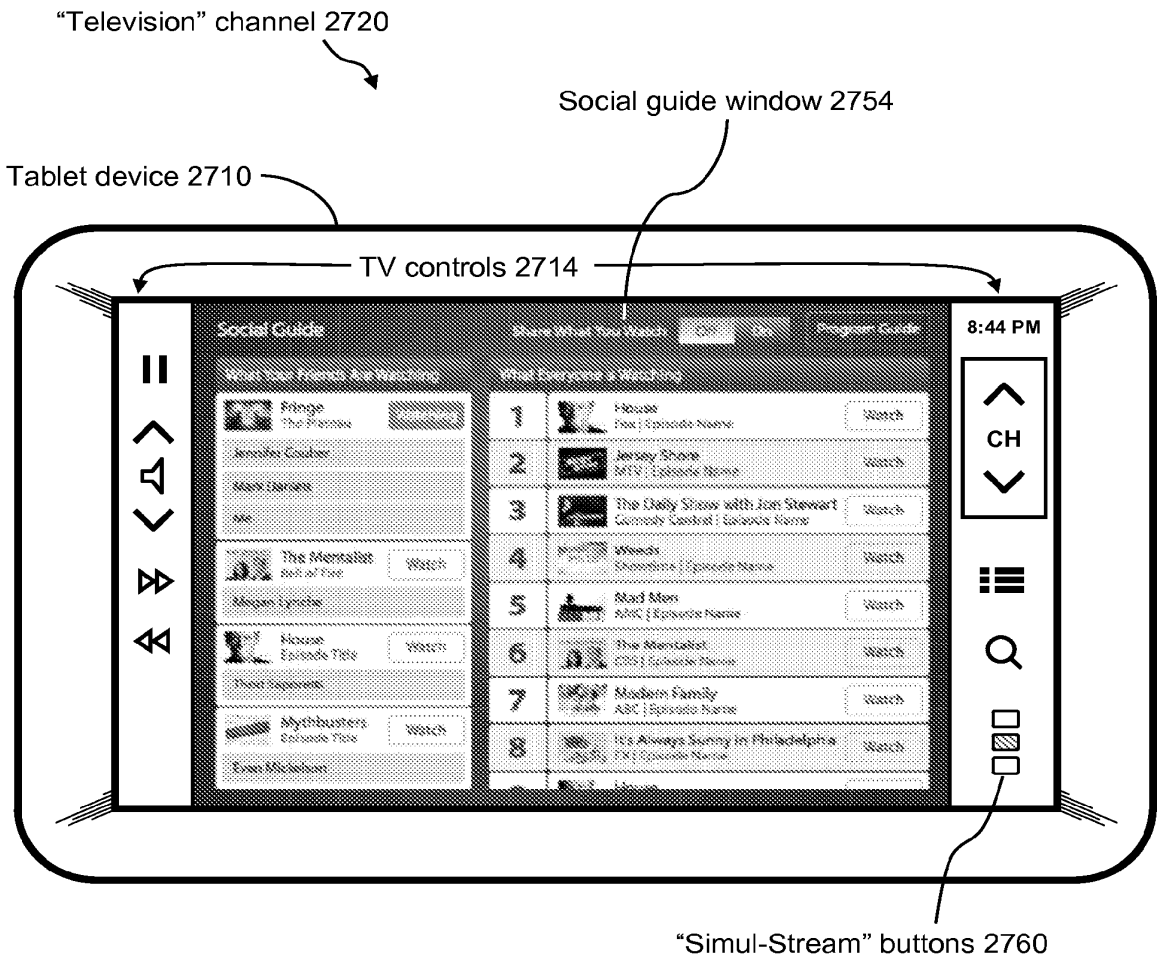

"Television" channel 2720
Social guide window 2754
Tablet device 2710
TV controls 2714
Social Guide
8:44 PM
CH
"Simul-Stream" buttons 2760

FIG. 39

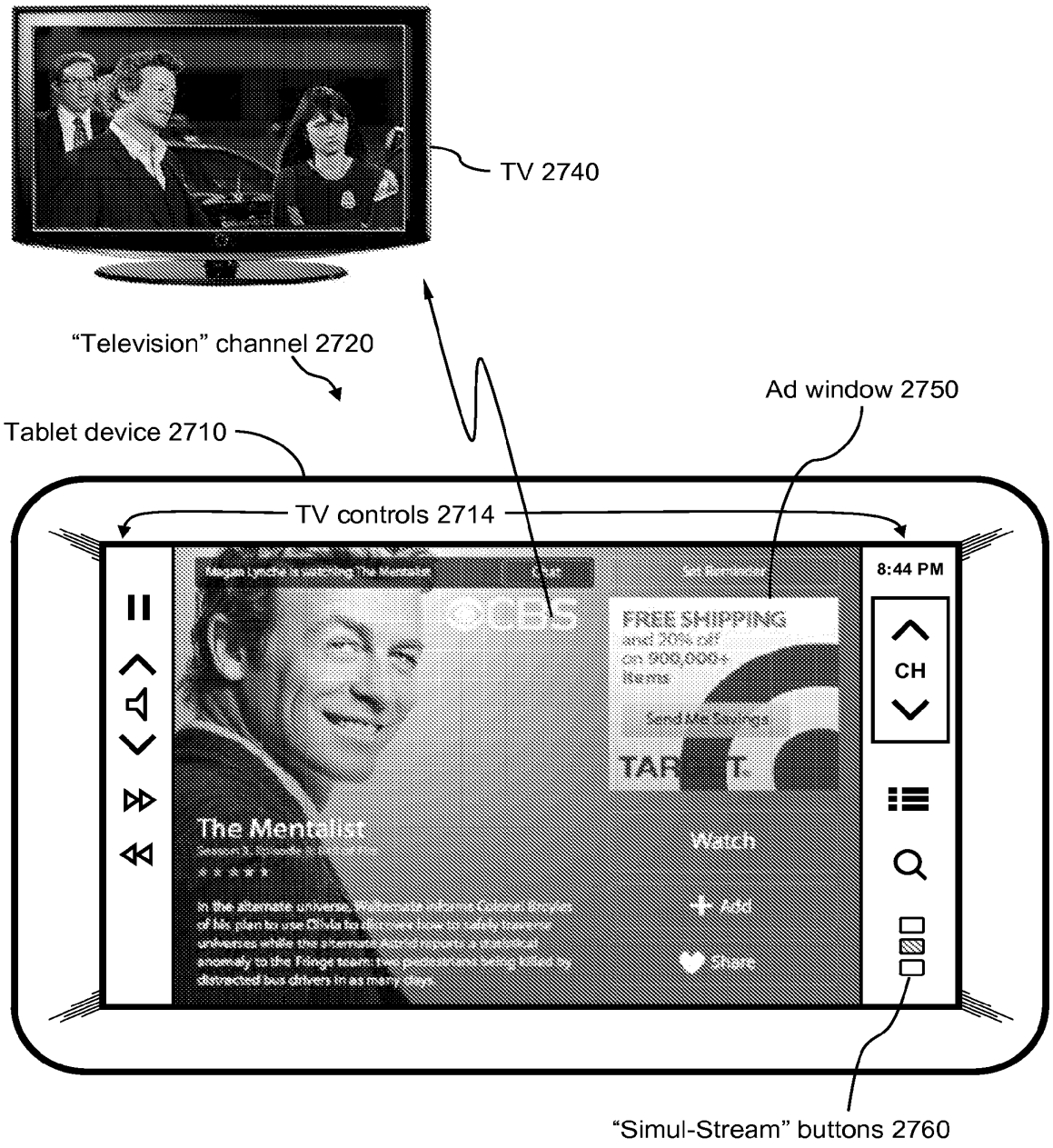

TV 2740
"Television" channel 2720
Tablet device 2710
Ad window 2750
TV controls 2714
8:44 PM
CH
FREE SHIPPING
The Mentalist
Watch
Add
Share
"Simul-Stream" buttons 2760

FIG. 40

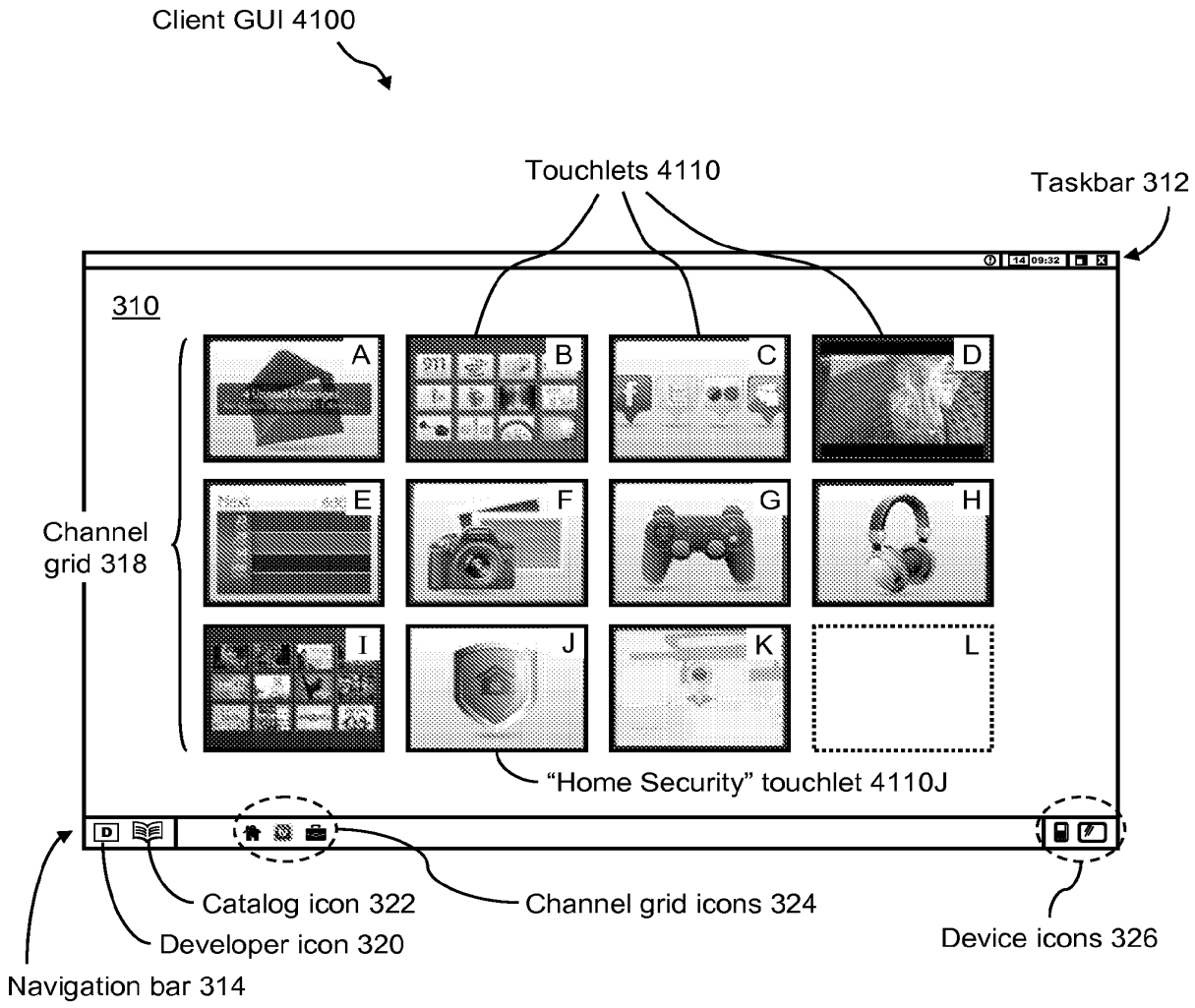

Client GUI 4100
Touchlets 4110
Taskbar 312
310
A
B
C
D
E
F
G
H
I
J
K
L
Channel grid 318
"Home Security" touchlet 4110J
Catalog icon 322
Channel grid icons 324
Developer icon 320
Device icons 326
Navigation bar 314

FIG. 41

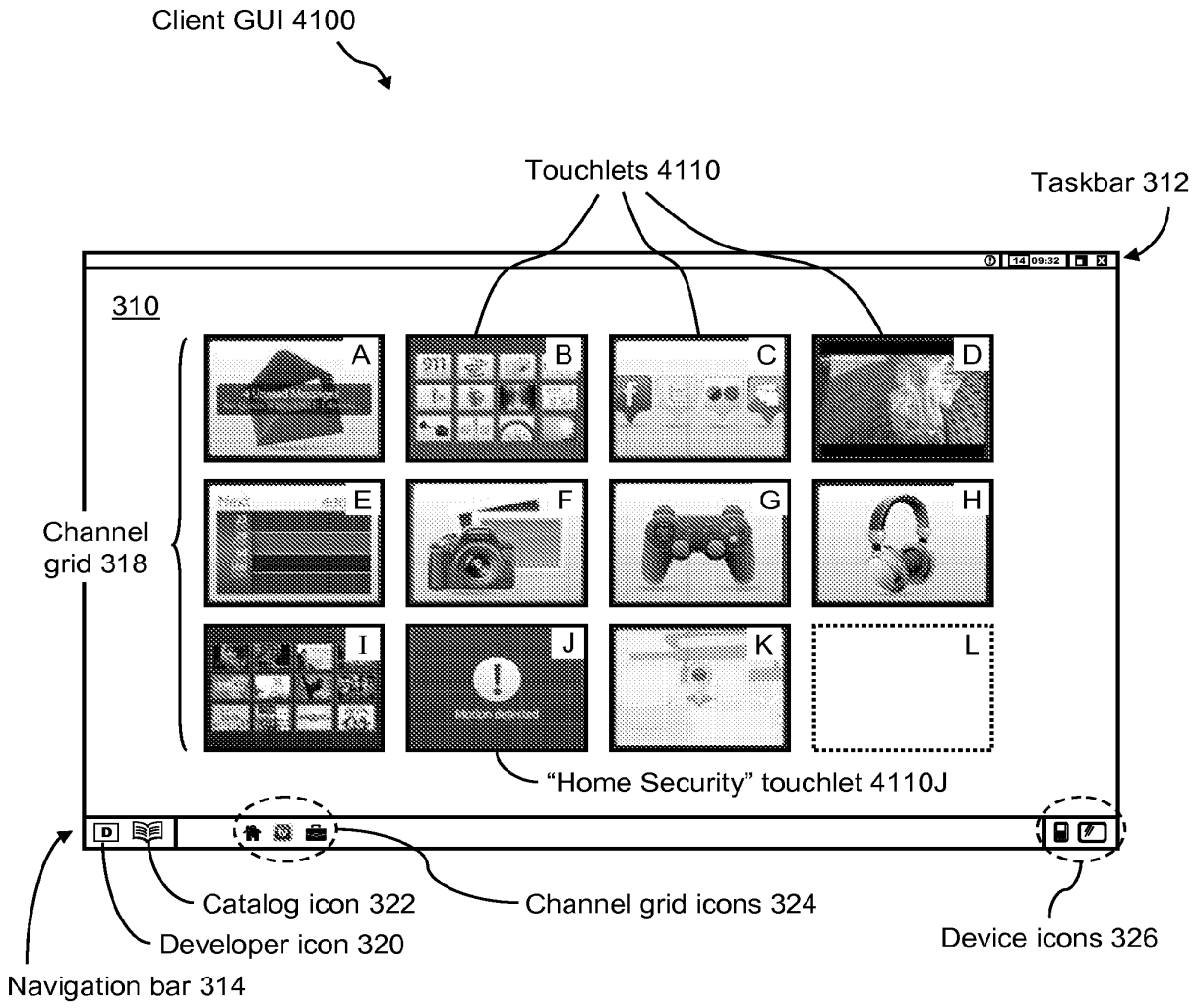

Client GUI 4100
Touchlets 4110
Taskbar 312
310
A
B
C
D
E
F
G
H
I
J
K
L
Channel grid 318
"Home Security" touchlet 4110J
Catalog icon 322
Channel grid icons 324
Developer icon 320
Device icons 326
Navigation bar 314

FIG. 42

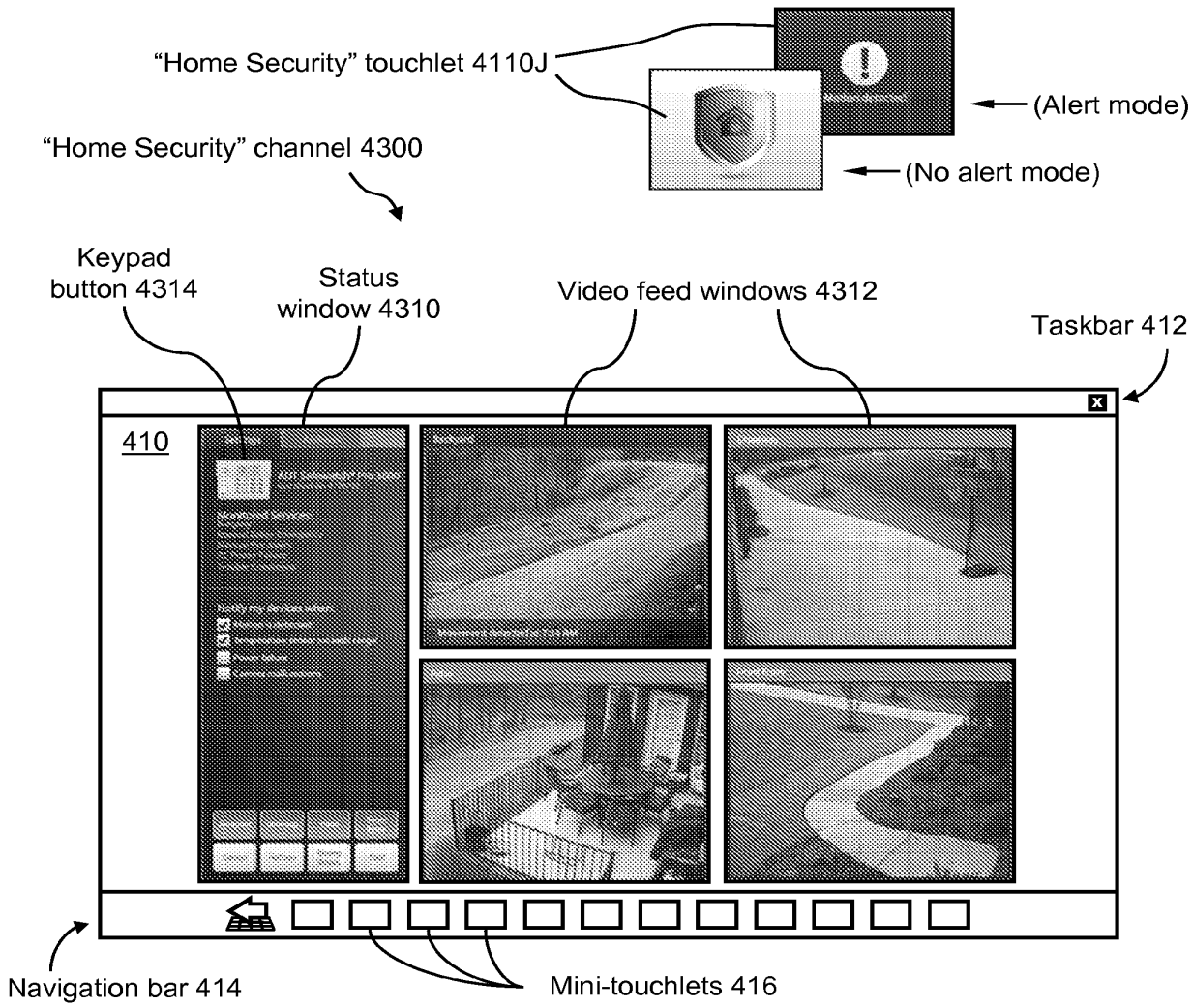

"Home Security" touchlet 4110J
(Alert mode)
(No alert mode)
"Home Security" channel 4300
Keypad button 4314
Status window 4310
Video feed windows 4312
Taskbar 412
410
Navigation bar 414
Mini-touchlets 416

FIG. 43

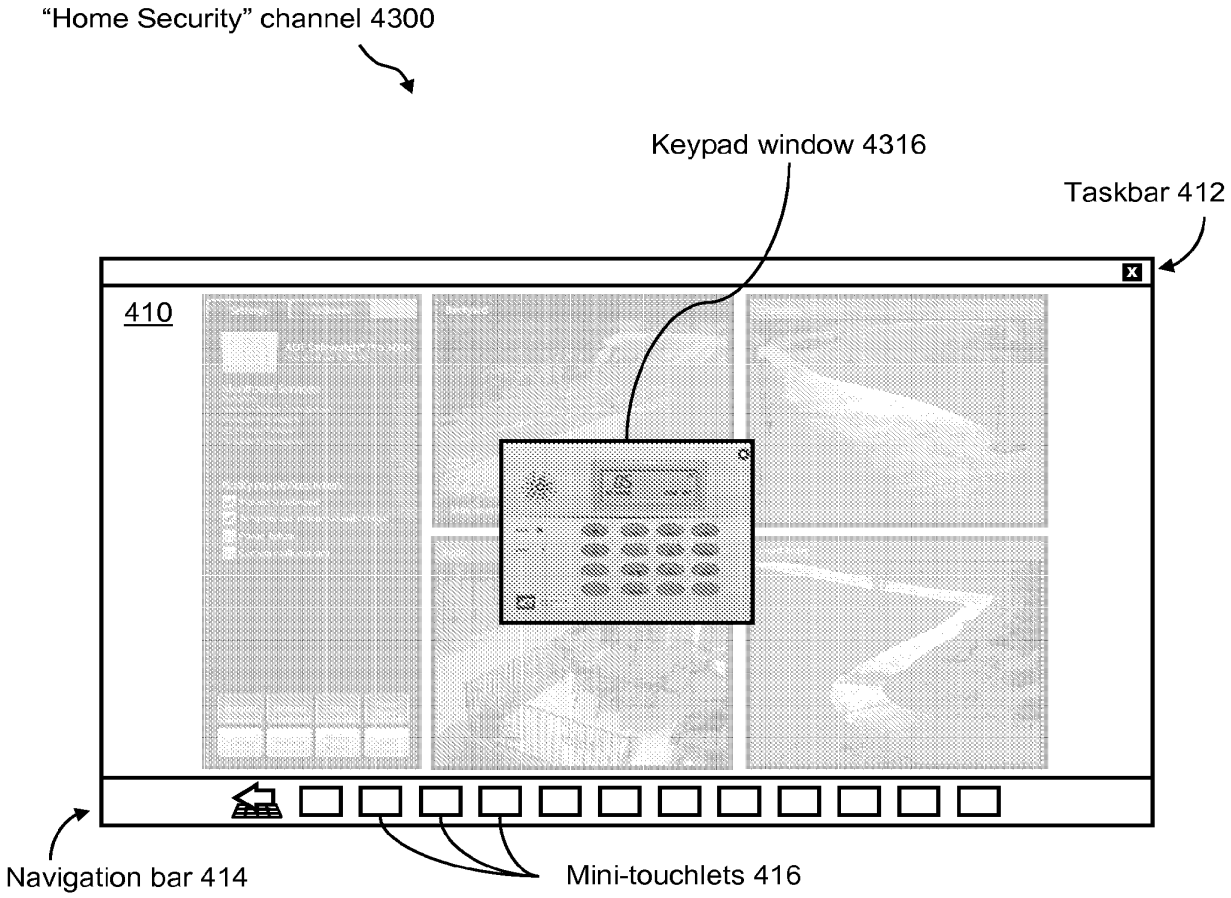

"Home Security" channel 4300
Keypad window 4316
Taskbar 412
410
Navigation bar 414
Mini-touchlets 416

FIG. 44

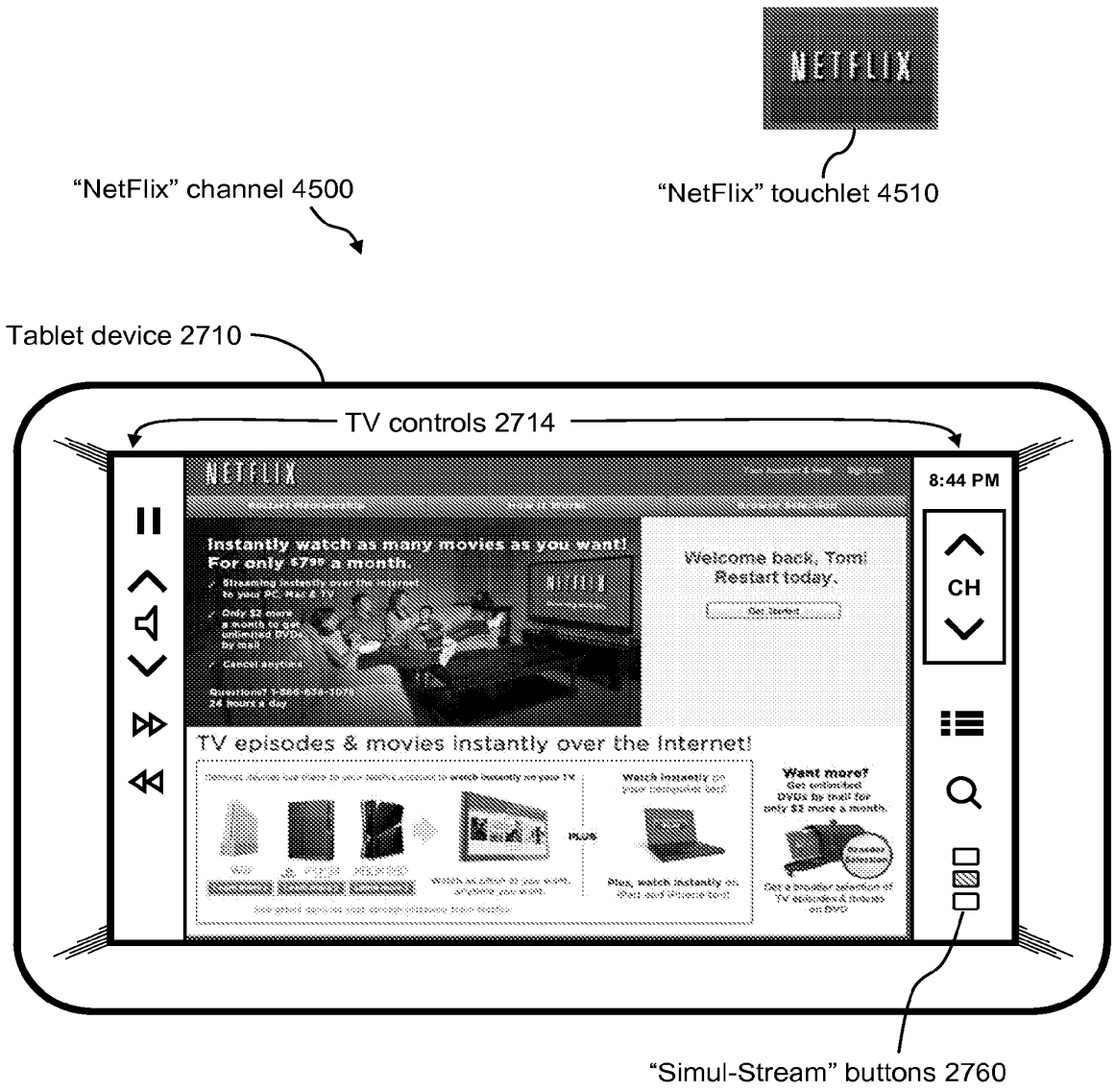

NETFLIX
"NetFlix" channel 4500
"NetFlix" touchlet 4510
Tablet device 2710
TV controls 2714
NETFLIX
8:44 PM
Instantly watch as many movies as you want!
For only $7.99 a month.
Welcome back, Tom!
Restart today.
CH
TV episodes & movies instantly over the Internet!
Want more?
"Simul-Stream" buttons 2760

FIG. 45

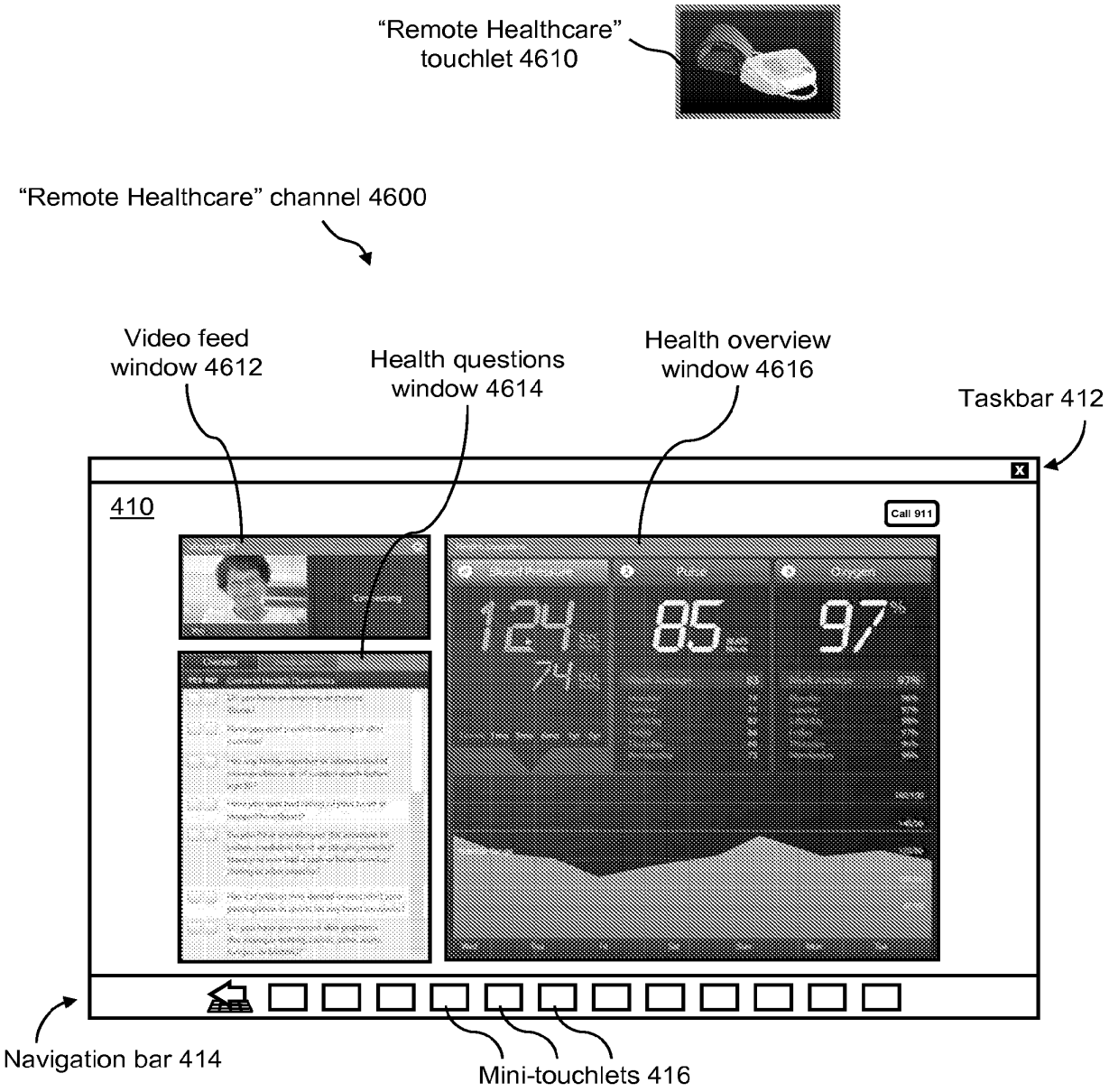

"Remote Healthcare" touchlet 4610
"Remote Healthcare" channel 4600
Video feed window 4612
Health questions window 4614
Health overview window 4616
Taskbar 412
410
Call 911
Navigation bar 414
Mini-touchlets 416

FIG. 46

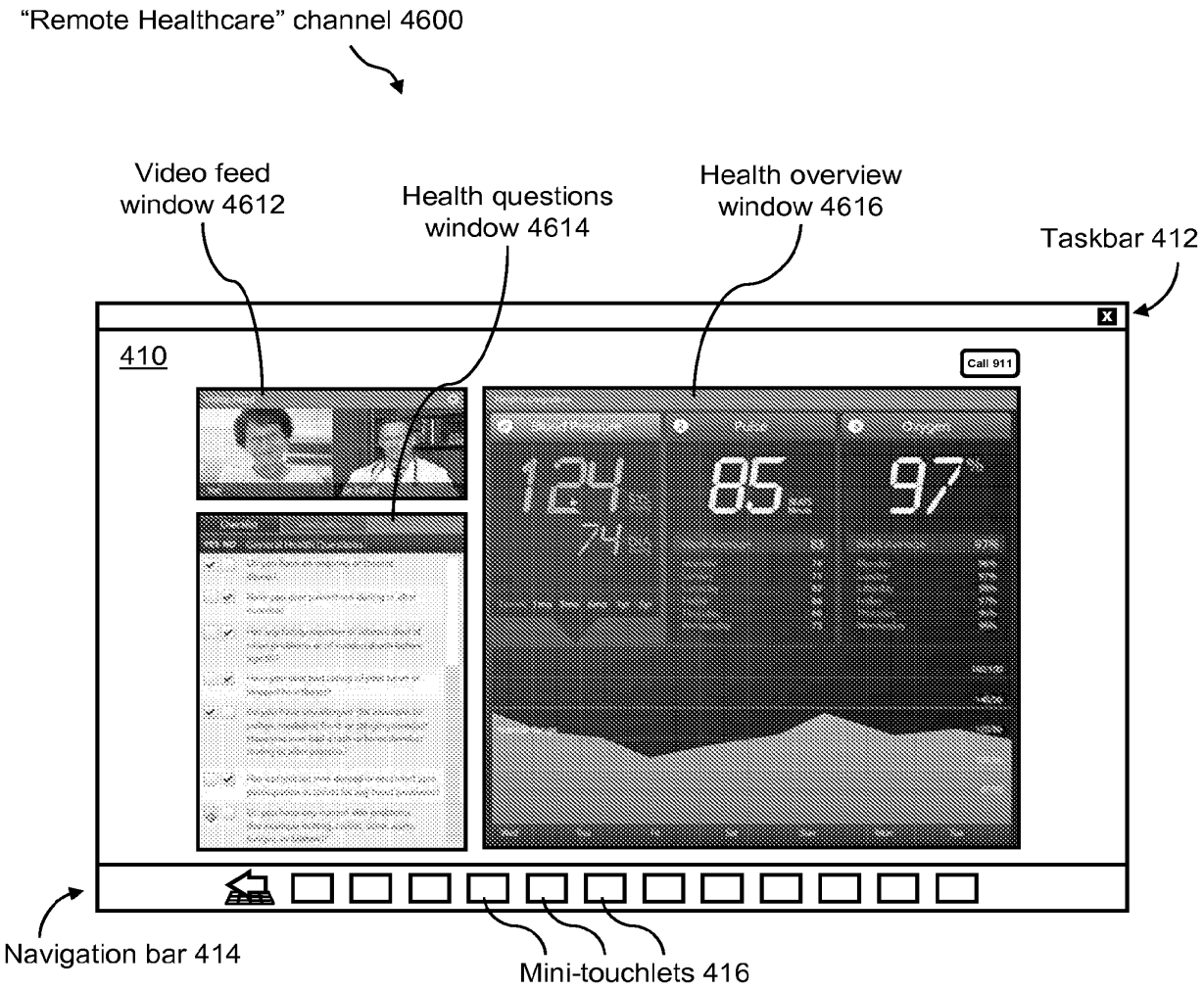

"Remote Healthcare" channel 4600
Video feed window 4612
Health questions window 4614
Health overview window 4616
Taskbar 412
410
Call 911
Navigation bar 414
Mini-touchlets 416

FIG. 47

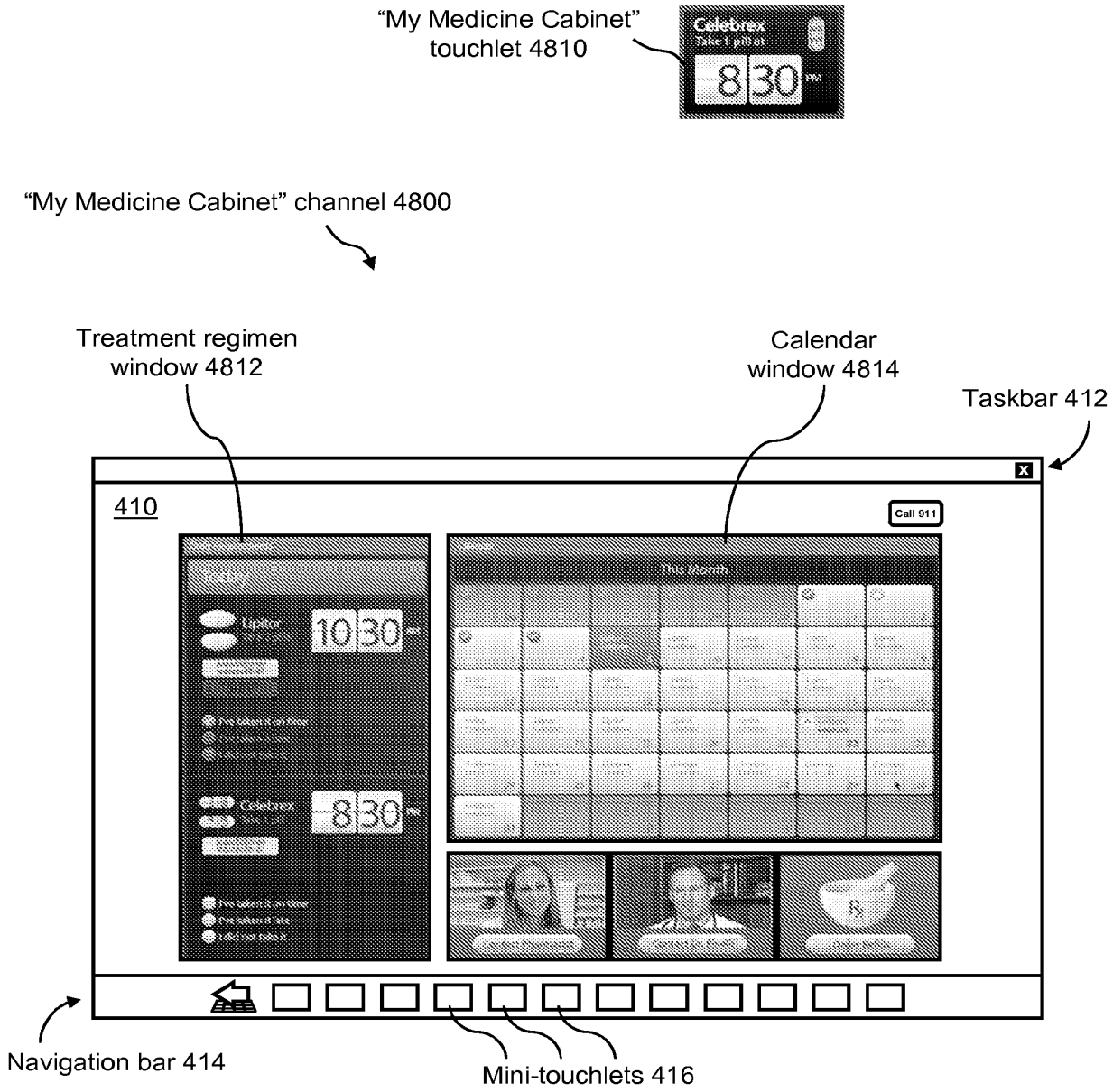

"My Medicine Cabinet" touchlet 4810
Celebrex
8 30
"My Medicine Cabinet" channel 4800
Treatment regimen window 4812
Calendar window 4814
Taskbar 412
410
Call 911
10 30
8 30
Navigation bar 414
Mini-touchlets 416

FIG. 48

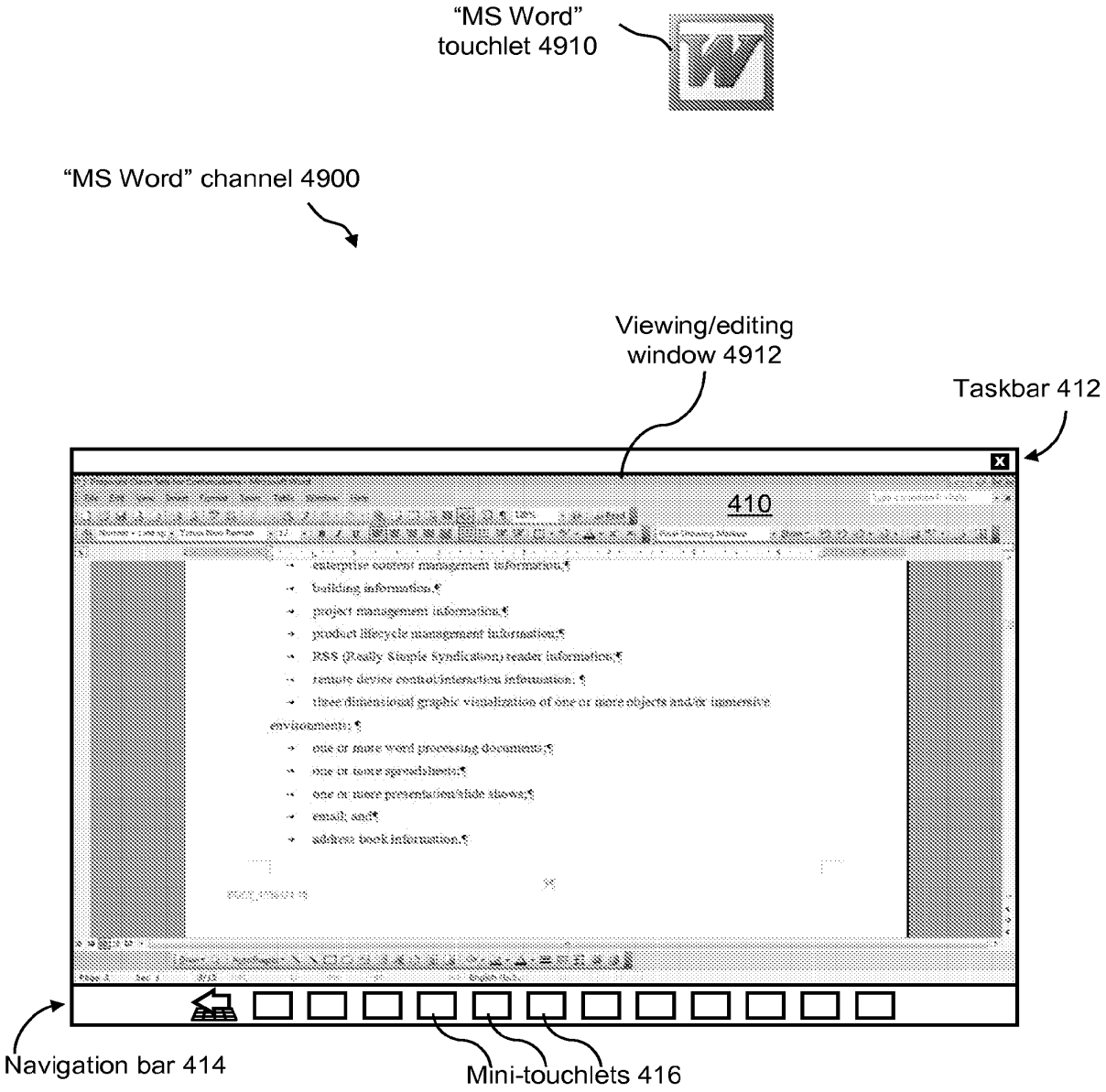

"MS Word" touchlet 4910
"MS Word" channel 4900
Viewing/editing window 4912
Taskbar 412
410
Navigation bar 414
Mini-touchlets 416

FIG. 49

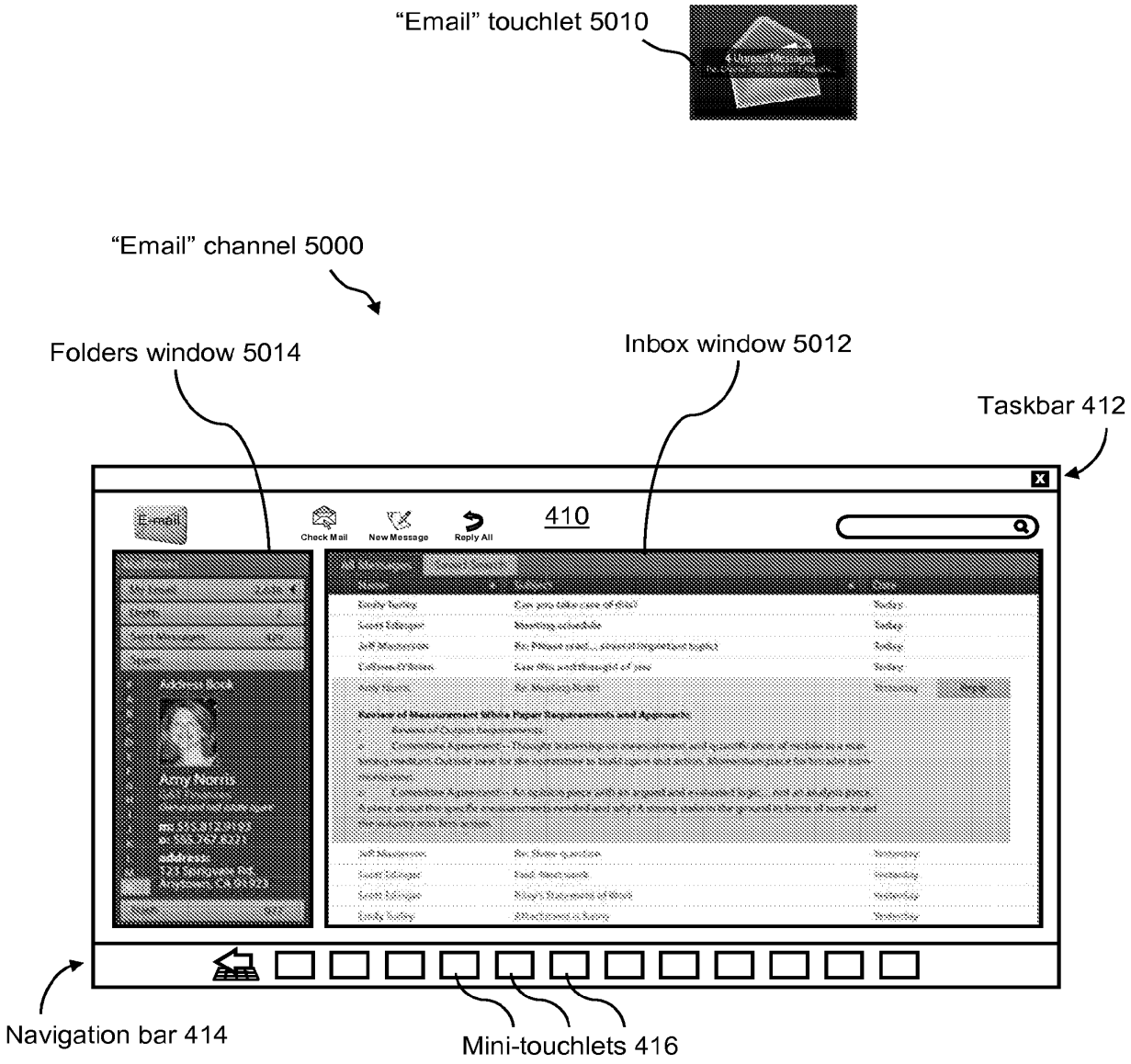

"Email" touchlet 5010
"Email" channel 5000
Folders window 5014
Inbox window 5012
Taskbar 412
E-mail
Check Mail
New Message
Reply All
410
Navigation bar 414
Mini-touchlets 416

FIG. 50

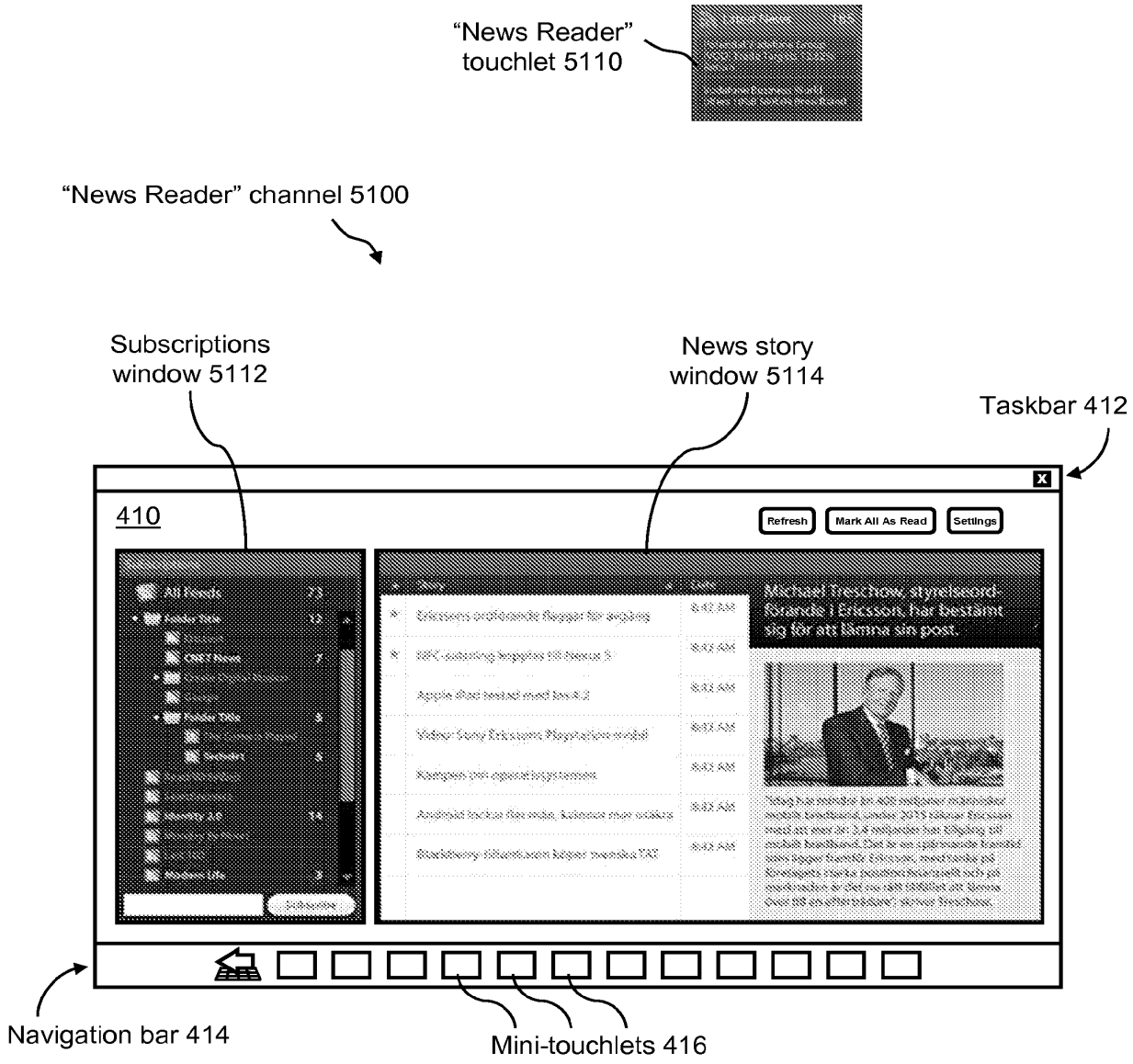

"News Reader" touchlet 5110
"News Reader" channel 5100
Subscriptions window 5112
News story window 5114
Taskbar 412
410
Refresh
Mark All As Read
Settings
Navigation bar 414
Mini-touchlets 416

FIG. 51

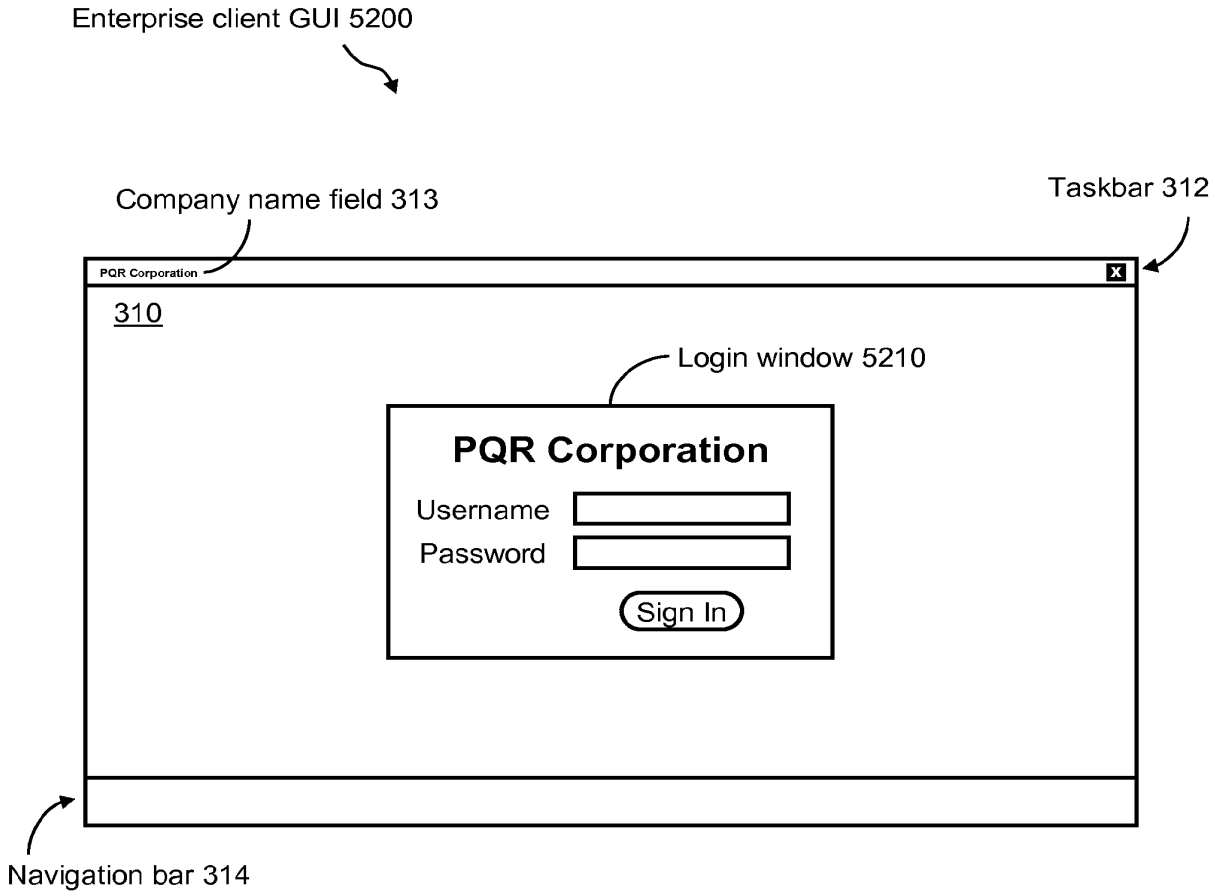

Enterprise client GUI 5200
Company name field 313
Taskbar 312
PQR Corporation
310
Login window 5210
PQR Corporation
Username
Password
Sign In
Navigation bar 314

FIG. 52

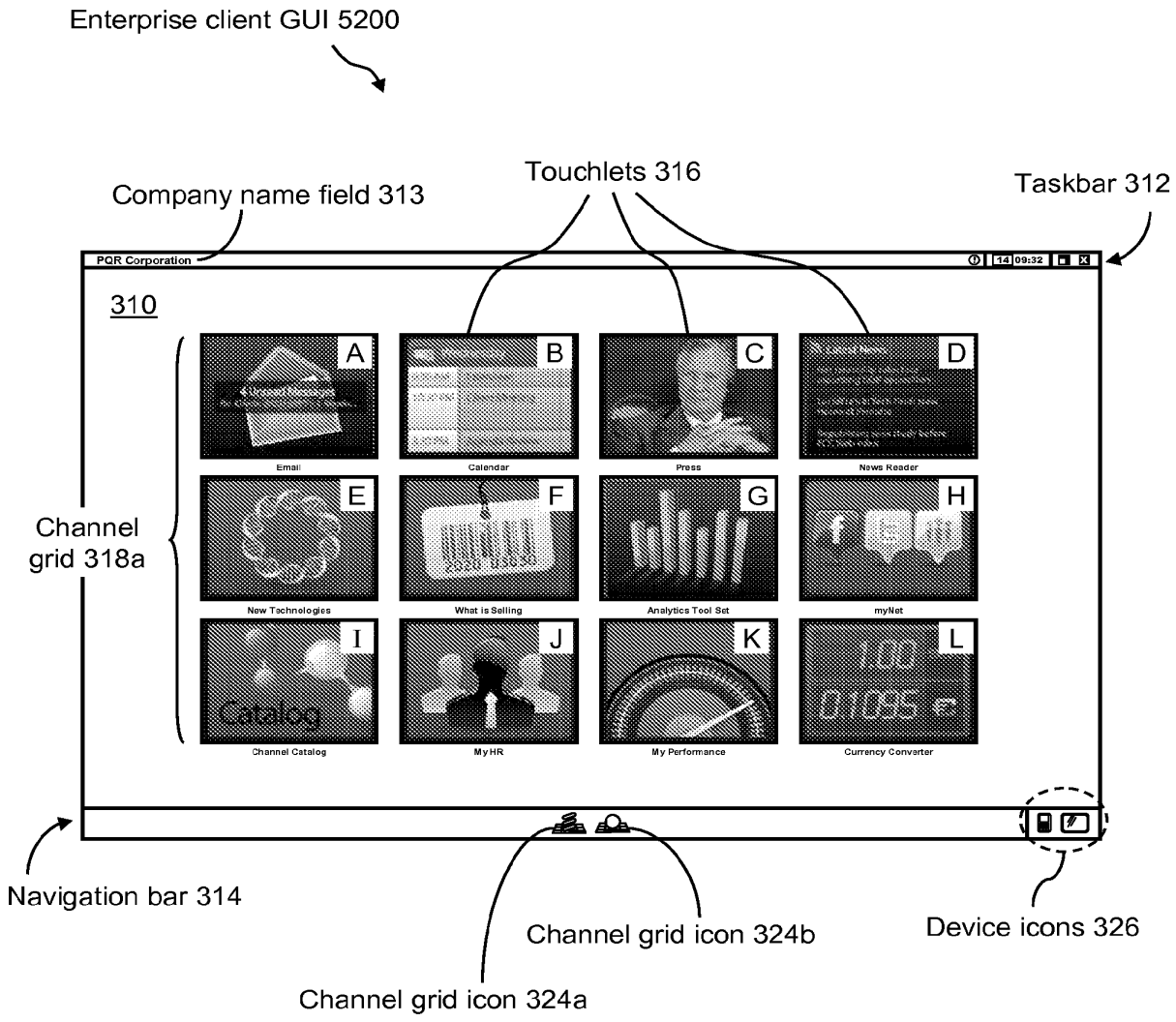

Enterprise client GUI 5200
Company name field 313
Touchlets 316
Taskbar 312
PQR Corporation
14 09:32
310
A
B
C
D
Email
Calendar
Press
News Reader
E
F
G
H
New Technologies
What is Selling
Analytics Tool Set
myNet
I
J
K
L
Catalog
Channel Catalog
My HR
My Performance
Currency Converter
Channel grid 318a
Navigation bar 314
Channel grid icon 324b
Channel grid icon 324a
Device icons 326

FIG. 53

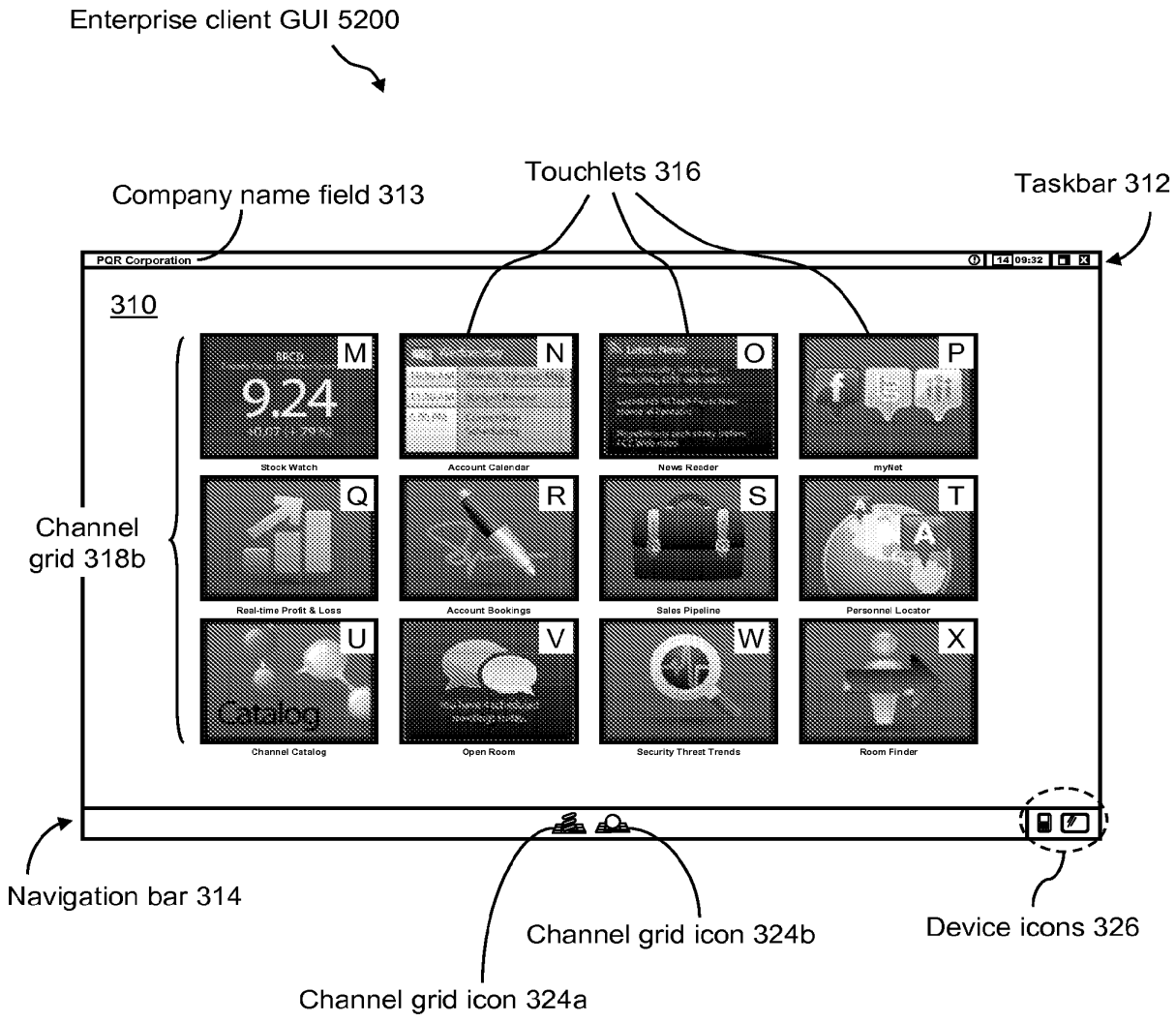

Enterprise client GUI 5200
Company name field 313
Touchlets 316
Taskbar 312
PQR Corporation
14 09:32
310
M
N
O
P
9.24
Stock Watch
Account Calendar
News Reader
myNet
Q
R
S
T
Real-time Profit & Loss
Account Bookings
Sales Pipeline
Personnel Locator
U
V
W
X
Catalog
Channel Catalog
Open Room
Security Threat Trends
Room Finder
Channel grid 318b
Navigation bar 314
Channel grid icon 324b
Device icons 326
Channel grid icon 324a

FIG. 54

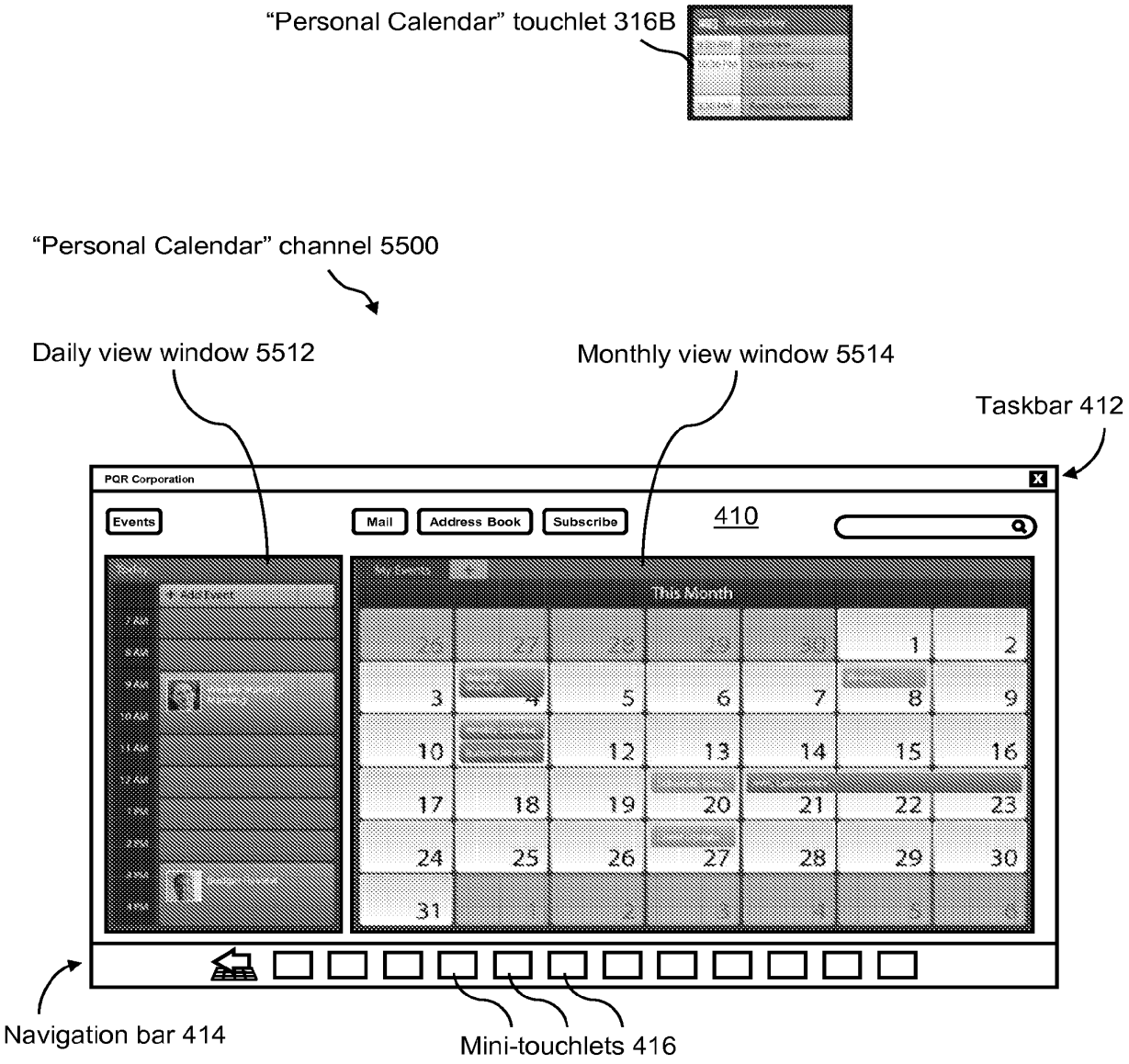

"Personal Calendar" touchlet 316B
"Personal Calendar" channel 5500
Daily view window 5512
Monthly view window 5514
Taskbar 412
PQR Corporation
Events
Mail
Address Book
Subscribe
410
This Month
Navigation bar 414
Mini-touchlets 416

FIG. 55

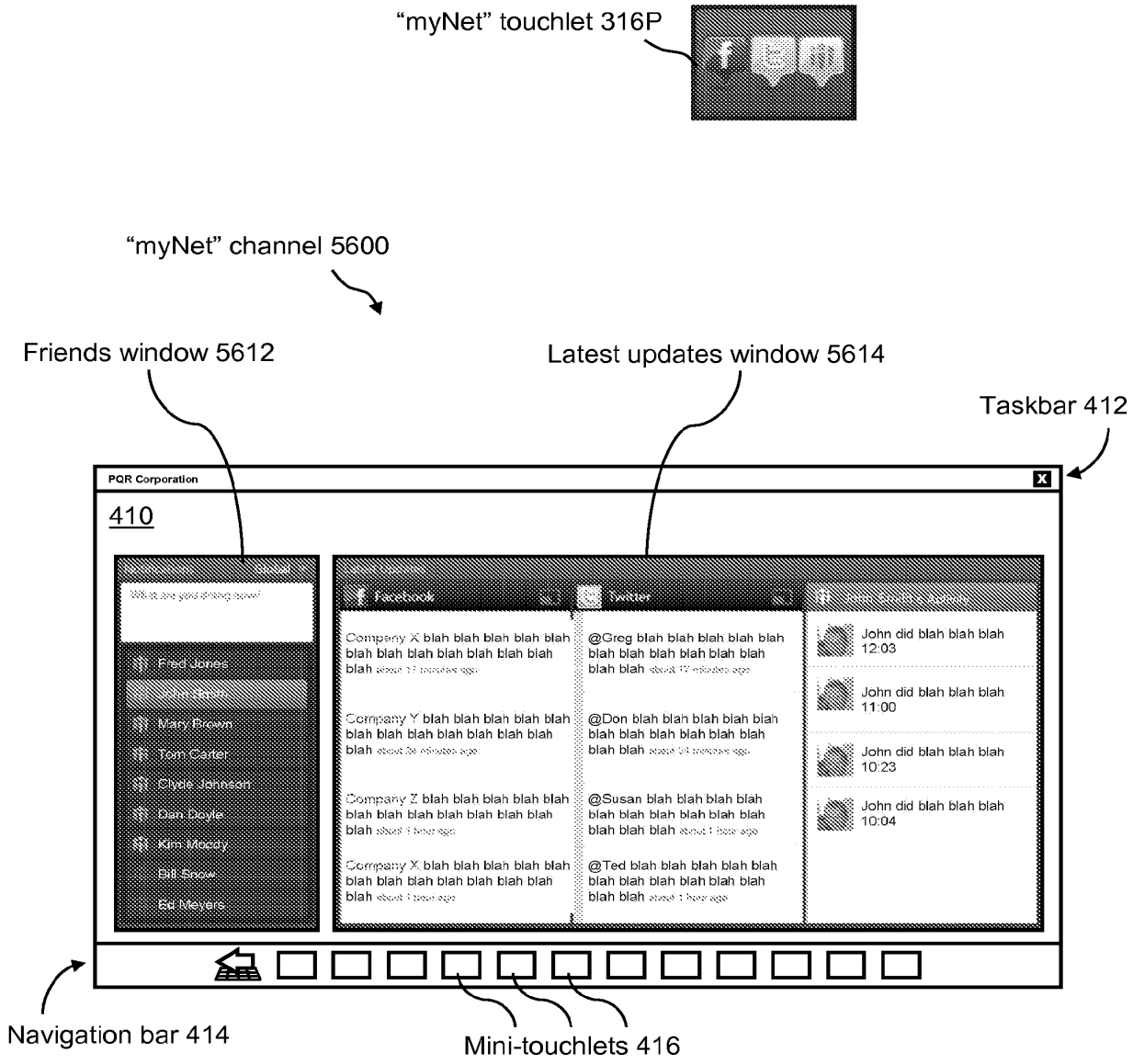

"myNet" touchlet 316P
"myNet" channel 5600
Friends window 5612
Latest updates window 5614
Taskbar 412
PQR Corporation
410
Fred Jones
Mary Brown
Tom Carter
Clyde Johnson
Dan Doyle
Kim Moody
Bill Snow
Ed Meyers
Facebook
Twitter
Company X blah blah blah blah blah blah blah blah blah blah blah blah blah blah
Company Y blah blah blah blah blah blah blah blah blah blah blah blah blah blah
Company Z blah blah blah blah blah blah blah blah blah blah blah blah blah blah
Company X blah blah blah blah blah blah blah blah blah blah blah blah blah blah
@Greg blah blah blah blah blah blah blah blah blah blah blah blah blah blah
@Don blah blah blah blah blah blah blah blah blah blah blah blah blah blah
@Susan blah blah blah blah blah blah blah blah blah blah blah blah blah blah
@Ted blah blah blah blah blah blah blah blah blah blah blah blah blah blah
John did blah blah blah 12:03
John did blah blah blah 11:00
John did blah blah blah 10:23
John did blah blah blah 10:04
Navigation bar 414
Mini-touchlets 416

FIG. 56

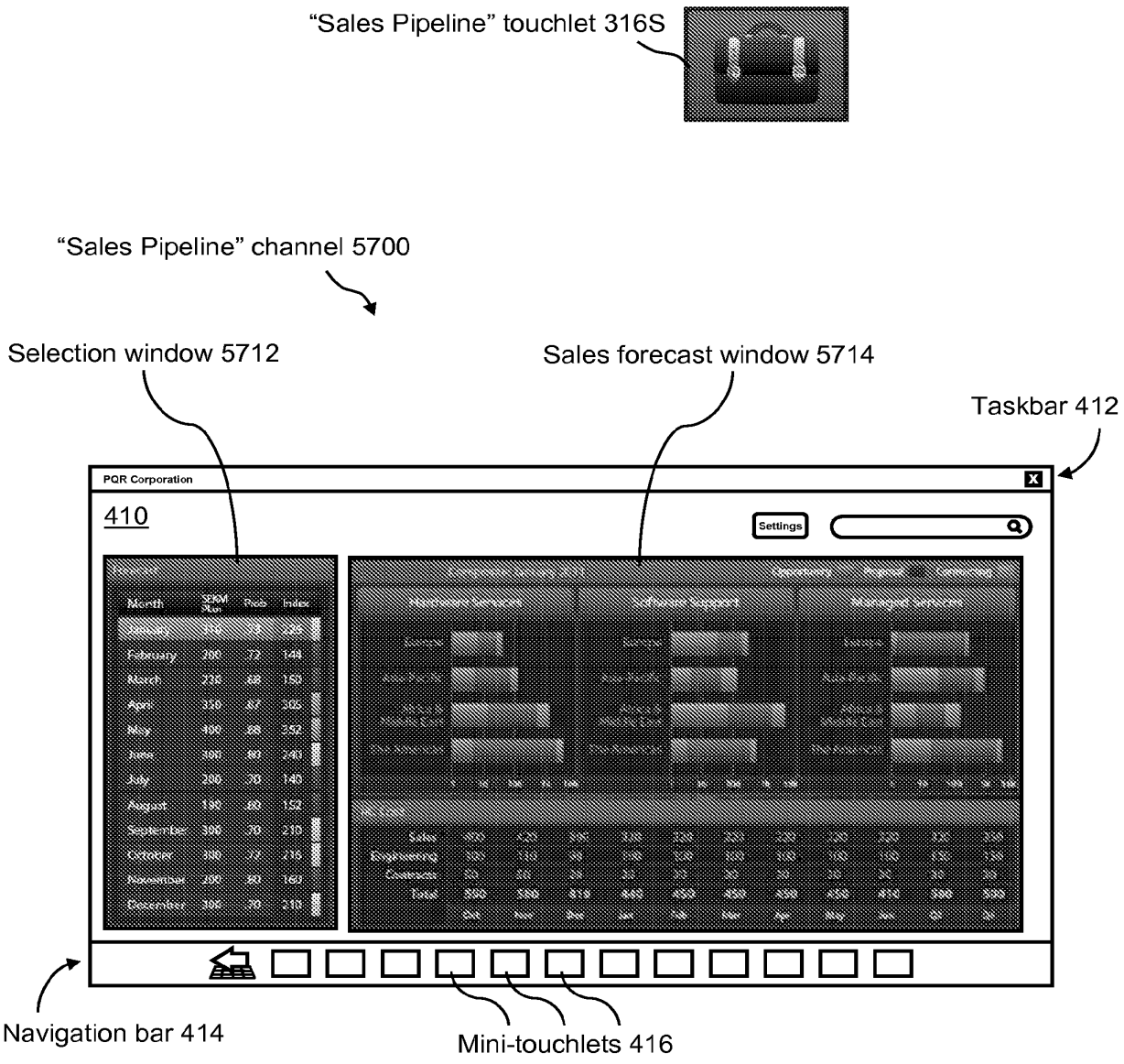

"Sales Pipeline" touchlet 316S
"Sales Pipeline" channel 5700
Selection window 5712
Sales forecast window 5714
Taskbar 412
PQR Corporation
410
Settings
Navigation bar 414
Mini-touchlets 416

FIG. 57

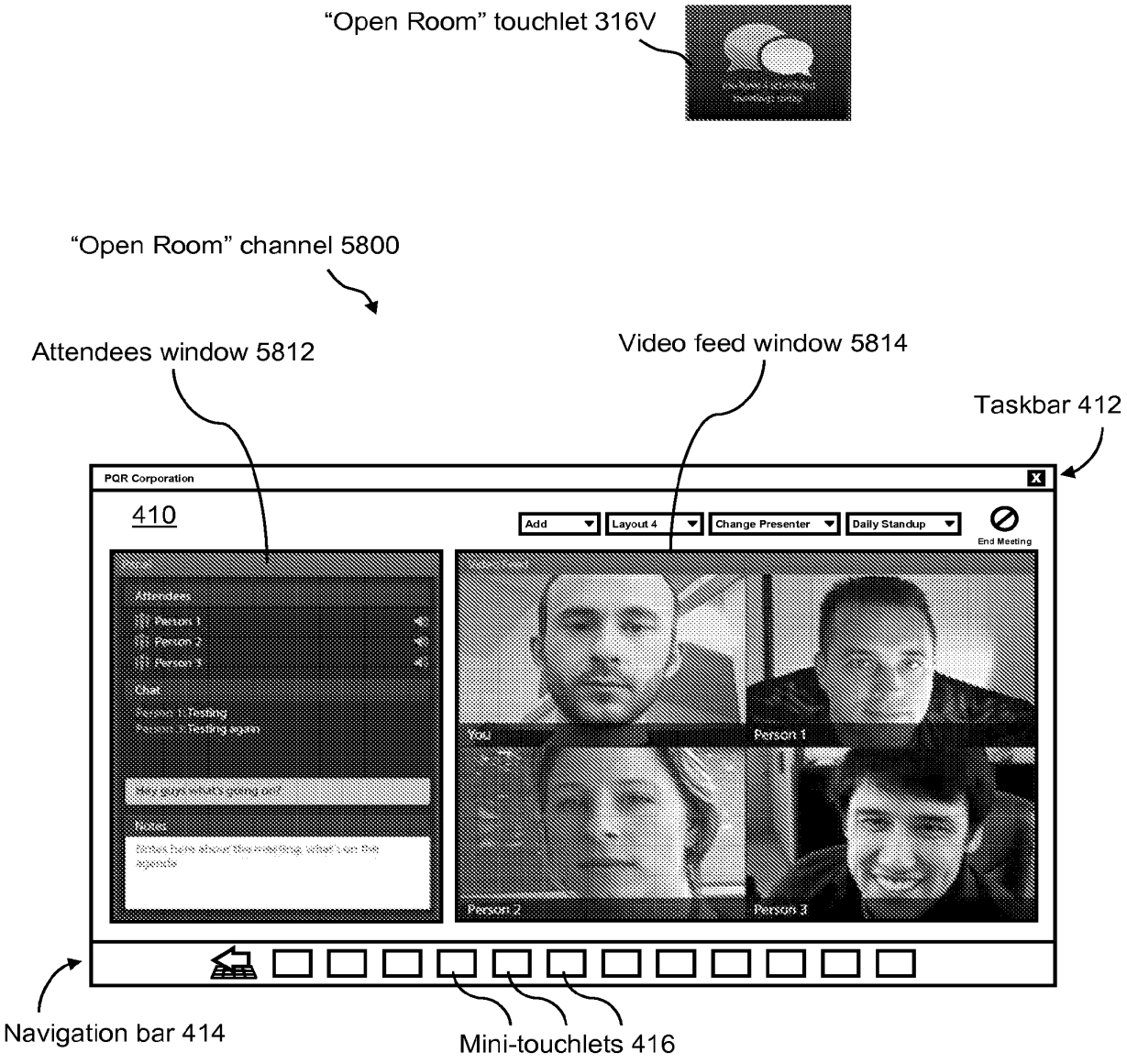

"Open Room" touchlet 316V
"Open Room" channel 5800
Attendees window 5812
Video feed window 5814
Taskbar 412
PQR Corporation
410
Add
Layout 4
Change Presenter
Daily Standup
End Meeting
Attendees
Person 1
Person 2
Person 3
Chat
Testing
Testing again
Hey guys what's going on?
Note
You
Person 1
Person 2
Person 3
Navigation bar 414
Mini-touchlets 416

FIG. 58

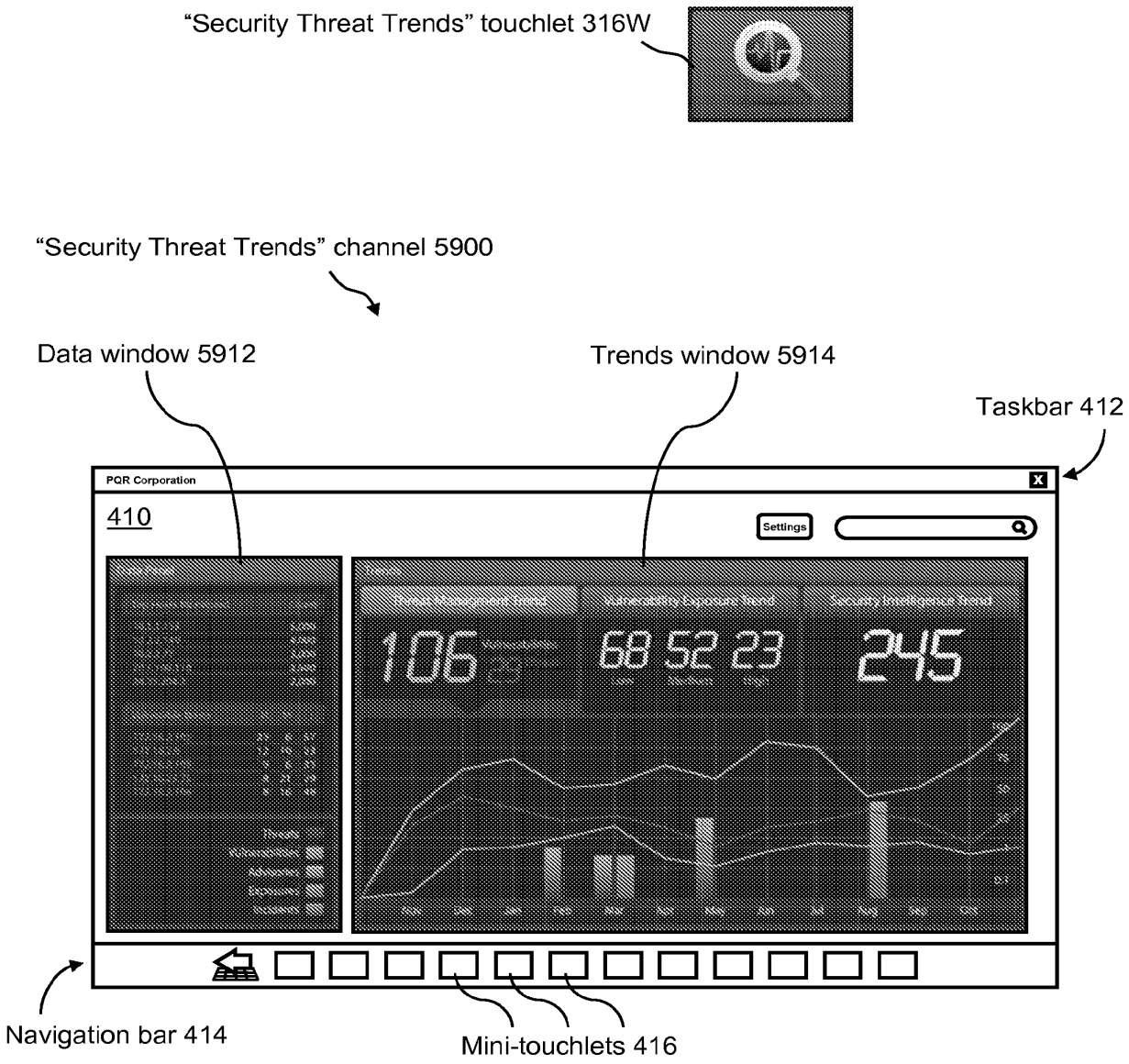

"Security Threat Trends" touchlet 316W
"Security Threat Trends" channel 5900
Data window 5912
Trends window 5914
Taskbar 412
PQR Corporation
410
Settings
106
68 52 23
245
Navigation bar 414
Mini-touchlets 416

FIG. 59

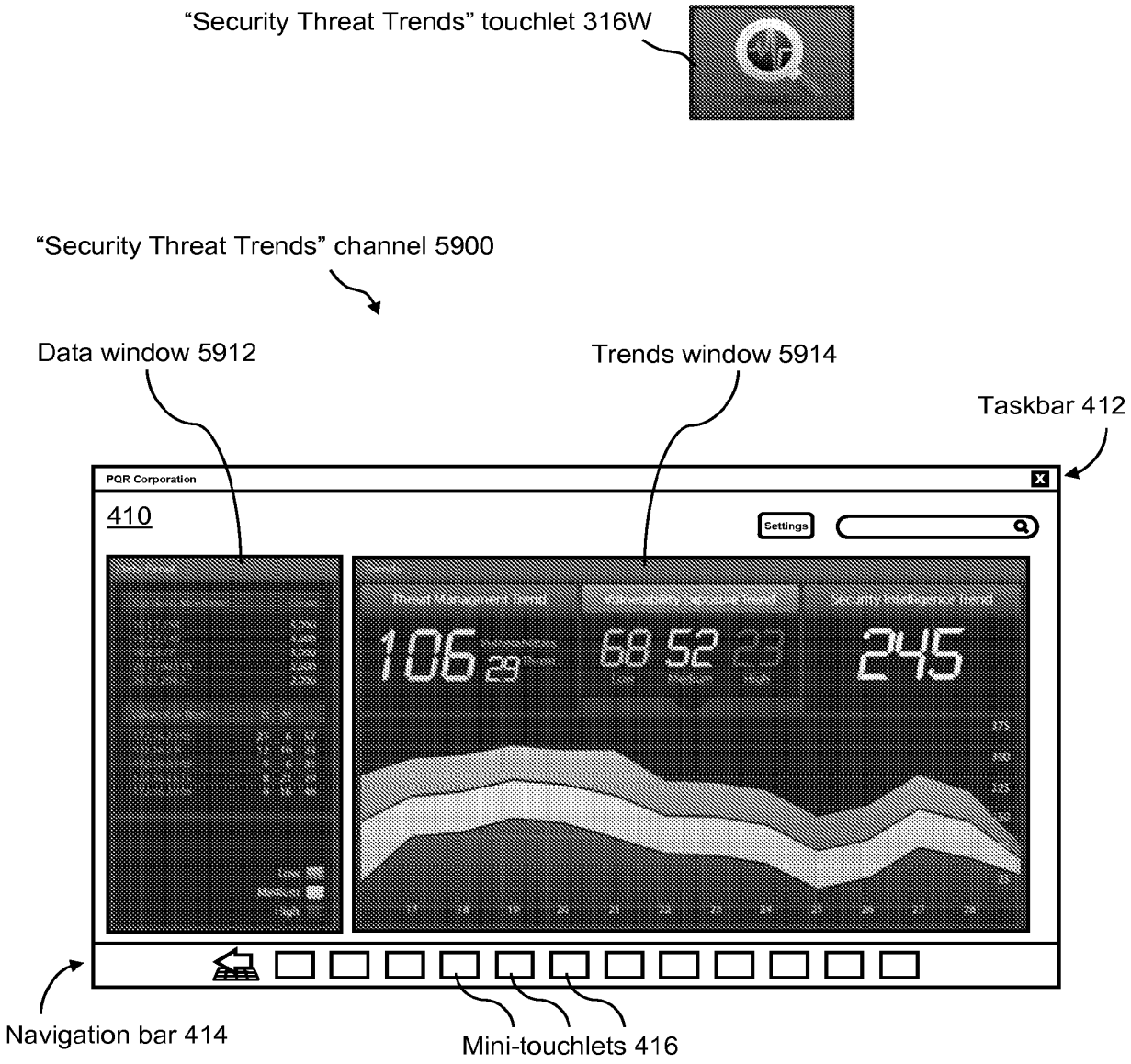

"Security Threat Trends" touchlet 316W
"Security Threat Trends" channel 5900
Data window 5912
Trends window 5914
Taskbar 412
PQR Corporation
410
Settings
106
68 52
245
Navigation bar 414
Mini-touchlets 416

FIG. 60

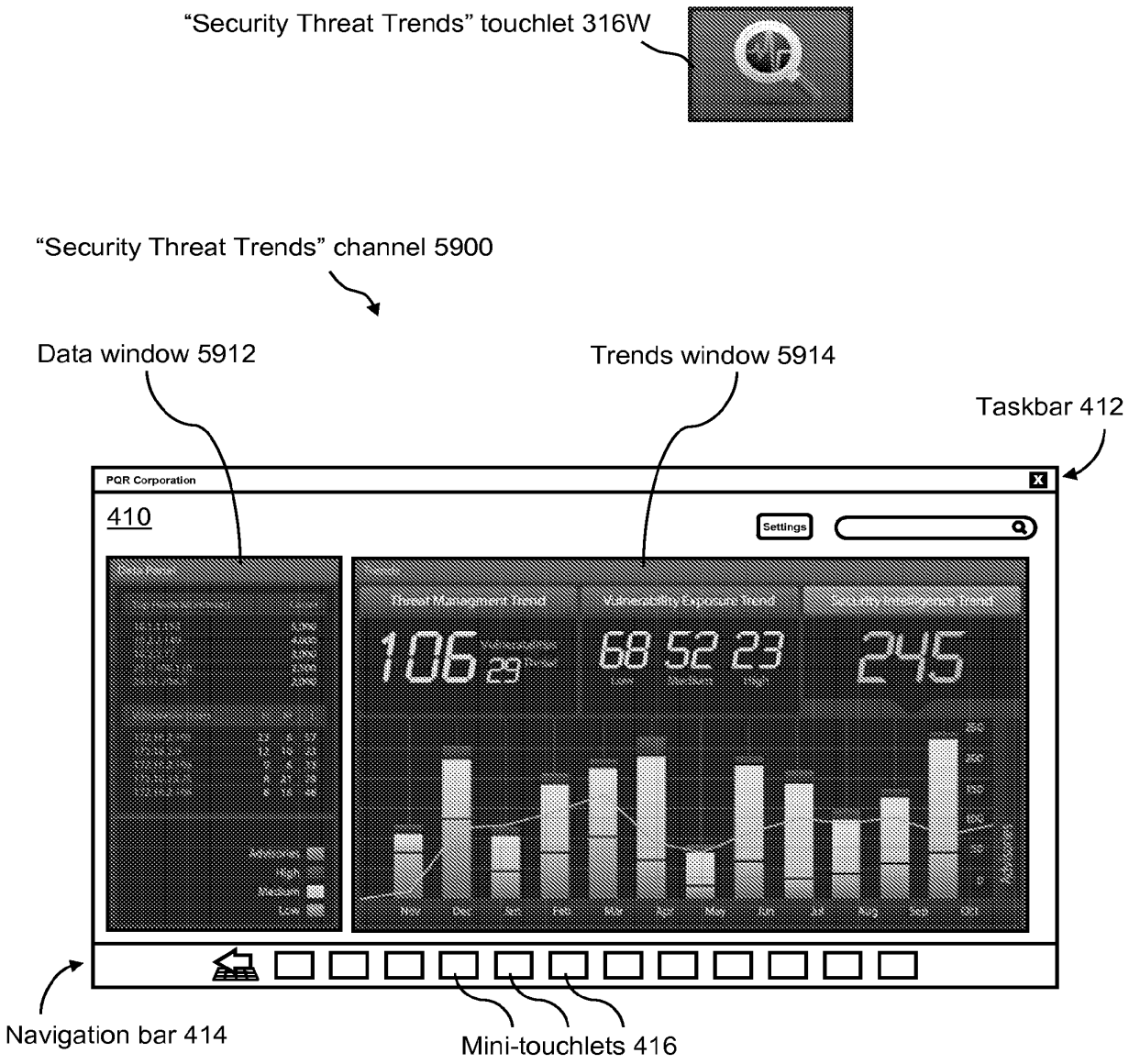

"Security Threat Trends" touchlet 316W
"Security Threat Trends" channel 5900
Data window 5912
Trends window 5914
Taskbar 412
PQR Corporation
410
Settings
106
68 52 23
245
Navigation bar 414
Mini-touchlets 416

FIG. 61

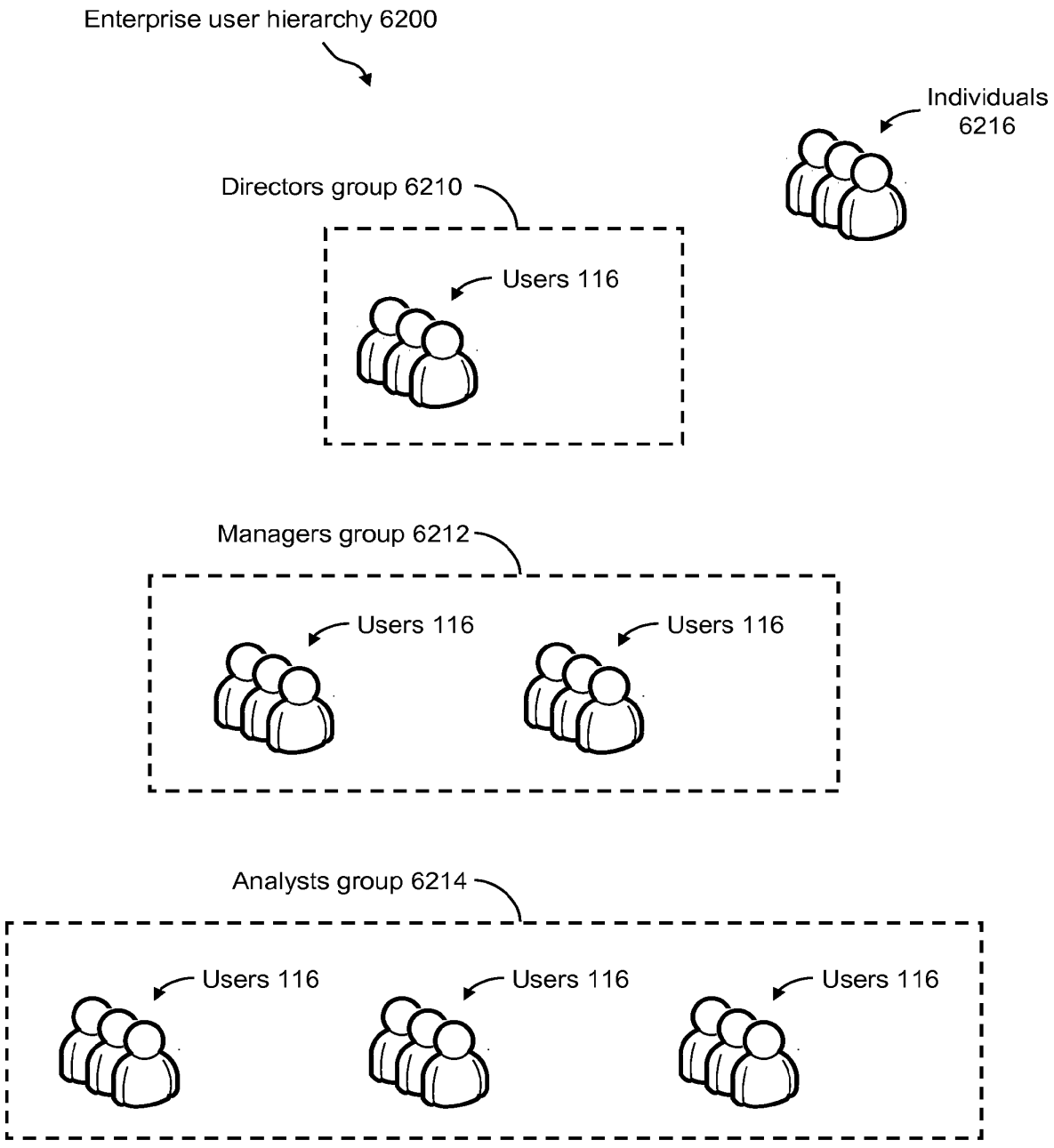

Enterprise user hierarchy 6200
Individuals 6216
Directors group 6210
Users 116
Managers group 6212
Users 116
Users 116
Analysts group 6214
Users 116
Users 116
Users 116

FIG. 62

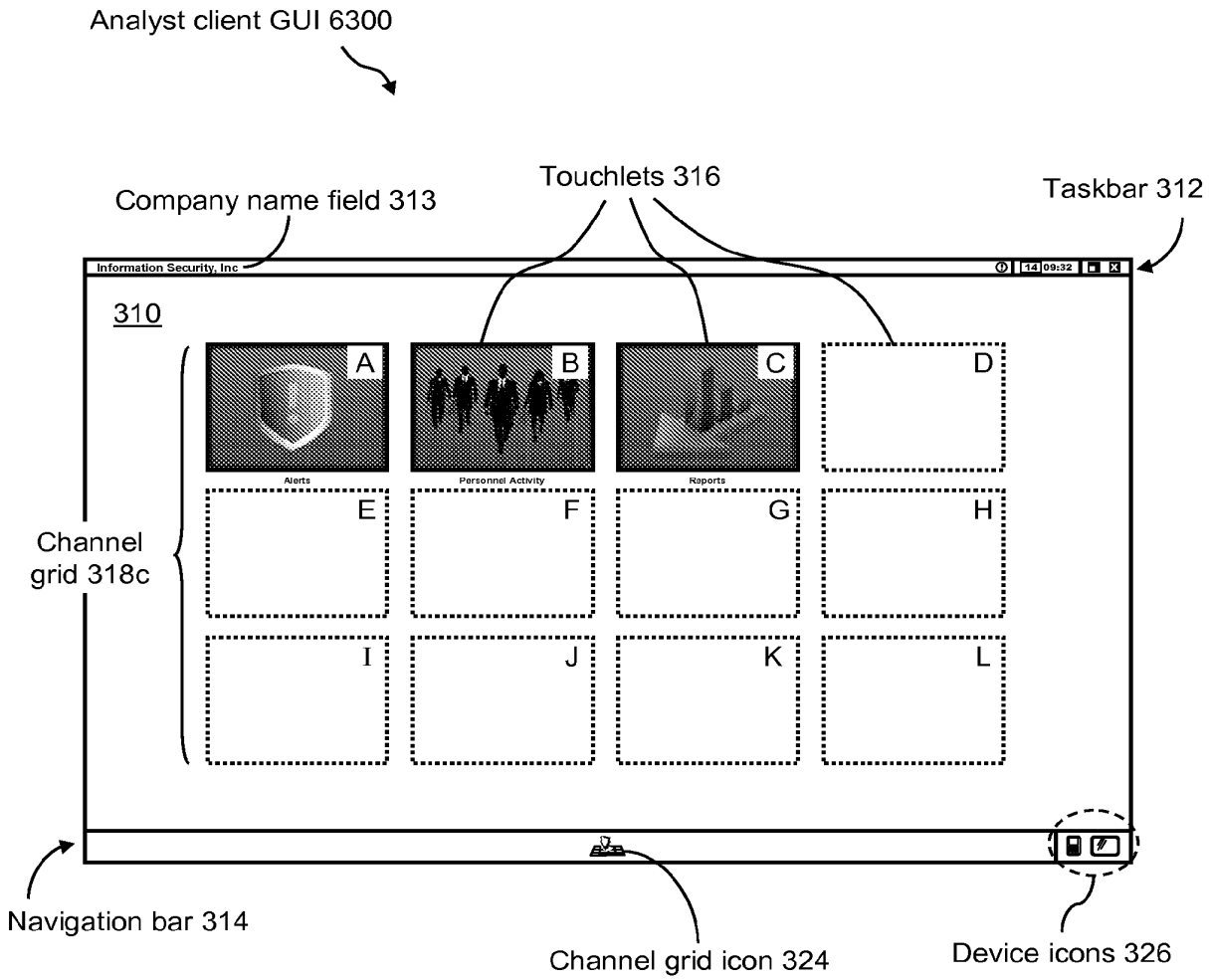

Analyst client GUI 6300
Company name field 313
Touchlets 316
Taskbar 312
Information Security, Inc
14 09:32
310
A
B
C
D
Alerts
Personnel Activity
Reports
E
F
G
H
I
J
K
L
Channel grid 318c
Navigation bar 314
Channel grid icon 324
Device icons 326

FIG. 63

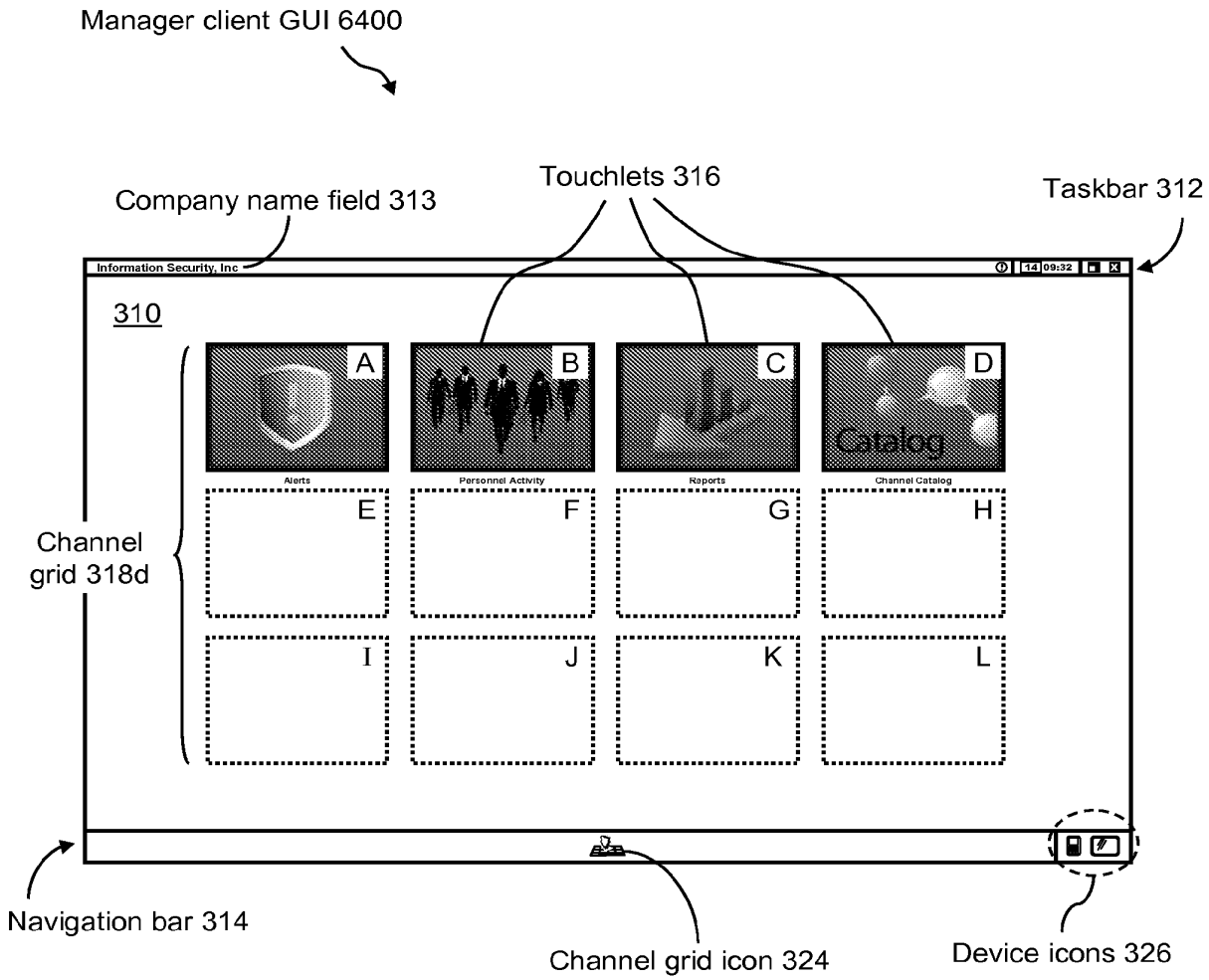

Manager client GUI 6400
Company name field 313
Touchlets 316
Taskbar 312
Information Security, Inc
14 09:32
310
A
B
C
D
Catalog
Alerts
Personnel Activity
Reports
Channel Catalog
E
F
G
H
I
J
K
L
Channel grid 318d
Navigation bar 314
Channel grid icon 324
Device icons 326

FIG. 64

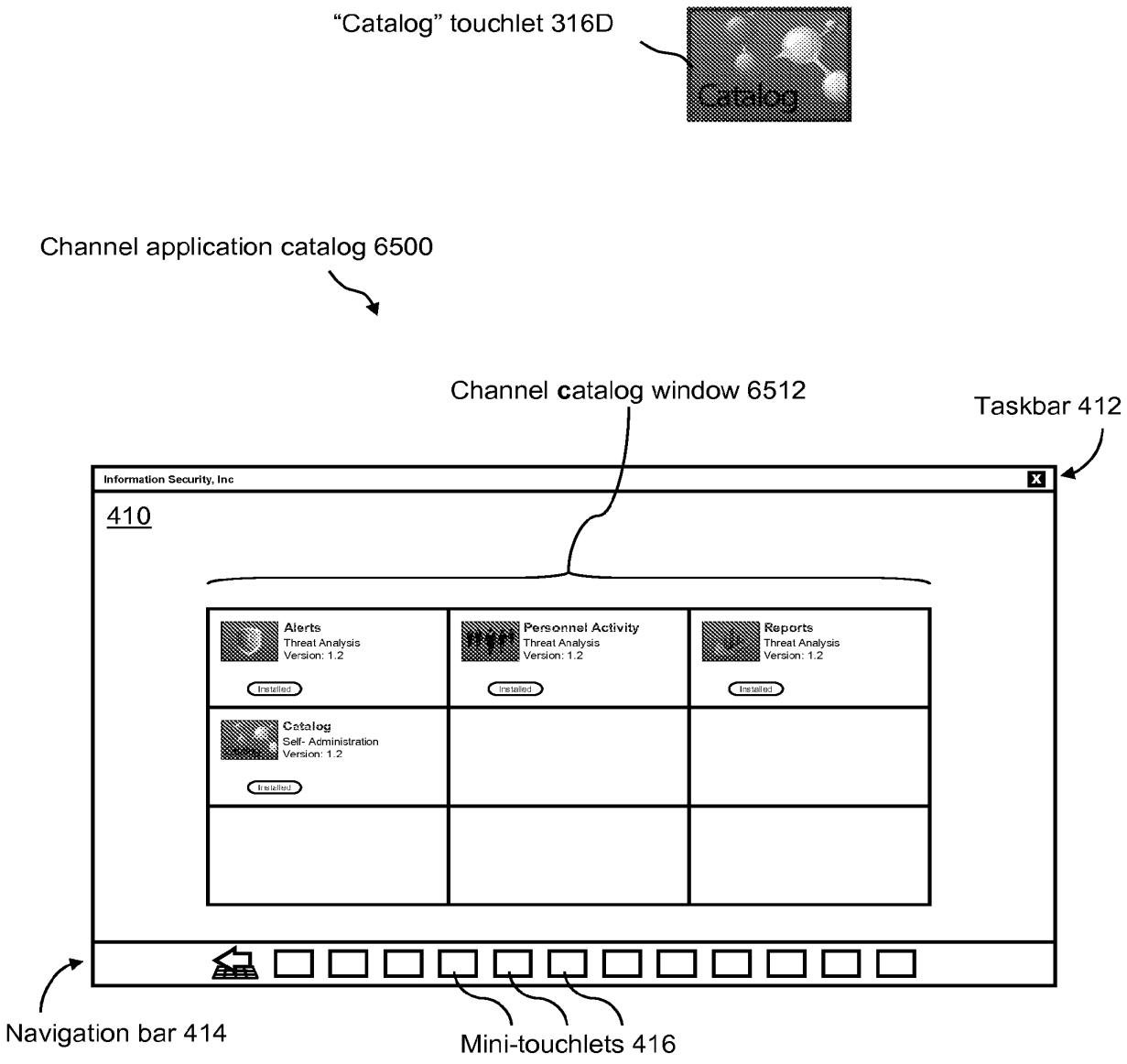

"Catalog" touchlet 316D
Catalog
Channel application catalog 6500
Channel catalog window 6512
Taskbar 412
Information Security, Inc
410
Alerts
Threat Analysis
Version: 1.2
Installed
Personnel Activity
Threat Analysis
Version: 1.2
Installed
Reports
Threat Analysis
Version: 1.2
Installed
Catalog
Self- Administration
Version: 1.2
Installed
Navigation bar 414
Mini-touchlets 416

FIG. 65

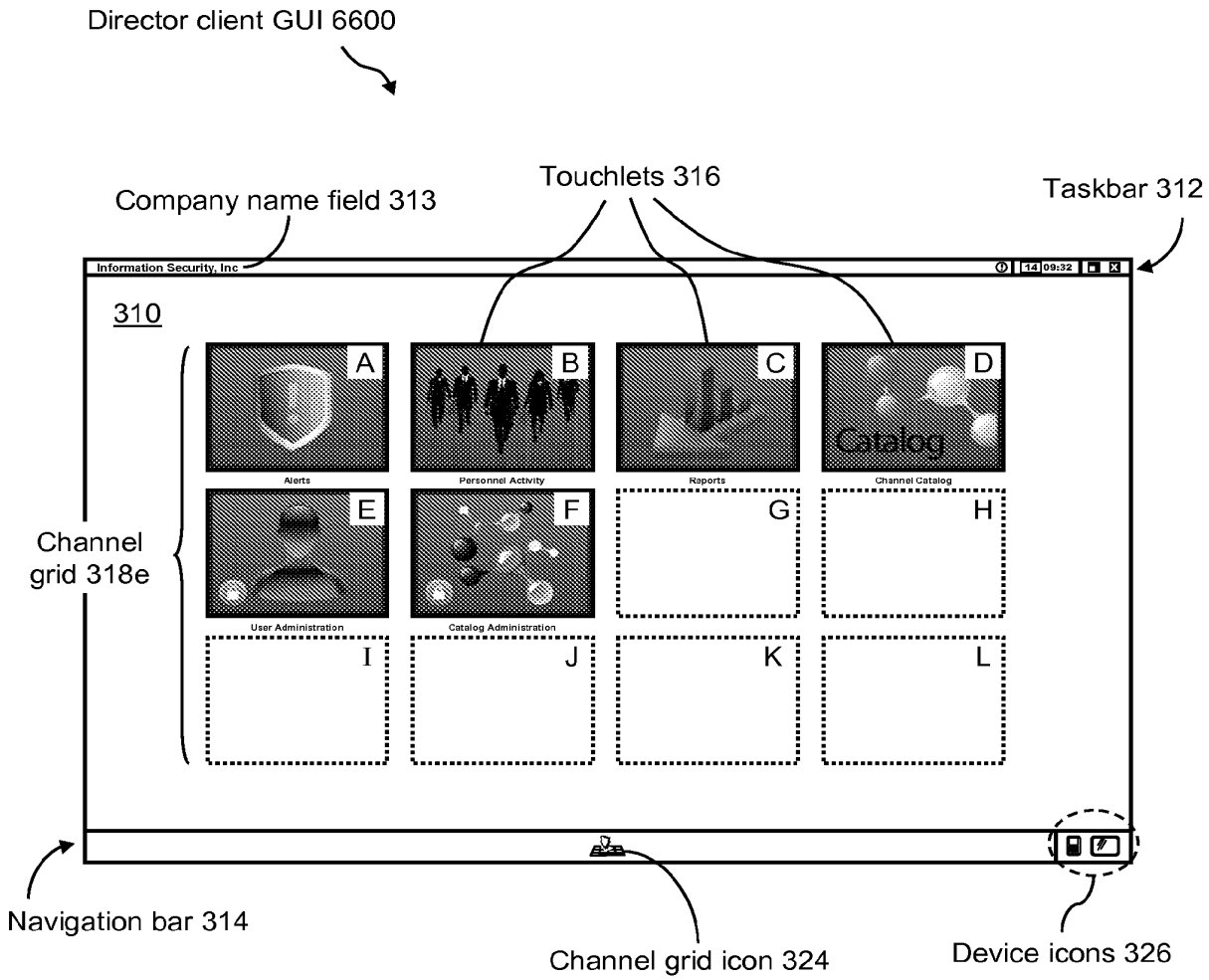

Director client GUI 6600
Company name field 313
Touchlets 316
Taskbar 312
Information Security, Inc
14 09:32
310
A
B
C
D
Catalog
Alerts
Personnel Activity
Reports
Channel Catalog
E
F
G
H
User Administration
Catalog Administration
I
J
K
L
Channel grid 318e
Navigation bar 314
Channel grid icon 324
Device icons 326

FIG. 66

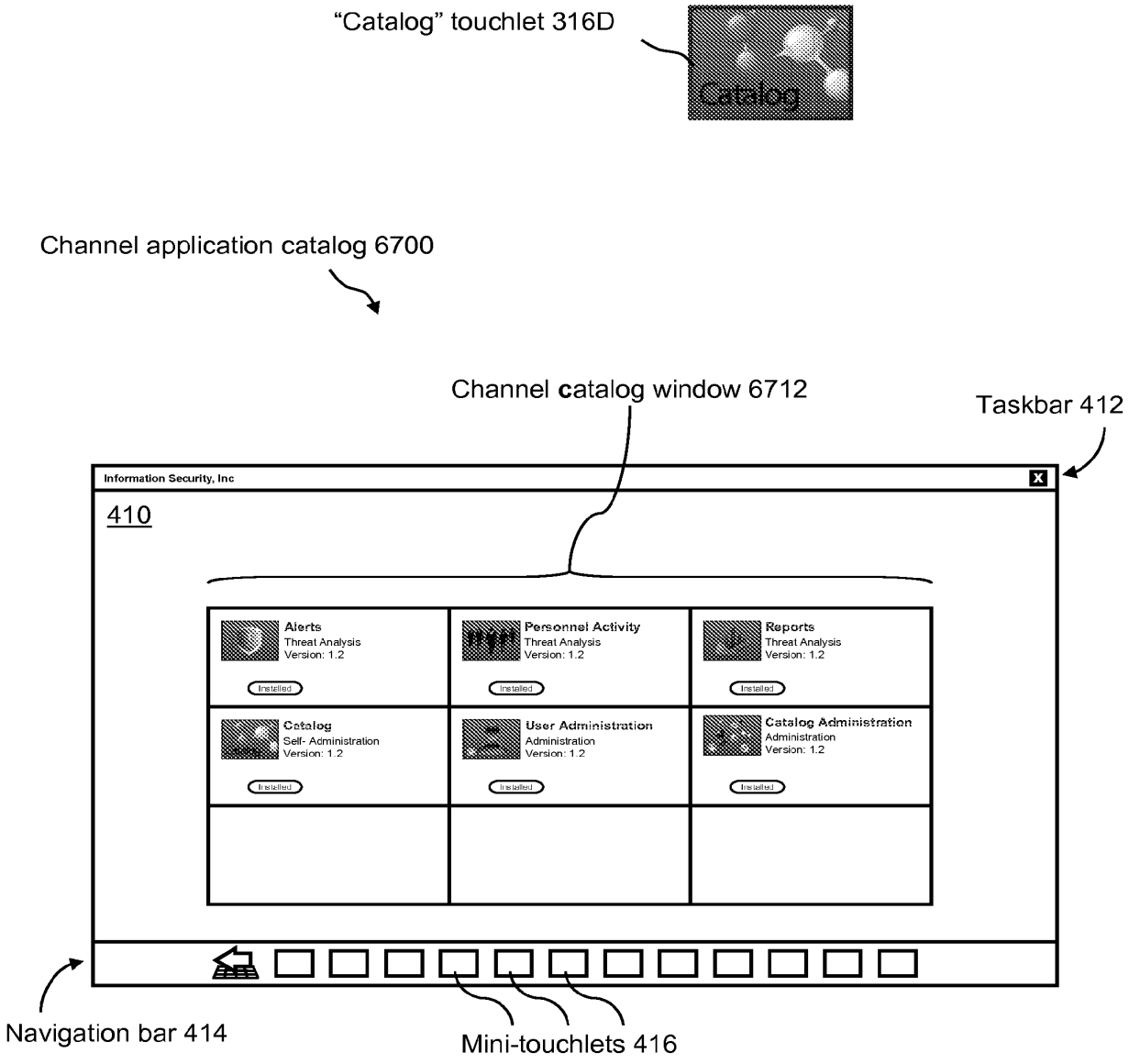

"Catalog" touchlet 316D
Catalog
Channel application catalog 6700
Channel catalog window 6712
Taskbar 412
Information Security, Inc
410
Alerts
Threat Analysis
Version: 1.2
Installed
Personnel Activity
Threat Analysis
Version: 1.2
Installed
Reports
Threat Analysis
Version: 1.2
Installed
Catalog
Self- Administration
Version: 1.2
Installed
User Administration
Administration
Version: 1.2
Installed
Catalog Administration
Administration
Version: 1.2
Installed
Navigation bar 414
Mini-touchlets 416

FIG. 67

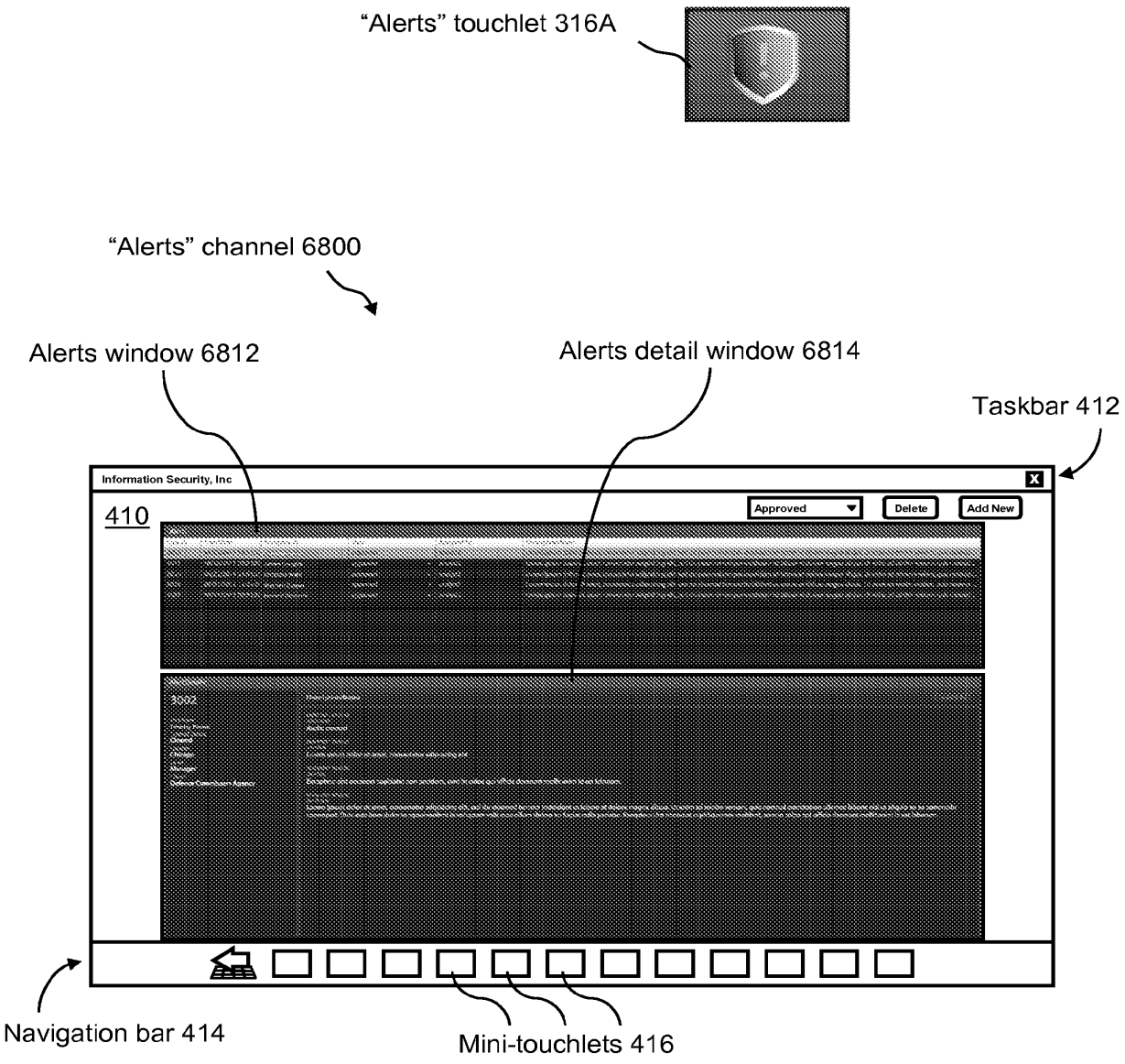

"Alerts" touchlet 316A
"Alerts" channel 6800
Alerts window 6812
Alerts detail window 6814
Taskbar 412
Information Security, Inc
410
Approved
Delete
Add New
Navigation bar 414
Mini-touchlets 416

FIG. 68

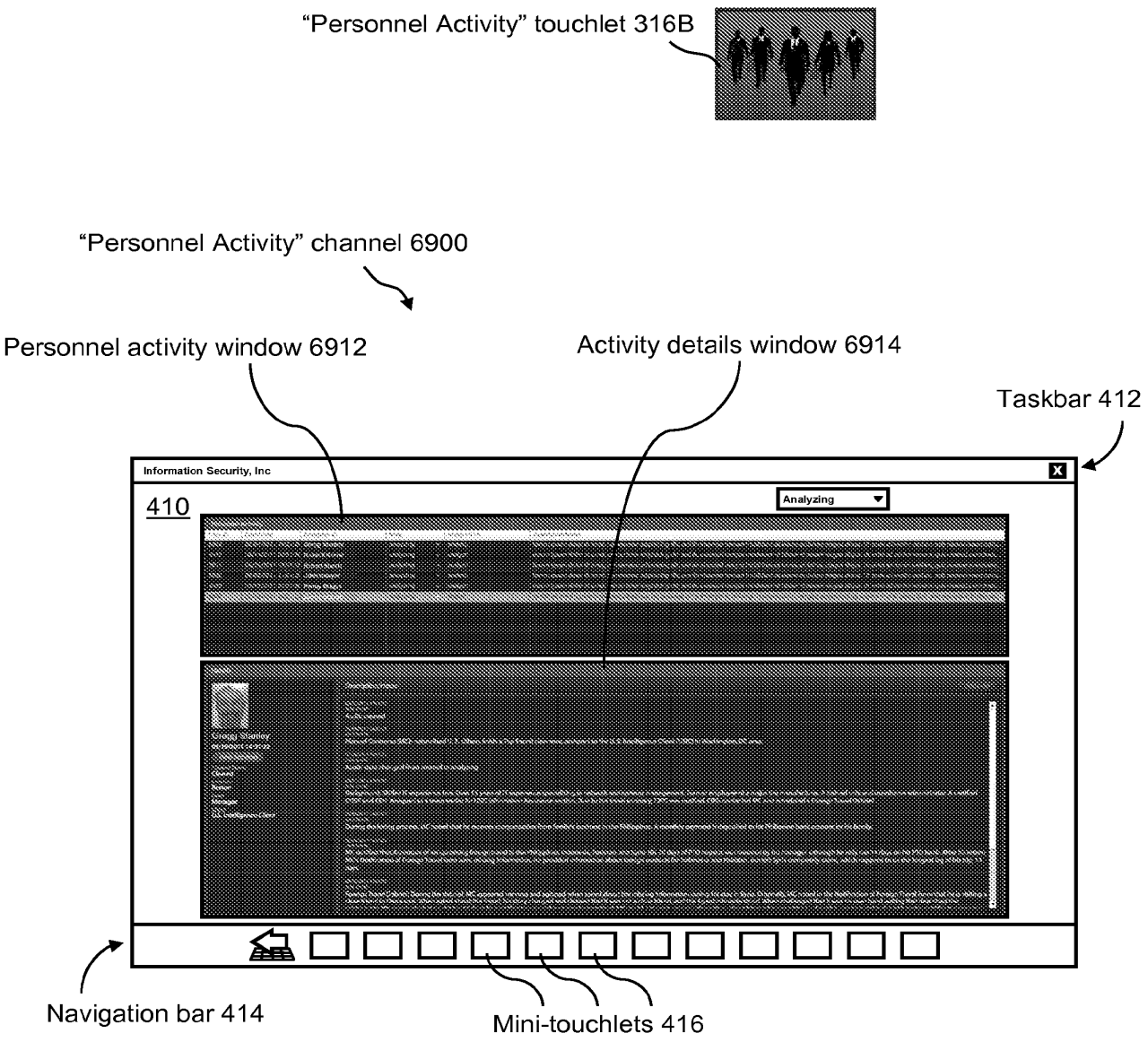

"Personnel Activity" touchlet 316B
"Personnel Activity" channel 6900
Personnel activity window 6912
Activity details window 6914
Taskbar 412
Information Security, Inc
410
Analyzing
Navigation bar 414
Mini-touchlets 416

FIG. 69

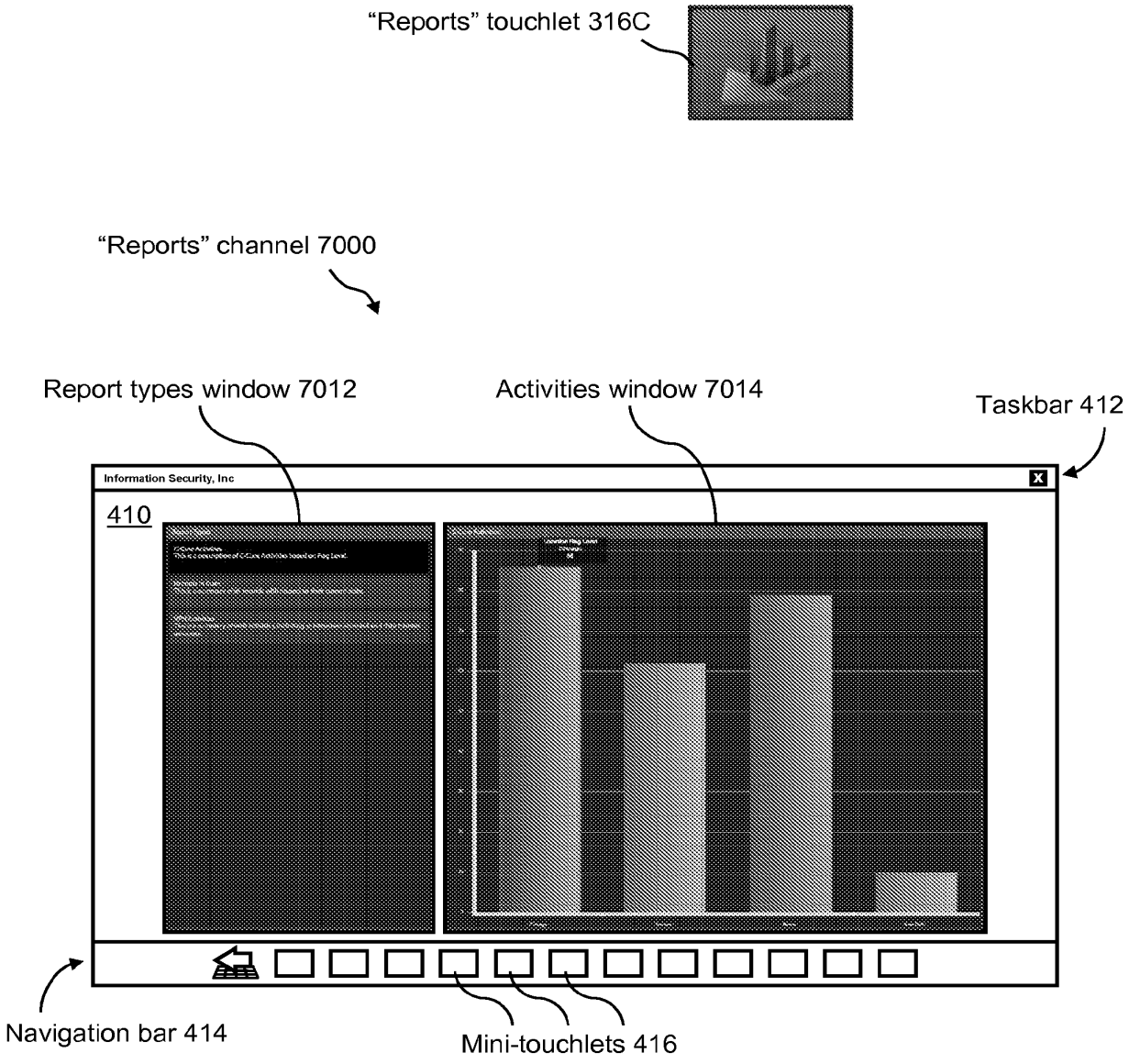

"Reports" touchlet 316C
"Reports" channel 7000
Report types window 7012
Activities window 7014
Taskbar 412
Information Security, Inc
410
Navigation bar 414
Mini-touchlets 416

FIG. 70

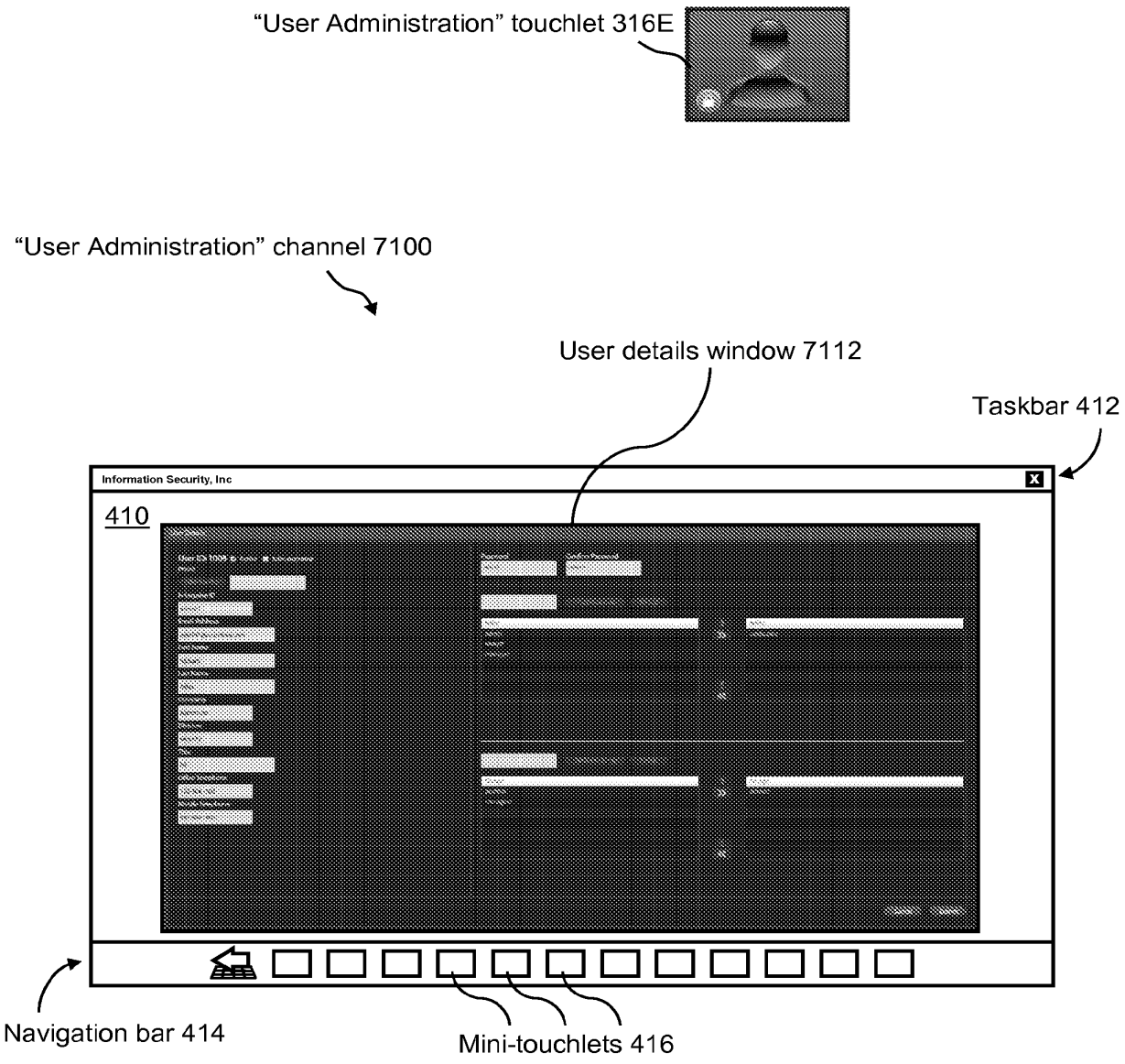

"User Administration" touchlet 316E
"User Administration" channel 7100
User details window 7112
Taskbar 412
Information Security, Inc
410
Navigation bar 414
Mini-touchlets 416

FIG. 71

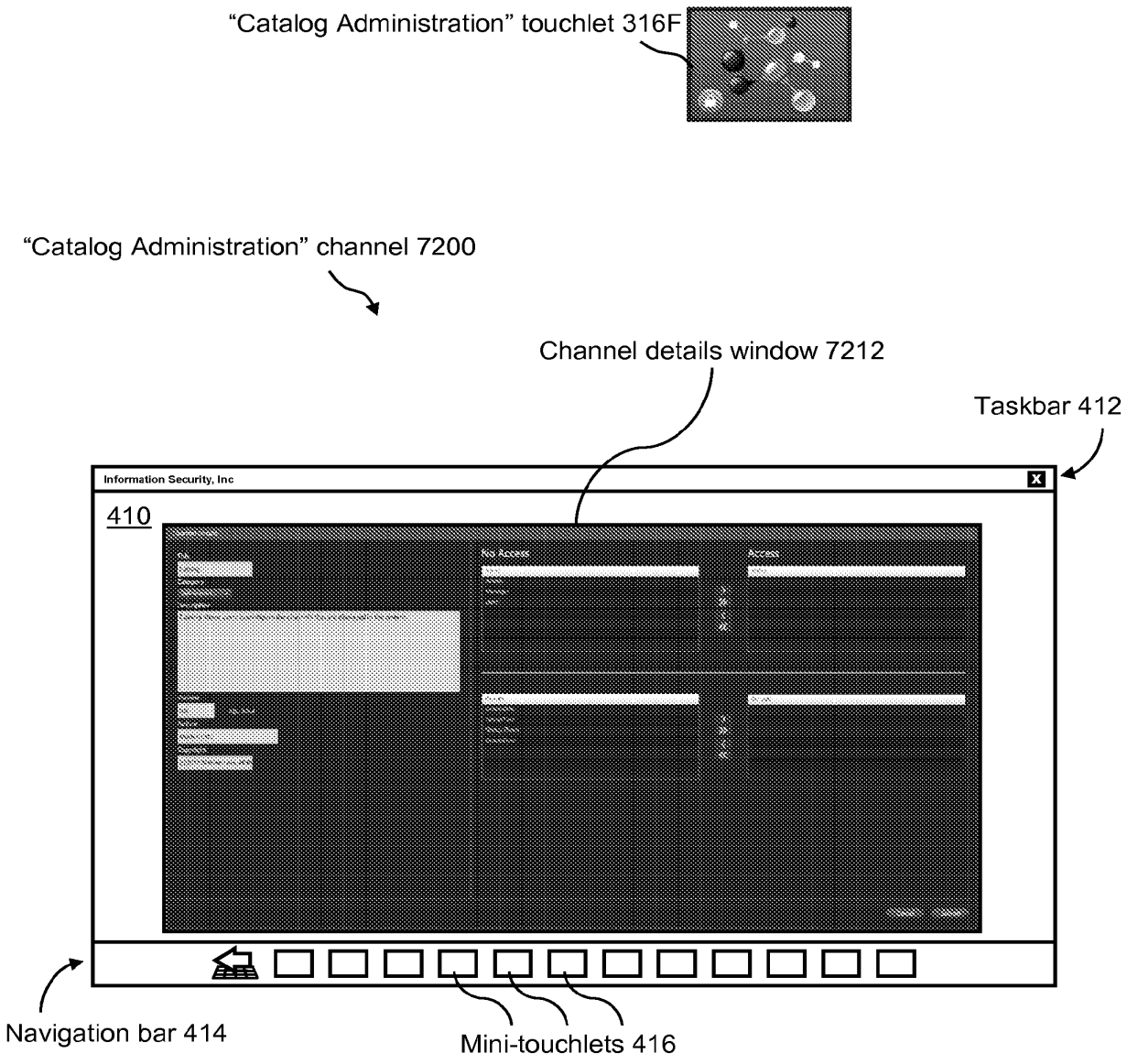

"Catalog Administration" touchlet 316F
"Catalog Administration" channel 7200
Channel details window 7212
Taskbar 412
Information Security, Inc
410
Navigation bar 414
Mini-touchlets 416

FIG. 72

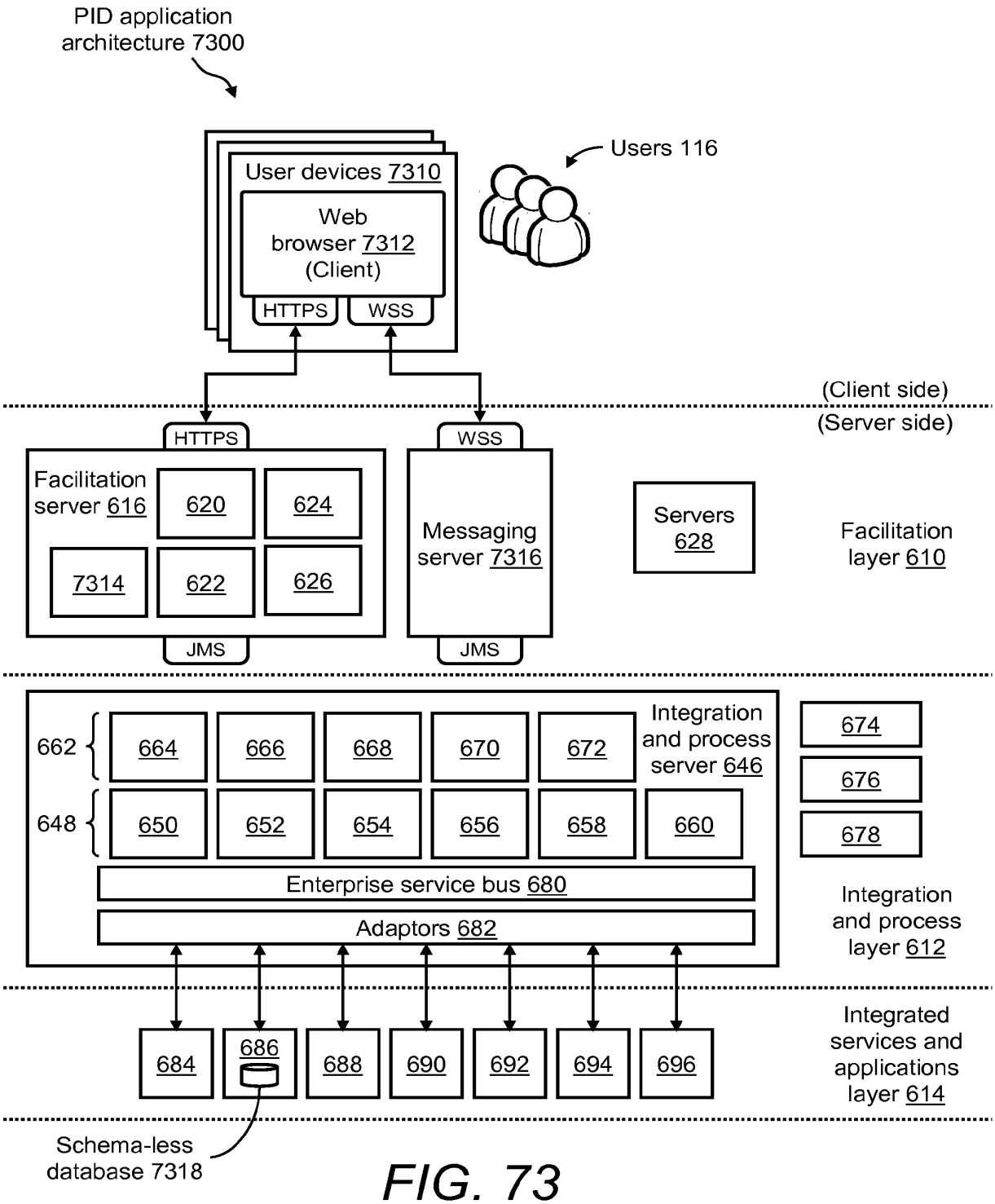

PID application architecture 7300
User devices 7310
Web browser 7312 (Client)
HTTPS
WSS
Users 116
(Client side)
(Server side)
HTTPS
WSS
Facilitation server 616
620
624
7314
622
626
JMS
Messaging server 7316
JMS
Servers 628
Facilitation layer 610
662
664
666
668
670
672
Integration and process server 646
674
676
678
648
650
652
654
656
658
660
Enterprise service bus 680
Adaptors 682
Integration and process layer 612
684
686
688
690
692
694
696
Integrated services and applications layer 614
Schema-less database 7318

FIG. 73

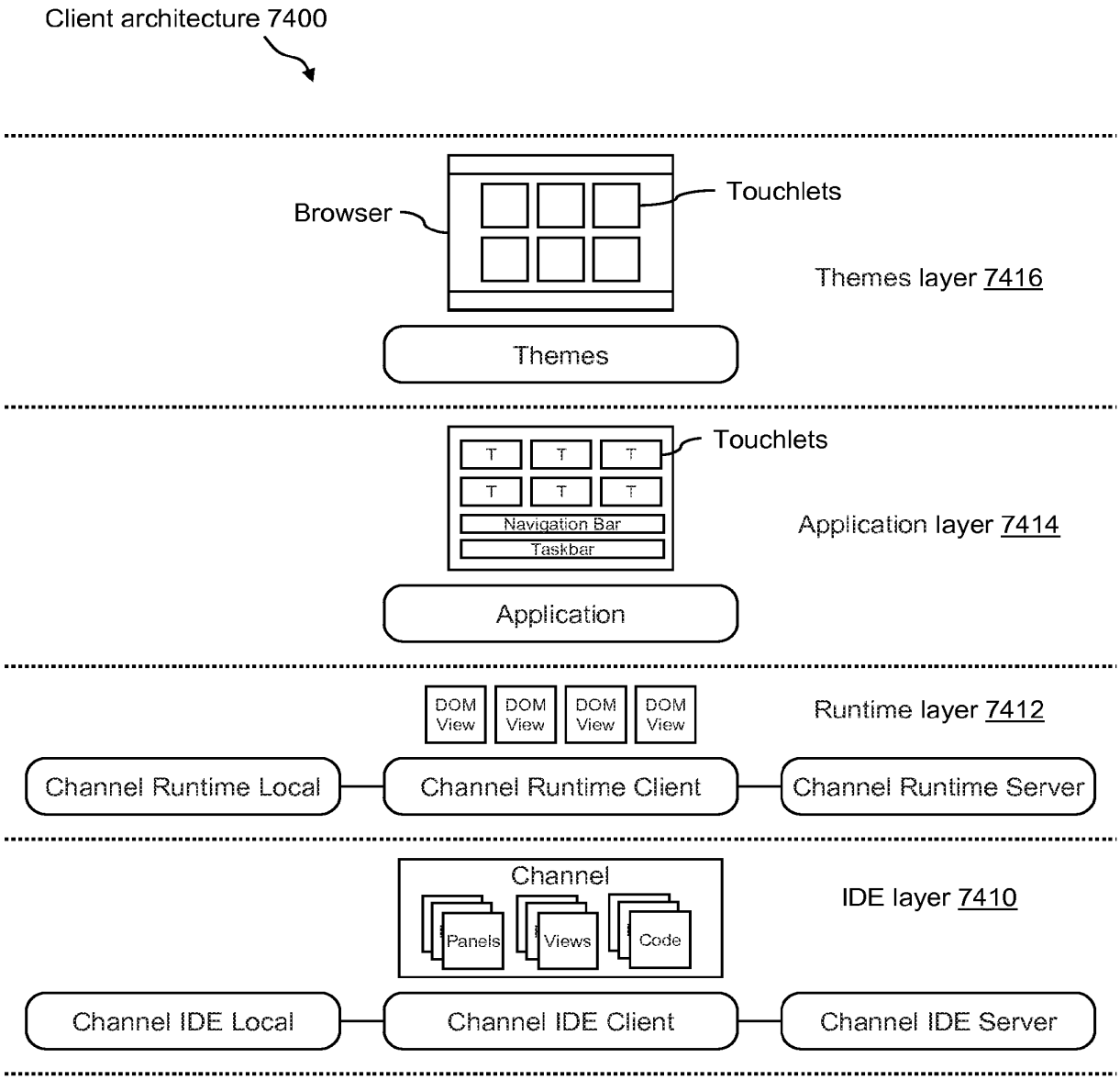

Client architecture 7400
Browser
Touchlets
Themes layer 7416
Themes
Touchlets
T
Navigation Bar
Taskbar
Application layer 7414
Application
DOM View
Runtime layer 7412
Channel Runtime Local
Channel Runtime Client
Channel Runtime Server
Channel
Panels
Views
Code
IDE layer 7410
Channel IDE Local
Channel IDE Client
Channel IDE Server

FIG. 74

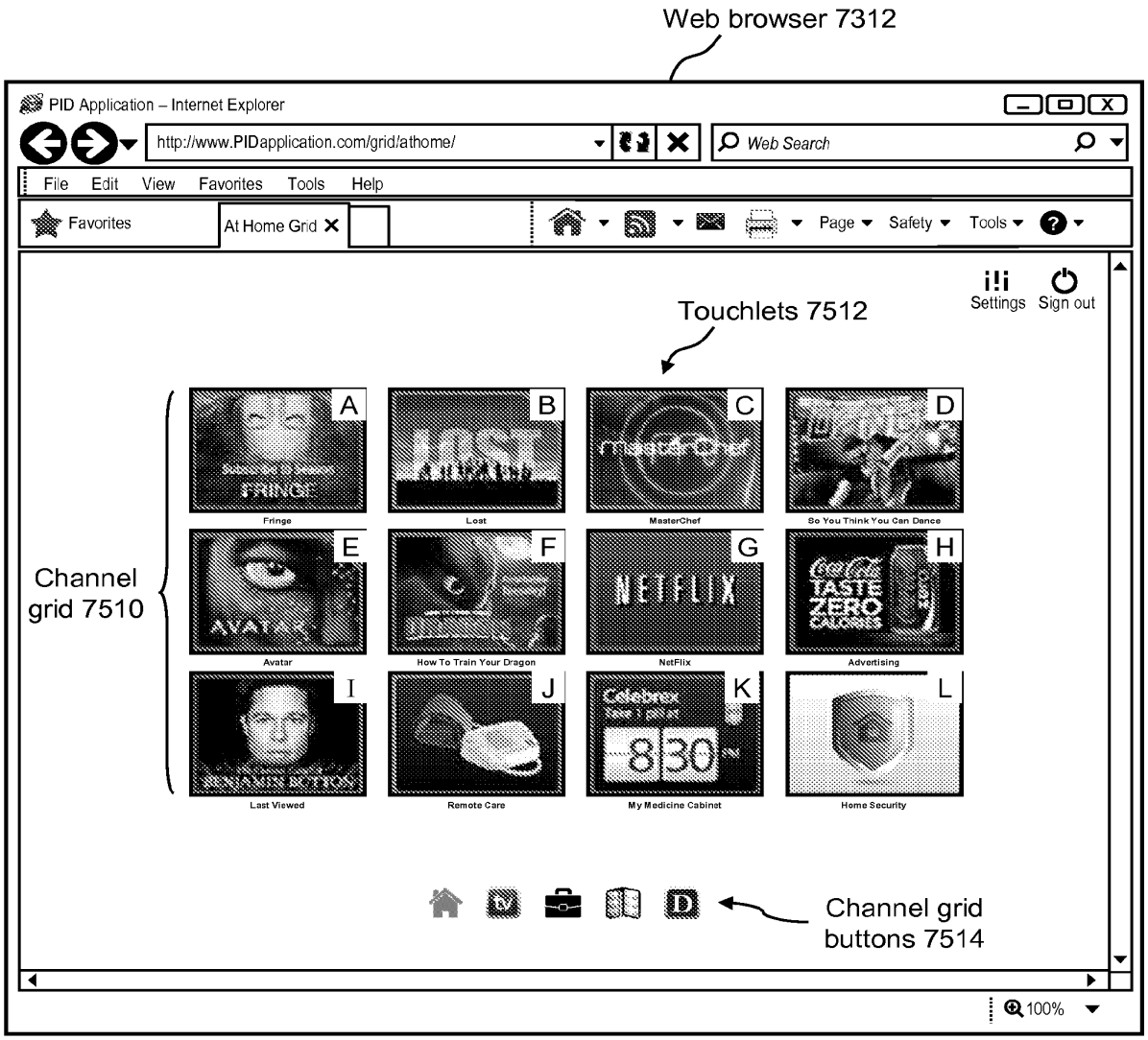

Web browser 7312
PID Application – Internet Explorer
http://www.PIDapplication.com/grid/athome/
Web Search
File Edit View Favorites Tools Help
Favorites
At Home Grid
Page Safety Tools
Settings
Sign out
Touchlets 7512
Channel grid 7510
A
Fringe
B
Lost
C
MasterChef
D
So You Think You Can Dance
E
Avatar
F
How To Train Your Dragon
G
NETFLIX
NetFlix
H
Advertising
I
Last Viewed
J
Remote Care
K
My Medicine Cabinet
L
Home Security
Channel grid buttons 7514
100%

FIG. 75

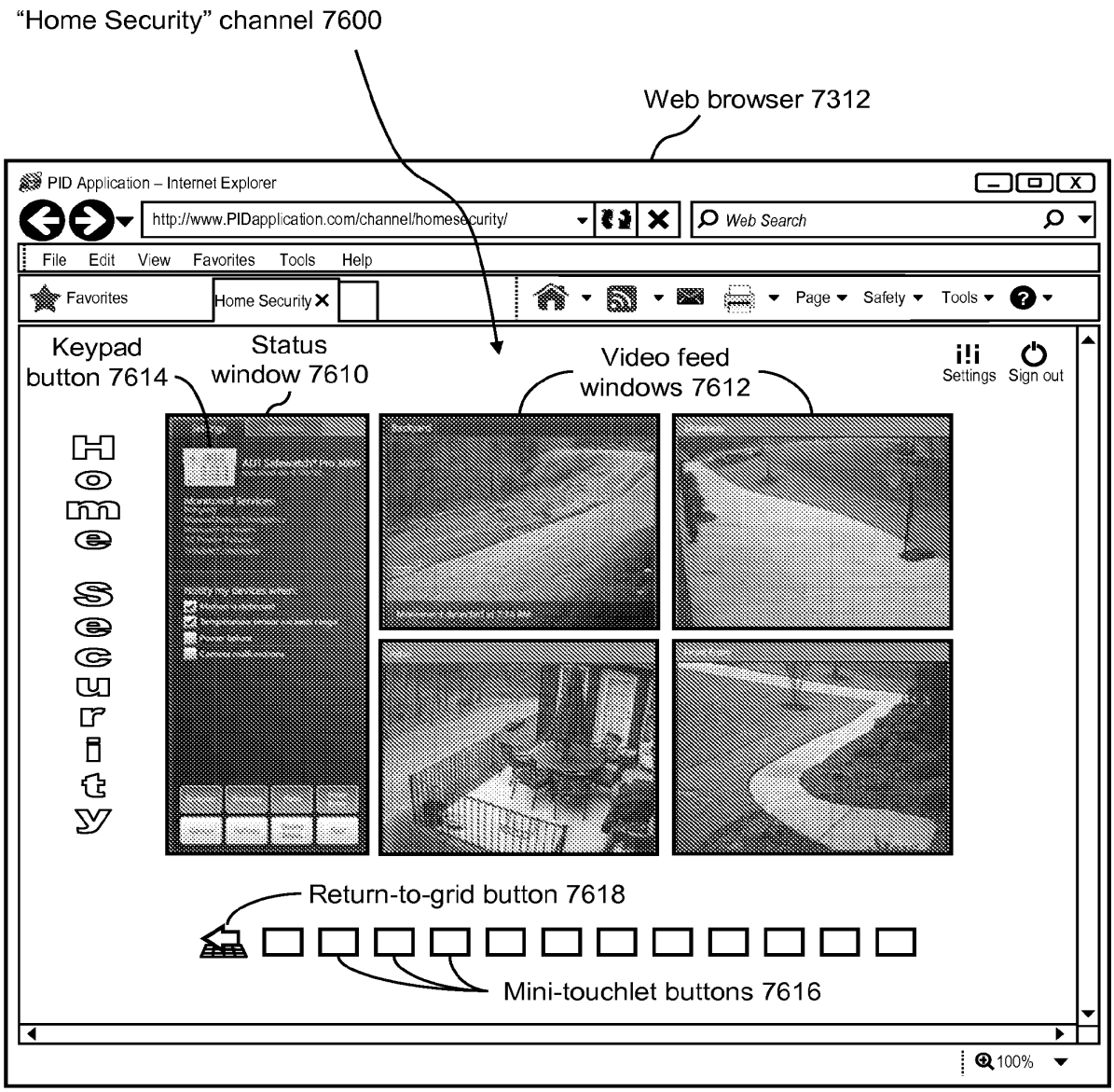

"Home Security" channel 7600
Web browser 7312
PID Application – Internet Explorer
http://www.PIDapplication.com/channel/homesecurity/
Web Search
File Edit View Favorites Tools Help
Favorites
Home Security
Page Safety Tools
Keypad button 7614
Status window 7610
Video feed windows 7612
Settings
Sign out
Home Security
Return-to-grid button 7618
Mini-touchlet buttons 7616
100%

FIG. 76

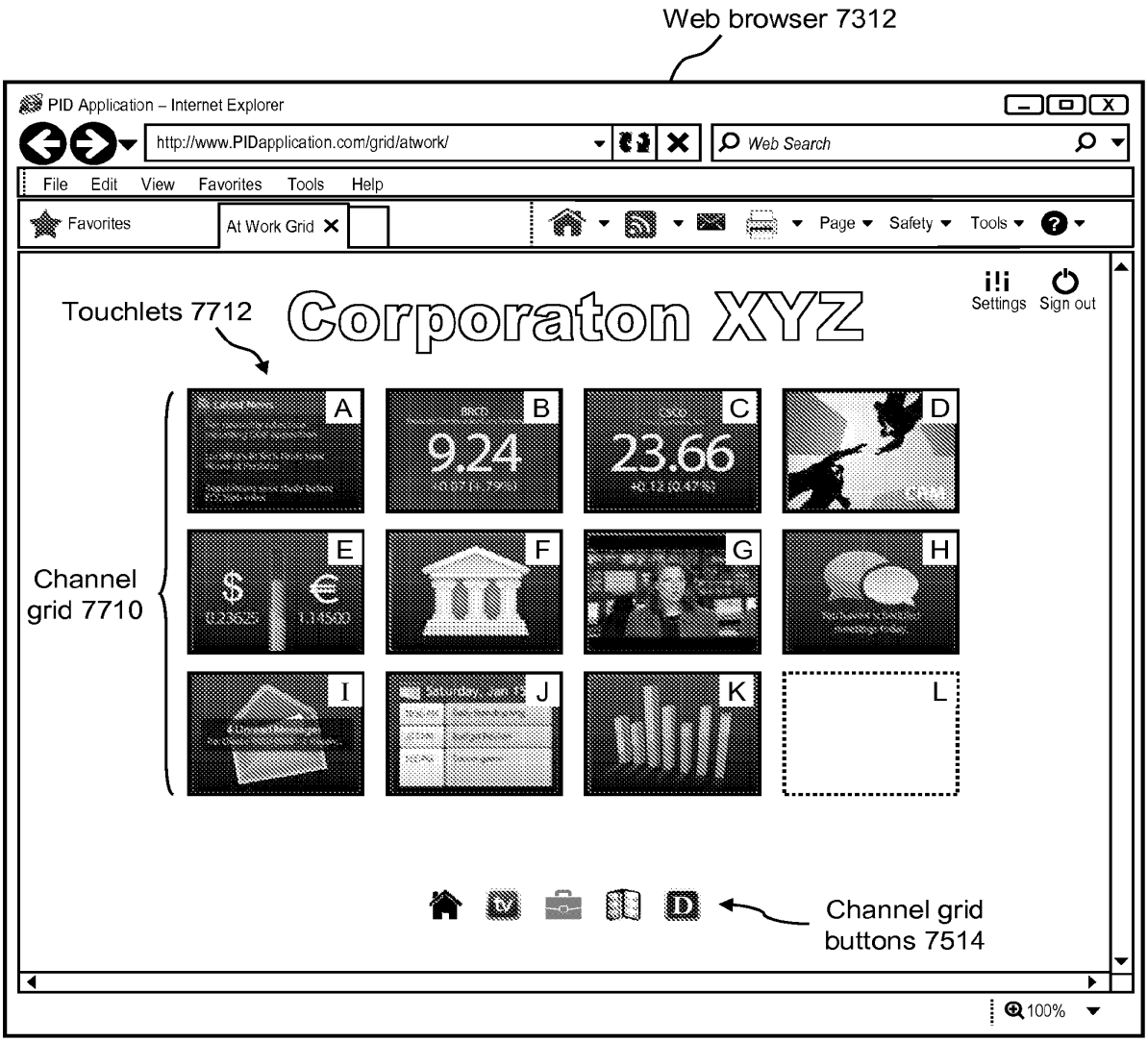

Web browser 7312
PID Application – Internet Explorer
http://www.PIDapplication.com/grid/atwork/
Web Search
File Edit View Favorites Tools Help
Favorites
At Work Grid
Page Safety Tools
Settings
Sign out
Touchlets 7712
Corporaton XYZ
Channel grid 7710
A
B
9.24
C
23.66
D
E
F
G
H
I
J
K
L
Channel grid buttons 7514
100%

FIG. 77

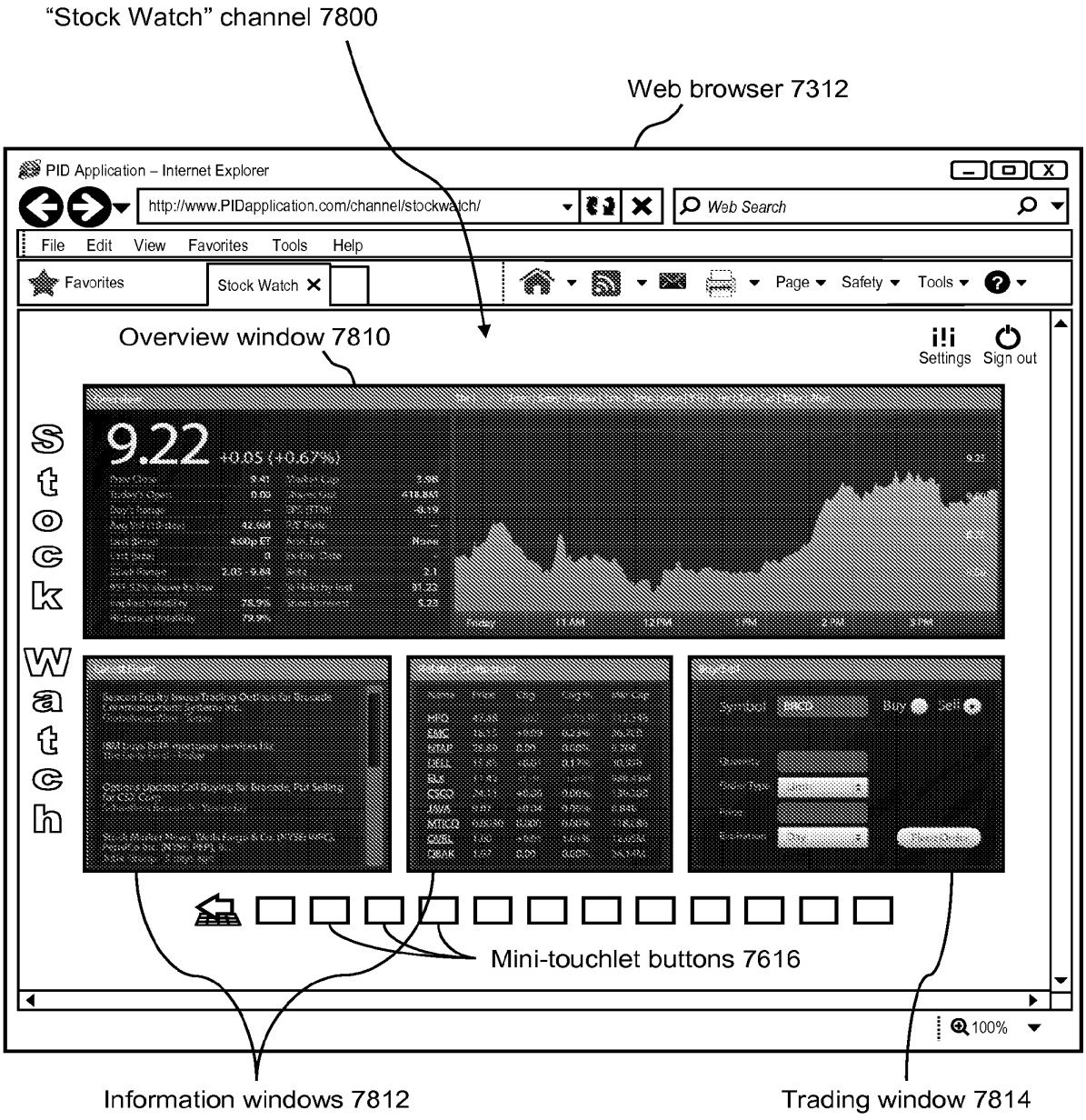

"Stock Watch" channel 7800
Web browser 7312
PID Application – Internet Explorer
http://www.PIDapplication.com/channel/stockwatch/
Web Search
File Edit View Favorites Tools Help
Favorites
Stock Watch
Page Safety Tools
Overview window 7810
Settings
Sign out
Stock Watch
9.22 +0.05 (+0.67%)
Mini-touchlet buttons 7616
100%
Information windows 7812
Trading window 7814

FIG. 78

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2012/022406

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - H04H 6/32 (2012.01)
USPC - 725/14
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)
IPC(8) - H04H 6/32, H04N 7/16, H04N 17/00 (2012.01)
USPC - 725/9, 725/14, 725/25

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 practicable, search terms used)
MicroPatent, Google Patents, and ACM

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2005/0114881 A1 (PHILYAW et al) 26 May 2005 (26.05.2005) entire document	1-20
Y	US 2010/0254370 A1 (JANA et al) 07 October 2010 (07.10.2010) entire document	1-20
Y	US 2010/0281107 A1 (FALLOWS et al) 04 November 2010 (04.11.2010) entire document	2-3
Y	US 2010/0031334 A1 (SHAIKH) 04 February 2010 (04.02.2010) entire document	18
A	US 2009/0025025 A1 (VLECK et al) 22 January 2009 (22.01.2009) entire document	1-20

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

* 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 application or patent 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
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
30 April 2012	10 MAY 2012
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

PATENT COOPERATION TREATY

RECEIVED
APR 21 2014
SHERIDAN ROSS PC
DOCKETING DEPT

From the INTERNATIONAL SEARCHING AUTHORITY

To: Tadd F. Wilson
Sheridan Ross P.C.
1560 Broadway
Suite 1200
Denver, Colorado 80202
United States of America

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

	Date of mailing *(day/month/year)* 16APR 2014
Applicant's or agent's file reference 6583-426-PCT	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. PCT/US13/55494	International filing date *(day/month/year)* 18 August 2013 (18.08.2013)
Applicant Flextronics AP, LLC	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

   When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

   Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Facsimile No.: +41 22 338 82 70

   For more detailed instructions, see *PCT Applicant's Guide*, International Phase, paragraphs 9.004 – 9.011.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to any protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

   ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with any request to forward the texts of both the protest and the decision thereon to the designated Offices.

   ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

   The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. Following the expiration of 30 months from the priority date, these comments will also be made available to the public.

   Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau before the completion of the technical preparations for international publication (Rules 90*bis*.1 and 90*bis*.3).

   Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

   In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

   For details about the applicable time limits, Office by Office, see www.wipo.int/pct/en/texts/time_limits.html and the *PCT Applicant's Guide*, National Chapters.

Name and mailing address of the ISA/ Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer Shane Thomas PCT Helpdesk: 571-272-4300 Telephone No. PCT OSP: 571-272-7774

Form PCT/ISA/220 (July 2010)

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 6583-426-PCT	**FOR FURTHER ACTION**	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. PCT/US13/55494	International filing date *(day/month/year)* 18 August 2013 (18.08.2013)	(Earliest) Priority Date *(day/month/year)* 17 August 2012 (17.08.2012)
Applicant Flextronics AP, LLC		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 4 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

   a. With regard to the **language**, the international search was carried out on the basis of:

   ☒ the international application in the language in which it was filed.

   ☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

   b. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).

   c. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (see Box No. II).

3. ☒ **Unity of invention is lacking** (see Box No. III).

4. With regard to the **title**,

   ☐ the text is approved as submitted by the applicant.

   ☒ the text has been established by this Authority to read as follows:

PROVIDING USER INTERFACES IN AN INTELLIGENT TELEVISION

5. With regard to the **abstract**,

   ☒ the text is approved as submitted by the applicant.

   ☐ the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,

   a. the figure of the **drawings** to be published with the abstract is Figure No. 1a

   ☐ as suggested by the applicant.

   ☒ as selected by this Authority, because the applicant failed to suggest a figure.

   ☐ as selected by this Authority, because this figure better characterizes the invention.

   b. ☐ none of the figures is to be published with the abstract.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US13/55494

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

Group I: Claims 1-2; Group II: Claims 3-4; Group II: Claims 5-6; Group IV: Claims 7-8; Group V: Claims 9-10; Group VI: Claims 11-12; Group VII: Claims 13-14

-***-Please see Supplemental Page-***-

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
1 and 2

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US13/55494

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - G06F 3/0482 (2014.01)
USPC - 715/851
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)
IPC(8) Classification(s): G06F 3/01, 3/048, 3/0482 (2014.01)
USPC Classification(s): 715/738, 851, 854; 348/14.03

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 practicable, search terms used)
MicroPatent (US-G, US-A, EP-A, EP-B, WO, JP-bib, DE-C,B, DE-A, DE-T, DE-U, GB-A, FR-A); ProQuest; IEEE; Google/Google Scholar

Keywords: intelligent, smart, hybrid, tv, television, reverse, back, navigation, user interface, second user interface, media, content

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2012/0174039 A1 (RHOADS, J. et al.) 05 July 2012; claims 5, 6, 22, paragraphs [0006], [0026], [0028], [0049].	1-2
A	US 2012/0173979 A1 (LEE, K.) 05 July 2012; the entire document.	1-2
A	US 2011/0131506 A1 (CALISSENDORFF, E.) 02 June 2011; the entire document.	1-2

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

* 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 application or patent 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
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
24 March 2014 (24.03.2014)	16 APR 2014
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Shane Thomas PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US13/55494

-***-Continued from Box No. III - Observations where unity of invention is lacking-***-

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fee must be paid.

Group I: Claims 1-2 are directed toward a method for providing a user interface in an intelligent television.
Group II: Claims 3-4 are directed toward a method for providing a user interface in an intelligent television.
Group III: Claims 5-6 are directed toward a method for providing a user interface in an intelligent television.
Group IV: Claims 7-8 are directed toward a method for providing a user interface in an intelligent television.
Group V: Claims 9-10 are directed toward a method for providing a user interface in an intelligent television.
Group VI: Claims 11-12 are directed toward a method for providing one of two types of user interfaces in an intelligent television.
Group VII: Claims 13-14 are directed toward a method for providing a user interface in an intelligent television.

The inventions listed as Groups I-VII do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

The special technical features of Group I include a first series of user interfaces; receiving a back selection to reverse a navigation, which are not present in Groups II-VII.

The special technical features of Group II include a first navigation bar; a second navigation bar; rendering a horizontal navigation bar; and rendering a different user interface for the second navigation bar, which are not present in Groups I and III-VII.

The special technical features of Group III include a notification for a user; dismissing the notification; and providing a missing notification icon in the user interface, which are not present in Groups I-II and IV-VII.

The special technical features of Group IV include the user interface including at least two regions; and providing an action based on a location within one of the least two regions, which are not present in Groups I-III and V-VII.

The special technical features of Group V include determining a selection characteristic; determining a content characteristic; and based on the selection characteristic and the content characteristic, affecting change in the user interface, which are not present in Groups I-IV and VI-VII.

The special technical features of Group VI include determining a type of user interface selection; a first type of selection; and a second type of selection, which are not present in Groups I-V and VII.

The special technical features of Group VII include receiving a selection for an unrelated search that does not apply to the first content; and providing a search panel above a portion of the content to search for a second content, which are not present in Groups I-VI.

The common technical feature shared by Groups I-VII is a method and system for providing a user interface in an intelligent television, the method and system comprising: receiving, by a processor of the intelligent television, a selection associated with content in the intelligent television; presenting a second user interface different than a first user interface. However, this common feature is previously disclosed by US 2012/0210239 A1 (Kim). Kim discloses a method and system for providing a user interface in an intelligent television (a first GUI (user interface) displayed on a screen of a Smart TV; paragraphs [0121] and [0247]), the method and system comprising: receiving, by a processor (paragraph [0177]) of the intelligent television, a selection associated with content in the intelligent television (first user action (selection); paragraph [0249]); presenting a second user interface different than a first user interface (second GUI; paragraph [0249]).

Since the common technical feature is previously disclosed by the Kim reference, this common feature is not special and so Groups I-VII lack unity.

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To: Tadd F. Wilson
Sheridan Ross P.C.
1560 Broadway
Suite 1200
Denver, Colorado 80202
United States of America

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	16 APR 2014

Applicant's or agent's file reference	FOR FURTHER ACTION
6583-426-PCT	See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US13/55494	18 August 2013 (18.08.2013)	17 August 2012 (17.08.2012)

International Patent Classification (IPC) or both national classification and IPC
IPC(8) - G06F 3/0482 (2014.01)
USPC - 715/851

Applicant Flextronics AP, LLC

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1 *bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA/US	Date of completion of this opinion	Authorized officer:
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	24 March 2014 (24.03.2014)	Shane Thomas PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/237 (cover sheet) (July 2011)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US13/55494

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:

   ☒ the international application in the language in which it was filed.

   ☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a))

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing filed or furnished:

   a. (means)

      ☐ on paper

      ☐ in electronic form

   b. (time)

      ☐ in the international application as filed

      ☐ together with the international application in electronic form

      ☐ subsequently to this Authority for the purposes of search

4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US13/55494

Box No. IV Lack of unity of invention

1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees the applicant has, within the appicable time limit:

   ☐ paid additional fees

   ☐ paid additional fees under protest and, where applicable, the protest fee

   ☐ paid additional fees under protest but the applicable protest fee was not paid

   ☒ not paid additional fees

2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is

   ☐ complied with

   ☒ not complied with for the following reasons:

Group I: Claims 1-2; Group II: Claims 3-4; Group II: Claims 5-6; Group IV: Claims 7-8; Group V: Claims 9-10; Group VI: Claims 11-12; Group VII: Claims 13-14

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fee must be paid.

Group I: Claims 1-2 are directed toward a method for providing a user interface in an intelligent television.
Group II: Claims 3-4 are directed toward a method for providing a user interface in an intelligent television.
Group III: Claims 5-6 are directed toward a method for providing a user interface in an intelligent television.
Group IV: Claims 7-8 are directed toward a method for providing a user interface in an intelligent television.
Group V: Claims 9-10 are directed toward a method for providing a user interface in an intelligent television.
Group VI: Claims 11-12 are directed toward a method for providing one of two types of user interfaces in an intelligent television.
Group VII: Claims 13-14 are directed toward a method for providing a user interface in an intelligent television.

The inventions listed as Groups I-VII do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: The special technical features of Group I include a first series of user interfaces; receiving a back selection to reverse a navigation, which are not present in Groups II-VII. The special technical features of Group II include a first navigation bar; a second navigation bar; rendering a horizontal navigation bar; and rendering a different user interface for the second navigation bar, which are not present in Groups I and III-VII. The special technical features of Group III include a notification for a user; dismissing the notification; and providing a missing notification icon in the user interface, which are not present in Groups I-II and IV-VII. The special technical features of Group IV include the user interface including at least two regions; and providing an action based on a location within one of the least two regions, which are not present in Groups I-III and V-VII. The special technical features of Group V include determining a selection characteristic; determining a content characteristic; and based on the selection characteristic and the content characteristic, affecting change in the user interface, which are not present in Groups I-IV and VI-VII. The special technical features of Group VI include determining a type of user interface selection; a first type of selection; and a second type of selection, which are not present in Groups I-V and VII. The special technical features of Group VII include receiving a selection for an unrelated search that does not apply to the first content; and providing a search panel above a portion of the content to search for a second content, which are not present in Groups I-VI.

The common technical feature shared by Groups I-VII is a method and system for providing a user interface in an intelligent television, the method and system comprising: receiving, by a processor of the intelligent television, a selection associated with content in the intelligent television; presenting a second user interface different than a first user interface. However, this common feature is previously disclosed by US 2012/0210239 A1 (Kim). Kim discloses a method and system for providing a user interface in an intelligent television (a first GUI (user interface) displayed on a screen of a Smart TV; paragraphs [0121] and [0247]), the method and system comprising: receiving, by a processor (paragraph [0177]) of the intelligent television, a selection associated with content in the intelligent television (first user action (selection); paragraph [0249]); presenting a second user interface different than a first user interface (second GUI; paragraph [0249]).

Since the common technical feature is previously disclosed by the Kim reference, this common feature is not special and so Groups I-VII lack unity.

4. Consequently, this opinion has been established in respect of the following parts of the international application:

   ☐ all parts

   ☒ the parts relating to claims Nos. 1 and 2

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US13/55494

Box No. V **Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	None	YES
	Claims	1-2	NO
Inventive step (IS)	Claims	None	YES
	Claims	1-2	NO
Industrial applicability (IA)	Claims	1-2	YES
	Claims	None	NO

2. Citations and explanations:

Claims 1-2 lack novelty under PCT Article 33(2) as being anticipated by US 2012/0174039 A1 to Rhoads et al. (hereinafter "Rhoads").

As to claim 1, Rhoads discloses a method for providing a user interface in an intelligent television, the method comprising: receiving, by a processor of the intelligent television, a selection associated with content in the intelligent television (receiving by the control circuitry of a smart TV comprising a microprocessor (receiving, by a processor of the intelligent television) a user selection of a media identifier from multiple media identifiers by the smart TV (a selection associated with content in the intelligent television), paragraphs [0006], [0026], [0049]); in response to the selection, presenting the user interface associated with the content, wherein the user interface is associated with a first series of user interfaces (In response to the user's indication (in response to the selection), the media guidance application may provide a display screen with media guidance data (presenting the user interface associated with the content); an options region may allow the user to access different types of content, media guidance application displays, and/or media guidance application features (wherein the user interface is associated with a first series of user interfaces), paragraph [0028]); receiving a back selection to reverse a navigation through the first series of user interfaces (the navigation indicator may allow a user to navigate back (receiving a back selection to reverse a navigation) through a hierarchical structure of media identifiers to the location of the media asset (through the first series of user interfaces), paragraph [0023]); and presenting a second user interface, wherein the second user interface is in a second series of user interfaces (a second navigation indicator is displayed (and presenting a second user interface) that represents a path navigating through the hierarchy of the interactive media guidance application to the second media asset (wherein the second user interface is in a second series of user interfaces), claims 5, 6), and wherein the first series of user interfaces is different from the second series of user interfaces (wherein the first navigation indicator comprises a first navigation cue that identifies which media identifier to select from a first portion of the plurality of media identifiers (wherein the first series of user interfaces) second navigation cue that identifies which media identifier to select from a second portion of the plurality of media identifier (is different from a second series of user interfaces), claim 22).

As to claim 2, Rhoads discloses an intelligent television system comprising: a memory operable to store social media data (memory storage may be used to store various types of content including social media content (a memory operable to store social media data), paragraphs [0025], [0051]); a processor in communication with the memory (a processor with an application stored in memory (a processor in communication with the memory), paragraph [0049]), the processor operable to: execute a user interface application (the processor executes instruction for the media guidance application (executes a user interface application), paragraph [0049]), the user interface application operable receive, by a processor of the intelligent television, a selection associated with content in the intelligent television (the media guidance application (the user interface application) receives by the control circuitry of a smart TV comprising a microprocessor (operable to receive, by a processor of the intelligent television) a user selection of a media identifier from multiple media identifiers by the smart TV (a selection associated with content in the intelligent television), paragraphs [0006], [0026], [0049]); in response to the selection, present the user interface associated with the content, wherein the user interface is associated with a first series of user interfaces (In response to the user's indication (in response to the selection), the media guidance application may provide a display screen with media guidance data (present the user interface associated with the content); an options region may allow the user to access different types of content, media guidance application displays, and/or media guidance application features (wherein the user interface is associated with a first series of user interfaces), paragraph [0028]); receive a back selection to reverse a navigation through the first series of user interfaces (the navigation indicator may allow a user to navigate back (receive a back selection to reverse a navigation) through a hierarchical structure of media identifiers to the location of the media asset (through the first series of user interfaces), paragraph [0023]); and present a second user interface, wherein the second user interface is in a second series of user interfaces (a second navigation indicator is displayed (and present a second user interface) that represents a path navigating through the hierarchy of the interactive media guidance application to the second media asset (wherein the second user interface is in a second series of user interfaces), claims 5, 6), and wherein the first series of user interfaces is different from the second series of user interfaces (wherein the first navigation indicator comprises a first navigation cue that identifies which media identifier to select from a first portion of the plurality of media identifiers (wherein the first series of user interfaces) second navigation cue that identifies which media identifier to select from a second portion of the plurality of media identifier (is different from a second series of user interfaces), claim 22).

Claims 1-2 have industrial applicability as defined by PCT Article 33(4) because the subject matter can be made or used in industry.

PATENT COOPERATION TREATY

RECEIVED
APR 21 2014
SHERIDAN ROSS P.C.
DOCKETING DEPT.

From the INTERNATIONAL SEARCHING AUTHORITY

To: TADD F. WISON
SHERIDAN ROSS P.C.
1560 BROADWAY
SUITE 1200
DENVER, CO 80202

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

	Date of mailing *(day/month/year)* 17 APR 2014
Applicant's or agent's file reference 6583-434-PCT	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. PCT/US2013/055342	International filing date *(day/month/year)* 16 August 2013
Applicant FLEXTRONICS AP, LLC	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

   When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

   Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Facsimile No.: +41 22 338 82 70

   For more detailed instructions, see *PCT Applicant's Guide*, International Phase, paragraphs 9.004 – 9.011.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to any protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

   ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with any request to forward the texts of both the protest and the decision thereon to the designated Offices.

   ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

   The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. Following the expiration of 30 months from the priority date, these comments will also be made available to the public.

   Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau before the completion of the technical preparations for international publication (Rules 90*bis*.1 and 90*bis*.3).

   Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

   In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

   For details about the applicable time limits, Office by Office, see www.wipo.int/pct/en/texts/time_limits.html and the *PCT Applicant's Guide*, National Chapters.

Name and mailing address of the ISA/ Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 Telephone No. PCT OSP: 571-272-7774

Form PCT/ISA/220 (July 2010)

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 6583-434-PCT	**FOR FURTHER ACTION**	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. PCT/US2013/055342	International filing date *(day/month/year)* 16 August 2013	(Earliest) Priority Date *(day/month/year)* 17 August 2012
Applicant FLEXTRONICS AP, LLC		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 5 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

a. With regard to the **language**, the international search was carried out on the basis of:

☒ the international application in the language in which it was filed.

☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

b. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).

c. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (see Box No. II).

3. ☒ **Unity of invention is lacking** (see Box No. III).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,

a. the figure of the **drawings** to be published with the abstract is Figure No. 14

☒ as suggested by the applicant.

☐ as selected by this Authority, because the applicant failed to suggest a figure.

☐ as selected by this Authority, because this figure better characterizes the invention.

b. ☐ none of the figures is to be published with the abstract.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2013/055342

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
See Extra Sheet.

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
1-2

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2013/055342

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - H04N 5/445 (2014.01)
USPC - 725/56
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)
IPC(8) - G06F 3/033; H04N 5/445; 21/262; H04H 6/32 (2014.01)
USPC -345/156, 682; 725/56

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
CPC - G06F 3/033; H04N 5/445; 21/262; H04H 6/32 (2014.01)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Google, Orbit, Google Patents

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2012/0144416 A1 (WETZER et al) 07 June 2012 (07.06.2012) entire document	1, 2
A	US 2012/0154449 A1 (RAMAGEM et al) 21 June 2012 (21.06.2012) entire document	1, 2
A	WO 2012/103121 A1 (WETZER et al) 02 August 2012 (02.08.2012) entire document	1, 2
A	US 2011/0246495 A1 (MALLINSON) 06 October 2011 (06.10.2011) entire document	1, 2

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

* 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 application or patent 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
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
09 April 2014	17 APR 2014
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/US2013/055342

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claims 1-2, drawn to a method for providing an indication of a linkage to a poster of social media, an intelligent television, comprising: providing a first visual indicia for a first posting and a second visual indicia for a second posting wherein the first and second visual indicia are different and indicate the linkage between a first poster of the first posting or a second poster of the second posting.
Group II, claims 3-4, drawn to a method for providing a rooting section for an intelligent television, comprising: based on a received selection of sporting content, providing a first visual representation of one or more of the social media postings associated with a first team affiliation and providing a second visual representation of one or more of the social media postings associated with a second team affiliation.
Group III, claims 5-6, drawn to a method for providing social media on an intelligent television, comprising: identifying a user of the intelligent television and registering the user with one or more social media sites, and providing social media posting associated with the user on an user interface of the intelligent television.
Group IV, claims 7-8, drawn to a method for providing social media information on an intelligent television, comprising: determining the availability of social media for the selected programming and providing a visual representation of one or more of the social media postings associated with selected programming.
Group V, claims 9-10, drawn to a method for providing social media information on an intelligent television, comprising: receiving a second selection to change a volume of social media, and changing an amount of social media presented in response to the second selection.
Group VI, claims 11-12, drawn to a method for providing social media information on an intelligent television, the comprising: the intelligent television discovering a device also connected to the network, connecting the device to the intelligent television, a user pushes a social media message from the device, and displaying the social media message on the intelligent television.
Group VII, claims 13-14, drawn to a method for providing media on an intelligent television, comprising: retrieving available media from one or more social media sources and from one or more local sources and presenting together media from both one or more social media sources and one or more local sources.
Group VIII, claims 15-16, drawn to a method for providing social media on an intelligent television, comprising: receiving a programming change input and providing determining the type of programming changing input one of two or more user interfaces that include a presentation of social media information.
Group IX, claims 17-18, drawn to a method for providing social media on an intelligent television, comprising: pausing the media playback on the intelligent television while the media continues to be presented in real-time and during the pause, receiving one or more social media postings associated with the media, and storing the one or more social media postings in a time sequence correlated to the media presentation.
Group X, claims 19-20, drawn to a method for providing social media on an intelligent television, comprising: receiving a selection of a control device on a remote control associated with an intelligent television and determining whether the selection is a first type or a second type, and providing a first user interface at the bottom of a display of the intelligent television wherein the first user interface provides at least one social media posting if the selection is a first type, and providing a second user interface at the top of the display of the intelligent television, wherein the second user interface provides information associated with content being presented in the display if the selection is a second type.
Group XI, claims 21-22, drawn to a method for publishing social media by an intelligent television, the comprising: receiving a selection of a control device associated with the intelligent television and automatically publishing information about the content to a social media site based on the selection.
Group XII, claim 23-24, drawn to a method for providing social media on an intelligent television, comprising: determining a state associated with a social media posting and providing a user interface for the social media application, having the social media posting displayed based on the state.

The inventions listed as Groups I-XII do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the special technical feature of the Group I invention: providing a first visual indicia for a first posting and a second visual indicia for a second posting wherein the first and second visual indicia are different and indicate the linkage between a first poster of the first posting or a second poster of the second posting as claimed therein is not present in the invention of Groups II-XII. The special technical feature of the Group II invention: based on a received selection of sporting content, providing a first visual representation of one or more of the social media postings associated with a first team affiliation and providing a second visual representation of one or more of the social media postings associated with a second team affiliation as claimed therein is not present in the invention of Groups I, III-XII. The special technical feature of the Group III invention: identifying a user of the intelligent television and registering the user with one or more social media sites, and providing social media posting associated with the user on an user interface of the intelligent television as claimed therein is not present in the invention of Groups I, II, IV-XII. The special technical feature of the Group IV invention: determining the availability of social media for the selected programming and providing a visual representation of one or more of the social media postings associated with selected programming as claimed therein is not present in the invention of Groups I, II, III or V-XII. The special technical feature of the Group V invention: receiving a second selection to change a volume of social media, and changing an amount of social media presented in response to the second selection as claimed therein is not present in the invention of Groups I-IV, VI-XII. The special technical feature of the Group VI invention: the intelligent television discovering a device also connected to the network, connecting the device to the intelligent television, a user pushes a social media message from the device, and displaying the social media message on the intelligent television as claimed therein is not present in the invention of Groups I-V, VII-XII. The special technical feature of the Group VII invention: retrieving available media from one or more social media sources and from one or more local sources and presenting together media from both one or more social media sources and one or more local sources as claimed therein is not present in the invention of Groups I-VI or VIII-XII. The special technical feature of the Group VIII invention: receiving a programming change input and providing determining the type of programming changing input one of two or more user interfaces that include a presentation of social media information as claimed therein is not present in the invention of Groups I-VII or IX-XII.

[See Continuation on Next Extra Sheet]

The special technical feature of the Group IX invention: pausing the media playback on the intelligent television while the media continues to be presented in real-time and during the pause, receiving one or more social media postings associated with the media, and storing the one or more social media postings in a time sequence correlated to the media presentation as claimed therein is not present in the invention of Groups I-VIII or X-XII. The special technical feature of the Group X invention: receiving a selection of a control device on a remote control associated with an intelligent television and determining whether the selection is a first type or a second type, and providing a first user interface at the bottom of a display of the intelligent television wherein the first user interface provides at least one social media posting if the selection is a first type, and providing a second user interface at the top of the display of the intelligent television, wherein the second user interface provides information associated with content being presented in the display if the selection is a second type as claimed therein is not present in the invention of Groups I-IX or XI-XII. The special technical feature of the Group XI invention: receiving a selection of a control device associated with the intelligent television and automatically publishing information about the content to a social media site based on the selection as claimed therein is not present in the invention of Groups I-X or XII. The special technical feature of the Group XII invention: determining a state associated with a social media posting and providing a user interface for the social media application, having the social media posting displayed based on the state as claimed therein is not present in the invention of Groups I-XI.

Groups I- XII lack unity of invention because even though the inventions of these groups require the technical feature of visual representation of social media posting on an intelligent TV, this technical feature is not a special technical feature as it does not make a contribution over the prior art in view of US 2012/0154449 A1 (RAMAGEM et al) 21 June 2012 (21.06.2012).

US 2012/0154449 A1 to RAMAGEM et al discloses a visual whiteboard as an application or component for operation on a smart TV (para. 0007) and social networking techniques, devices, systems and software which can be used in conjunction with social networks associated with a television (para 0002) and teaches visual representation of social media posting on an intelligent TV (content identifiers or other group information can be posted to the visual whiteboard by the authorized users for subsequent display on the corresponding smart [intelligent] TV, para 0007; receiving media items from various media sources and service providers, para 0021; mechanism for direct sharing of information via the social graph ...finding a funny cat video posted on a large site like Digg, para 0038; that a content identifier (hyperlink to a video), and various notes posted to the visual whiteboard by authorized group members, para 0055; see also para 0030, 0031 for using the visual whiteboard operating on an intelligent TV and enabling an active user engaging in various aspects of social networking on the intelligent TV, including searching for updates from social networks [that implies receiving and visual representation of social postings on the intelligent TV).

Since none of the special technical features of the Group I-XII inventions are found in more than one of the inventions, unity of invention is lacking.

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To: TADD F. WISON
SHERIDAN ROSS P.C.
1560 BROADWAY
SUITE 1200
DENVER, CO 80202

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	17 APR 2014
Applicant's or agent's file reference 6583-434-PCT	**FOR FURTHER ACTION** See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2013/055342	16 August 2013	17 August 2012

International Patent Classification (IPC) or both national classification and IPC
IPC(8) - H04N 5/445 (2014.01)
USPC - 725/56

Applicant FLEXTRONICS AP, LLC

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA/US	Date of completion of this opinion	Authorized officer:
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	09 April 2014	Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/237 (cover sheet) (July 2011)

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2013/055342

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:

   ☒ the international application in the language in which it was filed.

   ☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a))

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing filed or furnished:

   a. (means)

      ☐ on paper

      ☐ in electronic form

   b. (time)

      ☐ in the international application as filed

      ☐ together with the international application in electronic form

      ☐ subsequently to this Authority for the purposes of search

4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2013/055342

Box No. IV Lack of unity of invention

1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees the applicant has, within the appicable time limit:

   ☐ paid additional fees

   ☐ paid additional fees under protest and, where applicable, the protest fee

   ☐ paid additional fees under protest but the applicable protest fee was not paid

   ☒ not paid additional fees

2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is

   ☐ complied with

   ☒ not complied with for the following reasons:

See Supplemental Box

4. Consequently, this opinion has been established in respect of the following parts of the international application:

   ☐ all parts

   ☒ the parts relating to claims Nos. 1-2

Form PCT/ISA/237 (Box No. IV) (July 2011)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2013/055342

Box No. V **Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	None	YES
	Claims	1, 2	NO
Inventive step (IS)	Claims	None	YES
	Claims	1, 2	NO
Industrial applicability (IA)	Claims	1, 2	YES
	Claims	None	NO

2. Citations and explanations:

Claims 1-2 lack novelty under PCT Article 33(2) as being anticipated by Wetzer et al., hereinafter referred to as Wetzer.

Regarding claims 1, 2, Wetzer discloses a method for providing an indication of a linkage to a poster of social media [claim 1] (further fig.29 F shows a gettogether session interface wherein participants who accept the invitation join a session, that allows participants to chat with each other through the text chat interface, further the interface shows messages 2927 between users, wherein a message from a first user is displayed with the name of that user i.e. "Jennifer Coulter" [first visual indicia indicate the linkage between a first poster of the first posting] and a message from a second user is displayed with the name of that user i.e. "Mark Daniels", para 0209, 0210), the method comprising, and an intelligent television (user device 118 (e.g., an intelligent TV) is a user platform operated by a user to facilitate display of and interaction with secure user-centric information, Fig 1, para 0050, 0059) system [claim 2] comprising: a memory operable to store social media data; a processor in communication with the memory, the processor operable to (user devices 118 serve as a platform operated by a user 116 to facilitate display and interaction, the user devices 118 of user 116 includes a portable device/tablet and an intelligent television, mobile device, para 0059; fig.22 shows an alert notification appears in the display of the tablet device 1310, indicating that a friend is also watching Fringe [an intelligent television used to view social media notifications is interpreted as stores social media data with a processor in communication to a memory], para 0014, 0195): receiving, by a processor of an intelligent television (user device 118 (e.g., an intelligent TV) is a user platform operated by a user to facilitate display of and interaction with secure user-centric information, Fig 1, para 0050, 0059), two or more social media postings (user devices 118 serve as a platform operated by a user 116 to facilitate display and interaction, the user devices 118 of user 116 includes a portable device/tablet and an intelligent television, mobile device, para 0059; fig.29A shows a user 116 watching a show on TV 1340 using a tablet device 1310, further fig.29C shows an interface where a user invites other users/participants who are contacts of the user 116, para 0202, 0203; further fig.29 F shows a gettogether session interface wherein participants who accept the invitation join a session, that allows participants to chat with each other through the text chat interface, further the interface shows messages 2927 between users "Jennifer Coulter" and "Mark Daniels" [two or more social media postings] , para 0209, 0210); execute a user interface application in communication with the social media application, the user interface application operable to [claim 2] (further fig.29 F shows a gettogether session interface wherein participants who accept the invitation join a session, that allows participants to chat with each other through the text chat interface, further the interface shows messages 2927 between users "Jennifer Coulter" and "Mark Daniels" [two or more social media postings] , para 0209, 0210): providing a visual representation of the social media postings (further fig.29 F shows a gettogether session interface wherein participants who accept the invitation join a session, that allows participants to chat with each other through the text chat interface, further the interface shows messages 2927 between users "Jennifer Coulter" and "Mark Daniels" [providing a visual representation of two or more social media postings] , para 0209, 0210); in the visual representation, providing a first visual indicia for a first posting and a second visual indicia for a second posting (further fig.29 F shows a gettogether session interface wherein participants who accept the invitation join a session, that allows participants to chat with each other through the text chat interface, further the interface shows messages 2927 between users, wherein a message from a first user is displayed with the name of that user i.e. "Jennifer Coulter" [first visual indicia for a first posting] and a message from a second user is displayed with the name of that user i.e. "Mark Daniels" [second visual indicia for a second posting], para 0209, 0210); and wherein the first and second visual indicia are different and indicate the linkage between a first poster of the first posting or a second poster of the second posting (further fig.29 F shows a gettogether session interface wherein participants who accept the invitation join a session, that allows participants to chat with each other through the text chat interface, further the interface shows messages 2927 between users, wherein a message from a first user is displayed with the name of that user i.e. "Jennifer Coulter" [first visual indicia indicate the linkage between a first poster of the first posting] and a message from a second user is displayed with the name of that user i.e. "Mark Daniels" [second visual indicia different from first visual indicia], the chat session messages between the users provides the users to communicate with each other by sending texts, pictures and videos, para 0209, 0210).

Claims 1-2 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2013/055342

Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
Continuation of:

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claims 1-2, drawn to a method for providing an indication of a linkage to a poster of social media, an intelligent television comprising: providing a first visual indicia for a first posting and a second visual indicia for a second posting wherein the first and second visual indicia are different and indicate the linkage between a first poster of the first posting or a second poster of the second posting.
Group II, claims 3-4, drawn to a method for providing a rooting section for an intelligent television, comprising: based on a received selection of sporting content, providing a first visual representation of one or more of the social media postings associated with a first team affiliation and providing a second visual representation of one or more of the social media postings associated with a second team affiliation.
Group III, claims 5-6, drawn to a method for providing social media on an intelligent television, comprising: identifying a user of the intelligent television and registering the user with one or more social media sites, and providing social media posting associated with the user on an user interface of the intelligent television.
Group IV, claims 7-8, drawn to a method for providing social media information on an intelligent television, comprising: determining the availability of social media for the selected programming and providing a visual representation of one or more of the social media postings associated with selected programming.
Group V, claims 9-10, drawn to a method for providing social media information on an intelligent television, comprising: receiving a second selection to change a volume of social media, and changing an amount of social media presented in response to the second selection.
Group VI, claims 11-12, drawn to a method for providing social media information on an intelligent television, the comprising: the intelligent television discovering a device also connected to the network, connecting the device to the intelligent television, a user pushes a social media message from the device, and displaying the social media message on the intelligent television.
Group VII, claims 13-14, drawn to a method for providing media on an intelligent television, comprising: retrieving available media from one or more social media sources and from one or more local sources and presenting together media from both one or more social media sources and one or more local sources.
Group VIII, claims 15-16, drawn to a method for providing social media on an intelligent television, comprising: receiving a programming change input and providing determining the type of programming changing input one of two or more user interfaces that include a presentation of social media information.
Group IX, claims 17-18, drawn to a method for providing social media on an intelligent television, comprising: pausing the media playback on the intelligent television while the media continues to be presented in real-time and during the pause, receiving one or more social media postings associated with the media, and storing the one or more social media postings in a time sequence correlated to the media presentation.
Group X, claims 19-20, drawn to a method for providing social media on an intelligent television, comprising: receiving a selection of a control device on a remote control associated with an intelligent television and determining whether the selection is a first type or a second type, and providing a first user interface at the bottom of a display of the intelligent television wherein the first user interface provides at least one social media posting if the selection is a first type, and providing a second user interface at the top of the display of the intelligent television, wherein the second user interface provides information associated with content being presented in the display if the selection is a second type.
Group XI, claims 21-22, drawn to a method for publishing social media by an intelligent television, the comprising: receiving a selection of a control device associated with the intelligent television and automatically publishing information about the content to a social media site based on the selection.
Group XII, claim 23-24, drawn to a method for providing social media on an intelligent television, comprising: determining a state associated with a social media posting and providing a user interface for the social media application, having the social media posting displayed based on the state.

The inventions listed as Groups I-XII do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the special technical feature of the Group I invention: providing a first visual indicia for a first posting and a second visual indicia for a second posting wherein the first and second visual indicia are different and indicate the linkage between a first poster of the first posting or a second poster of the second posting as claimed therein is not present in the invention of Groups II-XII. The special technical feature of the Group II invention: based on a received selection of sporting content, providing a first visual representation of one or more of the social media postings associated with a first team affiliation and providing a second visual representation of one or more of the social media postings associated with a second team affiliation as claimed therein is not present in the invention of Groups I, III-XII. The special technical feature of the Group III invention: identifying a user of the intelligent television and registering the user with one or more social media sites, and providing social media posting associated with the user on an user interface of the intelligent television as claimed therein is not present in the invention of Groups I, II, IV-XII. The special technical feature of the Group IV invention: determining the availability of social media for the selected programming and providing a visual representation of one or more of the social media postings associated with selected programming as claimed therein is not present in the invention of Groups I, II, III or V-XII. The special technical feature of the Group V invention: receiving a second selection to change a volume of social media, and changing an amount of social media presented in response to the second selection as claimed therein is not present in the invention of Groups I-IV, VI-XII. The special technical feature of the Group VI invention: the intelligent television discovering a device also connected to the network, connecting the device to the intelligent television, a user pushes a social media message from the device, and displaying the social media message on the intelligent television as claimed therein is not present in the invention of Groups I-V, VII-XII. The special technical feature of the Group VII invention: retrieving available media from one or more social media sources and from one or more local sources and presenting together media from both one or more social media sources and one or more local sources as claimed therein is not present in the invention of Groups I-VI or VIII-XII. The special technical feature of the Group VIII invention: receiving a programming change input and providing determining the type of programming changing input one of two or more user interfaces that include a presentation of social media information as claimed therein is not present in the invention of Groups I-VII or IX-XII.

[See Continuation on Next Extra Sheet]

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2013/055342

Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
Continuation of:

The special technical feature of the Group IX invention: pausing the media playback on the intelligent television while the media continues to be presented in real-time and during the pause, receiving one or more social media postings associated with the media, and storing the one or more social media postings in a time sequence correlated to the media presentation as claimed therein is not present in the invention of Groups I-VIII or X-XII. The special technical feature of the Group X invention: receiving a selection of a control device on a remote control associated with an intelligent television and determining whether the selection is a first type or a second type, and providing a first user interface at the bottom of a display of the intelligent television wherein the first user interface provides at least one social media posting if the selection is a first type, and providing a second user interface at the top of the display of the intelligent television, wherein the second user interface provides information associated with content being presented in the display if the selection is a second type as claimed therein is not present in the invention of Groups I-IX or XI-XII. The special technical feature of the Group XI invention: receiving a selection of a control device associated with the intelligent television and automatically publishing information about the content to a social media site based on the selection as claimed therein is not present in the invention of Groups I-X or XII. The special technical feature of the Group XII invention: determining a state associated with a social media posting and providing a user interface for the social media application, having the social media posting displayed based on the state as claimed therein is not present in the invention of Groups I-XI.

Groups I- XII lack unity of invention because even though the inventions of these groups require the technical feature of visual representation of social media posting on an intelligent TV, this technical feature is not a special technical feature as it does not make a contribution over the prior art in view of US 2012/0154449 A1 (RAMAGEM et al) 21 June 2012 (21.06.2012).

US 2012/0154449 A1 to RAMAGEM et al discloses a visual whiteboard as an application or component for operation on a smart TV (para. 0007) and social networking techniques, devices, systems and software which can be used in conjunction with social networks associated with a television (para 0002) and teaches visual representation of social media posting on an intelligent TV (content identifiers or other group information can be posted to the visual whiteboard by the authorized users for subsequent display on the corresponding smart [intelligent] TV, para 0007; receiving media items from various media sources and service providers, para 0021; mechanism for direct sharing of information via the social graph ...finding a funny cat video posted on a large site like Digg, para 0038; that a content identifier (hyperlink to a video), and various notes posted to the visual whiteboard by authorized group members, para 0055; see also para 0030, 0031 for using the visual whiteboard operating on an intelligent TV and enabling an active user engaging in various aspects of social networking on the intelligent TV, including searching for updates from social networks [that implies receiving and visual representation of social postings on the intelligent TV).

Since none of the special technical features of the Group I-XII inventions are found in more than one of the inventions, unity of invention is lacking.

Amy

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To: Kendria E. Pearson
Sheridan Ross P.C.
1560 Broadway
Suite 1200
Denver, Colorado 80202
United States of America

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

Applicant's or agent's file reference 6583-464-PCT	Date of mailing *(day/month/year)* 10 MAR 2014 **FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. PCT/US13/55592	International filing date *(day/month/year)* 19 August 2013 (19.08.2013)
Applicant Flextronics AP, LLC	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

   When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

   Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Facsimile No.: +41 22 338 82 70

   For more detailed instructions, see *PCT Applicant's Guide*, International Phase, paragraphs 9.004 – 9.011.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to any protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

   ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with any request to forward the texts of both the protest and the decision thereon to the designated Offices.

   ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

   The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. Following the expiration of 30 months from the priority date, these comments will also be made available to the public.

   Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau before the completion of the technical preparations for international publication (Rules 90*bis*.1 and 90*bis*.3).

   Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

   In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

   For details about the applicable time limits, Office by Office, see www.wipo.int/pct/en/texts/time_limits.html and the *PCT Applicant's Guide*, National Chapters.

Name and mailing address of the ISA/ Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer Shane Thomas PCT Helpdesk: 571-272-4300 Telephone No. PCT OSP: 571-272-7774

Form PCT/ISA/220 (July 2010)

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 6583-464-PCT	**FOR FURTHER ACTION**	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. PCT/US13/55592	International filing date *(day/month/year)* 19 August 2013 (19.08.2013)	(Earliest) Priority Date *(day/month/year)* 17 August 2012 (17.08.2012)
Applicant Flextronics AP, LLC		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 2 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

   a. With regard to the **language**, the international search was carried out on the basis of:

   ☒ the international application in the language in which it was filed.

   ☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

   b. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).

   c. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (see Box No. II).

3. ☐ **Unity of invention is lacking** (see Box No. III).

4. With regard to the **title**,

   ☐ the text is approved as submitted by the applicant.

   ☒ the text has been established by this Authority to read as follows:

USER INTERFACE FOR AN INTELLIGENT TELEVISION

5. With regard to the **abstract**,

   ☒ the text is approved as submitted by the applicant.

   ☐ the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,

   a. the figure of the **drawings** to be published with the abstract is Figure No. 14

   ☐ as suggested by the applicant.

   ☐ as selected by this Authority, because the applicant failed to suggest a figure.

   ☒ as selected by this Authority, because this figure better characterizes the invention.

   b. ☐ none of the figures is to be published with the abstract.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US13/55592

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - G06F 3/0481 (2014.01)
USPC - 715/848
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)
IPC(8) Classification(s): H04N 21/47; G06F 3/01, 3/0481 (2014.01)
USPC Classification(s): 725/811, 838, 848

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 practicable, search terms used)
MicroPatent (US-G, US-A, EP-A, EP-B, WO, JP-bib, DE-C,B, DE-A, DE-T, DE-U, GB-A, FR-A); ProQuest; IEEE; Google/Google Scholar

Keywords: GUI, Fibonacci, Timeline, Grid, Thumbnail, Smart TV, Favorite, Icon, Select

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 2011/0131506 A1, (CALLISENDORFF, E.), 02 June 2011; figures 5a-5d, paragraphs [0025], [0032], [0047], [0077], [0091], [0110], [0112], [0113], [0120]	1 --- 2-20
Y	US 2011/0252446 A1, (JEONG, Y. et al.), 13 October 2011; Claim 20, figures [0020], [0145], [0163], [0444]	2-5, 13-14, 17-20
Y	US 2010/0241962 A1, (PETERSON, T. et al.), 23 September 2010; figure 7, paragraphs [0011], [0037], [0039], [0060]	3-5, 12-16, 18
Y	US 2005/0091596 A1, (ANTHONY, C. et al.), 28 April 2005; paragraphs [0042], [0043], [0044], [0046], [0047], [0063]	6-11, 15, 19

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

* 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 application or patent 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
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
05 February 2014 (05.02.2014)	10 MAR 2014
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Shane Thomas PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To: Kendria E. Pearson
Sheridan Ross P.C.
1560 Broadway
Suite 1200
Denver, Colorado 80202
United States of America

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	10 MAR 2014
Applicant's or agent's file reference 6583-464-PCT	**FOR FURTHER ACTION** See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US13/55592	19 August 2013 (19.08.2013)	17 August 2012 (17.08.2012)

International Patent Classification (IPC) or both national classification and IPC
IPC(8) - G06F 3/0481 (2014.01)
USPC - 715/848

Applicant Flextronics AP, LLC

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1 *bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA/US	Date of completion of this opinion	Authorized officer:
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	05 February 2014 (05.02.2014)	Shane Thomas PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/237 (cover sheet) (July 2011)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US13/55592

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:

   ☒ the international application in the language in which it was filed.

   ☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a))

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing filed or furnished:

   a. (means)

      ☐ on paper

      ☐ in electronic form

   b. (time)

      ☐ in the international application as filed

      ☐ together with the international application in electronic form

      ☐ subsequently to this Authority for the purposes of search

4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US13/55592

Box No. V **Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	2-20	YES
	Claims	1	NO
Inventive step (IS)	Claims	None	YES
	Claims	1-20	NO
Industrial applicability (IA)	Claims	1-20	YES
	Claims	None	NO

2. Citations and explanations:

Claims 1 lacks novelty under PCT Article 33(2) as being anticipated by US 2011/0131506 A1 (Calissendorff).

As to claim1, Calissendorff discloses a method for providing multiple types of user interfaces in an intelligent television (a method to dynamically adapt a user interface to the available context in a smart TV (method for providing multiple types of user interfaces in an intelligent television), paragraph [0025], [0120]), the method comprising: receiving a selection for the user interface (the presentation model locates the command associated with the action (receiving a selection for the user interface), paragraph [0077]), wherein the user interface provides content (the presentation model uses the available content to generate the interface for the user (wherein the user interface provides content), paragraph [0091]); determining a type of content to provide (content is determined by which available items fulfill the criteria of a presentation group (determining a type of content to provide), paragraph [0047]); determining a type of user interface based on the type of content to provide, wherein a first type of content corresponds to a first user interface (available content with the known context is used to generate the user interface (determining a type of user interface based on the type of content to provide, wherein the first type of content corresponds to a first user interface), paragraph [0072]), a second type of content corresponds to a second user interface (when a change in context is detected, the available content is used to generate a new user interface (a second type of content corresponds to a second user interface), paragraphs [0110], [0112]), and a third type of content corresponds to a third user interface (when the user moves into a different context B or C, the interface will update to the new context (and a third type of content corresponds to a third user interface), figures 5a-5d, paragraph [0058]); providing the first user interface for the first type of content (presenting the user interface of content (providing the first user interface for the first type of content), paragraph [0073]); providing the second user interface for the second type of content (presenting the user interface of the new content (providing the second user interface for the second type of content), paragraph [0113]); and providing the third user interface for the third type of content (the presentation model ensures that each item is presented (providing the third user interface for the third type of content), paragraph [0032]).

Claims 2, 17 and 20 lack an inventive step under PCT Article 33(3) as being obvious over Calissendorff in view of US 2011/0252466 A1 to Jeong et al. (hereinafter "Jeong").

As to claim 2, Calissendorff discloses the method as defined in claim 1. However, Calissendorff fails to disclose a method wherein the first type of content is for a selection main screen with a limited amount of content. Jeong discloses a method wherein the first type of content is for a selection main screen with a limited amount of content (the home screen (selection main screen) may further include an application menu with at least one application that can be executed (wherein the first type of content is for a selection main screen with a limited amount of content), paragraph [0145]). It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the method of Calissendorff to include wherein the first type of content is for a selection main screen with a limited amount of content, as taught by Jeong, for the benefit of presenting a main screen that is simple to navigate.

-***-Continued Within the Next Supplemental Box-***-

Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
Continuation of:
-***-Continued from Box V: Citations and Explanations-***-

As to claim 17, Calissendorff discloses a method comprising: receive a selection for the user interface (the presentation model locates the command associated with the action (receive a selection for the user interface), paragraph [0077]), wherein the user interface provides content (the presentation model uses the available content to generate the interface for the user (wherein the user interface provides content), paragraph [0091]); determine a type of content to provide (content is determined by which available items fulfill the criteria of a presentation group (determine a type of content to provide), paragraph [0047]); determine a type of user interface based on the type of content to provide, wherein a first type of content corresponds to a first user interface (available content with the known context is used to generate the user interface (determine a type of user interface based on the type of content to provide, wherein the first type of content corresponds to a first user interface), paragraph [0072]), a second type of content corresponds to a second user interface (when a change in context is detected, the available content is used to generate a new user interface (a second type of content corresponds to a second user interface), paragraphs [0110], [0112]), and a third type of content corresponds to a third user interface (when the user moves into a different context B or C, the interface will update to the new context (and a third type of content corresponds to a third user interface), figures 5a-5d, paragraph [0058]); provide the first user interface for the first type of content (presenting the user interface of content (provide the first user interface for the first type of content), paragraph [0073]); provide the second user interface for the second type of content (presenting the user interface of the new content (provide the second user interface for the second type of content), paragraph [0113]); provide the third user interface for the third type of content (the presentation model ensures that each item is presented (provide the third user interface for the third type of content), paragraph [0032]). However, Calissendorff fails to disclose a method comprising: computer readable medium having stored thereon processor executable instructions that cause a computing system to execute a method, the instructions comprising: instructions to. Jeong discloses a method comprising: computer readable medium having stored thereon processor executable instructions that cause a computing system to execute a method, the instructions comprising: instructions to (a non-transitory computer readable medium including instructions configured to perform the display method (computer readable medium having stored thereon processor executable instructions that cause a computing system to execute a method, the instructions comprising: instructions to), claim 20). It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the method of Calissendorff to include computer readable medium having stored thereon processor executable instructions that cause a computing system to execute a method, the instructions comprising: instructions to, as taught by Jeong, for the benefit of executing instructions to perform the method.

As to claim 20, Calissendorff and Jeong disclose the computer readable medium as defined in claim 17. Calissendorff further discloses the computer readable medium wherein the third type of content is for a collection of content, and wherein the third user interface is for a linear view (the presentation group (wherein the third type of content is for a collection of content) is in a linear view (wherein the third user interface is for a linear view), figure 3d).

Claims 12 and 16 lack an inventive step under PCT Article 33(3) as being obvious over Calissendorff in view of US 2010/0241962 A1 to Peterson et al. (hereinafter "Peterson").

As to claim 12, Calissendorff discloses an intelligent television system comprising (smart TV controller (intelligent television system), paragraph [0114]): execute a statistics subservice (the presentation model includes services to present content to users based on user preferences (execute a statistics subservice), paragraph [0033]); execute an user interface application (dynamically adapt a user interface to the available context (execute an user interface application), paragraph [0120]): receive a selection for the user interface (the presentation model locates the command associated with the action (receive a selection for the user interface), paragraph [0077]), wherein the user interface provides content (the presentation model uses the available content to generate the interface for the user (wherein the user interface provides content), paragraph [0091]); determine a type of content to provide (content is determined by which available items fulfill the criteria of a presentation group (determine a type of content to provide), paragraph [0047]); determine a type of user interface based on the type of content to provide, wherein a first type of content corresponds to a first user interface (available content with the known context is used to generate the user interface (determine a type of user interface based on the type of content to provide, wherein the first type of content corresponds to a first user interface), paragraph [0072]), a second type of content corresponds to a second user interface (when a change in context is detected, the available content is used to generate a new user interface (a second type of content corresponds to a second user interface), paragraphs [0110], [0112]), and a third type of content corresponds to a third user interface (when the user moves into a different context B or C, the interface will update to the new context (and a third type of content corresponds to a third user interface), figures 5a-5d, paragraph [0058]); provide the first user interface for the first type of content (presenting the user interface of content (provide the first user interface for the first type of content), paragraph [0073]); provide the second user interface for the second type of content (presenting the user interface of the new content (provide the second user interface for the second type of content), paragraph [0113]); and provide the third user interface for the third type of content (the presentation model ensures that each item is presented (provide the third user interface for the third type of content), paragraph [0032]). However, Calissendorff fails to disclose a system comprising: a memory operable to store social media data; a processor in communication with the memory, the processor operable to execute a statistics subservice operable to: execute an user interface application operable to. Peterson discloses a system comprising: a memory operable to store social media data (memory can store supplemental content such as social network data (a memory operable to store social media data), paragraphs [0037], [0039]); a processor in communication with the memory, the processor operable to: execute an user interface application operable to (one or more processors with a memory element (a processor in communication with the memory), the processor executes the media delivery system (execute an user interface application operable to), figure 7, paragraph [0060]). It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the system of Calissendorff to include a memory operable to store social media data; a processor in communication with the memory, the processor operable to execute a statistics subservice operable to: execute an user interface application operable to, as taught by Peterson, for the benefit of using stored social media data to perform metrics for organizing content display.

-***-Continued Within the Next Supplemental Box-***-

Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
Continuation of:

-***-Continued from Previous Supplemental Box-***-

As to claim 16, Calissendorff and Peterson disclose the intelligent television system as defined in claim 12. Calissendorff further discloses a system wherein the third type of content is for a collection of content, and wherein the third user interface is for a linear view (the presentation group (wherein the third type of content is for a collection of content) is in a linear view (wherein the third user interface is for a linear view), figure 3d).

Claims 3-5 and 18 lack an inventive step under PCT Article 33(3) as being obvious over Calissendorff in view of Jeong, and further in view of US 2010/0241962 A1 to Peterson et al. (hereinafter "Peterson").

As to claim 3, Calissendorff and Jeong disclose the method as defined in claim 2. However, Calissendorff fails to disclose a method wherein the first user interface is for at least one of a grid view, a Fibonacci view, and a cluster view. Peterson discloses a method wherein the first user interface is for at least one of a grid view, a Fibonacci view, and a cluster view (the means of displaying can be presented as a Fibonacci spiral (wherein the first user interface is a Fibonacci view), paragraph [0043]). It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the method of Calissendorff to include wherein the first user interface is for at least one of a grid view, a Fibonacci view, and a cluster view, as taught by Peterson, for the benefit of presenting a Fibonacci view giving the user more selectable options.

As to claim 4, the combination of Calissendorff, Jeong, and Peterson disclose the method as defined in claim 3. However, Calissendorff fails to disclose a method wherein the Fibonacci view provides selectable content thumbnails arranged in a Fibonacci spiral. Peterson discloses a method wherein the Fibonacci view provides selectable content thumbnails arranged in a Fibonacci spiral (content thumbnails can be presented in a Fibonacci spiral (the Fibonacci view provides selectable content thumbnails arranged in a Fibonacci spiral), paragraph [0011]). It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the method of Calissendorff to include wherein the Fibonacci view provides selectable content thumbnails arranged in a Fibonacci spiral, as taught by Peterson, for the benefit of presenting a Fibonacci view giving the user more selectable options.

As to claim 5, the combination of Calissendorff, Jeong, and Peterson disclose the method as defined in claim 4. However, Calissendorff fails to disclose a method wherein the thumbnails are arranged in the Fibonacci spiral based on a characteristic of the content associated with the thumbnail, and wherein the characteristic is one or more of an amount of content, a most viewed statistic, a newest statistic, or a most favorite statistic. Peterson discloses a method wherein the thumbnails are arranged in a Fibonacci spiral (thumbnails can be presented in a Fibonacci spiral (wherein thumbnails are arranged in a Fibonacci spiral), paragraph [0011]). Further, Jeong discloses a method wherein the arrangement is based on a characteristic of the content associated with the thumbnail (the application menu of thumbnails may be arranged based on characteristics (wherein the arrangement is based on a characteristic of the content associated with the thumbnail), paragraphs [0163], [0444]), and wherein the characteristic is a most favorite statistic (thumbnails may be arranged by applications most frequently used by the user (wherein the characteristic is a most favorite statistic), paragraph [0444]). It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the method of Calissendorff to include wherein the thumbnails are arranged in a Fibonacci spiral, as taught by Peterson, for the benefit of giving the user more selectable options. Further, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the method of Calissendorff to include wherein the characteristic is a most favorite statistic, as taught by Jeong, for the benefit of presenting thumbnails in a preferred order.

As to claim 18, Calissendorff and Jeong disclose the computer readable medium as defined in claim 17. However, Calissendorff fails to disclose a computer readable medium wherein first type of content is for a selection main screen with a limited amount of content, and wherein the first user interface is for at least one of a grid view, a Fibonacci view, and a cluster view. Jeong discloses a computer readable medium wherein first type of content is for a selection main screen with a limited amount of content (the home screen (selection main screen) may further include an application menu with at least one application that can be executed (wherein the first type of content is for a selection main screen with a limited amount of content), paragraph [0145]). Further, Peterson discloses a computer readable medium wherein the first user interface is for at least one of a grid view, a Fibonacci view, and a cluster view (the means of displaying can be presented as a Fibonacci spiral (wherein the first user interface is a Fibonacci view), paragraph [0043]). It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the system of Calissendorff to include wherein first type of content is for a selection main screen with a limited amount of content, as taught by Jeong, for the benefit of presenting a main screen that is simple for the user to navigate. Further, It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the system of Calissendorff to include wherein the first user interface is for at least one of a grid view, a Fibonacci view, and a cluster view, as taught by Peterson, for the benefit of using a Fibonacci view to present more selectable options to the user.

Claims 6-11 lack an inventive step under PCT Article 33(3) as being obvious over Calissendorff in view of US 2005/0091596 A1 to Anthony et al. (hereinafter "Anthony").

As to claim 6, Calissendorff discloses the method as defined in claim 1. However, Calissendorff fails to disclose a method wherein the second type of content is for content associated with time. Anthony discloses a method wherein the second type of content is for content associated with time (the area displayed to the user is enough in detail for the user to discern the timeline content (wherein the second type of content is for content associated with time), paragraph [0063]). It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the method of Calissendorff to include wherein the second type of content is for content associated with time, as taught by Anthony, for the benefit of using a time parameter for organizing content.

-***-Continued Within the Next Supplemental Box-***-

Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
Continuation of:

-***-Continued from Previous Supplemental Box-***-

As to claim 7, Calissendorff and Anthony disclose the method as defined in claim 6. However, Calissendorff fails to disclose a method wherein the second user interface is a timeline view. Anthony discloses a method wherein the second user interface is a timeline view (a dynamic timeline view allows a user to view a set of items arranged chronologically (is a timeline view) and presented in a GUI environment (wherein the second user interface), paragraph [0043]). It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the method of Calissendorff to include wherein the second user interface is a timeline view, as taught by Anthony, for the benefit of presenting the content in a timeline view to a user.

As to claim 8, Calissendorff and Anthony disclose the method as defined in claim 7. However, Calissendorff fails to disclose a method wherein the timeline view provides selectable content thumbnails arranged in timeline from oldest content at a first side of the timeline view to newest content at a second side of the timeline view. Anthony discloses a method wherein the timeline view provides selectable content thumbnails arranged in timeline from oldest content at a first side of the timeline view to newest content at a second side of the timeline view (the timeline view provides thumbnail icons that will open when the user double clicks (wherein the timeline view provides selectable content thumbnails) arranged in a chronological manner (arranged in timeline from oldest content at a first side of the timeline view to newest content at a second side of the timeline view), paragraphs [0044], [0046], [0047]). It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the method of Calissendorff to include wherein the timeline view provides selectable content thumbnails arranged in timeline from oldest content at a first side of the timeline view to newest content at a second side of the timeline view, as taught by Anthony, for the benefit of presenting a chronological view of content to a user.

As to claim 9, Calissendorff and Anthony disclose the method as defined in claim 8. However, Calissendorff fails to disclose a method wherein the timeline view includes a demarcation to indicate a change in date to which the content is associated. Anthony discloses a method wherein the timeline view includes a demarcation to indicate a change in date to which the content is associated (items may be grouped in chronological order (the timeline view includes a demarcation) in a logical timeline that may include various time intervals (to indicated a change in date to which the content is associated), paragraph [0042]). It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the method of Calissendorff to include wherein the timeline view includes a demarcation to indicate a change in date to which the content is associated, as taught by Anthony, for the benefit of showing a user interface that clearly indicates a date change of a timeline view.

As to claim 10, Calissendorff discloses the method as defined in claim 1. However, Calissendorff fails to disclose a method wherein the third type of content is for a collection of content. Anthony discloses a method wherein the third type of content is for a collection of content (items may be stored in logical groupings such as virtual folders or stacks (wherein the third type of content is for a collection of content), paragraph [0047]). It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the method of Calissendorff to include wherein the third type of content is for a collection of content, as taught by Anthony, for the benefit of grouping content for easier viewing for the user.

As to claim 11, Calissendorff and Anthony disclose the method as defined in claim 10. Calisendorff further discloses a method wherein the third user interface is for a linear view (the presentation group is in a linear view (wherein the third user interface is for a linear view), figure 3d). It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the method of Calissendorff to include wherein the third user interface is for a linear view, as taught by Anthony, for the benefit of presenting a linear view in a user interface.

Claims 13-14 lack an inventive step under PCT Article 33(3) as being obvious over Calissendorff in view of Peterson, and further in view of Jeong.

As to claim 13, Calissendorff and Peterson disclose the intelligent television system as defined in claim 12. However, Calissendorff fails to disclose a system wherein first type of content is for a selection main screen with a limited amount of content, and wherein the first user interface is for at least one of a grid view, a Fibonacci view, and a cluster view. Jeong discloses a system wherein first type of content is for a selection main screen with a limited amount of content (the home screen (selection main screen) may further include an application menu with at least one application that can be executed (wherein the first type of content is for a selection main screen with a limited amount of content), paragraph [0145]). Further, Peterson discloses a system wherein the first user interface is for at least one of a grid view, a Fibonacci view, and a cluster view (the means of displaying can be presented as a Fibonacci spiral (wherein the first user interface is a Fibonacci view), paragraph [0043]). It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the system of Calissendorff to include wherein first type of content is for a selection main screen with a limited amount of content, as taught by Jeong, for the benefit of presenting a main screen that is simple for the user to navigate. Further, It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the system of Calissendorff to include wherein the first user interface is for at least one of a grid view, a Fibonacci view, and a cluster view, as taught by Peterson, for the benefit of using a Fibonacci view to present more selectable options to the user.

-***-Continued Within the Next Supplemental Box-***-

Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
Continuation of:

-***-Continued from Previous Supplemental Box-***-

As to claim 14, the combination of Calissendorff, Jeong, and Peterson disclose the intelligent television system as defined in claim 13. However, Calissendorff fails to disclose a system wherein the first user interface is a Fibonacci view, wherein the Fibonacci view provides selectable content thumbnails arranged in a Fibonacci spiral, wherein the thumbnails are arranged in the Fibonacci spiral based on a characteristic of the content associated with the thumbnail, and wherein the characteristic is one or more of an amount of content, a most viewed statistic, a newest statistic, or a most favorite statistic. Peterson discloses a system wherein the first user interface is a Fibonacci view (content can be presented in a Fibonacci spiral (wherein the first user interface is a Fibonacci view), paragraph [0011]), wherein the Fibonacci view provides selectable content thumbnails arranged in a Fibonacci spiral (content (thumbnails can be presented in a Fibonacci spiral (the Fibonacci view provides selectable content thumbnails arranged in a Fibonacci spiral), paragraph [0011]), wherein the thumbnails are arranged in the Fibonacci spiral (thumbnails can be presented in a Fibonacci spiral (wherein the thumbnails are arranged in a Fibonacci spiral), paragraph [0011]). Further, Jeong discloses a system wherein the arrangement is based on a characteristic of the content associated with the thumbnail (the application menu of thumbnails may be arranged based on characteristics (wherein the arrangement is based on a characteristic of the content associated with the thumbnail (paragraphs [0163], [0444]), and wherein the characteristic is a most favorite statistic (thumbnails may be arranged by applications most frequently used by the user (wherein the characteristic is a most favorite statistic), paragraph [0444]). It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the system of Calissendorff to include wherein the first user interface is a Fibonacci view, wherein the Fibonacci view provides selectable content thumbnails arranged in a Fibonacci spiral, wherein the thumbnails are arranged in the Fibonacci spiral, as taught by Peterson, for the benefit of presenting thumbnails using a Fibonacci spiral to the user. Further, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the system of Calissendorff to include system wherein the arrangement is based on a characteristic of the content associated with the thumbnail, and wherein the characteristic is a most favorite statistic as taught by Jeong, for the benefit of presenting thumbnails to a user based on favorites.

Claim 15 lacks an inventive step under PCT Article 33(3) as being obvious over Calissendorff in view of Peterson, and further in view of Anthony.

As to claim 15, Calissendorff and Peterson disclose the intelligent television system as defined in claim 12. However, Calissendorff fails to disclose a system wherein the second type of content is for content associated with time, wherein the second user interface is a timeline view, wherein the timeline view provides selectable content thumbnails arranged in timeline from oldest content at a first side of the timeline view to newest content at a second side of the timeline view, and wherein the timeline view includes a demarcation to indicate a change in date to which the content is associated. Anthony discloses a system wherein the second type of content is for content associated with time (the area displayed to the user is enough in detail for the user to discern the timeline content (wherein the second type of content is for content associated with time), paragraph [0063]), wherein the second user interface is a timeline view (a dynamic timeline view allows a user to view a set of items arranged chronologically (is a timeline view) and presented in a GUI environment (wherein the second user interface), paragraph [0043]), wherein the timeline view provides selectable content thumbnails arranged in timeline from oldest content at a first side of the timeline view to newest content at a second side of the timeline view (the timeline view provides thumbnail icons that will open when the user double clicks (wherein the timeline view provides selectable content thumbnails) arranged in a chronological manner (arranged in timeline from oldest content at a first side of the timeline view to newest content at a second side of the timeline view), paragraphs [0044], [0046], [0047]), and wherein the timeline view includes a demarcation to indicate a change in date to which the content is associated (items may be grouped in chronological order (the timeline view includes a demarcation) in a logical timeline that may include various time intervals (to indicated a change in date to which the content is associated), paragraph [0042]). It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the system of Calisssendorff to include wherein the second type of content is for content associated with time, wherein the second user interface is a timeline view, wherein the timeline view provides selectable content thumbnails arranged in timeline from oldest content at a first side of the timeline view to newest content at a second side of the timeline view, and wherein the timeline view includes a demarcation to indicate a change in date to which the content is associated, as taught by Anthony, for the benefit of organizing the display of content in a timeline view.

-***-Continued Within the Next Supplemental Box-***-

Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
Continuation of:
-***-Continued from Previous Supplemental Box-***-

Claim 19 lacks an inventive step under PCT Article 33(3) as being obvious over Calissendorff in view of Jeong, and further in view of Anthony.

As to claim 19, Calissendorff and Jeong disclose the computer readable medium as defined in claim 17. However, Calissendorff fails to disclose the computer readable medium wherein the second type of content is for content associated with time, wherein the second user interface is a timeline view, wherein the timeline view provides selectable content thumbnails arranged in timeline from oldest content at a first side of the timeline view to newest content at a second side of the timeline view, and wherein the timeline view includes a demarcation to indicate a change in date to which the content is associated. Anthony discloses a computer readable medium (computer readable medium, claim 21) wherein the second type of content is for content associated with time (the area displayed to the user is enough in detail for the user to discern the timeline content (wherein the second type of content is for content associated with time), paragraph [0063]), wherein the second user interface is a timeline view (a dynamic timeline view allows a user to view a set of items arranged chronologically (is a timeline view) and presented in a GUI environment (wherein the second user interface), paragraph [0043]), wherein the timeline view provides selectable content thumbnails arranged in timeline from oldest content at a first side of the timeline view to newest content at a second side of the timeline view the timeline view provides thumbnail icons that will open when the user double clicks (wherein the timeline view provides selectable content thumbnails) arranged in a chronological manner (arranged in timeline from oldest content at a first side of the timeline view to newest content at a second side of the timeline view), paragraphs [0044], [0046], [0047]), and wherein the timeline view includes a demarcation to indicate a change in date to which the content is associated (items may be grouped in chronological order (the timeline view includes a demarcation) in a logical timeline that may include various time intervals (to indicated a change in date to which the content is associated), paragraph [0042]). It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the computer readable medium of Calissendorff to include wherein the second type of content is for content associated with time, wherein the second user interface is a timeline view, wherein the timeline view provides selectable content thumbnails arranged in timeline from oldest content at a first side of the timeline view to newest content at a second side of the timeline view, and wherein the timeline view includes a demarcation to indicate a change in date to which the content is associated, as taught by Anthony, for the benefit of performing the timeline view operations using computer readable medium.

Claims 1-20 have industrial applicability as defined by PCT Article 33(4) because the subject matter can be made or used in industry.

Electronic Patent Application Fee Transmittal

Application Number:	13968884
Filing Date:	16-Aug-2013
Title of Invention:	ON SCREEN METHOD AND SYSTEM FOR CHANGING TELEVISION CHANNELS
First Named Inventor/Applicant Name:	Mohammed Selim
Filer:	Douglas W. Swartz/Robert Roe-Pachirat
Attorney Docket Number:	6583-445

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Submission- Information Disclosure Stmt	1806	1	180	180
		Total in USD ($)		**180**

Electronic Acknowledgement Receipt	
EFS ID:	19750252
Application Number:	13968884
International Application Number:	
Confirmation Number:	1062
Title of Invention:	ON SCREEN METHOD AND SYSTEM FOR CHANGING TELEVISION CHANNELS
First Named Inventor/Applicant Name:	Mohammed Selim
Customer Number:	111285
Filer:	Douglas W. Swartz/Robert Roe-Pachirat
Filer Authorized By:	Douglas W. Swartz
Attorney Docket Number:	6583-445
Receipt Date:	01-AUG-2014
Filing Date:	16-AUG-2013
Time Stamp:	11:11:45
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$180
RAM confirmation Number	8171
Deposit Account	191970
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		6583-445_IDS_02.pdf	332597 5bce6486e87212e0b0ac5b546cb034608990ca0a	yes	7
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Transmittal Letter		1	3	
	Information Disclosure Statement (IDS) Form (SB08)		4	7	
Warnings:					
Information:					
2	Foreign Reference	WO2012103121.pdf	13311541 6aae5e6a94ce861a1bf6d32c7f2a438ee9887a84	no	176
Warnings:					
Information:					
3	Non Patent Literature	6583-426-PCT_ISR_WO_04-16-2014.pdf	1086233 a4e513b78e6fe5498dbd4cde6712a1df6047fbfa	no	9
Warnings:					
Information:					
4	Non Patent Literature	6583-434-PCT_ISR_WO_04-17-2014.pdf	1443005 eb4910f5bd08db361d7cb252843a4135585ad136	no	12
Warnings:					
Information:					
5	Non Patent Literature	6583-464-PCT_ISR-WO_03-10-2014.pdf	1594680 d37ab73bbb09536252e8c5ff5bbd35a3a111ab2b	no	11
Warnings:					
Information:					
6	Non Patent Literature	6583-425_NOA_04-16-2014.pdf	401795 ee968cf2dcb9da09766f624c86b0de2c1193e971	no	7
Warnings:					
Information:					
7	Non Patent Literature	6583-438_OA_07-21-2014.pdf	899367 864425482fb539c890a1ab1ac9d9fb7c90d97380	no	21
Warnings:					
Information:					

8	Non Patent Literature	6583-441_OA_06-04-2014.pdf	310886 3a209fee0a15e8a406179f7de94c68e461f4e71e	no	10
Warnings:					
Information:					
9	Non Patent Literature	6583-442_OA_07-09-2014.pdf	521185 dfd876c0126ad1bd89bd4b648d044412796f117b	no	17
Warnings:					
Information:					
10	Non Patent Literature	6583-443_OA_07-21-2014.pdf	358878 60bc82975188686cd880a0a2e05dbbc9207d55ba	no	12
Warnings:					
Information:					
11	Non Patent Literature	6583-444_OA_05-15-2014.pdf	232330 943297edd42b7b6502a4826ab17a8695cae94602	no	6
Warnings:					
Information:					
12	Non Patent Literature	6583-446_OA_06-16-2014.pdf	325367 6731bd57e0d96afab1c9c8826e6f5d460545af7f	no	10
Warnings:					
Information:					
13	Non Patent Literature	6583-449_OA_07-07-2014.pdf	512413 656cf509f75e3062f279fe472b03a190891df25c	no	15
Warnings:					
Information:					
14	Non Patent Literature	6583-450_OA_05-06-2014.pdf	348540 51cfdfd3f00217354f88444fbe166540e948512f	no	11
Warnings:					
Information:					
15	Non Patent Literature	6583-453_OA_06-13-2014.pdf	314734 1f206c9fb6d4815e594bab0111d8bda6fa95e2df	no	10
Warnings:					
Information:					
16	Non Patent Literature	6583-454_OA_07-15-2014.pdf	246252 cea8468fb03d134edaaa255df7b0ae810566d80f	no	7
Warnings:					
Information:					

17	Non Patent Literature	6583-456_OA_05-23-2014.pdf	615736 47de9f278469950a5d75fba1ff9fb728f3380492	no	18
Warnings:					
Information:					
18	Non Patent Literature	6583-458_OA_05-23-2014.pdf	586825 74e18283d79847eafc655e19258cdac279f0d9e9	no	17
Warnings:					
Information:					
19	Non Patent Literature	6583-463_OA_07-15-2014.pdf	358770 b8159cfd058fc7e5b27f7f532cb2a2abe519480b	no	12
Warnings:					
Information:					
20	Non Patent Literature	6583-464_OA_07-07-2014.pdf	236242 ecaa508243eb84eb2610d842ec70614de4342054	no	7
Warnings:					
Information:					
21	Non Patent Literature	6583-481_OA_06-06-2014.pdf	240412 dc452e429b01c83dfb982eca23e28ee0dece85ce	no	7
Warnings:					
Information:					
22	Non Patent Literature	6583-495_OA_07-18-2014.pdf	451229 94d6ab2206db4baba3766da85d17dd376b126cad	no	14
Warnings:					
Information:					
23	Non Patent Literature	6583-498_OA_05-06-2014.pdf	401800 842b992e85d8ecf6084412670fcd2c96de49fbd7	no	12
Warnings:					
Information:					
24	Non Patent Literature	6583-499_OA_04-30-2014.pdf	357652 24c196b3fbdead07de140cc45ea1fee1d327d2a6	no	11
Warnings:					
Information:					
25	Non Patent Literature	6583-500_OA_05-27-2014.pdf	414649 69622a4b0aa546852115e60280ef598eee13fa20	no	12
Warnings:					
Information:					

26	Non Patent Literature	6583-501_OA_06-25-2014.pdf	284651 85a879461322ac3178eb37328a449afac371e972	no	9
Warnings:					
Information:					
27	Non Patent Literature	6583-511_OA_06-25-2014.pdf	386960 1dbcc9147ff873c7849b329c4b680d061b91df42	no	13
Warnings:					
Information:					
28	Non Patent Literature	6583-520_OA_07-09-2014.pdf	630160 42b06f756020de23b17fc48eb7a4201ccddc881a	no	19
Warnings:					
Information:					
29	Non Patent Literature	6583-526_OA_07-15-2014.pdf	307584 7a57a9fa2db3830926 56ae539a054fd7099bf01f	no	9
Warnings:					
Information:					
30	Fee Worksheet (SB06)	fee-info.pdf	30574 70c8c377652c9368795302a243092ebb113a90a3	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	27543047		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

<u>New Applications Under 35 U.S.C. 111</u>
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

<u>National Stage of an International Application under 35 U.S.C. 371</u>
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

<u>New International Application Filed with the USPTO as a Receiving Office</u>
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re the Application of:	)	Group Art Unit: 2426
Mohammed Selim	)	Confirmation No.: 1062
Serial No.: 13/968,884	)	Examiner: Adil Ocak
Filed: August 16, 2013	)	SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT
Atty. File No.: 6583-445	)	
Entitled: "On Screen Method and System for Changing Television Channels"	)	*Electronically Submitted*

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Commissioner:

The references cited on attached Form PTO/SB08 are being called to the attention of the Examiner.

☒ Copies of the cited non-patent and/or foreign references are enclosed herewith.

☐ Copies of the cited U.S. patents and/or patent applications are enclosed herewith.

☒ Copies of the cited U.S. patents/patent application publications are not enclosed in accordance with 37 C.F.R. § 1.98(a).

☐ Copies of the cited references are not enclosed, in accordance with 37 C.F.R. § 1.98(d), because the references were cited by or submitted to the U.S. Patent and Trademark Office in prior application Serial No. _____ filed _____, which is relied upon for an earlier filing date under 35 U.S.C. § 120.

☐ To the best of applicants' belief, the pertinence of the foreign-language references is believed to be summarized in the attached English abstracts and/or in the figures, although applicants do not necessarily vouch for the accuracy of the translation.

☐ Examiner's attention is drawn to the following related applications:

Serial No. _____ filed _____ (Attorney Ref. No. _____)

Serial No. _____ filed _____ (Attorney Ref. No. _____)

☐ Other:_____

Submission of the above information is not intended as an admission that any item is citable under the statutes or rules to support a rejection, that any item disclosed represents analogous art, or that those skilled in the art would refer to or recognize the pertinence of any reference without the benefit of hindsight, nor should an inference be drawn as to the pertinence

EX. 1002
LG Electronics, Inc. / Page 601 of 3523

of the references based on the order in which they are presented. Submission of this statement should not be taken as an indication that a search has been conducted, or that no better art exists.

It is respectfully requested that the cited information be expressly considered during the prosecution of this application and the references made of record therein.

FEES

☐	**37 CFR 1.97(b)**: No fee is believed due in connection with this submission, because the information disclosure statement submitted herewith is satisfied by one of the following conditions ("X" indicates satisfaction): ☐ Within three months of the filing date of a national application other than a continued prosecution application under 37 CFR 1.53(d), or ☐ Within three months of the date of entry of the national stage as set forth in § 1.491 in an international application, or ☐ Before the mailing date of a first Office Action on the merits, or ☐ Before the mailing of a first Office action after the filing of a request for continued examination under 37 CFR 1.114. Although no fee is believed due, if any fee is deemed due in connection with this submission, please charge such fee to Deposit Account 19-1970.
☒	**37 CFR 1.97(c)**: The information disclosure statement transmitted herewith is being filed after all the above conditions (37 CFR 1.97(b)), but before the mailing date of any one of the following conditions: (1) a final action under 37 C.F.R. 1.113, or (2) a notice of allowance under 37 C.F.R. 1.311, or (3) an action that otherwise closes prosecution in the application. This Information Disclosure Statement is accompanied by: ☐ A Certification (below) as specified by 37 C.F.R. 1.97(e). Although no fee is believed due, if any fee is deemed due in connection with this submission, please charge such fee to Deposit Account 19-1970. OR ☒ Please charge Deposit Account 19-1970 in the amount of $180.00 for the fee set forth in 37 C.F.R. 1.17(p) for submission of an information disclosure statement. Please credit any overpayment or charge any underpayment to Deposit Account 19-1970.
☐	**37 CFR 1.97(d)**: This Information Disclosure Statement is being submitted after the period specified in 37 CFR 1.97(c). ☐ This information Disclosure Statement includes a Certification (below) as specified by 37 C.F.R. 1.97(e) AND ☐ Applicants hereby requests consideration of the reference(s) disclosed herein. Please charge Deposit Account 19-1970 in the amount of $180.00 under 37 C.F.R. 1.17(p). Please credit any overpayment or charge any underpayment to Deposit Account 19-1970. Election to pay the fee should not be taken as an indication that applicant(s) cannot execute a certification.

EX. 1002
LG Electronics, Inc. / Page 602 of 3523

Certification (37 C.F.R. 1.97(e))
(Applicable only if checked)

☐ The undersigned certifies that:

☐ Each item of information contained in the Information Disclosure Statement submitted herewith was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this statement. 37 C.F.R. 1.97(e)(1).

☐ A copy of the communication from the foreign patent office is enclosed.

OR

☐ No item of information contained in the Information Disclosure Statement submitted herewith was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the undersigned after making reasonable inquiry, no item of information contained in the Information Disclosure Statement was known to any individual designated in 37 C.F.R. 1.56(c) more than three months prior to the filing of this statement. 37 C.F.R. 1.97(e)(2).

Respectfully submitted,

SHERIDAN ROSS P.C.

By: /Douglas W. Swartz/
Douglas W. Swartz
Registration No. 37,739
1560 Broadway, Suite 1200
Denver, Colorado 80202-5141
(303) 863-9700

Date: August 01, 2014

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/968,884	08/16/2013	Mohammed Selim	6583-445	1062

111285 7590 06/25/2014

Sheridan Ross P.C.
1560 Broadway
Suite 1200
Denver, CO 80202

EXAMINER
OCAK, ADIL

ART UNIT	PAPER NUMBER
2426	

NOTIFICATION DATE	DELIVERY MODE
06/25/2014	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

flexpatents@sheridanross.com

Office Action Summary	Application No. 13/968,884	Applicant(s) SELIM, MOHAMMED	
	Examiner ADIL OCAK	Art Unit 2426	AIA (First Inventor to File) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *8/16/2013*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *1-19* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-19* is/are rejected.

8)☒ Claim(s) *8,9 and 13-15* is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☒ The drawing(s) filed on *8/16/2013* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date *4/7/2014*.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

DETAILED ACTION

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

2. This action is in response to application 13/968884 filed 8/16/2013.

3. Claims 1 through 19 are presented for examination.

Claim Objections

4. Claims 8, 9 and 13-15 are objected to because of the following informalities which appears to be cut and paste issues:

- Claim 8 – "The television of claim 8", the Examiner believes the applicant meant for this to read " The television of claim 7", and is examined as such
- Claim 9 - "The television of claim 9", the Examiner believes the applicant meant for this to read " The television of claim 8", and is examined as such
- Claim 13 - "The computer readable medium of claim 13", the Examiner believes the applicant meant for this to read " The computer readable medium of claim 12", and is examined as such
- Claim 14 - "The computer readable medium of claim 14", the Examiner believes the applicant meant for this to read "The computer readable medium of claim 13", and is examined as such
- Claim 15 - "The computer readable medium of claim 15", the Examiner believes the applicant meant for this to read "The computer readable medium of claim 14", and is examined as such

Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102 of this title, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103 are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.

3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. **Claims 1, 2, 7, 12, and 13** rejected under 35 U.S.C. 103 as being unpatentable over Carolynn Rae Johnson, Patent No US 7,506,350 B2 (hereinafter Johnson) in view of James W. Wieder, Patent No US 8,089,455 B1 (hereafter Wieder).

Regarding Claim 1, Johnson discloses **a method, comprising:**

receiving, wirelessly by at least one of an infrared and radio frequency module of a television and from a remote control, a request to change a programming channel [FIG.1 & col.5, lines 4-26: Discloses an IR receiver (item 1122- infrared module) receiving wirelessly from a remote control a request to change channels. For example, activation of a "CHANNEL UP" feature on remote

control (item 1125) causes CPU (item 1112) to send a "change channel" command along with channel data to tuner (item 1105) via I2C BUS (col.5, lines 18-21).]**;**

displaying, by a microprocessor executable application framework and on a television screen [FIG.1: Discloses a video signal processor (item 1155) outputting to a display; and col.2, lines 15-16: Discloses an EPG is displayed on a display module, such as a television, that is associated with the electronic host device; and col.4, lines 47-52: Discloses FIG. 1 is a schematic of an apparatus capable of processing user commands, displaying the user interface screens of FIGS. 4-10, and performing searches of stored program guide records in accordance with the present invention. The apparatus is capable of processing both analog NTSC television signals and internet information.]**, an on screen channel changer** [FIG.3-4 & col.12, lines 42-50: Discloses The OSD processor is also responsible for generating an exemplary program guide as shown in FIG. 4 under the control of the ARM processor (item 315 of FIG.3). In the exemplary embodiment, upon detecting a user request to generate a guide display, the ARM microprocessor processes the program guide data information obtained from a data stream provided by a program guide information provider and formats the guide data information into OSD pixel data corresponding to a "grid guide" as shown in FIG. 4; and col.14, lines 1-15: Discloses using the remote control to change channels (items 510-516 of FIG.4) by highlighting and clicking.]**, the on screen channel changer comprising electronic program guide ("EPG") information** [FIG.4: Discloses EPG information such as program titles and times.] **and a number input bar comprising digits** [FIG.4: Discloses items 510-516 (input bar comprising digits), for example, item 510 comprises a cell (input bar) with the digits 202. Selecting this input bar by the remote cause the channel to change to channel 202.]**;**

receiving, by the application framework and from the remote control, a channel selection using the on screen channel changer [FIG.1 & Col.5, lines 14-25: Discloses central processing unit (CPU) (item 1112) within mP (item 1110) executes control programs contained within memory, such as EEPROM 1127 shown FIG. 1 (application framework), in response to commands provided by a user, e.g., via IR remote control (item 1125) and IR receiver (item 1122). For example, activation of a "CHANNEL UP" feature on remote control 1125 causes CPU 1112 to send a "change channel" command along with channel data to tuner 1105 via I2C BUS. As a result, tuner 1105 tunes the next channel in the channel

scan list; and col.14, lines 1-15: Discloses using the remote control to change channels (items 510-516 of FIG.4) by highlighting and clicking.]**; and**

changing, by the application framework, to the selected channel [FIG.1 & Col.5, lines 14-25: Discloses central processing unit (CPU) (item 1112) within mP (item 1110) executes control programs contained within memory, such as EEPROM 1127 shown FIG. 1 (application framework), in response to commands provided by a user, e.g., via IR remote control (item 1125) and IR receiver (item 1122). For example, activation of a "CHANNEL UP" feature on remote control 1125 causes CPU 1112 to send a "change channel" command along with channel data to tuner 1105 via I2C BUS. As a result, tuner 1105 tunes the next channel in the channel scan list; and col.14, lines 1-15: Discloses using the remote control to change channels (items 510-516 of FIG.4) by highlighting and clicking.]**.**

Although Johnson discloses channel changing based on EPG GUI and remote control that displays the digits of the channel (items 510-516 of FIG.4), Johnson does not explicitly disclose **receiving, by the application framework and from the remote control, a channel selection *based on digits* using the on screen channel changer** (emphasis added to distinguish the elements not taught by Johnson)**.** However, in analogous art, Wieder teaches a channel selection mode where an active-display may show a virtual-keyboard (number input bar) with the numbers 0 thru 9. The user may use a remote control to select a sequence of numbers to go to a specific channel (e.g., select "3" then "5" then 1" to go to channel 351). The numbers may be shown in their selected sequence on a portion of an active-display, so the user can verify what is happening (Wieder, column 10, lines 10-15). Therefore, it would have been obvious to one of ordinary skill in the art before the effective filling date of the invention to modify Johnson in view of Wieder to select channel based on digits. One would be motivated at the time of the invention to have this capability since current remote controls are complex to use because of the large number of control-buttons they have (Wieder, column 1, lines 14-15). What is desired is a simpler way of remotely controlling and/or interacting-with electronic-devices (Wieder, column 2, lines 20-21).

Regarding Claim 2, the combined teaching of Johnson and Wieder discloses **the method of claim 1,** and Wieder further discloses **wherein the digits range from 0 to 9** [col. 10, lines 10-15: Disclose a channel selection mode where an active-display may show a virtual-keyboard (number input bar) with the numbers 0 thru 9]**, wherein the remote control selects the digits using non-numeric keys** [FIG.2A-B & col.5, lines 17-19: Discloses a remote control with a single input control button (item 203) for selection.]**, and** Johnson further discloses **wherein the EPG information corresponds to multiple programs and/or channels** [FIG.4: Discloses EPG showing multiple channels.]**, and wherein the EPG information comprises, for each program, airtime, program name, program channel, and program description** [FIG.4: Discloses EPG with each program showing airtime, program name, and program channel; and col.8, lines 46-49: Discloses the program description contained in the program guide information may comprise different program descriptive fields such as title, star, rating, etc., relating to a program.]**.** This claim is rejected on the same grounds as claim 1.

Regarding Claim 7, Johnson discloses **a television, comprising:**

a television screen [col.2, lines 15-16: Discloses an EPG is displayed on a display module, such as a television, that is associated with the electronic host device]**;**

at least one of an infrared and radio frequency module configured to receive wirelessly requests from a remote control of a user, the requests comprising a selected channel or program from a displayed listing [FIG.1 & Col.5, lines 14-25: Discloses central processing unit (CPU) (item 1112) within mP (item 1110) executes control programs contained within memory, such as EEPROM 1127 shown FIG. 1 (application framework), in response to commands provided by a user, e.g., via IR remote control (item 1125) and IR receiver (item 1122). For example, activation of a "CHANNEL UP" feature on remote control 1125 causes CPU 1112 to send a "change channel" command along with channel data to tuner 1105 via I2C BUS. As a result, tuner 1105 tunes the next channel in the channel scan list; and col.14, lines 1-15: Discloses using the remote control to change channels (items 510-516 of FIG.4) by highlighting and clicking.]**; and**

a microprocessor executable application framework configured to receive a request to change a programming channel, display, on the television screen [FIG.1: Discloses a video signal processor (item 1155) outputting to a display; and col.2, lines 15-16: Discloses an EPG is displayed on a display module, such as a television, that is associated with the electronic host device; and col.4, lines 47-52: Discloses FIG. 1 is a schematic of an apparatus capable of processing user commands, displaying the user interface screens of FIGS. 4-10, and performing searches of stored program guide records in accordance with the present invention. The apparatus is capable of processing both analog NTSC television signals and internet information.]**, an on screen channel changer** [FIG.3-4 & col.12, lines 42-50: Discloses The OSD processor is also responsible for generating an exemplary program guide as shown in FIG. 4 under the control of the ARM processor (item 315 of FIG.3). In the exemplary embodiment, upon detecting a user request to generate a guide display, the ARM microprocessor processes the program guide data information obtained from a data stream provided by a program guide information provider and formats the guide data information into OSD pixel data corresponding to a "grid guide" as shown in FIG. 4; and col.14, lines 1-15: Discloses using the remote control to change channels (items 510-516 of FIG.4) by highlighting and clicking.]**, the on screen channel changer comprising electronic program guide ("EPG") information** [FIG.4: Discloses EPG information such as program titles and times.] **and a number input bar comprising digits** [FIG.4: Discloses items 510-516 (input bar comprising digits), for example, item 510 comprises a cell (input bar) with the digits 202. Selecting this input bar by the remote cause the channel to change to channel 202.]**,**

receive, from the remote control, a channel selection using the on screen channel changer, and change to the selected channel [FIG.1 & Col.5, lines 14-25: Discloses central processing unit (CPU) (item 1112) within mP (item 1110) executes control programs contained within memory, such as EEPROM 1127 shown FIG. 1 (application framework), in response to commands provided by a user, e.g., via IR remote control (item 1125) and IR receiver (item 1122). For example, activation of a "CHANNEL UP" feature on remote control 1125 causes CPU 1112 to send a "change channel" command along with channel data to tuner 1105 via I2C BUS. As a result, tuner 1105 tunes the

next channel in the channel scan list; and col.14, lines 1-15: Discloses using the remote control to change channels (items 510-516 of FIG.4) by highlighting and clicking.]**;**

and change to the selected channel [FIG.1 & Col.5, lines 14-25: Discloses central processing unit (CPU) (item 1112) within mP (item 1110) executes control programs contained within memory, such as EEPROM 1127 shown FIG. 1 (application framework), in response to commands provided by a user, e.g., via IR remote control (item 1125) and IR receiver (item 1122). For example, activation of a "CHANNEL UP" feature on remote control 1125 causes CPU 1112 to send a "change channel" command along with channel data to tuner 1105 via I2C BUS. As a result, tuner 1105 tunes the next channel in the channel scan list; and col.14, lines 1-15: Discloses using the remote control to change channels (items 510-516 of FIG.4) by highlighting and clicking.]**.**

and wherein the EPG information corresponds to multiple programs and/or channels [FIG.4: Discloses EPG showing multiple channels.]**, and wherein the EPG information comprises, for each program, airtime, program name, program channel, and program description** [FIG.4: Discloses EPG with each program showing airtime, program name, and program channel; and col.8, lines 46-49: Discloses the program description contained in the program guide information may comprise different program descriptive fields such as title, star, rating, etc., relating to a program.]**.**

Although Johnson discloses channel changing based on EPG GUI and remote control that displays the digits of the channel (items 510-516 of FIG.4), Johnson does not explicitly disclose **receive, from the remote control, a channel selection *based on digits* using the on screen channel changer, and change to the selected channel** and **the television of claim 7, *wherein the digits range from 0 to 9, wherein the remote control selects the digits using non-numeric keys, and wherein the EPG information corresponds to multiple programs and/or channels, and wherein the EPG information comprises, for each program, airtime, program name, program channel, and program description*** (emphasis added to distinguish the elements not taught by Johnson)**.** However, in analogous art, Wieder teaches a channel selection mode where an active-display may show a virtual-keyboard (number input bar) with the numbers 0 thru 9. The user may use a remote control to select a sequence of numbers to go to a specific channel (e.g., select "3" then "5" then 1" to go to channel 351).

The numbers may be shown in their selected sequence on a portion of an active-display, so the user can verify what is happening (Wieder, column 10, lines 10-15). Wieder further discloses **the television of claim 7, wherein the digits range from 0 to 9** [col. 10, lines 10-15: Disclose a channel selection mode where an active-display may show a virtual-keyboard (number input bar) with the numbers 0 thru 9]**, wherein the remote control selects the digits using non-numeric keys** [FIG.2A-B & col.5, lines 17-19: Discloses a remote control with a single input control button (item 203) for selection.].

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filling date of the invention to modify Johnson in view of Wieder to select channel based on digits. One would be motivated at the time of the invention to have this capability since current remote controls are complex to use because of the large number of control-buttons they have (Wieder, column 1, lines 14-15). What is desired is a simpler way of remotely controlling and/or interacting-with electronic-devices (Wieder, column 2, lines 20-21).

Regarding Claim 12, Johnson discloses **a tangible and non-transient computer readable medium, comprising microprocessor executable instructions that, when executed, are configured to perform operations comprising:**

receive, from a remote control of a user, a request to change a programming channel [FIG.1 & Col.5, lines 14-25: Discloses central processing unit (CPU) (item 1112) within mP (item 1110) executes control programs contained within memory (processor receives request), such as EEPROM 1127 shown FIG. 1, in response to commands provided by a user, e.g., via IR remote control (item 1125) and IR receiver (item 1122). For example, activation of a "CHANNEL UP" feature on remote control 1125 causes CPU 1112 to send a "change channel" command along with channel data to tuner 1105 via I2C BUS. As a result, tuner 1105 tunes the next channel in the channel scan list; and col.14, lines 1-15: Discloses using the remote control to change channels (items 510-516 of FIG.4) by highlighting and clicking.]**;**

display, on a television screen [FIG.1: Discloses a video signal processor (item 1155) outputting to a display; and col.2, lines 15-16: Discloses an EPG is displayed on a display module, such as a television, that is associated with the electronic host device; and col.4, lines 47-52: Discloses FIG. 1 is a schematic

of an apparatus capable of processing user commands, displaying the user interface screens of FIGS. 4-10, and performing searches of stored program guide records in accordance with the present invention. The apparatus is capable of processing both analog NTSC television signals and internet information.]**, an on screen channel changer** [FIG.3-4 & col.12, lines 42-50: Discloses The OSD processor is also responsible for generating an exemplary program guide as shown in FIG. 4 under the control of the ARM processor (item 315 of FIG.3). In the exemplary embodiment, upon detecting a user request to generate a guide display, the ARM microprocessor processes the program guide data information obtained from a data stream provided by a program guide information provider and formats the guide data information into OSD pixel data corresponding to a "grid guide" as shown in FIG. 4; and col.14, lines 1-15: Discloses using the remote control to change channels (items 510-516 of FIG.4) by highlighting and clicking.]**, the on screen channel changer comprising electronic program guide ("EPG") information** [FIG.4: Discloses EPG information such as program titles and times.] **and a number input bar comprising digits** [FIG.4: Discloses items 510-516 (input bar comprising digits), for example, item 510 comprises a cell (input bar) with the digits 202. Selecting this input bar by the remote cause the channel to change to channel 202.]**; receive, from the remote control, a channel selection using the on screen channel changer** [FIG.1 & Col.5, lines 14-25: Discloses central processing unit (CPU) (item 1112) within mP (item 1110) executes control programs contained within memory, such as EEPROM 1127 shown FIG. 1 (application framework), in response to commands provided by a user, e.g., via IR remote control (item 1125) and IR receiver (item 1122). For example, activation of a "CHANNEL UP" feature on remote control 1125 causes CPU 1112 to send a "change channel" command along with channel data to tuner 1105 via I2C BUS. As a result, tuner 1105 tunes the next channel in the channel scan list; and col.14, lines 1-15: Discloses using the remote control to change channels (items 510-516 of FIG.4) by highlighting and clicking.]**; and change to the selected channel** [FIG.1 & Col.5, lines 14-25: Discloses central processing unit (CPU) (item 1112) within mP (item 1110) executes control programs contained within memory, such as EEPROM 1127 shown FIG. 1 (application framework), in response to commands provided by a user, e.g., via IR remote control (item 1125) and IR receiver (item 1122). For example, activation of a "CHANNEL UP" feature on remote control 1125 causes CPU 1112 to send a "change

channel" command along with channel data to tuner 1105 via I2C BUS. As a result, tuner 1105 tunes the next channel in the channel scan list; and col.14, lines 1-15: Discloses using the remote control to change channels (items 510-516 of FIG.4) by highlighting and clicking.]**.**

Although Johnson discloses channel changing based on EPG GUI and remote control that displays the digits of the channel (items 510-516 of FIG.4), Johnson does not explicitly disclose **receive, from the remote control, a channel selection *based on digits* using the on screen channel changer** (emphasis added to distinguish the elements not taught by Johnson)**.** However, in analogous art, Wieder teaches a channel selection mode where an active-display may show a virtual-keyboard (number input bar) with the numbers 0 thru 9. The user may use a remote control to select a sequence of numbers to go to a specific channel (e.g., select "3" then "5" then 1" to go to channel 351). The numbers may be shown in their selected sequence on a portion of an active-display, so the user can verify what is happening (Wieder, column 10, lines 10-15). Therefore, it would have been obvious to one of ordinary skill in the art before the effective filling date of the invention to modify Johnson in view of Wieder to select channel based on digits. One would be motivated at the time of the invention to have this capability since current remote controls are complex to use because of the large number of control-buttons they have (Wieder, column 1, lines 14-15). What is desired is a simpler way of remotely controlling and/or interacting-with electronic-devices (Wieder, column 2, lines 20-21).

Regarding Claim 13, the combined teaching of Johnson and Wieder discloses **the computer readable medium of claim 13,** and Wieder further discloses **wherein the digits range from 0 to 9** [col. 10, lines 10-15: Disclose a channel selection mode where an active-display may show a virtual-keyboard (number input bar) with the numbers 0 thru 9]**, wherein the remote control selects the digits using non-numeric keys** [FIG.2A-B & col.5, lines 17-19: Discloses a remote control with a single input control button (item 203) for selection.]**, and** Johnson further discloses **wherein the EPG information corresponds to multiple programs and/or channels** [FIG.4: Discloses EPG showing multiple channels.]**, and wherein the EPG information comprises, for each program, airtime, program name, program channel, and program description** [FIG.4: Discloses EPG with each program showing airtime,

program name, and program channel; and col.8, lines 46-49: Discloses the program description contained in the program guide information may comprise different program descriptive fields such as title, star, rating, etc., relating to a program.]**.** This claim is rejected on the same grounds as claim 1.

8. **Claims 3, 4, 6, 8, 9, 11, 14, 15, 17, and 19** rejected under 35 U.S.C. 103 as being unpatentable over Carolynn Rae Johnson, Patent No US 7,506,350 B2 (hereinafter Johnson) in view of James W. Wieder, Patent No US 8,089,455 B1 (hereafter Wieder) and further in view of Heo et al., US 2011/0055873 A1 (hereafter Heo).

Regarding Claim 3, the combined teaching of Johnson and Wieder discloses **the method of claim 2,** and the combined teachings do not explicitly disclose **wherein each of the digits are selected using one or more arrow keys and a select button.** However, in analogous art, Heo teaches a user interface manager that controls a virtual keypad to be displayed on a screen (Heo, paragraph 0075). The user can select a specific virtual key (number 0-9) contained in the virtual keypad using the directional arrow keys of the remote. Figure 11 of Heo discloses a remote control with directional arrow keys with an OK select button. Therefore, it would have been obvious to one of ordinary skill in the art before the effective filling date of the invention to modify Johnson and Wieder in view of Heo have a remote control having directional arrow keys and a select button for choosing channel digits. One would be motivated at the time of the invention to have this capability since it allows user to easily enter desired information using a graphical user interface displayed on a display screen (Heo, paragraph 0003).

Regarding Claim 4, the combined teaching of Johnson, Wieder, and Heo discloses **the method of claim 3,** and Wielder further discloses **wherein the remote control does not have a key corresponding to each of the digits** [FIG.2A-B & col.5, lines 17-19: Discloses a remote control with a single input control button (item 203) for selection, with no keys corresponding to each of the digits.]**.** This claim is rejected on the same grounds as claim 1.

Regarding Claim 6, the combined teaching of Johnson and Wieder discloses **the method of claim 1,** and the combined teachings do not explicitly disclose **wherein, as the user selects each digit, the application framework updates the EPG information to include only those programs and/or channels selectable from the selected digits.** However, in analogous art, Heo teaches a user interface manager that controls a virtual keypad to be displayed on a screen (Heo, paragraph 0075). The user can select a specific virtual key (number 0-9) contained in the virtual keypad using the directional arrow keys of the remote. Paragraph 0123 of Heo discloses a signal processor that displays information graphically or in text (EPG) on the display based on at least one of the processed user input signal received through a remote controller. Therefore, it would have been obvious to one of ordinary skill in the art before the effective filling date of the invention to modify Johnson and Wieder in view of Heo to have EPG information displayed based on digits selected by remote control. One would be motivated at the time of the invention to have this capability since it allows user to easily enter desired information using a graphical user interface displayed on a display screen (Heo, paragraph 0003).

Regarding Claim 8, the combined teaching of Johnson and Wieder discloses **the television of claim 8,** and the combined teachings do not explicitly disclose **wherein each of the digits are selected using one or more arrow keys and a select button.** However, in analogous art, Heo teaches a user interface manager that controls a virtual keypad to be displayed on a screen (Heo, paragraph 0075). The user can select a specific virtual key (number 0-9) contained in the virtual keypad using the directional arrow keys of the remote. Figure 11 of Heo discloses a remote control with directional arrow keys with an OK select button. Therefore, it would have been obvious to one of ordinary skill in the art before the effective filling date of the invention to modify Johnson and Wieder in view of Heo have a remote control having directional arrow keys and a select button for choosing channel digits. One would be motivated at the time of the invention to have this capability since it allows user to easily enter desired information using a graphical user interface displayed on a display screen (Heo, paragraph 0003).

Regarding Claim 9, the combined teaching of Johnson, Wieder, and Heo discloses **the television of claim 9,** and Wielder further discloses **wherein the remote control does not have a key corresponding to each of the digits** [FIG.2A-B & col.5, lines 17-19: Discloses a remote control with a single input control button (item 203) for selection, with no keys corresponding to each of the digits.]**.** This claim is rejected on the same grounds as claim 7.

Regarding Claim 11, the combined teaching of Johnson and Wieder discloses **the television of claim 7,** and the combined teachings do not explicitly disclose **wherein, as the user selects each digit, the application framework updates the EPG information to include only those programs and/or channels selectable from the selected digits.** However, in analogous art, Heo teaches a user interface manager that controls a virtual keypad to be displayed on a screen (Heo, paragraph 0075). The user can select a specific virtual key (number 0-9) contained in the virtual keypad using the directional arrow keys of the remote. Paragraph 0123 of Heo discloses a signal processor that displays information graphically or in text (EPG) on the display based on at least one of the processed user input signal received through a remote controller. Therefore, it would have been obvious to one of ordinary skill in the art before the effective filling date of the invention to modify Johnson and Wieder in view of Heo have EPG information displayed based on digits selected by remote control. One would be motivated at the time of the invention to have this capability since it allows user to easily enter desired information using a graphical user interface displayed on a display screen (Heo, paragraph 0003).

Regarding Claim 14, the combined teaching of Johnson and Wieder discloses **the computer readable medium of claim 14,** and the combined teachings do not explicitly disclose **wherein each of the digits are selected using one or more arrow keys and a select button.** However, in analogous art, Heo teaches a user interface manager that controls a virtual keypad to be displayed on a screen (Heo, paragraph 0075). The user can select a specific virtual key (number 0-9) contained in the virtual keypad using the directional arrow keys of the remote. Figure 11 of Heo discloses a remote control with directional arrow keys with an OK select button. Therefore, it would have been obvious to one of ordinary

skill in the art before the effective filling date of the invention to modify Johnson and Wieder in view of Heo have a remote control having directional arrow keys and a select button for choosing channel digits. One would be motivated at the time of the invention to have this capability since it allows user to easily enter desired information using a graphical user interface displayed on a display screen (Heo, paragraph 0003).

Regarding Claim 15, the combined teaching of Johnson, Wieder, and Heo discloses **the computer readable medium of claim 15,** and Wielder further discloses **wherein the remote control does not have a key corresponding to each of the digits** [FIG.2A-B & col.5, lines 17-19: Discloses a remote control with a single input control button (item 203) for selection, with no keys corresponding to each of the digits.]**.** This claim is rejected on the same grounds as claim 12.

Regarding Claim 17, the combined teaching of Johnson and Wieder discloses **the computer readable medium of claim 13,** and the combined teachings do not explicitly disclose **wherein, as the user selects each digit, the application framework updates the EPG information to include only those programs and/or channels selectable from the selected digits.** However, in analogous art, Heo teaches a user interface manager that controls a virtual keypad to be displayed on a screen (Heo, paragraph 0075). The user can select a specific virtual key (number 0-9) contained in the virtual keypad using the directional arrow keys of the remote. Paragraph 0123 of Heo discloses a signal processor that displays information graphically or in text (EPG) on the display based on at least one of the processed user input signal received through a remote controller. Therefore, it would have been obvious to one of ordinary skill in the art before the effective filling date of the invention to modify Johnson and Wieder in view of Heo to have EPG information displayed based on digits selected by remote control. One would be motivated at the time of the invention to have this capability since it allows user to easily enter desired information using a graphical user interface displayed on a display screen (Heo, paragraph 0003).

Regarding Claim 19, the combined teaching of Johnson, Wieder, and Heo discloses **the television of claim 11,** and Heo further discloses **wherein the EPG information and graphical image in the thumbnail preview changes as the in focus EPG information changes** [para.0123: Discloses a signal processor that displays information graphically or in text (EPG) on the display based on at least one of the processed user input signal (channel change) received through a remote controller.]**.**

9. **Claim 5, 10, 16, and 18** rejected under 35 U.S.C. 103 as being unpatentable over Carolynn Rae Johnson, Patent No US 7,506,350 B2 (hereinafter Johnson) in view of James W. Wieder, Patent No US 8,089,455 B1 (hereafter Wieder) and further in view of Arthur Vaysman, US 2007/0011702 A1 (hereafter Vaysman).

Regarding Claim 5, the combined teaching of Johnson and Wieder discloses **the method of claim 1,** and the combined teachings do not explicitly disclose **wherein the on screen channel changer comprises *a thumbnail preview containing EPG information corresponding to an in focus channel and/or program and a graphical image, wherein the EPG information in the thumbnail preview comprises, for the in focus channel and/or program, airtime, program name, program channel, and program description, and wherein the graphical image in the thumbnail preview is one of a captured frame of a program associated with the in focus program, a picture associated with the in focus program, and a photograph associated with the in focus program*** (emphasis added to distinguish the elements not taught by Johnson)**.** However, in analogous art, Vaysman teaches a method of creating and presenting a Dynamic Mosaic Extended Electronic Programming Guide (DMXEPG) using video, audio, special applications, and service dynamic metadata. The system enables television or digital radio service subscribers to select and display of various programs including video, interactive TV applications, or any combination of audio or visual components grouped and presented in accordance with the dynamic program/show metadata. It allows users to view and select desired programs using program's visual representation (thumbnails) (Vaysman, paragraph 0012). The system allows for dynamically assign channels to Mosaic Element (ME) using: continuously updated metadata (programming schedule) about

television (broadcasted) channel (EPG programming/listings), criteria received from one or more sources. Figure 1 of Vaysman discloses DMXEPG main page (an EPG screen) which displays multidimensional user interface with dynamically assigned programs, iTV applications, video loops, icons, sound, pictures or any other content components to each mosaic element (ME) (Vaysman, paragraph 0141). Figures 64-69 discloses mosaic picture elements (thumbnail preview) containing EPG information corresponding to an in focus program (highlighted in bold). The mosaic picture element is a graphical image of the program's visual representation (captured frame of a program). Airtime, program name, program channel, and program description are disclosed in these figures.

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filling date of the invention to modify Johnson and Wieder in view of Vaysman to provide EPG with thumbnail representation of the programs. One would be motivated at the time of the invention to have this capability since browsing a large number of channels in a search of a desired show is time consuming and inefficient (Vaysman, paragraph 0003).

Regarding Claim 10, the combined teaching of Johnson and Wieder discloses **the television of claim 7,** and the combined teachings do not explicitly disclose **wherein the on screen channel changer comprises *a thumbnail preview containing EPG information corresponding to an in focus channel and/or program and a graphical image, wherein the EPG information in the thumbnail preview comprises, for the in focus channel and/or program, airtime, program name, program channel, and program description, and wherein the graphical image in the thumbnail preview is one of a captured frame of a program associated with the in focus program, a picture associated with the in focus program, and a photograph associated with the in focus program*** (emphasis added to distinguish the elements not taught by Johnson). However, in analogous art, Vaysman teaches a method of creating and presenting a Dynamic Mosaic Extended Electronic Programming Guide (DMXEPG) using video, audio, special applications, and service dynamic metadata. The system enables television or digital radio service subscribers to select and display of various programs including video, interactive TV applications, or any combination of audio or visual components grouped and presented in accordance

with the dynamic program/show metadata. It allows users to view and select desired programs using program's visual representation (thumbnails) (Vaysman, paragraph 0012). The system allows for dynamically assign channels to Mosaic Element (ME) using: continuously updated metadata (programming schedule) about television (broadcasted) channel (EPG programming/listings), criteria received from one or more sources. Figure 1 of Vaysman discloses DMXEPG main page (an EPG screen) which displays multidimensional user interface with dynamically assigned programs, iTV applications, video loops, icons, sound, pictures or any other content components to each mosaic element (ME) (Vaysman, paragraph 0141). Figures 64-69 discloses mosaic picture elements (thumbnail preview) containing EPG information corresponding to an in focus program (highlighted in bold). The mosaic picture element is a graphical image of the program's visual representation (captured frame of a program). Airtime, program name, program channel, and program description are disclosed in these figures.

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filling date of the invention to modify Johnson and Wieder in view of Vaysman to provide EPG with thumbnail representation of the programs. One would be motivated at the time of the invention to have this capability since browsing a large number of channels in a search of a desired show is time consuming and inefficient (Vaysman, paragraph 0003).

Regarding Claim 16, the combined teaching of Johnson and Wieder discloses **the computer readable medium of claim 13,** and the combined teachings do not explicitly disclose **wherein the on screen channel changer comprises *a thumbnail preview containing EPG information corresponding to an in focus channel and/or program and a graphical image, wherein the EPG information in the thumbnail preview comprises, for the in focus channel and/or program, airtime, program name, program channel, and program description, and wherein the graphical image in the thumbnail preview is one of a captured frame of a program associated with the in focus program, a picture associated with the in focus program, and a photograph associated with the in focus program*** (emphasis added to distinguish the elements not taught by Johnson). However, in analogous art,

Vaysman teaches a method of creating and presenting a Dynamic Mosaic Extended Electronic Programming Guide (DMXEPG) using video, audio, special applications, and service dynamic metadata. The system enables television or digital radio service subscribers to select and display of various programs including video, interactive TV applications, or any combination of audio or visual components grouped and presented in accordance with the dynamic program/show metadata. It allows users to view and select desired programs using program's visual representation (thumbnails) (Vaysman, paragraph 0012). The system allows for dynamically assign channels to Mosaic Element (ME) using: continuously updated metadata (programming schedule) about television (broadcasted) channel (EPG programming/listings), criteria received from one or more sources. Figure 1 of Vaysman discloses DMXEPG main page (an EPG screen) which displays multidimensional user interface with dynamically assigned programs, iTV applications, video loops, icons, sound, pictures or any other content components to each mosaic element (ME) (Vaysman, paragraph 0141). Figures 64-69 discloses mosaic picture elements (thumbnail preview) containing EPG information corresponding to an in focus program (highlighted in bold). The mosaic picture element is a graphical image of the program's visual representation (captured frame of a program). Airtime, program name, program channel, and program description are disclosed in these figures.

Therefore, it would have been obvious to one of ordinary skill in the art before the effective filling date of the invention to modify Johnson and Wieder in view of Vaysman to provide EPG with thumbnail representation of the programs. One would be motivated at the time of the invention to have this capability since browsing a large number of channels in a search of a desired show is time consuming and inefficient (Vaysman, paragraph 0003).

Regarding Claim 18, the combined teaching of Johnson, Wieder, and Vaysman discloses **the method of claim 5,** and Vaysman further discloses **wherein the EPG information and graphical image in the thumbnail preview changes as the in focus EPG information changes** [FIG.64-65: Discloses in FIG.64 mosaic video element 3 selected with EPG information and graphical image, when preview

changes as shown in FIG.65, mosaic video element 7 is now selected with different EPG information and graphic image.].

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Beach et al., (7,228,556 B2)
- Daniel L. Rumsey, (US 2003/0003876 A1)
- Segal et al., (US 2009/0213079 A1)
- Yao et al., (US 201110321095 A1)
- Siu-Leong Yu, (US 2012/0229320 A1)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ADIL OCAK whose telephone number is (571)272-2774. The examiner can normally be reached on M-F 8:00 AM - 5:00 PM.

Examiner's Note: The Examiner has cited particular paragraphs or columns and line numbers in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in their entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner. In the case of amending the claimed invention, Applicant is respectfully requested to indicate the portion(s) of the specification which dictate the structure relied on for proper interpretation and also to verify and ascertain the metes and bounds of the claimed invention.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nasser Goodarzi can be reached on 571-272-4195. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from

either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system; contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. O./
Examiner, Art Unit 2426

/Josh Taylor/
Primary Examiner, Art Unit 2426
June 16, 2014

Notice of References Cited	Application/Control No. 13/968,884	Applicant(s)/Patent Under Reexamination SELIM, MOHAMMED	
	Examiner ADIL OCAK	Art Unit 2426	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-7,506,350	03-2009	Johnson, Carolynn Rae	725/53
*	B	US-8,089,455	01-2012	Wieder, James W.	345/156
*	C	US-2011/0055873	03-2011	HEO et al.	725/52
*	D	US-2007/0011702	01-2007	Vaysman, Arthur	725/045
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13968884	SELIM, MOHAMMED
	Examiner	Art Unit
	ADIL OCAK	2426

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	06/12/2014	06/12/2014							
	1	✓								
	2	✓								
	3	✓								
	4	✓								
	5	✓								
	6	✓								
	7	✓								
	8	✓	O							
	9	✓	O							
	10	✓								
	11	✓								
	12	✓								
	13	✓	O							
	14	✓	O							
	15	✓	O							
	16	✓								
	17	✓								
	18	✓								
	19	✓								

Substitute for form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Application Number	13/968,884
				Filing Date	August 16, 2013
(Use as many sheets as necessary)				First Named Inventor	Mohammed Selim
				Art Unit	2425
				Examiner Name	Brian T Pendleton
Sheet	1	of	11	Attorney Docket Number	6583-445

U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No.[1]	Document Number Number-kind Code [2] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1	4284849	08/18/1981	Anderson et al.	
	2	5539479	07/23/1996	Bertram	
	3	5964839	10/12/1999	Johnson et al.	
	4	6177931	01/23/2001	Alexander et al.	
	5	6493038	12/10/2002	Singh et al.	
	6	6629077	09/30/2003	Arling et al.	
	7	6661468	12/09/2003	Alten et al.	
	8	6704062	03/09/2004	Ahida	
	9	7174126	02/06/2007	McElhatten et al.	
	10	7233316	06/19/2007	Smith et al.	
	11	7363591	04/22/2008	Goldthwaite et al.	
	12	7487529	02/03/2009	Orlick	
	13	7493641	02/17/2009	Klosterman et al.	
	14	7577923	08/18/2009	Beam et al.	
	15	7685520	03/23/2010	Rashkovskiy et al.	
	16	7822716	10/26/2010	Lee et al.	
	17	7880077	02/01/2011	Pauws et al.	
	18	7900228	03/01/2011	Stark et al.	
	19	7904924	03/08/2011	De Heer et al.	
	20	7908635	03/15/2011	Barton et al.	
	21	8006201	08/23/2011	Bhattacharya	
	22	8127329	02/28/2012	Kunkel et al.	
	23	8151215	04/03/2012	Baurmann et al.	
	24	8166511	04/24/2012	Griggs	
	25	8201104	06/12/2012	Yamamoto et al.	
	26	8220021	07/10/2012	Look et al.	
	27	2001/0010097	07/26/2001	Lee	
	28	2001/0056577	12/27/2001	Gordon et al.	
	29	2002/0056098	05/09/2002	White	
	30	2002/0067376	06/06/2002	Martin et al.	
	31	2002/0152267	10/17/2002	Lennon	
	32	2003/0084449	05/01/2003	Chane et al.	

Examiner Signature	/Adil Ocak/	Date Considered	06/12/2014

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.O./

Substitute for form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Application Number	13/968,884
				Filing Date	August 16, 2013
				First Named Inventor	Mohammed Selim
(Use as many sheets as necessary)				Art Unit	2425
				Examiner Name	Brian T Pendleton
Sheet	2	of	11	Attorney Docket Number	6583-445

	33	2003/0110234	06/12/2003	Egli et al.	
	34	2003/0151621	08/14/2003	McEvilly et al.	
	35	2003/0177498	09/18/2003	Ellis et al.	
	36	2003/0182659	09/25/2003	Ellis et al.	
	37	2003/0225777	12/04/2003	Marsh	
	38	2003/0226146	12/04/2003	Thurston et al.	
	39	2004/0103120	05/27/2004	Fickle et al.	
	40	2004/0117831	06/17/2004	Ellis et al.	
	41	2004/0119815	06/24/2004	Soloff	
	42	2004/0211282	10/28/2004	Kim	
	43	2004/0216156	10/28/2004	Wagner	
	44	2004/0237108	11/25/2004	Drazin et al.	
	45	2005/0188318	08/25/2005	Tamir et al.	
	46	2005/0232210	10/20/2005	Karaoguz et al.	
	47	2006/0031875	02/09/2006	Yu	
	48	2006/0064716	03/23/2006	Sull et al.	
	49	2006/0101504	05/11/2006	Aravamudan et al.	
	50	2006/0117337	06/01/2006	Shivaji Rao et al.	
	51	2006/0158838	07/20/2006	Kinoshita et al.	
	52	2006/0262116	11/23/2006	Moshiri et al.	
	53	2006/0280449	12/14/2006	Ogawa et al.	
	54	2007/0028282	02/01/2007	Kooijmans et al.	
	55	2007/0050733	03/01/2007	Lee et al.	
	56	2007/0061724	03/15/2007	Slothouber et al.	
	57	2007/0096939	05/03/2007	Walrath	
	58	2007/0143809	06/21/2007	Chen et al.	
	59	2007/0261090	11/08/2007	Miller et al.	
	60	2008/0022309	01/24/2008	Begeja et al.	
	61	2008/0086745	04/10/2008	Knudson et al.	
	62	2008/0098433	04/24/2008	Hardacker et al.	
	63	2008/0141307	06/12/2008	Whitehead	
	64	2008/0177828	07/24/2008	Accarie et al.	
	65	2009/0160764	08/20/2008	Myllymäki	
	66	2008/0244637	10/02/2008	Candelore	
	67	2008/0288461	11/20/2008	Glennon et al.	
	68	2008/0307457	12/11/2008	Yang et al.	

Examiner Signature	/Adil Ocak/	Date Considered	06/12/2014

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.O./

Substitute for form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Application Number	13/968,884
				Filing Date	August 16, 2013
				First Named Inventor	Mohammed Selim
(Use as many sheets as necessary)				Art Unit	2425
				Examiner Name	Brian T Pendleton
Sheet	3	of	11	Attorney Docket Number	6583-445

	69	2009/0019485	01/15/2009	Ellis et al.	
	70	2009/0064222	03/05/2009	Dawson et al.	
	71	2009/0129340	05/21/2009	Handa	
	72	2009/0199237	08/06/2009	White et al.	
	73	2009/0204929	08/13/2009	Baurmann et al.	
	74	2009/0210910	08/20/2009	Smith et al.	
	75	2009/0235311	09/17/2009	Michel et al.	
	76	2009/0249394	10/01/2009	Schwesinger et al.	
	77	2009/0293078	11/26/2009	Pirani et al.	
	78	2010/0013997	01/21/2010	Whang	
	79	2010/0031193	02/04/2010	Stark et al.	
	80	2010/0050219	02/25/2010	Angiolillo et al.	
	81	2010/0086277	04/08/2010	Craner	
	82	2010/0161506	06/24/2010	Bosenick et al.	
	83	2010/0172407	07/08/2010	Ramaswamy	
	84	2010/0180292	07/15/2010	Epstein et al.	
	85	2010/0201890	08/12/2010	Degonde et al.	
	86	2010/0225830	09/09/2010	Blanchard et al.	
	87	2010/0293497	11/18/2010	Peterson	
	88	2010/0306402	12/02/2010	Russell et al.	
	89	2011/0016492	01/20/2011	Morita	
	90	2011/0035774	02/10/2011	Parker	
	91	2011/0041150	02/17/2011	Schein et al.	
	92	2011/0047572	02/24/2011	Hill et al.	
	93	2011/0060661	03/10/2011	Chai et al.	
	94	2011/0072480	03/24/2011	Stone	
	95	2011/0074591	03/31/2011	Arling et al.	
	96	2011/0078745	03/31/2011	Macrae et al.	
	97	2011/0093888	04/21/2011	Araki et al.	
	98	2011/0126251	05/26/2011	LaFreniere et al.	
	99	2011/0125755	05/26/2011	Kaila et al.	
	100	2011/0119626	06/15/2011	Faenger et al.	
	101	2011/0145860	06/16/2011	Wei	
	102	2011/0154198	06/23/2011	Bachman et al.	
	103	2011/0173657	07/14/2011	Thomas et al.	
	104	2011/0187929	08/04/2011	Suzuki et al.	

Examiner Signature	/Adil Ocak/	Date Considered	06/12/2014

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.O./

Substitute for form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Application Number	13/968,884
				Filing Date	August 16, 2013
				First Named Inventor	Mohammed Selim
(Use as many sheets as necessary)				Art Unit	2425
				Examiner Name	Brian T Pendleton
Sheet	4	of	11	Attorney Docket Number	6583-445

	105	2011/0213700	09/01/2011	Sant'Anselmo	
	106	2011/0219395	09/08/2011	Moshiri et al.	
	107	2011/0252446	10/13/2011	Jeong et al.	
	108	2011/0273552	11/10/2011	Wang et al.	
	109	2011/0276995	11/10/2011	Alten et al.	
	110	2011/0289067	11/24/2011	Jordan et al.	
	111	2011/0289419	11/24/2011	Yu et al.	
	112	2011/0289452	11/24/2011	Jordan et al.	
	113	2011/0321098	12/29/2011	Bangalore et al.	
	114	2012/0002951	01/05/2012	Reisman	
	115	2012/0011545	01/12/2012	Doets et al.	
	116	2012/0069131	03/22/2012	Abelow	
	117	2012/0079096	03/29/2012	Cowan et al.	
	118	2012/0086857	04/12/2012	Kim et al.	
	119	2012/0096264	04/19/2012	Traversat et al.	
	120	2012/0110623	05/03/2012	Hill et al.	
	121	2012/0120316	05/17/2012	Lee	
	122	2012/0144422	06/06/2012	Han et al.	
	123	2012/0144423	06/07/2012	Kim et al.	
	124	2012/0151006	06/14/2012	McInerney et al.	
	125	2012/0147270	06/14/2012	Kim et al.	
	126	2012/0174039	07/05/2012	Rhoads et al.	
	127	2012/0176546	07/12/2012	Yoon	
	128	2012/0200574	08/09/2012	Hill et al.	
	129	2012/0206652	08/16/2012	Yi	
	130	2012/0210370	08/16/2012	Kim et al.	
	131	2012/0210275	08/16/2012	Park et al.	
	132	2012/0210355	08/16/2012	Kim et al.	
	133	2012/0221972	08/30/2012	Dougall et al.	
	134	2012/0257108	10/11/2012	Friedlander et al.	
	135	2012/0260284	10/11/2012	Friedlander et al.	
	136	2014/0049651	02/20/2014	Voth	
	137	2014/0049691	02/20/2014	Burdzinski et al.	
	138	2014/0049692	02/20/2014	Sirpal et al.	
	139	2014/0049693	02/20/2014	Selim et al.	
	140	2014/0052785	02/20/2014	Sirpal	

Examiner Signature	/Adil Ocak/	Date Considered	06/12/2014

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.O./

Substitute for form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Application Number	13/968,884
				Filing Date	August 16, 2013
				First Named Inventor	Mohammed Selim
(Use as many sheets as necessary)				Art Unit	2425
				Examiner Name	Brian T Pendleton
Sheet	5	of	11	Attorney Docket Number	6583-445

	141	2014/0052786	02/20/2014	de Paz	
	142	2014/0053176	02/20/2014	Milano et al.	
	143	2014/0053177	02/20/2014	Voth	
	144	2014/0053178	02/20/2014	Voth et al.	
	145	2014/0053179	02/20/2014	Voth	
	146	2014/0053180	02/20/2014	Shoykher	
	147	2014/0053190	02/20/2014	Sirpal	
	148	2014/0053191	02/20/2014	Selim	
	149	2014/0053192	02/20/2014	Sirpal	
	150	2014/0053193	02/20/2014	Selim et al.	
	151	2014/0053194	02/20/2014	Shoykher et al.	
	152	2014/0053195	02/20/2014	Sirpal et al.	
	153	2014/0053196	02/20/2014	Selim	
	154	2014/0053197	02/20/2014	Shoykher et al.	
	155	2014/0053198	02/20/2014	Sirpal et al.	
	156	2014/0053200	02/20/2014	de Paz et al.	
	157	2014/0053202	02/20/2014	Selim	
	158	2014/0053203	02/20/2014	Csiki	
	159	2014/0053204	02/20/2014	Milano	
	160	2014/0053205	02/20/2014	Sirpal et al.	
	161	2014/0053206	02/20/2014	Shoykher et al.	
	162	2014/0053207	02/20/2014	Shoykher et al.	
	163	2014/0053208	02/20/2014	Sirpal et al.	
	164	2014/0053211	02/20/2014	Milano	
	165	2014/0053212	02/20/2014	Shoykher et al.	
	166	2014/0053221	02/20/2014	Sirpal et al.	
	167	2014/0053222	02/20/2014	Shoykher et al.	
	168	2014/0053225	02/20/2014	Shoykher et al.	
	169	2014/0055673	02/27/2014	Sirpal et al.	
	170	2014/0059578	02/27/2014	Voth et al.	
	171	2014/0059480	02/27/2014	de Paz et al.	
	172	2014/0059589	02/27/2014	Sirpal	
	173	2014/0059596	02/27/2014	Dourado	
	174	2014/0059598	02/27/2014	Milano	
	175	2014/0059599	02/27/2014	Sirpal et al.	
	176	2014/0059600	02/27/2014	Duarado	

Examiner Signature	/Adil Ocak/	Date Considered	06/12/2014

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.O./

Substitute for form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Application Number	13/968,884
				Filing Date	August 16, 2013
				First Named Inventor	Mohammed Selim
(Use as many sheets as necessary)				Art Unit	2425
				Examiner Name	Brian T Pendleton
Sheet	6	of	11	Attorney Docket Number	6583-445

	177	2014/0059601	02/27/2014	Sirpal	
	178	2014/0059602	02/27/2014	Sirpal	
	179	2014/0059603	02/27/2014	Lee et al.	
	180	2014/0059605	02/27/2014	Sirpal et al.	
	181	2014/0059606	02/27/2014	Selim et al.	
	182	2014/0059609	02/27/2014	Duarado	
	183	2014/0059610	02/27/2014	Sirpal et al.	
	184	2014/0059613	02/27/2014	Burdzinski et al.	
	185	2014/0059614	02/27/2014	Shoykher et al.	
	186	2014/0059615	02/27/2014	Sirpal et al.	
	187	2014/0059625	02/27/2014	Dourado et al.	
	188	2014/0059626	02/27/2014	Selim	
	189	2014/0059635	02/27/2014	Sirpal et al.	
	190	2014/0059637	02/27/2014	Chen et al.	
	191	2014/0067954	03/06/2014	Sirpal	
	192	2014/0068673	03/06/2014	Sirpal et al.	
	193	2014/0068674	03/06/2014	Sirpal et al.	
	194	2014/0068682	03/06/2014	Selim et al.	
	195	2014/0068683	03/06/2014	Selim et al.	
	196	2014/0068685	03/06/2014	Selim et al.	
	197	2014/0068689	03/06/2014	Sirpal et al.	
	198	2014/0075475	03/13/2014	Sirpal et al.	
	199	2014/0075476	03/13/2014	de Paz et al.	
	200	2014/0075477	03/13/2014	de Paz et al.	
	201	2014/0075479	03/13/2014	Soto et al.	
	202	2014/0075483	03/13/2014	de Paz et al.	
	203	2014/0075484	03/13/2014	Selim et al.	
	204	2014/0075487	03/13/2014	Selim et al.	

UNPUBLISHED U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No.[1]	Document Number Number-kind Code[2] (if known)	Filing Date MM-DD-YYYY	Name of Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	205	13/970420	08/19/2013	Selim et al.	

Examiner Signature	/Adil Ocak/	Date Considered	06/12/2014

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.O./

Substitute for form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Application Number	13/968,884
				Filing Date	August 16, 2013
(Use as many sheets as necessary)				First Named Inventor	Mohammed Selim
				Art Unit	2425
				Examiner Name	Brian T Pendleton
Sheet	7	of	11	Attorney Docket Number	6583-445

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]; Number[4]; Kind Code[5] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]
	206	CN 1832534	09/13/2006	SHENZHEN DIWEITE DIGITAL VIDEO TECHNOLOG CORP.		(English abstract)
	207	CN 101472102	07/01/2009	KONKA GROUP CO., LTD.		(English abstract)
	208	CN 101540850	09/23/2009	SHENZHEN TCL NEW TECHNOLOGY LTD		(English abstract)
	209	CN 101567992	10/28/2009	ALI CORP		(English abstract)
	210	CN 201937743	08/17/2011	SVA TECHNOLOGIES CO., LTD.		(English abstract)
	211	EP 1031929	08/30/2000	HEWLETT-PACKARD COMPANY		
	212	EP 1067458	01/10/2001	CANAL + SOCIETE ANONYME		
	213	EP 1770956	04/04/2007	BRITISH TELECOMMUNICATIONS		
	214	EP 1865723	12/12/2007	SONY NETSERVICES GMBH		
	215	EP 2328346	06/01/2011	UNITED VIDEO PROPERTIES, INC.		
	216	EP 2348724	07/27/2011	KABEL DEUTSCHLAND GMBH		
	217	EP 2439935	04/11/2012	LG ELECTRONICS INC.		
	218	EP 2487922	08/15/2012	LG ELECTRONICS, INC.		
	219	WO 99/21308	04/29/1999	SONY ELECTRONICS, INC.		
	220	WO 99/35849	07/15/1999	AMIGA DEVELOPMENT LLC		
	221	WO 2000/005884	02/03/2000	MATE MEDIA ACCESS TECHNOLOGIES LTD.		

Examiner Signature	/Adil Ocak/	Date Considered	06/12/2014

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.O./

Substitute for form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Application Number	13/968,884
				Filing Date	August 16, 2013
				First Named Inventor	Mohammed Selim
(Use as many sheets as necessary)				Art Unit	2425
				Examiner Name	Brian T Pendleton
Sheet	8	of	11	Attorney Docket Number	6583-445

	222	WO 01/06784	01/15/2001	UNITED VIDEO PROPERTIES INC		
	223	WO 01/06788	01/25/2001	UNITED VIDEO PROPERTIES, INC.		
	224	WO 02/080552	10/10/2002	KONINKL PHILIPS ELECTRONICS NV		
	225	WO 03/044755	05/30/2003	BEHAVIORAL INFORMATICS, INC.		
	226	WO 2007/137611	12/06/2007	TELECOM ITALIA S.P.A.		
	227	WO 2011/148054	12/01/2011	AXEL TECHNOLOGIES		
	228	WO 2011/163481	12/29/2011	HILCREST LAB INC		
	229	WO 2012/030024	03/08/2012	LG ELECTRONICS INC.		
	230	WO 2012/068438	05/24/2012	THOMSON LICENSING		
	231	WO 2012/073027	06/07/2012	YOUVIEW TV LTD		
	232	WO 2012/094247	07/12/2012	ROVI TECHNOLOGIES CORPORATION		
	233	WO 2014/026636	02/20/2014	FLEXTRONICS AP, LLC		
	234	WO 2014/026640	02/20/2014	FLEXTRONICS AP, LLC		
	235	WO 2014/028067	02/20/2014	FLEXTRONICS AP, LLC		
	236	WO 2014/028068	02/20/2014	FLEXTRONICS AP, LLC		
	237	WO 2014/028069	02/20/2014	FLEXTRONICS AP, LLC		
	238	WO 2014/028071	02/20/2014	FLEXTRONICS AP, LLC		
	239	WO 2014/028074	02/20/2014	FLEXTRONICS AP, LLC		

NON-PATENT LITERATURE DOCUMENTS		
Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
	240	TVONICSUK "Tvonics: How to use the EPG search function." 1 pages retrieved from the internet on Nov. 11, 2013 from [www.youtube.com/watch?v=H8euZ0lydo]

Examiner Signature	/Adil Ocak/	Date Considered	06/12/2014

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.O./

Substitute for form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Application Number	13/968,884
				Filing Date	August 16, 2013
				First Named Inventor	Mohammed Selim
(Use as many sheets as necessary)				Art Unit	2425
				Examiner Name	Brian T Pendleton
Sheet	9	of	11	Attorney Docket Number	6583-445

	241	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/36844, mailed Jun. 28, 2013 (Attorney's Ref. No. 6583-424-PCT) 8 pages
	242	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/36843, mailed Jun. 28, 2013 (Attorney's Ref. No. 6583-425-PCT) 8 pages
	243	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/36826, mailed Jun. 17, 2013 (Attorney's Ref. No. 6583-430-PCT) 8 pages
	244	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/55589, mailed Dec. 19, 2013 (Attorney's Ref. No. 6583-436-PCT) 9 pages
	245	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055289, mailed Dec. 02, 2013 (Attorney's Ref. No. 6583-444-PCT) 7 pages
	246	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055288, mailed Dec. 02, 2013 (Attorney's Ref. No. 6583-445-PCT) 9 pages
	247	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055286, mailed Dec. 02, 2013 (Attorney's Ref. No. 6583-446-PCT) 8 pages
	248	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/55285, mailed Dec. 11, 2013 (Attorney's Ref. No. 6583-447-PCT) 8 pages
	249	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055284, mailed Jan. 14, 2014 (Attorney's Ref. No. 6583-448-PCT) 12 pages
	250	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055293, mailed Dec. 02, 2013 (Attorney's Ref. No. 6583-449-PCT) 12 pages
	251	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055294, mailed Dec. 02, 2013 (Attorney's Ref. No. 6583-450-PCT) 10 pages
	252	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055296, mailed Nov. 29, 2013 (Attorney's Ref. No. 6583-451-PCT) 9 pages
	253	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/55493, mailed Nov. 07, 2013 (Attorney's Ref. No. 6583-452-PCT) 9 pages
	254	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/036828, mailed Jun. 28, 2013 (Attorney's Ref. No. 6583-453-PCT) 12 pages
	255	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055340, mailed Feb. 10, 2014 (Attorney's Ref. No. 6583-454-PCT) 10 pages
	256	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/55551, mailed Dec. 06, 2013 (Attorney's Ref. No. 6583-463-PCT) 7 pages
	257	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/036819, mailed Jun. 17, 2013 (Attorney's Ref. No. 6583-469-PCT) 9 pages
	258	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/036782, mailed Jun. 28, 2013 (Attorney's Ref. No. 6583-470-PCT) 9 pages
	259	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/36678, mailed Aug. 30, 2013 (Attorney's Ref. No. 6583-471-PCT) 9 pages

Examiner Signature	/Adil Ocak/	Date Considered	06/12/2014

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.O./

Substitute for form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Application Number	13/968,884
				Filing Date	August 16, 2013
(Use as many sheets as necessary)				First Named Inventor	Mohammed Selim
				Art Unit	2425
				Examiner Name	Brian T Pendleton
Sheet	10	of	11	Attorney Docket Number	6583-445

	260	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/036804, mailed Jul. 01, 2013 (Attorney's Ref. No. 6583-472-PCT) 13 pages
	261	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/55405, mailed Jan. 17, 2014 (Attorney's Ref. No. 6583-478-PCT) 8 pages
	262	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055278, mailed Mar. 11, 2014 (Attorney's Ref. No. 6583-479) 9 pages
	263	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/55509, mailed nov. 08, 2013 (Attorney's Ref. No. 6583-481-PCT) 9 pages
	264	International Search Report and Written Opinion for Intenational (PCT) Patent Application No. PCT/CN2013/081639, mailed Nov. 28, 2013 (Attorney's Ref. No. 6583-487-PCT) 10 pages
	265	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055303, mailed Dec. 05, 2013 (Attorney's Ref. No. 6583-488-PCT) 8 pages
	266	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055280, mailed Jan. 10, 2014 (Attorney's Ref. No. 6583-489-PCT) 10 pages
	267	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/55383, mailed Nov. 13, 2013 (Attorney's Ref. No. 6583-490-PCT) 9 pages
	268	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055344, mailed Mar. 11, 2014 (Attorney's Ref. No. 6583-491-PCT) 8 pages
	269	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055345, mailed Dec. 06, 2013 (Attorney's Ref. No. 6583-492-PCT) 7 pages
	270	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/55371, mailed No. 08, 2013 (Attorney's Ref. No. 6583-493-PCT) 7 pages
	271	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/55389, mailed Mar. 10, 2014 (Attorney's Ref. No. 6583-494-PCT) 10 pages
	272	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055283, mailed Mar. 04, 2014 (Attorney's Ref. No. 6583-495-PCT) 7 pages
	273	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/55564, mailed Nov. 22, 2013 (Attorney's Ref. No. 6583-496-PCT) 7 pages
	274	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/55379, mailed Dec. 06, 2013 (Attorney's Ref. No. 6583-497-PCT) 8 pages
	275	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055349, mailed Nov. 29, 2013 (Attorney's Ref. No. 6583-498-PCT) 7 pages
	276	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055312, mailed Dec. 05, 2013 (Attorney's Ref. No. 6583-499-PCT) 8 pages
	277	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/55374, mailed Nov. 12, 2013 (Attorney's Ref. No. 6583-500-PCT) 8 pages
	278	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/55542, mailed Mar. 10, 2014 (Attorney's Ref. No. 6583-501-PCT) 9 pages

Examiner Signature	/Adil Ocak/	Date Considered	06/12/2014

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.O./

Substitute for form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(Use as many sheets as necessary)*				Application Number	13/968,884
				Filing Date	August 16, 2013
				First Named Inventor	Mohammed Selim
				Art Unit	2425
				Examiner Name	Brian T Pendleton
Sheet	11	of	11	Attorney Docket Number	6583-445

	279	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/55315, mailed Jan. 24, 2014 (Attorney's Ref. No. 6583-502-PCT) 9 pages
	280	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055317, mailed Dec. 02, 2013 (Attorney's Ref. No. 6583-503-PCT) 9 pages
	281	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055318, mailed Jan. 09, 2014 (Attorney's Ref. No. 6583-504-PCT) 10 pages
	282	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055319, mailed Mar. 11, 2014 (Attorney's Ref. No. 6583-505-PCT) 7 pages
	283	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055321, mailed Dec. 06, 2013 (Attorney's Ref. No. 6583-506-PCT) 9 pages
	284	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/CN2013/081630, mailed Nov. 21, 2013 (Attorney's Ref. No. 6583-507-PCT) 11 pages
	285	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055298, mailed Nov. 29, 2013 (Attorney's Ref. No. 6583-509-PCT) 8 pages
	286	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/55567, mailed Dec. 20, 2013 (Attorney's Ref. No. 6583-519-PCT) 10 pages
	287	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/55570, mailed Nov. 22, 2013 (Attorney's Ref. No. 6583-520-PCT) 8 pages
	288	Official Action for U.S. Patent Application No. 13/864,206, mailed Nov. 27, 2013 (Attorney's Ref. No. 6583-425) 17 pages
	289	Official Action for U.S. Patent Application No. 13/864,214, mailed Mar. 12, 2014 (Attorney's Ref. No. 6583-469) 12 pages

Examiner Signature	/Adil Ocak/	Date Considered	06/12/2014

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.O./

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	1	H04N21/42218.cpc. and virtual with (keyboard keypad) with channel	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2014/06/12 15:36
L2	49	H04N21/$.cpc. and virtual with (keyboard keypad) with channel	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2014/06/12 15:37
L4	10	H04N21/$.cpc. and display$3 with channel with digit$1 with bar	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2014/06/12 15:37
L6	111	H04N21/$.cpc. and number with input$3 with bar and (television tv) and EPG	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2014/06/12 15:38
L8	36	H04N21/$.cpc. and screen with channel with changer	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2014/06/12 15:39
L9	1	H04N21/42218.cpc. and virtual with (keyboard keypad) with channel	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2014/06/12 15:39
L10	49	H04N21/$.cpc. and virtual with (keyboard keypad) with channel	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2014/06/12 15:39
L11	1	H04N21/42218.cpc. and virtual with key$5 with channel with select$3	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2014/06/12 15:40
L12	119	H04N21/$.cpc. and virtual with key$5 with channel with select$3	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2014/06/12 15:40
L13	24	H04N21/$.cpc. and virtual with key$5 with channel with select$3 with (digit$1 number$1)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2014/06/12 15:40
L14	1	H04N21/42218.cpc. and bar	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2014/06/12 15:41
L15	2	H04N21/42218.cpc. and EPG	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2014/06/12 15:41
L16	4	H04N21/42218.cpc. and arrow with select	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2014/06/12 15:41
L17	16	H04N21/42218.cpc. and (number numeric) with input	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2014/06/12 15:41
L18	1	H04N21/42218.cpc. and virtual with (keyboard keypad) with channel	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2014/06/12 15:41
L19	1	("7506350").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/06/12 15:41

L20	1	("7228556").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/06/12 15:41
L21	14	vaysman.in. and mosaic	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2014/06/12 15:41

6/ 12/ 2014 3:43:29 PM
C:\ Users\ aocak\ Documents\ EAST\ Workspaces\ 13968884.wsp

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

BIB DATA SHEET

CONFIRMATION NO. 1062

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
13/968,884	08/16/2013 RULE	725	2426	6583-445

APPLICANTS

Flextronics AP, LLC, San Jose, CA, Assignee (with 37 CFR 1.172 Interest);

INVENTORS

Mohammed Selim, Oakville, CANADA;

**** CONTINUING DATA ***************************

This appln claims benefit of 61/684,672 08/17/2012
and claims benefit of 61/702,650 09/18/2012
and claims benefit of 61/697,710 09/06/2012
and claims benefit of 61/700,182 09/12/2012
and claims benefit of 61/736,692 12/13/2012
and claims benefit of 61/798,821 03/15/2013
and claims benefit of 61/804,942 03/25/2013
and claims benefit of 61/804,998 03/25/2013
and claims benefit of 61/804,971 03/25/2013
and claims benefit of 61/804,990 03/25/2013
and claims benefit of 61/805,003 03/25/2013
and claims benefit of 61/805,053 03/25/2013
and claims benefit of 61/805,030 03/25/2013
and claims benefit of 61/805,027 03/25/2013
and claims benefit of 61/805,042 03/25/2013
and claims benefit of 61/805,038 03/25/2013

**** FOREIGN APPLICATIONS ***************************

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****

09/05/2013

Foreign Priority claimed ☐ Yes ☑ No 35 USC 119(a-d) conditions met ☐ Yes ☑ No Verified and Acknowledged /ADIL OCAK/ Examiner's Signature	☐ Met after Allowance AO Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		CANADA	31	19	3

ADDRESS

Sheridan Ross P.C.
1560 Broadway
Suite 1200
Denver, CO 80202
UNITED STATES

TITLE

ON SCREEN METHOD AND SYSTEM FOR CHANGING TELEVISION CHANNELS

FILING FEE	FEES: Authority has been given in Paper	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time)

BIB (Rev. 05/07).

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13968884	SELIM, MOHAMMED
	Examiner	Art Unit
	ADIL OCAK	2426

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
Text EAST search - US-PGPUB, USPAT, USOCR, EPO, JPO, DERWENT	6/12/2014	AO
Inventor name search	6/12/2014	AO
IEEE search	6/12/2014	AO
Provisional and Double Patent	6/12/2014	AO
NPL search	6/12/2014	AO
See search history printout	6/12/2014	AO

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

/ADIL OCAK/ Examiner.Art Unit 2426	

Substitute for form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Application Number	13/968,884
				Filing Date	August 16, 2013
				First Named Inventor	Mohammed Selim
(Use as many sheets as necessary)				Art Unit	2425
				Examiner Name	Brian T Pendleton
Sheet	1	of	11	Attorney Docket Number	6583-445

U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No.[1]	Document Number Number-kind Code [2] (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1	4284849	08/18/1981	Anderson et al.	
	2	5539479	07/23/1996	Bertram	
	3	5964839	10/12/1999	Johnson et al.	
	4	6177931	01/23/2001	Alexander et al.	
	5	6493038	12/10/2002	Singh et al.	
	6	6629077	09/30/2003	Arling et al.	
	7	6661468	12/09/2003	Alten et al.	
	8	6704062	03/09/2004	Ahida	
	9	7174126	02/06/2007	McElhatten et al.	
	10	7233316	06/19/2007	Smith et al.	
	11	7363591	04/22/2008	Goldthwaite et al.	
	12	7487529	02/03/2009	Orlick	
	13	7493641	02/17/2009	Klosterman et al.	
	14	7577923	08/18/2009	Beam et al.	
	15	7685520	03/23/2010	Rashkovskiy et al.	
	16	7822716	10/26/2010	Lee et al.	
	17	7880077	02/01/2011	Pauws et al.	
	18	7900228	03/01/2011	Stark et al.	
	19	7904924	03/08/2011	De Heer et al.	
	20	7908635	03/15/2011	Barton et al.	
	21	8006201	08/23/2011	Bhattacharya	
	22	8127329	02/28/2012	Kunkel et al.	
	23	8151215	04/03/2012	Baurmann et al.	
	24	8166511	04/24/2012	Griggs	
	25	8201104	06/12/2012	Yamamoto et al.	
	26	8220021	07/10/2012	Look et al.	
	27	2001/0010097	07/26/2001	Lee	
	28	2001/0056577	12/27/2001	Gordon et al.	
	29	2002/0056098	05/09/2002	White	
	30	2002/0067376	06/06/2002	Martin et al.	
	31	2002/0152267	10/17/2002	Lennon	
	32	2003/0084449	05/01/2003	Chane et al.	

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

Substitute for form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Application Number	13/968,884
				Filing Date	August 16, 2013
				First Named Inventor	Mohammed Selim
(Use as many sheets as necessary)				Art Unit	2425
				Examiner Name	Brian T Pendleton
Sheet	2	of	11	Attorney Docket Number	6583-445

	33	2003/0110234	06/12/2003	Egli et al.	
	34	2003/0151621	08/14/2003	McEvilly et al.	
	35	2003/0177498	09/18/2003	Ellis et al.	
	36	2003/0182659	09/25/2003	Ellis et al.	
	37	2003/0225777	12/04/2003	Marsh	
	38	2003/0226146	12/04/2003	Thurston et al.	
	39	2004/0103120	05/27/2004	Fickle et al.	
	40	2004/0117831	06/17/2004	Ellis et al.	
	41	2004/0119815	06/24/2004	Soloff	
	42	2004/0211282	10/28/2004	Kim	
	43	2004/0216156	10/28/2004	Wagner	
	44	2004/0237108	11/25/2004	Drazin et al.	
	45	2005/0188318	08/25/2005	Tamir et al.	
	46	2005/0232210	10/20/2005	Karaoguz et al.	
	47	2006/0031875	02/09/2006	Yu	
	48	2006/0064716	03/23/2006	Sull et al.	
	49	2006/0101504	05/11/2006	Aravamudan et al.	
	50	2006/0117337	06/01/2006	Shivaji Rao et al.	
	51	2006/0158838	07/20/2006	Kinoshita et al.	
	52	2006/0262116	11/23/2006	Moshiri et al.	
	53	2006/0280449	12/14/2006	Ogawa et al.	
	54	2007/0028282	02/01/2007	Kooijmans et al.	
	55	2007/0050733	03/01/2007	Lee et al.	
	56	2007/0061724	03/15/2007	Slothouber et al.	
	57	2007/0096939	05/03/2007	Walrath	
	58	2007/0143809	06/21/2007	Chen et al.	
	59	2007/0261090	11/08/2007	Miller et al.	
	60	2008/0022309	01/24/2008	Begeja et al.	
	61	2008/0086745	04/10/2008	Knudson et al.	
	62	2008/0098433	04/24/2008	Hardacker et al.	
	63	2008/0141307	06/12/2008	Whitehead	
	64	2008/0177828	07/24/2008	Accarie et al.	
	65	2009/0160764	08/20/2008	Myllymäki	
	66	2008/0244637	10/02/2008	Candelore	
	67	2008/0288461	11/20/2008	Glennon et al.	
	68	2008/0307457	12/11/2008	Yang et al.	

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

Substitute for form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Application Number	13/968,884
				Filing Date	August 16, 2013
				First Named Inventor	Mohammed Selim
(Use as many sheets as necessary)				Art Unit	2425
				Examiner Name	Brian T Pendleton
Sheet	3	of	11	Attorney Docket Number	6583-445

	69	2009/0019485	01/15/2009	Ellis et al.	
	70	2009/0064222	03/05/2009	Dawson et al.	
	71	2009/0129340	05/21/2009	Handa	
	72	2009/0199237	08/06/2009	White et al.	
	73	2009/0204929	08/13/2009	Baurmann et al.	
	74	2009/0210910	08/20/2009	Smith et al.	
	75	2009/0235311	09/17/2009	Michel et al.	
	76	2009/0249394	10/01/2009	Schwesinger et al.	
	77	2009/0293078	11/26/2009	Pirani et al.	
	78	2010/0013997	01/21/2010	Whang	
	79	2010/0031193	02/04/2010	Stark et al.	
	80	2010/0050219	02/25/2010	Angiolillo et al.	
	81	2010/0086277	04/08/2010	Craner	
	82	2010/0161506	06/24/2010	Bosenick et al.	
	83	2010/0172407	07/08/2010	Ramaswamy	
	84	2010/0180292	07/15/2010	Epstein et al.	
	85	2010/0201890	08/12/2010	Degonde et al.	
	86	2010/0225830	09/09/2010	Blanchard et al.	
	87	2010/0293497	11/18/2010	Peterson	
	88	2010/0306402	12/02/2010	Russell et al.	
	89	2011/0016492	01/20/2011	Morita	
	90	2011/0035774	02/10/2011	Parker	
	91	2011/0041150	02/17/2011	Schein et al.	
	92	2011/0047572	02/24/2011	Hill et al.	
	93	2011/0060661	03/10/2011	Chai et al.	
	94	2011/0072480	03/24/2011	Stone	
	95	2011/0074591	03/31/2011	Arling et al.	
	96	2011/0078745	03/31/2011	Macrae et al.	
	97	2011/0093888	04/21/2011	Araki et al.	
	98	2011/0126251	05/26/2011	LaFreniere et al.	
	99	2011/0125755	05/26/2011	Kaila et al.	
	100	2011/0119626	06/15/2011	Faenger et al.	
	101	2011/0145860	06/16/2011	Wei	
	102	2011/0154198	06/23/2011	Bachman et al.	
	103	2011/0173657	07/14/2011	Thomas et al.	
	104	2011/0187929	08/04/2011	Suzuki et al.	

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

Substitute for form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Application Number	13/968,884
				Filing Date	August 16, 2013
				First Named Inventor	Mohammed Selim
(Use as many sheets as necessary)				Art Unit	2425
				Examiner Name	Brian T Pendleton
Sheet	4	of	11	Attorney Docket Number	6583-445

	105	2011/0213700	09/01/2011	Sant'Anselmo	
	106	2011/0219395	09/08/2011	Moshiri et al.	
	107	2011/0252446	10/13/2011	Jeong et al.	
	108	2011/0273552	11/10/2011	Wang et al.	
	109	2011/0276995	11/10/2011	Alten et al.	
	110	2011/0289067	11/24/2011	Jordan et al.	
	111	2011/0289419	11/24/2011	Yu et al.	
	112	2011/0289452	11/24/2011	Jordan et al.	
	113	2011/0321098	12/29/2011	Bangalore et al.	
	114	2012/0002951	01/05/2012	Reisman	
	115	2012/0011545	01/12/2012	Doets et al.	
	116	2012/0069131	03/22/2012	Abelow	
	117	2012/0079096	03/29/2012	Cowan et al.	
	118	2012/0086857	04/12/2012	Kim et al.	
	119	2012/0096264	04/19/2012	Traversat et al.	
	120	2012/0110623	05/03/2012	Hill et al.	
	121	2012/0120316	05/17/2012	Lee	
	122	2012/0144422	06/06/2012	Han et al.	
	123	2012/0144423	06/07/2012	Kim et al.	
	124	2012/0151006	06/14/2012	McInerney et al.	
	125	2012/0147270	06/14/2012	Kim et al.	
	126	2012/0174039	07/05/2012	Rhoads et al.	
	127	2012/0176546	07/12/2012	Yoon	
	128	2012/0200574	08/09/2012	Hill et al.	
	129	2012/0206652	08/16/2012	Yi	
	130	2012/0210370	08/16/2012	Kim et al.	
	131	2012/0210275	08/16/2012	Park et al.	
	132	2012/0210355	08/16/2012	Kim et al.	
	133	2012/0221972	08/30/2012	Dougall et al.	
	134	2012/0257108	10/11/2012	Friedlander et al.	
	135	2012/0260284	10/11/2012	Friedlander et al.	
	136	2014/0049651	02/20/2014	Voth	
	137	2014/0049691	02/20/2014	Burdzinski et al.	
	138	2014/0049692	02/20/2014	Sirpal et al.	
	139	2014/0049693	02/20/2014	Selim et al.	
	140	2014/0052785	02/20/2014	Sirpal	

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

Substitute for form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Application Number	13/968,884
				Filing Date	August 16, 2013
				First Named Inventor	Mohammed Selim
(Use as many sheets as necessary)				Art Unit	2425
				Examiner Name	Brian T Pendleton
Sheet	5	of	11	Attorney Docket Number	6583-445

	141	2014/0052786	02/20/2014	de Paz	
	142	2014/0053176	02/20/2014	Milano et al.	
	143	2014/0053177	02/20/2014	Voth	
	144	2014/0053178	02/20/2014	Voth et al.	
	145	2014/0053179	02/20/2014	Voth	
	146	2014/0053180	02/20/2014	Shoykher	
	147	2014/0053190	02/20/2014	Sirpal	
	148	2014/0053191	02/20/2014	Selim	
	149	2014/0053192	02/20/2014	Sirpal	
	150	2014/0053193	02/20/2014	Selim et al.	
	151	2014/0053194	02/20/2014	Shoykher et al.	
	152	2014/0053195	02/20/2014	Sirpal et al.	
	153	2014/0053196	02/20/2014	Selim	
	154	2014/0053197	02/20/2014	Shoykher et al.	
	155	2014/0053198	02/20/2014	Sirpal et al.	
	156	2014/0053200	02/20/2014	de Paz et al.	
	157	2014/0053202	02/20/2014	Selim	
	158	2014/0053203	02/20/2014	Csiki	
	159	2014/0053204	02/20/2014	Milano	
	160	2014/0053205	02/20/2014	Sirpal et al.	
	161	2014/0053206	02/20/2014	Shoykher et al.	
	162	2014/0053207	02/20/2014	Shoykher et al.	
	163	2014/0053208	02/20/2014	Sirpal et al.	
	164	2014/0053211	02/20/2014	Milano	
	165	2014/0053212	02/20/2014	Shoykher et al.	
	166	2014/0053221	02/20/2014	Sirpal et al.	
	167	2014/0053222	02/20/2014	Shoykher et al.	
	168	2014/0053225	02/20/2014	Shoykher et al.	
	169	2014/0055673	02/27/2014	Sirpal et al.	
	170	2014/0059578	02/27/2014	Voth et al.	
	171	2014/0059480	02/27/2014	de Paz et al.	
	172	2014/0059589	02/27/2014	Sirpal	
	173	2014/0059596	02/27/2014	Dourado	
	174	2014/0059598	02/27/2014	Milano	
	175	2014/0059599	02/27/2014	Sirpal et al.	
	176	2014/0059600	02/27/2014	Duarado	

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

Substitute for form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Application Number	13/968,884
				Filing Date	August 16, 2013
				First Named Inventor	Mohammed Selim
(Use as many sheets as necessary)				Art Unit	2425
				Examiner Name	Brian T Pendleton
Sheet	6	of	11	Attorney Docket Number	6583-445

	177	2014/0059601	02/27/2014	Sirpal	
	178	2014/0059602	02/27/2014	Sirpal	
	179	2014/0059603	02/27/2014	Lee et al.	
	180	2014/0059605	02/27/2014	Sirpal et al.	
	181	2014/0059606	02/27/2014	Selim et al.	
	182	2014/0059609	02/27/2014	Duarado	
	183	2014/0059610	02/27/2014	Sirpal et al.	
	184	2014/0059613	02/27/2014	Burdzinski et al.	
	185	2014/0059614	02/27/2014	Shoykher et al.	
	186	2014/0059615	02/27/2014	Sirpal et al.	
	187	2014/0059625	02/27/2014	Dourado et al.	
	188	2014/0059626	02/27/2014	Selim	
	189	2014/0059635	02/27/2014	Sirpal et al.	
	190	2014/0059637	02/27/2014	Chen et al.	
	191	2014/0067954	03/06/2014	Sirpal	
	192	2014/0068673	03/06/2014	Sirpal et al.	
	193	2014/0068674	03/06/2014	Sirpal et al.	
	194	2014/0068682	03/06/2014	Selim et al.	
	195	2014/0068683	03/06/2014	Selim et al.	
	196	2014/0068685	03/06/2014	Selim et al.	
	197	2014/0068689	03/06/2014	Sirpal et al.	
	198	2014/0075475	03/13/2014	Sirpal et al.	
	199	2014/0075476	03/13/2014	de Paz et al.	
	200	2014/0075477	03/13/2014	de Paz et al.	
	201	2014/0075479	03/13/2014	Soto et al.	
	202	2014/0075483	03/13/2014	de Paz et al.	
	203	2014/0075484	03/13/2014	Selim et al.	
	204	2014/0075487	03/13/2014	Selim et al.	

UNPUBLISHED U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No.[1]	Document Number Number-kind Code[2] (if known)	Filing Date MM-DD-YYYY	Name of Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	205	13/970420	08/19/2013	Selim et al.	

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

Substitute for form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Application Number	13/968,884
				Filing Date	August 16, 2013
(Use as many sheets as necessary)				First Named Inventor	Mohammed Selim
				Art Unit	2425
				Examiner Name	Brian T Pendleton
Sheet	7	of	11	Attorney Docket Number	6583-445

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]; Number[4]; Kind Code[5] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]
	206	CN 1832534	09/13/2006	SHENZHEN DIWEITE DIGITAL VIDEO TECHNOLOG CORP.		(English abstract)
	207	CN 101472102	07/01/2009	KONKA GROUP CO., LTD.		(English abstract)
	208	CN 101540850	09/23/2009	SHENZHEN TCL NEW TECHNOLOGY LTD		(English abstract)
	209	CN 101567992	10/28/2009	ALI CORP		(English abstract)
	210	CN 201937743	08/17/2011	SVA TECHNOLOGIES CO., LTD.		(English abstract)
	211	EP 1031929	08/30/2000	HEWLETT-PACKARD COMPANY		
	212	EP 1067458	01/10/2001	CANAL + SOCIETE ANONYME		
	213	EP 1770956	04/04/2007	BRITISH TELECOMMUNICATIONS		
	214	EP 1865723	12/12/2007	SONY NETSERVICES GMBH		
	215	EP 2328346	06/01/2011	UNITED VIDEO PROPERTIES, INC.		
	216	EP 2348724	07/27/2011	KABEL DEUTSCHLAND GMBH		
	217	EP 2439935	04/11/2012	LG ELECTRONICS INC.		
	218	EP 2487922	08/15/2012	LG ELECTRONICS, INC.		
	219	WO 99/21308	04/29/1999	SONY ELECTRONICS, INC.		
	220	WO 99/35849	07/15/1999	AMIGA DEVELOPMENT LLC		
	221	WO 2000/005884	02/03/2000	MATE MEDIA ACCESS TECHNOLOGIES LTD.		

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

Substitute for form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Application Number	13/968,884
				Filing Date	August 16, 2013
				First Named Inventor	Mohammed Selim
(Use as many sheets as necessary)				Art Unit	2425
				Examiner Name	Brian T Pendleton
Sheet	8	of	11	Attorney Docket Number	6583-445

	222	WO 01/06784	01/15/2001	UNITED VIDEO PROPERTIES INC		
	223	WO 01/06788	01/25/2001	UNITED VIDEO PROPERTIES, INC.		
	224	WO 02/080552	10/10/2002	KONINKL PHILIPS ELECTRONICS NV		
	225	WO 03/044755	05/30/2003	BEHAVIORAL INFORMATICS, INC.		
	226	WO 2007/137611	12/06/2007	TELECOM ITALIA S.P.A.		
	227	WO 2011/148054	12/01/2011	AXEL TECHNOLOGIES		
	228	WO 2011/163481	12/29/2011	HILCREST LAB INC		
	229	WO 2012/030024	03/08/2012	LG ELECTRONICS INC.		
	230	WO 2012/068438	05/24/2012	THOMSON LICENSING		
	231	WO 2012/073027	06/07/2012	YOUVIEW TV LTD		
	232	WO 2012/094247	07/12/2012	ROVI TECHNOLOGIES CORPORATION		
	233	WO 2014/026636	02/20/2014	FLEXTRONICS AP, LLC		
	234	WO 2014/026640	02/20/2014	FLEXTRONICS AP, LLC		
	235	WO 2014/028067	02/20/2014	FLEXTRONICS AP, LLC		
	236	WO 2014/028068	02/20/2014	FLEXTRONICS AP, LLC		
	237	WO 2014/028069	02/20/2014	FLEXTRONICS AP, LLC		
	238	WO 2014/028071	02/20/2014	FLEXTRONICS AP, LLC		
	239	WO 2014/028074	02/20/2014	FLEXTRONICS AP, LLC		

NON-PATENT LITERATURE DOCUMENTS		
Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
	240	TVONICSUK "Tvonics: How to use the EPG search function." 1 pages retrieved from the internet on Nov. 11, 2013 from [www.youtube.com/watch?v=H8euZ0lydo]

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

Substitute for form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(Use as many sheets as necessary)*				Application Number	13/968,884
				Filing Date	August 16, 2013
				First Named Inventor	Mohammed Selim
				Art Unit	2425
				Examiner Name	Brian T Pendleton
Sheet	9	of	11	Attorney Docket Number	6583-445

	241	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/36844, mailed Jun. 28, 2013 (Attorney's Ref. No. 6583-424-PCT) 8 pages
	242	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/36843, mailed Jun. 28, 2013 (Attorney's Ref. No. 6583-425-PCT) 8 pages
	243	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/36826, mailed Jun. 17, 2013 (Attorney's Ref. No. 6583-430-PCT) 8 pages
	244	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/55589, mailed Dec. 19, 2013 (Attorney's Ref. No. 6583-436-PCT) 9 pages
	245	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055289, mailed Dec. 02, 2013 (Attorney's Ref. No. 6583-444-PCT) 7 pages
	246	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055288, mailed Dec. 02, 2013 (Attorney's Ref. No. 6583-445-PCT) 9 pages
	247	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055286, mailed Dec. 02, 2013 (Attorney's Ref. No. 6583-446-PCT) 8 pages
	248	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/55285, mailed Dec. 11, 2013 (Attorney's Ref. No. 6583-447-PCT) 8 pages
	249	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055284, mailed Jan. 14, 2014 (Attorney's Ref. No. 6583-448-PCT) 12 pages
	250	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055293, mailed Dec. 02, 2013 (Attorney's Ref. No. 6583-449-PCT) 12 pages
	251	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055294, mailed Dec. 02, 2013 (Attorney's Ref. No. 6583-450-PCT) 10 pages
	252	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055296, mailed Nov. 29, 2013 (Attorney's Ref. No. 6583-451-PCT) 9 pages
	253	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/55493, mailed Nov. 07, 2013 (Attorney's Ref. No. 6583-452-PCT) 9 pages
	254	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/036828, mailed Jun. 28, 2013 (Attorney's Ref. No. 6583-453-PCT) 12 pages
	255	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055340, mailed Feb. 10, 2014 (Attorney's Ref. No. 6583-454-PCT) 10 pages
	256	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/55551, mailed Dec. 06, 2013 (Attorney's Ref. No. 6583-463-PCT) 7 pages
	257	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/036819, mailed Jun. 17, 2013 (Attorney's Ref. No. 6583-469-PCT) 9 pages
	258	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/036782, mailed Jun. 28, 2013 (Attorney's Ref. No. 6583-470-PCT) 9 pages
	259	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/36678, mailed Aug. 30, 2013 (Attorney's Ref. No. 6583-471-PCT) 9 pages

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

Substitute for form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Application Number	13/968,884
				Filing Date	August 16, 2013
				First Named Inventor	Mohammed Selim
(Use as many sheets as necessary)				Art Unit	2425
				Examiner Name	Brian T Pendleton
Sheet	10	of	11	Attorney Docket Number	6583-445

	260	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/036804, mailed Jul. 01, 2013 (Attorney's Ref. No. 6583-472-PCT) 13 pages
	261	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/55405, mailed Jan. 17, 2014 (Attorney's Ref. No. 6583-478-PCT) 8 pages
	262	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055278, mailed Mar. 11, 2014 (Attorney's Ref. No. 6583-479) 9 pages
	263	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/55509, mailed nov. 08, 2013 (Attorney's Ref. No. 6583-481-PCT) 9 pages
	264	International Search Report and Written Opinion for Intenational (PCT) Patent Application No. PCT/CN2013/081639, mailed Nov. 28, 2013 (Attorney's Ref. No. 6583-487-PCT) 10 pages
	265	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055303, mailed Dec. 05, 2013 (Attorney's Ref. No. 6583-488-PCT) 8 pages
	266	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055280, mailed Jan. 10, 2014 (Attorney's Ref. No. 6583-489-PCT) 10 pages
	267	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/55383, mailed Nov. 13, 2013 (Attorney's Ref. No. 6583-490-PCT) 9 pages
	268	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055344, mailed Mar. 11, 2014 (Attorney's Ref. No. 6583-491-PCT) 8 pages
	269	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055345, mailed Dec. 06, 2013 (Attorney's Ref. No. 6583-492-PCT) 7 pages
	270	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/55371, mailed No. 08, 2013 (Attorney's Ref. No. 6583-493-PCT) 7 pages
	271	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/55389, mailed Mar. 10, 2014 (Attorney's Ref. No. 6583-494-PCT) 10 pages
	272	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055283, mailed Mar. 04, 2014 (Attorney's Ref. No. 6583-495-PCT) 7 pages
	273	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/55564, mailed Nov. 22, 2013 (Attorney's Ref. No. 6583-496-PCT) 7 pages
	274	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/55379, mailed Dec. 06, 2013 (Attorney's Ref. No. 6583-497-PCT) 8 pages
	275	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055349, mailed Nov. 29, 2013 (Attorney's Ref. No. 6583-498-PCT) 7 pages
	276	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055312, mailed Dec. 05, 2013 (Attorney's Ref. No. 6583-499-PCT) 8 pages
	277	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/55374, mailed Nov. 12, 2013 (Attorney's Ref. No. 6583-500-PCT) 8 pages
	278	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/55542, mailed Mar. 10, 2014 (Attorney's Ref. No. 6583-501-PCT) 9 pages

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

Substitute for form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT *(Use as many sheets as necessary)*				Application Number	13/968,884
				Filing Date	August 16, 2013
				First Named Inventor	Mohammed Selim
				Art Unit	2425
				Examiner Name	Brian T Pendleton
Sheet	11	of	11	Attorney Docket Number	6583-445

	279	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/55315, mailed Jan. 24, 2014 (Attorney's Ref. No. 6583-502-PCT) 9 pages
	280	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055317, mailed Dec. 02, 2013 (Attorney's Ref. No. 6583-503-PCT) 9 pages
	281	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055318, mailed Jan. 09, 2014 (Attorney's Ref. No. 6583-504-PCT) 10 pages
	282	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055319, mailed Mar. 11, 2014 (Attorney's Ref. No. 6583-505-PCT) 7 pages
	283	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055321, mailed Dec. 06, 2013 (Attorney's Ref. No. 6583-506-PCT) 9 pages
	284	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/CN2013/081630, mailed Nov. 21, 2013 (Attorney's Ref. No. 6583-507-PCT) 11 pages
	285	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/055298, mailed Nov. 29, 2013 (Attorney's Ref. No. 6583-509-PCT) 8 pages
	286	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/55567, mailed Dec. 20, 2013 (Attorney's Ref. No. 6583-519-PCT) 10 pages
	287	International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US13/55570, mailed Nov. 22, 2013 (Attorney's Ref. No. 6583-520-PCT) 8 pages
	288	Official Action for U.S. Patent Application No. 13/864,206, mailed Nov. 27, 2013 (Attorney's Ref. No. 6583-425) 17 pages
	289	Official Action for U.S. Patent Application No. 13/864,214, mailed Mar. 12, 2014 (Attorney's Ref. No. 6583-469) 12 pages

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

Espacenet

Bibliographic data: CN1832534 (A) — 2006-09-13

Set-top box with scene mode and its control method

No documents available for this priority number.

Inventor(s): FU DALI [CN] ± (DALI FU, ; FU DALI)

Applicant(s): SHENZHEN DIWEITE DIGITAL VIDEO [CN] ± (SHENZHEN DIWEITE DIGITAL VIDEO TECHNOLOGY CO., LTD)

Classification: **- international:** ***H04N5/00; H04N7/173***
- cooperative:

Application number: CN2005133554 20050309

Priority number (s): CN2005133554 20050309

Also published as: CN100527781 (C)

Abstract of CN1832534 (A)

This invention discloses a set-top box with a situational mode and its control method including: a receiving unit capable of receiving information of channels-the EPG signals, a storing unit storing situational mode information set by a user and channel program information, an input receiving unit for receiving user operation orders and a control unit for controlling the TV to play the situational mode, in which, the set-top box enters into the personal situational mode state selected by the user after initial operation, this time, all operations are against the person situation mode, the user can add and delete its channel list liked and the set-top box enters into the personal situation mode play state, the selected channels are all ones the user likes so the user can watch the programs conveniently.

Last updated: 11.12.2013 Worldwide Database 5.8.15.10; 92p

EX. 1002
LG Electronics, Inc. / Page 654 of 3523

[19] 中华人民共和国国家知识产权局

[51] Int. Cl.
H04N 5/00 (2006.01)
H04N 7/173 (2006.01)

[12] 发明专利申请公开说明书

[21] 申请号 200510033554.2

[43] 公开日 2006 年 9 月 13 日

[11] 公开号 CN 1832534A

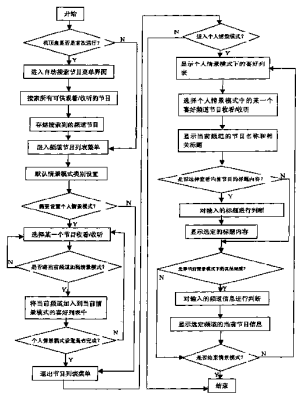
[22] 申请日 2005.3.9
[21] 申请号 200510033554.2
[71] 申请人 深圳市迪威特数字视讯技术有限公司
地址 518057 广东省深圳市南山区高新区南区科技南路深圳市数字技术园 B2 栋 5A
[72] 发明人 付大力
[74] 专利代理机构 广东国欣律师事务所
代理人 赵彦雄
权利要求书 3 页 说明书 5 页 附图 4 页

[54] 发明名称

一种具有情景模式的机顶盒及其控制方法

[57] 摘要

本发明公开了一种具有情景模式的机顶盒及其控制方法，其技术方案包括：能够接收频道节目信息信号即 EPG 信号的接收单元、存储用户个人设置的情景模式信息和频道节目信息的存储单元、用于用户操作命令接收的输入接收单元和控制电视机进行情景模式播放的控制单元。 机顶盒经过初始化运行后进入用户选择的个人情景模式设置状态，此时所有的操作都针对该个人情景模式进行，用户可以很方便地对喜好频道列表进行添加、删除操作；设置完毕或者跳过上述设置状态后，机顶盒自动进入个人情景模式播放状态，其中的可选择频道都是用户预先设置好的喜好频道，用户可以很方便地浏览、观看上述频道节目。



1、一种具有情景模式的机顶盒，包括：能够接收频道节目信息信号即 EPG 信号的接收单元、存储频道节目信息的存储单元、用于用户操作命令接收的输入接收单元，以及控制单元，其特征是：所述的存储单元能够存放用户个人设置的情景模式信息，所述的控制单元通过以下步骤实现电视节目的情景模式播放：

（a）控制单元判断机顶盒是否是首次运行，若是则控制单元自动搜索并存储可供观看、收听的频道节目信息，搜索完毕进入频道节目列表菜单；若否，则直接进入频道节目列表菜单；

（b）默认情景模式类别设置，控制单元根据输入接收单元的指令进行默认情景模式类别设置，并将其作为当前默认的情景模式；

（c）控制单元通过播放单元提示用户是否进行个人情景模式设置，若是则进入下一步骤，若否则直接进入（e）步骤；

（d）个人情景模式设置；

（e）控制单元通过播放单元提示用户是否进入个人情景模式，若是则进下一步骤，若否则直接进入（g）步骤；

（f）个人情景模式播放；

（g）机顶盒结束本次运行。

2、根据权利要求 1 所述的具有情景模式的机顶盒，其特征是：所述的（d）步骤具体通过如下 3 个小步骤实现：

（a）控制单元等待输入接收单元的指令，选择电视频道节目；

（b）控制单元通过播放单元提示用户是否将当前频道添加到个人情景模式的喜好列表中来，若是则添加，若否则返回（a）步骤；

（c）控制单元通过播放单元询问用户个人情景模式设置是否完成，如是则退出节目列表菜单并结束本次设置，如否则返回（a）步骤。

3、根据权利要求 1 或者 2 所述的具有情景模式的机顶盒，其特征是：所述的（f）步骤具体通过如下 4 个小步骤实现：

（a）控制单元控制显示单元显示个人情景模式下的喜好列表；

（b）控制单元等待用户选择具体频道节目；

（c）控制单元控制控制显示单元显示当前频道的节目名称和相关标题；

（d）控制单元根据输入接收单元的操作命令控制播放单元播放当前情景模式下的其他频道信息或者当前节目的其他标题内容。

4、根据权利要求 3 所述的具有情景模式的机顶盒，其特征是：所述的情景模式信息包括至少下述之一：

（a）表示用户喜好的情景模式的标识信息；

（b）个人情景模式中所包含每一个频道的频道名称、序号信息；

EX. 1002
LG Electronics, Inc. / Page 656 of 3523

（c）个人情景模式中所包含每一个频道播放时所需要的频道信息。

5、根据权利要求4所述的具有情景模式的机顶盒，其特征是：所述的喜好列表包括：

（a）当前所处的情景模式的标识说明；

（b）可供选择的几种情景模式的名称；

（c）至少一个可以被选择的频道和这些频道对应的节目指南信息；

（d）显示一些操作命令的提示，使用户可以通过输入单元向控制单元发出信号，包括至少下述之一：

切换到其他频道节目提示：控制播放单元播放其他可收看的频道；

显示其他频道名称提示：控制显示目前没有被显示在屏幕上的其他频道名称；

显示/隐藏节目指南提示：控制显示单元显示或者隐藏节目指南信息。

6、根据权利要求5所述的具有情景模式的机顶盒，其特征是：所述的喜好列表包括频道列表和节目指南信息列表，二者在显示单元屏幕上纵向排列且彼此相关的频道和节目指南信息在显示单元屏幕横向上对齐排布；所述的频道名称、序号和频道信息的显示只覆盖显示单元屏幕的一部分。

7、一种具有情景模式的机顶盒的控制方法，包括如下步骤：

（a）接收单元接收频道节目信息信号即EPG信号；

（b）控制单元控制存储单元存储频道节目信息；

（c）控制单元控制显示单元显示频道节目信息，并控制播放单元播放广播电视节目信号，其特征是：所述的存储单元能够存放用户个人设置的情景模式信息，所述的控制单元通过以下步骤实现电视节目的情景模式播放：

（a）控制单元判断机顶盒是否是首次运行，若是则控制单元自动搜索并存储可供观看、收听的频道节目信息，搜索完毕进入频道节目列表菜单；若否，则直接进入频道节目列表菜单；

（b）默认情景模式类别设置，控制单元根据输入接收单元的指令进行默认情景模式类别设置，并将其作为当前默认的情景模式；

（c）控制单元通过播放单元提示用户是否进行个人情景模式设置，若是则进入下一步骤，若否则直接进入（e）步骤；

（d）个人情景模式设置；

（e）控制单元通过播放单元提示用户是否进入个人情景模式，若是则进下一步骤，若否则直接进入（g）步骤；

（f）个人情景模式播放；

（g）机顶盒结束本次运行。

EX. 1002
LG Electronics, Inc. / Page 657 of 3523

8、根据权利要求 7 所述的具有情景模式的机顶盒的控制方法，其特征是：所述的（d）步骤具体通过如下 3 个小步骤实现：

（a）控制单元等待输入接收单元的指令，选择电视频道节目；

（b）控制单元通过播放单元提示用户是否将当前频道添加到个人情景模式的喜好列表中来，若是则添加，若否则返回（a）步骤；

（c）控制单元通过播放单元询问用户个人情景模式设置是否完成，如是则退出节目列表菜单并结束本次设置，如否则返回（a）步骤。

9、根据权利要求 7 或者 8 所述的具有情景模式的机顶盒的控制方法，其特征是：所述的（f）步骤具体通过如下 4 个小步骤实现：

（a）控制单元控制显示单元显示个人情景模式下的喜好列表；

（b）控制单元等待用户选择具体频道节目；

（c）控制单元控制控制显示单元显示当前频道的节目名称和相关标题；

（d）控制单元根据输入接收单元的操作命令控制播放单元播放当前情景模式下的其他频道信息或者当前节目的其他标题内容。

10、根据权利要求 9 所述的具有情景模式的机顶盒的控制方法，其特征是：所述的情景模式信息包括至少下述之一：

（a）表示用户喜好的情景模式的标识信息；

（b）个人情景模式中所包含每一个频道的频道名称、序号信息；

（c）个人情景模式中所包含每一个频道播放时所需要的频道信息。

11、根据权利要求 10 所述的具有情景模式的机顶盒的控制方法，其特征是：所述的喜好列表包括：

（a）当前所处的情景模式的标识说明；

（b）可供选择的几种情景模式的名称；

（c）至少一个可以被选择的频道和这些频道对应的节目指南信息；

（d）显示一些操作命令的提示，使用户可以通过输入单元向控制单元发出信号，包括至少下述之一：

切换到其他频道节目提示：控制播放单元播放其他可收看的频道；

显示其他频道名称提示：控制显示目前没有被显示在屏幕上的其他频道名称；

显示/隐藏节目指南提示：控制显示单元显示或者隐藏节目指南信息。

12、根据权利要求 11 所述的具有情景模式的机顶盒的控制方法，其特征是：所述的喜好列表包括频道列表和节目指南信息列表，二者在显示单元屏幕上纵向排列且彼此相关的频道和节目指南信息在显示单元屏幕横向上对齐排布；所述的频道名称、序号和频道信息的显示只覆盖显示单元屏幕的一部分。

EX. 1002
LG Electronics, Inc. / Page 658 of 3523

一种具有情景模式的机顶盒及其控制方法

技术领域

本发明涉及一种收看电视节目并设定个人情景模式的设备和方法，更具体的说，涉及一种接收频道节目信息信号并能设置情景模式播放的机顶盒及其控制方法。

背景技术

在过去的模拟电视时代，只有很少的电视节目可供观看，因此，观众没有选择想要观看的电视节目的困难。然而，现在已经进入数字电视时代，节目的数量剧增，用户可以选择的节目也越来越多，由于电视机往往在家庭中使用，而每个家庭成员所喜好的频道类型各有不同，譬如，新闻类、体育类、文艺类、影视类、综合类等等，那么，如何在所有的这些频道当中快速、便捷的找到自己感兴趣的频道就成为了一个问题。例如，观众总是要不断的浏览所有频道的节目，甚至包括一些观众并不喜欢的频道，以便找到自己喜爱的频道，这样的操作必然浪费观众大量不必要的时间。

为了解决上述问题，使用具有喜好频道设定的机顶盒已经被开发出来。如图1和2所示，当用户从频道表选择了一个之后，如图1所示一上层菜单被显示在屏幕上，以便使用户查看所有可供选择的频道的列表。当用户选定一个频道并且想要把它添加到自己的喜好频道列表中时，如图 2 所示的下层菜单被显示在屏幕上，询问用户要添加至哪一个喜好频道表中，此时用户将这个频道加入到自己的喜好频道表中。这样就完成了一次添加，同时，用户的这次操作被机顶盒记录并存储下来。重复上述的步骤就能够将所有自己感兴趣的频道全部添加至自己的喜好频道表。每当用户想要观看自己的喜好的频道时，必须重新选择自己的喜好列表，再次选择自己想要看的频道名称。

可见，当可供收看的频道的数量很大的时候，对于用户来说不断地在喜好列表和全部频道列表之间进行切换将变的很麻烦。

发明内容

本发明所要解决的技术问题是，提供一种能够方便、快捷地进行用户喜好频道设置和喜好频道电视节目播放的具有情景模式的机顶盒及其控制方法。

为解决上述技术问题，本发明包括：能够接收频道节目信息信号即 EPG 信号的接收单元、存储频道节目信息的存储单元、用于用户操作命令接收的输入接收单元，以及控制单元，其中，所述的存储单元能够存放用户个人设置的情景模式信息，所述的控制单元通过以下步骤实现电视节目的情景模式播放：

EX. 1002
LG Electronics, Inc. / Page 659 of 3523

（a）控制单元判断机顶盒是否是首次运行，若是则控制单元自动搜索并存储可供观看、收听的频道节目信息，搜索完毕进入频道节目列表菜单；若否，则直接进入频道节目列表菜单；

（b）默认情景模式类别设置，控制单元根据输入接收单元的指令进行默认情景模式类别设置，并将其作为当前默认的情景模式；

（c）控制单元通过播放单元提示用户是否进行个人情景模式设置，若是则进入下一步骤，若否则直接进入（e）步骤；

（d）个人情景模式设置；

（e）控制单元通过播放单元提示用户是否进入个人情景模式，若是则进下一步骤，若否则直接进入（g）步骤；

（f）个人情景模式播放；

（g）机顶盒结束本次运行。

作为本发明的改进，所述的（d）步骤具体通过如下 3 个小步骤实现：

（a）控制单元等待输入接收单元的指令，选择电视频道节目；

（b）控制单元通过播放单元提示用户是否将当前频道添加到个人情景模式的喜好列表中来，若是则添加，若否则返回（a）步骤；

（c）控制单元通过播放单元询问用户个人情景模式设置是否完成，如是则退出节目列表菜单并结束本次设置，如否则返回（a）步骤。

作为本发明的改进，所述的（f）步骤具体通过如下 4 个小步骤实现：

（a）控制单元控制显示单元显示个人情景模式下的喜好列表；

（b）控制单元等待用户选择具体频道节目；

（c）控制单元控制控制显示单元显示当前频道的节目名称和相关标题；

（d）控制单元根据输入接收单元的操作命令控制播放单元播放当前情景模式下的其他频道信息或者当前节目的其他标题内容。

作为本发明进一步的改进，所述的情景模式信息包括至少下述之一：

（a）表示用户喜好的情景模式的标识信息；

（b）个人情景模式中所包含每一个频道的频道名称、序号信息；

（c）个人情景模式中所包含每一个频道播放时所需要的频道信息。

作为本发明更进一步的改进，所述的喜好列表包括：

（a）当前所处的情景模式的标识说明；

（b）可供选择的几种情景模式的名称；

（c）至少一个可以被选择的频道和这些频道对应的节目指南信息；

（d）显示一些操作命令的提示，使用户可以通过输入单元向控制单元发出信号，包括至少下述之一：

EX. 1002
LG Electronics, Inc. / Page 660 of 3523

切换到其他频道节目提示：控制播放单元播放其他可收看的频道；

显示其他频道名称提示：控制显示目前没有被显示在屏幕上的其他频道名称；

显示/隐藏节目指南提示：控制显示单元显示或者隐藏节目指南信息。

作为本发明再进一步的改进，所述的喜好列表包括频道列表和节目指南信息列表，二者在显示单元屏幕上纵向排列且彼此相关的频道和节目指南信息在显示单元屏幕横向上对齐排布；所述的频道名称、序号和频道信息的显示只覆盖显示单元屏幕的一部分。

通过实施本发明，机顶盒运行经过必要的初始化，即搜索、储存能够观看、收听的电视节目后就提示用户是否进入个人情景模式，一旦用户做出选择后，所有的操作都将用户设置的个人情景模式作为默认的当前情景模式。用户在观看各频道电视节目的过程中可以很方便地添加、删除喜好频道列表。若用户此时不想重新设置个人情景模式，则机顶盒自动进入用户预先设置的个人的情景模式，其中的可选择频道都是用户预先设置的喜好频道，用户可以很方便的浏览、观看其中的各个频道，而不需要在全部频道列表与喜好频道列表间反复切换。

说明书附图

下面结合附图和具体实施方式，对本发明做进一步详细的说明。其中：

图 1 为全部频道列表传统显示模式示意图；

图 2 为喜好频道列表传统显示模式示意图；

图 3 为本发明所涉机顶盒的工作结构示意图；

图 4 为本发明所涉机顶盒控制单元工作流程示意图；

图 5 为本发明所涉喜好频道列表显示模式示意图；

图 6 为选定具体频道后频道信息显示模式示意图。

具体实施方式

如图 3 所示，本发明包括：能够接收频道节目信息信号即 EPG 信号的接收单元、存储频道节目信息的存储单元、用于用户操作命令接收的输入接收单元，以及控制单元，其中所述的存储单元能够存放用户个人设置的情景模式信息。其中，输入单元可以是安装在机顶盒上的操作面板，也可以是具有多个操作按钮的遥控器。

如图 4 所示，所述的控制单元通过以下步骤实现电视节目的情景模式播放：

(a) 控制单元判断机顶盒是否是首次运行，若是则控制单元自动搜索并存储可供观看、收听的频道节目信息，搜索完毕进入频道节目列表菜单；若否，则直接进入频道节目列表菜单；

EX. 1002
LG Electronics, Inc. / Page 661 of 3523

（b）默认情景模式类别设置，控制单元根据输入接收单元的指令进行默认情景模式类别设置，并将其作为当前默认的情景模式；

（c）控制单元通过播放单元提示用户是否进行个人情景模式设置，若是则进入下一步骤，若否则直接进入（e）步骤；

（d）个人情景模式设置；

（e）控制单元通过播放单元提示用户是否进入个人情景模式，若是则进下一步骤，若否则直接进入（g）步骤；

（f）个人情景模式播放；

（g）机顶盒结束本次运行。

其中，所述的（d）步骤具体通过如下 3 个小步骤实现：

（a）控制单元等待输入接收单元的指令，选择电视频道节目；

（b）控制单元通过播放单元提示用户是否将当前频道添加到个人情景模式的喜好列表中来，若是则添加，若否则返回（a）步骤；

（c）控制单元通过播放单元询问用户个人情景模式设置是否完成，如是则退出节目列表菜单并结束本次设置，如否则返回（a）步骤。

其中，所述的（f）步骤具体通过如下 4 个小步骤实现：

（a）控制单元控制显示单元显示个人情景模式下的喜好列表；

（b）控制单元等待用户选择具体频道节目；

（c）控制单元控制控制显示单元显示当前频道的节目名称和相关标题；

（d）控制单元根据输入接收单元的操作命令控制播放单元播放当前情景模式下的其他频道信息或者当前节目的其他标题内容。

具体可设置上/下键或者左/右键实现（d）步骤的操作，对于其他频道的选择具体还可以设置数字键直接输入的方式进行选择确定。通过实施本发明，当用户控制输入单元例如遥控器查看节目指南信息时，所查找到的也只是自己情景模式的喜好频道，而没有显示自己没有添加进情景模式的频道。如果用户使用遥控器查看自己情景模式下所有的频道，用户只需要按下相应按键例如遥控器上的喜好键，此时屏幕上显示的是该情景模式下所有喜好频道列表。

如图 5 所示，所述的情景模式信息包括至少下述之一：

（a）表示用户喜好的情景模式的标识信息；

（b）个人情景模式中所包含每一个频道的频道名称、序号信息；

（c）个人情景模式中所包含每一个频道播放时所需要的频道信息。

如图 6 所示，所述的喜好列表包括：

（a）当前所处的情景模式的标识说明；

（b）可供选择的几种情景模式的名称；

EX. 1002
LG Electronics, Inc. / Page 662 of 3523

（c）至少一个可以被选择的频道和这些频道对应的节目指南信息；

（d）显示一些操作命令的提示，使用户可以通过输入单元向控制单元发出信号，包括至少下述之一：

切换到其他频道节目提示：控制播放单元播放其他可收看的频道；

显示其他频道名称提示：控制显示目前没有被显示在屏幕上的其他频道名称；

显示/隐藏节目指南提示：控制显示单元显示或者隐藏节目指南信息。

其中，所述的喜好列表包括频道列表和节目指南信息列表，二者在显示单元屏幕上纵向排列且彼此相关的频道和节目指南信息在显示单元屏幕横向上对齐排布；所述的频道名称、序号和频道信息的显示只覆盖显示单元屏幕的一部分。

EX. 1002
LG Electronics, Inc. / Page 663 of 3523

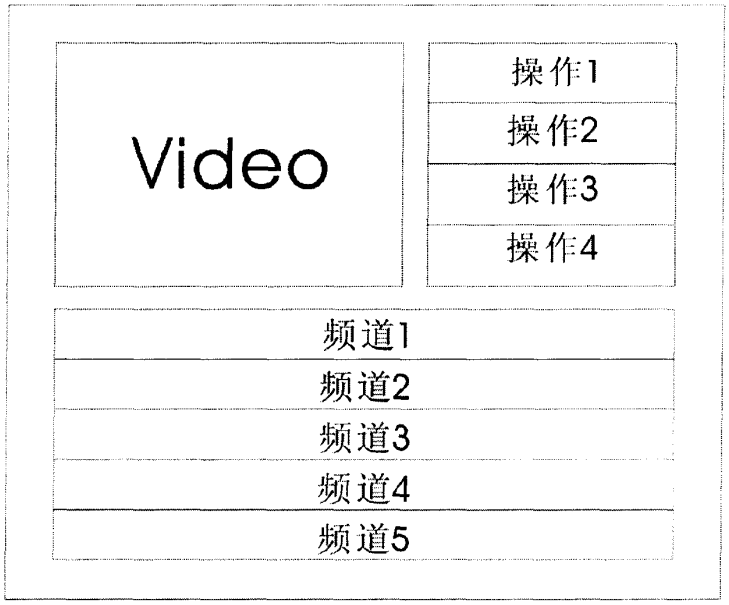


图 1

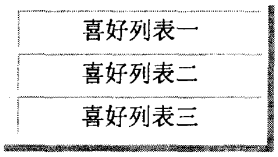


图 2

EX. 1002
LG Electronics, Inc. / Page 664 of 3523

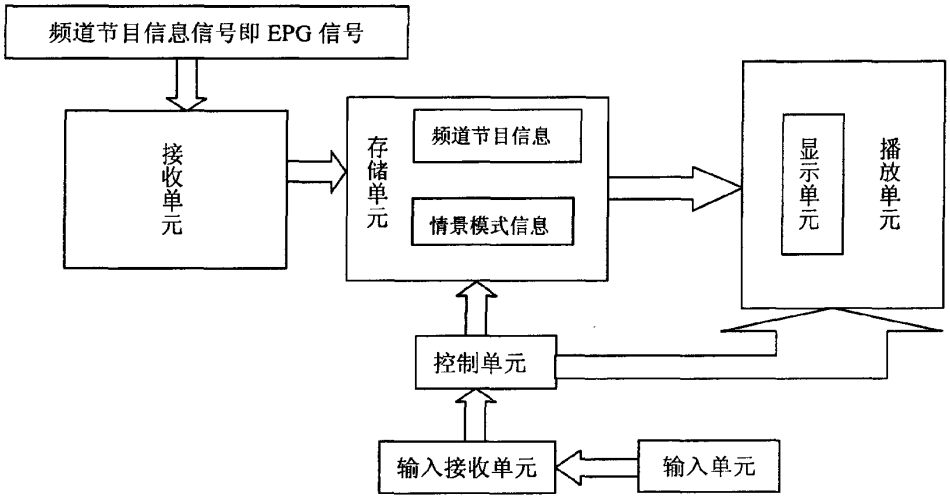


图 3

EX. 1002
LG Electronics, Inc. / Page 665 of 3523

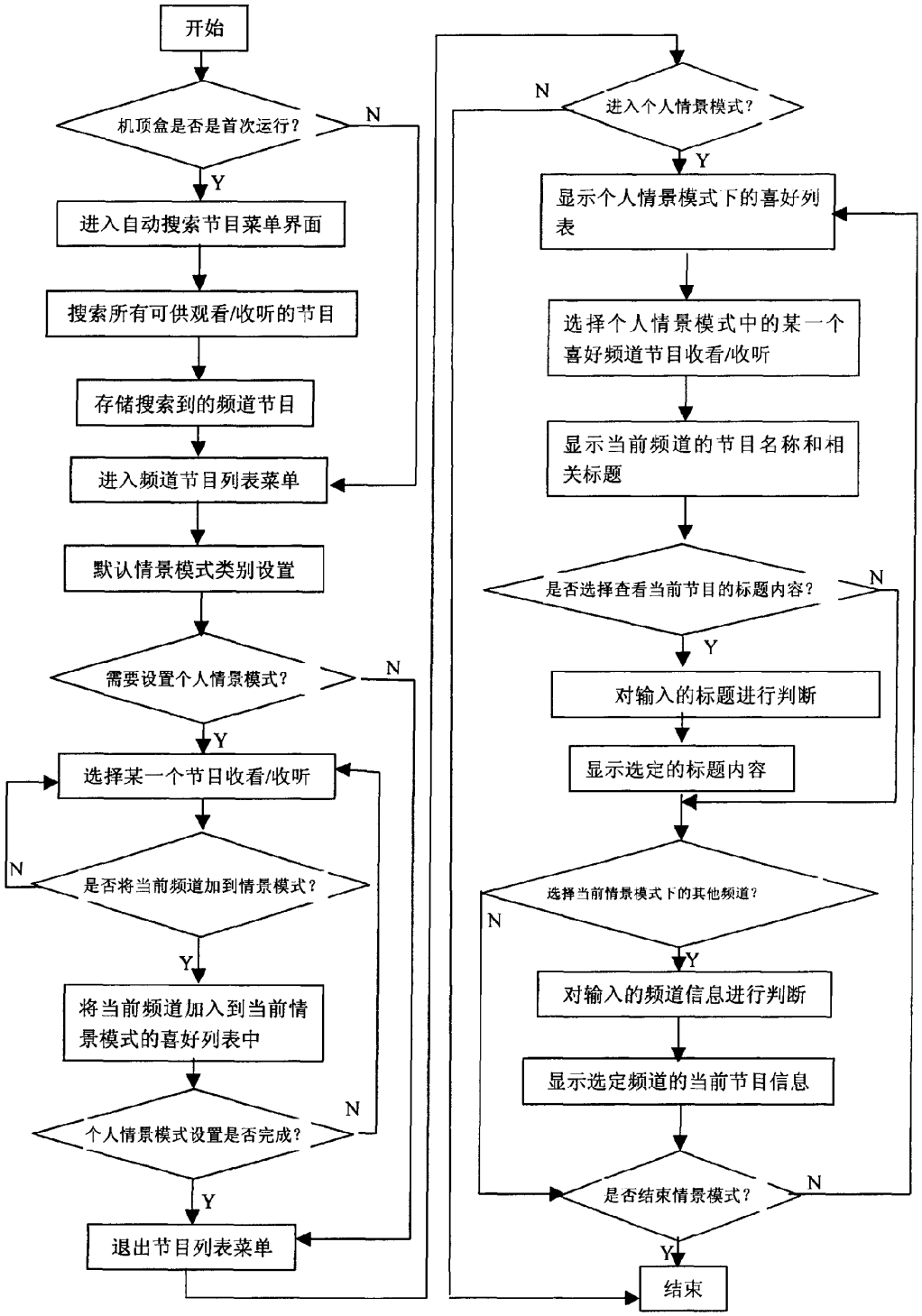


图 4

EX. 1002
LG Electronics, Inc. / Page 666 of 3523

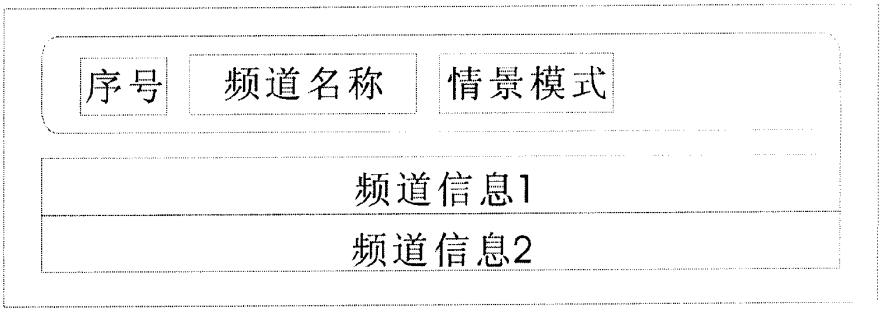


图 5

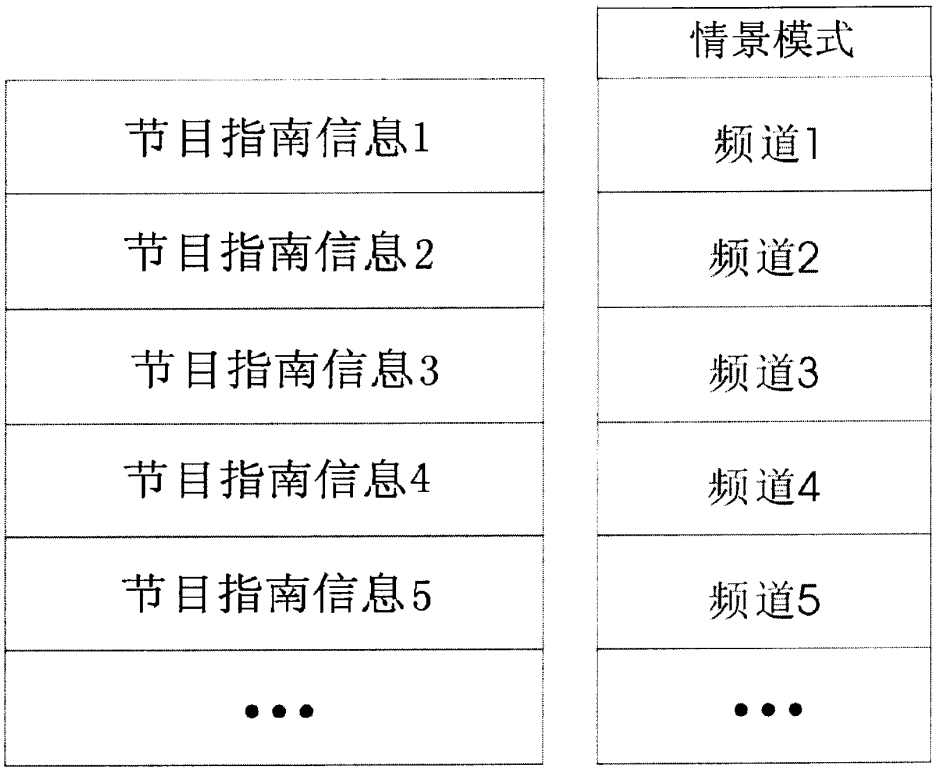


图 6

EX. 1002
LG Electronics, Inc. / Page 667 of 3523

Espacenet

Bibliographic data: CN101472102 (A) — 2009-07-01

Automatic prompting method for television program transmission and television set

No documents available for this priority number.

Inventor(s): SHUANGFEI WANG [CN] ± (WANG SHUANGFEI)

Applicant(s): KONKA GROUP CO LTD [CN] ± (KONKA GROUP CO., LTD)

Classification: **- international:** ***H04N5/445***
- cooperative:

Application number: CN20071125516 20071225

Priority number(s): CN20071125516 20071225

Abstract of CN101472102 (A)

The invention relates to a television program broadcasting automatic reminder method. The method comprises the following steps: A, the user coded information of a current user is acquired, the corresponding watching record of the current user stored in the television is found according to the coded information, and the information of the favorite programs of the user is generated according to the watching record; B, the program information in the television program guidebook is analyzed according to the relevant information of the favorite programs of the user, and the programs that the user is possibly interested in are found out; C, the programs that the user is possibly interested in are stored in a program broadcasting reminder list; and D, the television program prompting information is output within a time before the programs according to the program broadcasting reminder list. By implementing the invention, the television can automatically remind the user to watch the favorite programs, and the tedious program broadcasting reminder is not required to be manually set by the user, therefore, the use is simpler and more convenient.

Last updated: 11.12.2013 Worldwide Database 5.8.15.10; 92p

EX. 1002
LG Electronics, Inc. / Page 668 of 3523

[19] 中华人民共和国国家知识产权局

[51] Int. Cl.
H04N 5/445 (2006.01)
H04N 5/00 (2006.01)

[12] 发明专利申请公布说明书

[21] 申请号 200710125516.9

[43] 公开日 2009 年 7 月 1 日

[11] 公开号 CN 101472102A

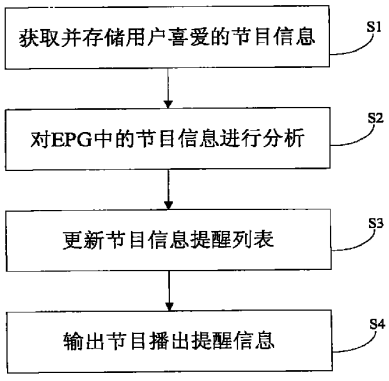
[22] 申请日 2007.12.25
[21] 申请号 200710125516.9
[71] 申请人 康佳集团股份有限公司
地址 518053 广东省深圳市南山区华侨城康佳集团
[72] 发明人 王双飞
[74] 专利代理机构 深圳市顺天达专利商标代理有限公司
代理人 高占元
权利要求书 4 页 说明书 9 页 附图 5 页

[54] 发明名称

一种电视节目播出自动提醒方法及电视机

[57] 摘要

本发明涉及一种电视节目播出自动提醒方法，包括步骤：A. 获取当前用户的用户编码信息，根据该编码信息找到对应的电视机内存储的当前用户的收视记录，根据该收视记录生成用户喜爱节目的信息；B. 根据用户喜爱节目的相关信息对电子节目指南中的节目信息进行分析，找出用户可能感兴趣的节目；C. 将用户可能感兴趣的节目存储到节目播出提醒列表；D. 根据节目播出提醒列表，在节目开始前一段时间内输出电视节目提示信息。 实施本发明，电视机能够自动提醒用户收看自己喜爱的节目，不需要用户手动设置繁琐的节目播出提醒，使用更简单、方便。



1、一种电视节目播出自动提醒方法，包括步骤：

A、获取当前用户的用户编码信息，根据该编码信息找到对应的电视机内存储的当前用户的收视记录，根据该收视记录生成用户喜爱节目的信息；

B、根据用户喜爱节目的相关信息对电子节目指南中的节目信息进行分析，找出用户可能感兴趣的节目；

C、将用户可能感兴趣的节目存储到节目播出提醒列表；

D、根据节目播出提醒列表，在节目开始前一段时间内输出电视节目提示信息。

2、根据权利要求 1 所述的电视节目自动提醒方法，其特征在于，所述步骤 A 包括子步骤：

A1、通过无线射频识别技术读取当前用户无线射频识别标签中的用户编码信息；

A2、根据编码信息在电视机的数据库中找到当前用户的收视记录；

A3、根据所述收视记录获取收看频率最高的节目类型并存储为用户喜爱节目的节目类型；

A4、根据所述收视记录获取收看频率最高的节目名称并存储为用户喜爱节目的节目名称；

A5、根据所述收视记录获取出现频率最高的节目内容关键字并存储为用户喜爱节目的节目内容关键字。

3、根据权利要求 1 所述的电视节目自动提醒方法，其特征在于，所述用户喜爱节目的信息包括节目类型、节目名称和节目内容关键字，所述步骤 B 包括步骤：

B1、电子节目指南更新时，获取其中每个节目的节目类型、节目名称和节目内容介绍；

B2、顺序判断每个节目是否有两项或两项以上符合用户喜爱节目的节目类型、节目名称和节目内容关键字，若是，则该节目是用户可能感兴趣的节目，

EX. 1002
LG Electronics, Inc. / Page 670 of 3523

执行步骤C。

4、根据权利要求1所述的电视节目自动提醒方法，其特征在于，步骤D包括子步骤：

D1、检索节目播出提醒列表；

D2、找出提醒列表中是否有即将播出的节目记录；

D3、将该节目存入一个临时列表；

D4、将该节目从节目播出提醒列表中删除；

D5、根据临时列表中的记录输出电视节目提示信息。

5、根据权利要求3所述的电视节目自动提醒方法，其特征在于，所述节目播出提醒列表中，节目按播出的时间先后顺序排序。

6、一种电视节目自动提醒的电视机，其特征在于，包括用户喜爱节目信息自动获取模块、电子节目指南信息分析模块、节目提醒列表模块和节目播出提醒模块；

所述用户喜爱节目信息自动获取模块，用于通过无线射频识别技术读取用户的无线射频识别标签中的用户编码信息，根据编码信息读取电视机内存储的该用户的收视记录，根据该收视记录自动生成用户喜爱节目信息，该信息包括节目类型、节目名称和节目内容关键字，并将该信息传输到电子节目指南信息分析模块；

所述电子节目指南信息分析模块用于根据用户喜爱节目的分析电子节目指南中的节目的节目类型、节目名称和节目内容，找出在当前电子节目指南中用户可能喜欢的节目信息，并将该信息传输至节目提醒列表模块；

所述节目提醒列表模块用于根据电子节目指南信息分析模块传输来的信息生成节目提醒列表；

所述节目播出提醒模块用于根据节目提醒列表显示即将播出的节目的提醒信息。

7、根据权利要求6所述的电视节目自动提醒的电视机，其特征在于，所述用户喜爱节目信息自动获取模块包括用户编码获取子模块、收视记录存储子模块、收视记录查找子模块、节目类型子模块、节目名称子模块、节目内容关

EX. 1002
LG Electronics, Inc. / Page 671 of 3523

键字子模块；

所述用户编码获取子模块用于利用无线射频识别技术从用户的电子标签中获取当前用户的编码信息；

所述收视记录存储子模块用于存储用户一定时间内的收视信息；

所述收视记录查找子模块用于根据当前用户的编码信息在收视记录存储子模块中查找到用户的收视记录信息；

所述节目类型子模块用于根据用户的收视记录信息中用户收看频率最高的节目的节目类型生成用户喜爱节目的节目类型；

所述节目名称子模块用于根据用户的收视记录信息中用户收看频率最高的节目的节目名称生成用户喜爱节目的节目名称；

所述节目内容关键字子模块用于根据用户的收视记录信息中用户收看频率最高的节目的节目内容关键字生成用户喜爱节目的节目内容关键字。

8、根据权利要求 7 所述的电视节目自动提醒的电视机，其特征在于，所述电子节目指南信息分析模块包括节目信息获取子模块、用户喜爱节目判断子模块；

所述节目信息获取子模块用于在电子节目指南更新时，自动获取其中每个节目的节目类型、节目名称和节目内容介绍；

所述用户喜爱节目判断子模块用于判断每个节目是否有两项或两项以上符合用户喜爱节目的节目类型、节目名称和节目内容关键字，若是，则判断该节目是用户可能喜爱的节目。

9、根据权利要求 8 所述的电视节目自动提醒的电视机，其特征在于，所述节目播出提醒模块包括节目播出提醒列表检索子模块、即将播出节目子模块、临时列表子模块、节目删除子模块、节目播出提示输出子模块；

节目播出提醒列表检索子模块用于检索节目播出提醒列表；

即将播出节目子模块用于从提醒列表中找出即将播出的节目；

临时列表子模块用于存储即将播出的节目；

节目删除子模块用于将已存入临时列表的节目从节目播出提醒列表中删除；

EX. 1002
LG Electronics, Inc. / Page 672 of 3523

节目播出提示输出子模块用于据临时列表中的记录输出电视节目提示信息。

10、根据权利要求9所述的电视节目自动提醒的电视机，其特征在于，所述节目播出提醒列表中，节目按播出的时间先后顺序排序。

EX. 1002
LG Electronics, Inc. / Page 673 of 3523

一种电视节目播出自动提醒方法及电视机

技术领域

本发明涉及电视机领域，更具体地说，涉及一种电视节目播出自动提醒方法及电视机。

背景技术

已有的电视节目提醒系统，一般需要由用户事先设置对某一些或某一类电视节目的喜好，电视机根据用户的设置对电子节目指南（Electronic Program Guide，简称 EPG）进行分析，找出下一时段用户感兴趣的节目，然后在节目播出之前提醒用户收看节目。

已有的电视节目播出提醒系统虽然大大方便了用户使用电视，但是需要用户进行手工设置，不够智能化。特别在用户对多个节目或多类节目感兴趣时，设置相当繁琐。

发明内容

本发明要解决的技术问题在于，针对现有技术的上述手工设置节目播出提醒不够方便的缺陷，提供一种电视节目播出自动提醒方法及电视机。

本发明解决其技术问题所采用的技术方案是：构造一种电视节目播出自动提醒方法，包括步骤：

A、获取当前用户的用户编码信息，根据该编码信息找到对应的电视机内存储的当前用户的收视记录，根据该收视记录生成用户喜爱节目的信息；

B、根据用户喜爱节目的相关信息对电子节目指南中的节目信息进行分析，找出用户可能感兴趣的节目；

C、将用户可能感兴趣的节目存储到节目播出提醒列表；

D、根据节目播出提醒列表，在节目开始前一段时间内输出电视节目提示

EX. 1002
LG Electronics, Inc. / Page 674 of 3523

信息。

在本发明所述的电视节目自动提醒方法中，所述步骤A包括子步骤：

A1、通过无线射频识别技术读取当前用户无线射频识别标签中的用户编码信息；

A2、根据编码信息在电视机的数据库中找到当前用户的收视记录；

A3、根据所述收视记录获取收看频率最高的节目类型并存储为用户喜爱节目的节目类型；

A4、根据所述收视记录获取收看频率最高的节目名称并存储为用户喜爱节目的节目名称；

A5、根据所述收视记录获取出现频率最高的节目内容关键字并存储为用户喜爱节目的节目内容关键字。

在本发明所述的电视节目自动提醒方法中，所述用户喜爱节目的信息包括节目类型、节目名称和节目内容关键字，所述步骤B包括步骤：

B1、电子节目指南更新时，获取其中每个节目的节目类型、节目名称和节目内容介绍；

B2、顺序判断每个节目是否有两项或两项以上符合用户喜爱节目的节目类型、节目名称和节目内容关键字，若是，则该节目是用户可能感兴趣的节目，执行步骤C。

在本发明所述的电视节目自动提醒方法中，步骤D包括子步骤：

D1、检索节目播出提醒列表；

D2、找出提醒列表中是否有即将播出的节目记录；

D3、将该节目存入一个临时列表；

D4、将该节目从节目播出提醒列表中删除；

D5、根据临时列表中的记录输出电视节目提示信息。

在本发明所述的电视节目自动提醒方法中，所述节目播出提醒列表中，节目按播出的时间先后顺序排序。

本发明还提供一种电视节目自动提醒的电视机，包括用户喜爱节目信息自动获取模块、电子节目指南信息分析模块、节目提醒列表模块和节目播出提醒

EX. 1002
LG Electronics, Inc. / Page 675 of 3523

模块；

所述用户喜爱节目信息自动获取模块，用于通过无线射频识别技术读取用户的无线射频识别标签中的用户编码信息，根据编码信息读取电视机内存储的该用户的收视记录，根据该收视记录自动生成用户喜爱节目信息，该信息包括节目类型、节目名称和节目内容关键字，并将该信息传输到电子节目指南信息分析模块；

所述电子节目指南信息分析模块用于根据用户喜爱节目的分析电子节目指南中的节目的节目类型、节目名称和节目内容，找出在当前电子节目指南中用户可能喜欢的节目信息，并将该信息传输至节目提醒列表模块；

所述节目提醒列表模块用于根据电子节目指南信息分析模块传输来的信息生成节目提醒列表；

所述节目播出提醒模块用于根据节目提醒列表显示即将播出的节目的提醒信息。

在本发明所述的电视节目自动提醒的电视机中，所述用户喜爱节目信息自动获取模块包括用户编码获取子模块、收视记录存储子模块、收视记录查找子模块、节目类型子模块、节目名称子模块、节目内容关键字子模块；

所述用户编码获取子模块用于利用无线射频识别技术从用户的电子标签中获取当前用户的编码信息；

所述收视记录存储子模块用于存储用户一定时间内的收视信息；

所述收视记录查找子模块用于根据当前用户的编码信息在收视记录存储子模块中查找到用户的收视记录信息；

所述节目类型子模块用于根据用户的收视记录信息中用户收看频率最高的节目的节目类型生成用户喜爱节目的节目类型；

所述节目名称子模块用于根据用户的收视记录信息中用户收看频率最高的节目的节目名称生成用户喜爱节目的节目名称；

所述节目内容关键字子模块用于根据用户的收视记录信息中用户收看频率最高的节目的节目内容关键字生成用户喜爱节目的节目内容关键字。

在本发明所述的电视节目自动提醒的电视机中，所述电子节目指南信息分

EX. 1002
LG Electronics, Inc. / Page 676 of 3523

析模块包括节目信息获取子模块、用户喜爱节目判断子模块；

所述节目信息获取子模块用于在电子节目指南更新时，自动获取其中每个节目的节目类型、节目名称和节目内容介绍；

所述用户喜爱节目判断子模块用于判断每个节目是否有两项或两项以上符合用户喜爱节目的节目类型、节目名称和节目内容关键字，若是，则判断该节目是用户可能喜爱的节目。

在本发明所述的电视节目自动提醒的电视机中，所述节目播出提醒模块包括节目播出提醒列表检索子模块、即将播出节目子模块、临时列表子模块、节目删除子模块、节目播出提示输出子模块；

节目播出提醒列表检索子模块用于检索节目播出提醒列表；

即将播出节目子模块用于从提醒列表中找出即将播出的节目；

临时列表子模块用于存储即将播出的节目；

节目删除子模块用于将已存入临时列表的节目从节目播出提醒列表中删除；

节目播出提示输出子模块用于据临时列表中的记录输出电视节目提示信息。

在本发明所述的电视节目自动提醒的电视机中，所述节目播出提醒列表中，节目按播出的时间先后顺序排序。

实施本发明的一种电视节目播出自动提醒方法及电视机，具有以下有益效果：电视机能够自动提醒用户收看自己喜爱的节目，不需要用户手动设置繁琐的节目播出提醒，使用更简单、方便。

附图说明

下面将结合附图及实施例对本发明作进一步说明，附图中：

图 1 是本发明电视节目播出自动提醒的电视机的结构图；

图 2 是本发明电视节目播出自动提醒方法的流程图；

图 3 是本发明电视节目播出自动提醒方法的最佳实施例流程图；

图 4 是本发明电视节目播出自动提醒方法的最佳实施例中步骤 S11 的子步

EX. 1002
LG Electronics, Inc. / Page 677 of 3523

骤流程图；

图 5 是本发明电视节目播出自动提醒方法的最佳实施例中步骤 S13 的子步骤流程图；

图 6 是本发明电视节目播出自动提醒方法的最佳实施例中步骤 S15 的子步骤流程图。

具体实施方式

如图 1 所示，在本发明的电视节目自动提醒电视机中，包括四个模块：用户喜爱节目信息自动获取模块 1、EPG 信息分析模块 2、节目提醒列表模块 3 以及节目播出提醒模块 4。

用户喜爱节目信息自动获取模块 1 用于通过无线射频识别技术读取用户的无线射频识别标签中的用户编码信息，根据编码信息读取电视机内存储的该用户的收视记录，根据该收视记录自动生成用户喜爱节目信息，该信息包括节目类型、节目名称和节目内容关键字，并将该信息传输到 EPG 信息分析模块 2。

用户喜爱节目信息自动获取模块 1 包括用户编码获取子模块 11、收视记录存储子模块 12、收视记录查找子模块 13、节目类型子模块 14、节目名称子模块 15 和节目内容关键字子模块 16。

用户编码获取子模块 11 用于利用无线射频识别技术从用户的电子标签中获取当前用户的编码信息。无线射频识别（Radio Frequency Identification，简称 RFID）技术是一种非接触式的自动识别技术，它通过射频信号自动识别目标对象并获取相关数据，识别工作无须人工干预。RFID 系统包括存储有约定格式的电子数据的电子标签(Tag)、能读取标签中数据的阅读器(Reader)。在实际应用中，电子标签附着在待识别物体上，阅读器可无接触地读取并识别电子标签中所保存的电子数据，从而达到自动识别物体的目的。用户在收看电视时持有自己的电子标签，电子标签中存储有用户的基本信息，可包括用户编码、姓名、性别和年龄等，其中，用户编码唯一。电视机主要通过其中的用户编码信息对用户进行识别。

收视记录存储子模块 12 用于存储该电视的用户在一定时间内的收视信

EX. 1002
LG Electronics, Inc. / Page 678 of 3523

息。每个用户的信息单独存储。只保存一定时间内的收视记录，一般是近一个月内的收视记录，这样能更准确的判断用户最近时间段的收视喜好。

收视记录查找子模块 13 用于根据当前用户的编码信息在收视记录存储子模块 12 中查找到该用户对应的收视记录信息。

节目类型子模块 14 用于根据用户的收视记录信息中用户收看频率最高的节目的节目类型生成用户喜爱节目的节目类型。

节目名称子模块 15 用于根据用户的收视记录信息中用户收看频率最高的节目的节目名称生成用户喜爱节目的节目名称。

节目内容关键字子模块 16 用于根据用户的收视记录信息中用户收看频率最高的节目的节目内容关键字生成用户喜爱节目的节目内容关键字。

EPG 信息分析模块 2 用于根据用户喜爱节目的分析电子节目指南中的节目的节目类型、节目名称和节目内容，找出在当前电子节目指南中用户可能喜欢的节目信息，并将该信息传输至节目提醒列表模块 3。在用户开机、EPG 更新或 EPG 改变时，系统获取新的 EPG 信息。EPG 信息分析模块 2 根据用户喜爱节目信息模块 14 中的用户喜爱节目的相关信息对新 EPG 中每个节目的节目类型、节目名称和节目内容进行分析，如果有两项或两项以上符合用户喜爱节目的相关信息，就标记该节目为用户可能感兴趣的节目，并把该节目及其相关信息传输至节目提醒列表模块 3。

EPG 信息分析模块 2 包括节目信息获取子模块 21 和用户喜爱节目判断子模块 22。

节目信息获取子模块 21 用于在电子节目指南更新时，自动获取其中每个节目的节目类型、节目名称和节目内容介绍。

用户喜爱节目判断子模块 22 用于判断每个节目是否有两项或两项以上符合用户喜爱节目的节目类型、节目名称和节目内容关键字，若是，则判断该节目是用户可能喜爱的节目。

节目提醒列表模块 3 根据从 EPG 信息分析模块 2 传输来的信息，按照节目播出时间先后排序生成新的节目提醒列表节目并存储。

节目播出提醒模块 4 根据节目提醒列表输出提醒信息，提醒用户收看电视

EX. 1002
LG Electronics, Inc. / Page 679 of 3523

节目。每隔一段时间，节目播出提醒模块 4 就自动获取一次当前时间，然后对节目提醒列表进行检索。找出提醒列表中将播出的节目记录，并将该节目记录存入一个临时列表，并删除节目提醒列表中的相应记录。提醒列表检索完毕后，根据临时列表中的记录，在屏幕上显示节目的播出提醒信息。提醒信息一般显示在屏幕的边角位置，不影响用户观看当前节目。

节目播出提醒模块包括节目播出提醒列表检索子模块 41、即将播出节目子模块 42、临时列表子模块 43、节目删除子模块 44、节目播出提示输出子模块 45。

节目播出提醒列表检索子模块 41 用于检索节目播出提醒列表。

即将播出节目子模块 42 用于从提醒列表中找出即将播出的节目。

临时列表子模块 43 用于将即将播出的节目存储到临时列表。

节目删除子模块 44 用于将已存入临时列表的节目从节目播出提醒列表中删除。及时删除已提醒过的节目。

节目播出提示输出子模块 45 用于据临时列表中的记录输出电视节目提示信息。

如图 2 所示，在本发明的电视节目播出自动提醒方法中，包括步骤：

步骤 S1：获取并存储用户喜爱的节目信息。获取依据是用户收看节目的时间和频率。

步骤 S2：根据用户喜爱的节目信息对 EPG 中的节目信息进行分析，找出用户可能感兴趣的电视节目。

步骤 S3：将用户可能感兴趣的电视节目更新到节目播出提醒列表。

步骤 S4：根据节目播出提醒列表，在节目播出前一段时间内，输出节目播出提醒信息，并在电视机屏幕上显示。

显示该播出提醒信息只是提醒用户收看节目，在用户执行换台操作后才收看新的电视节目，否则仍收看原来播出的电视节目。

如图 3 所示，在本发明的电视节目播出自动提醒方法的优选实施例中，包

EX. 1002
LG Electronics, Inc. / Page 680 of 3523

括步骤：

步骤 S11：获取用户喜爱节目的相关信息，并存储。

步骤 S12：判断是否开机，或 EPG 是否更新，或 EPG 是否发生变化，若是，则执行步骤 S13，若否，则执行步骤 S18。

步骤 S13：根据用户喜爱节目的相关信息对新的 EPG 中的节目信息进行分析，得到当前 EPG 中可能是用户喜爱的节目信息。

步骤 S14：根据可能是用户喜爱的节目生成或更新节目提醒列表，并存储新的节目提醒列表。该节目提醒列表按节目播放时间先后排序。

步骤 S15：根据新的节目提醒列表显示节目播出提醒信息。

步骤 S16：判断用户是否换台，若是，则执行步骤 S17，若否，则执行步骤步骤 S18。

步骤 S17：执行换台操作，收看新的节目。

步骤 S18：继续收看原来的节目。

如图 4 所示，其中步骤 S11 包括子步骤：

步骤 S111：在用户多次使用电视的过程中，获取用户收看电视的记录，并存储。

步骤 S112：对数据库中用户收视数据进行分析。

步骤 S113：找出收看频率最高的节目类型并存储。

步骤 S114：找出收看频率最高的节目名称并存储。

步骤 S115：找出出现频率最高的节目内容关键字并存储。

步骤 S116：根据上面的节目类型、节目名称和节目内容关键字生成用户喜爱节目的相关信息并存储。

如图 5 所示，其中步骤 S13 包括子步骤：

步骤 S1301：获取新的 EPG 信息。

步骤 S1302：对新的 EPG 中的节目进行检索。该检索可以以 EPG 中的节目播出时间先后为序。

EX. 1002
LG Electronics, Inc. / Page 681 of 3523

步骤S1303：判断当前节目是否含有用户喜爱节目的节目内容关键字，若是，则执行步骤S1304，若否，则执行步骤S1305。

步骤S1304：对该节目作标记。

步骤S1305：判断当前节目是否与用户喜爱节目的名称相同，若是，则执行步骤S1306，若否，则执行步骤S1307。

步骤S1306：对该节目作标记。

步骤S1307：判断当前节目是否与用户喜爱的节目类型相同，若是，则执行步骤S1308，若否，则执行步骤S1309。

步骤S1308：对该节目作标记。

步骤 S1309：判断是否当前节目的被标记次数≥2，若是，则执行步骤S1310，若否，则执行步骤S1311。

步骤S1310：该节目可能是用户喜爱的节目。

步骤S1311：判断当前EPG是否已检索完毕，若是，则执行步骤S1312，若否，则执行步骤S1302。

步骤S1312：输出当前EPG中用户可能喜爱的节目。

如图6所示，其中步骤S15包括子步骤：

步骤S151：获取当前系统时间。

步骤S152：检索节目提醒列表。

步骤S153：判断是否有即将播出的节目，若是，则执行步骤S154，若否，则执行步骤S151。

步骤S154：将该节目存入临时列表。

步骤S155：从提醒列表中删除该节目。

步骤S156：判断提醒列表是否检索完毕，若是，则执行步骤S157，若否，则执行步骤S152。

步骤S157：根据临时列表中的记录显示节目播出提醒信息。

EX. 1002
LG Electronics, Inc. / Page 682 of 3523

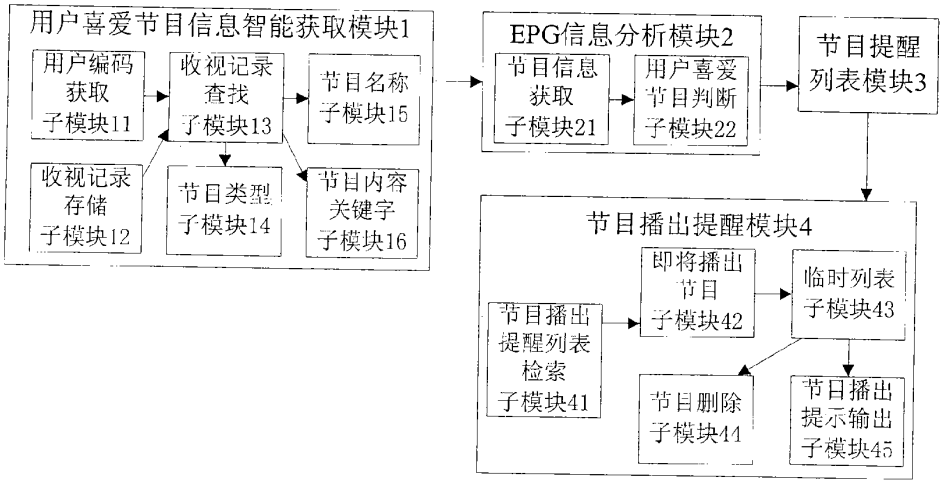


图 1

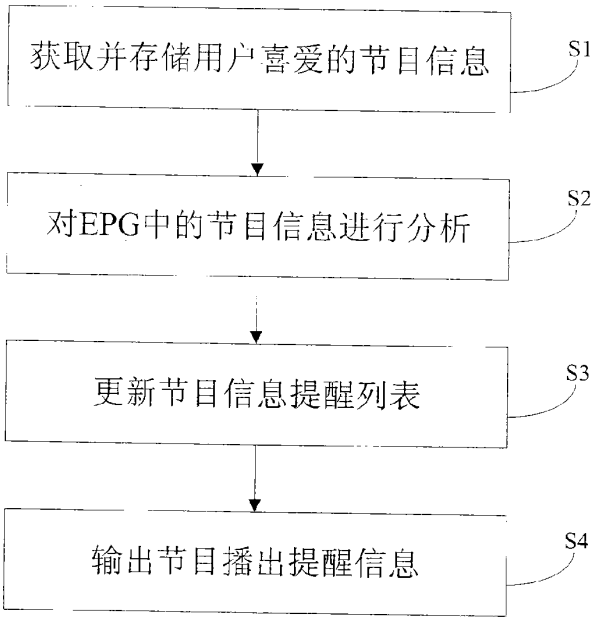


图 2

EX. 1002
LG Electronics, Inc. / Page 683 of 3523

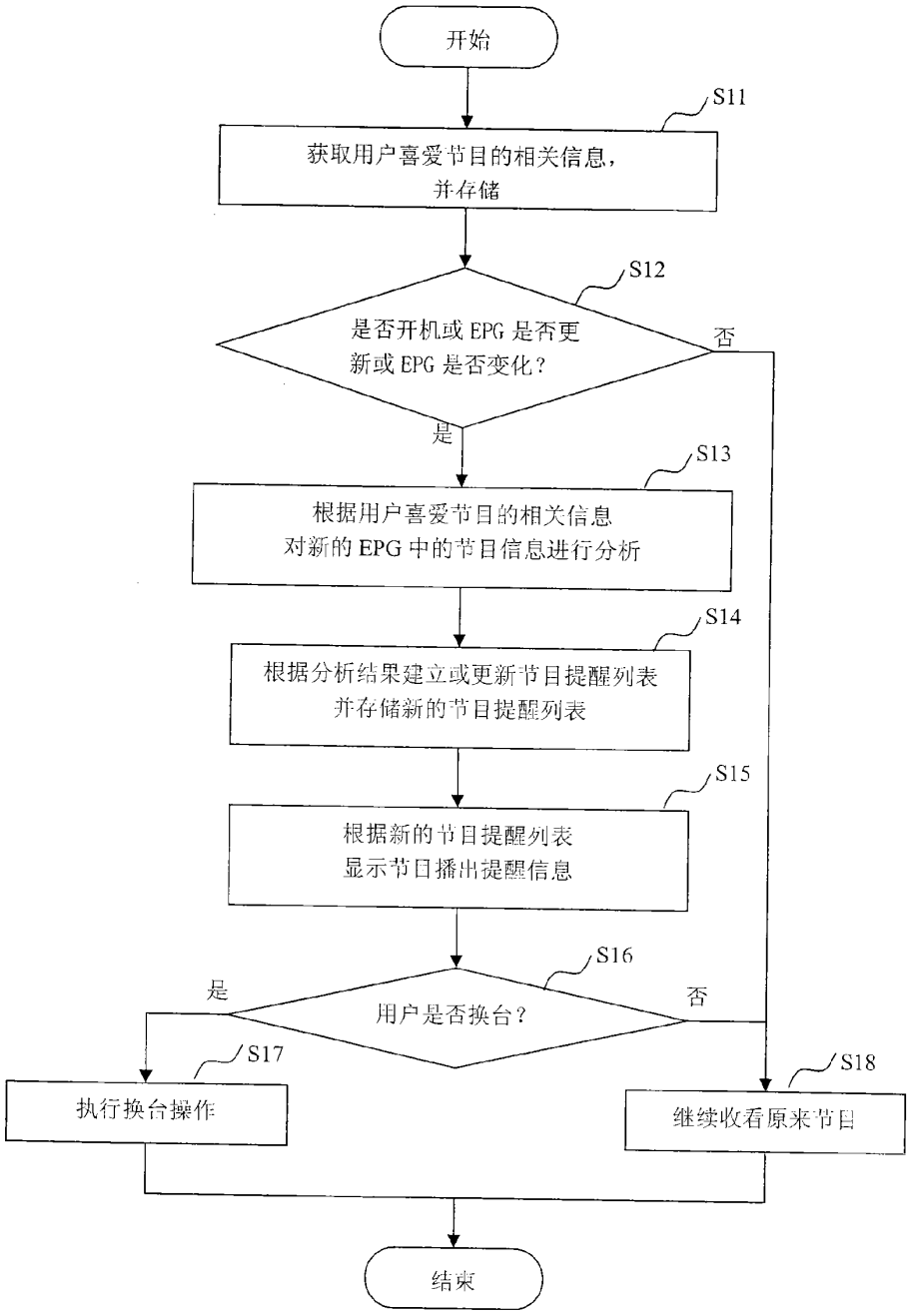


图 3

EX. 1002
LG Electronics, Inc. / Page 684 of 3523

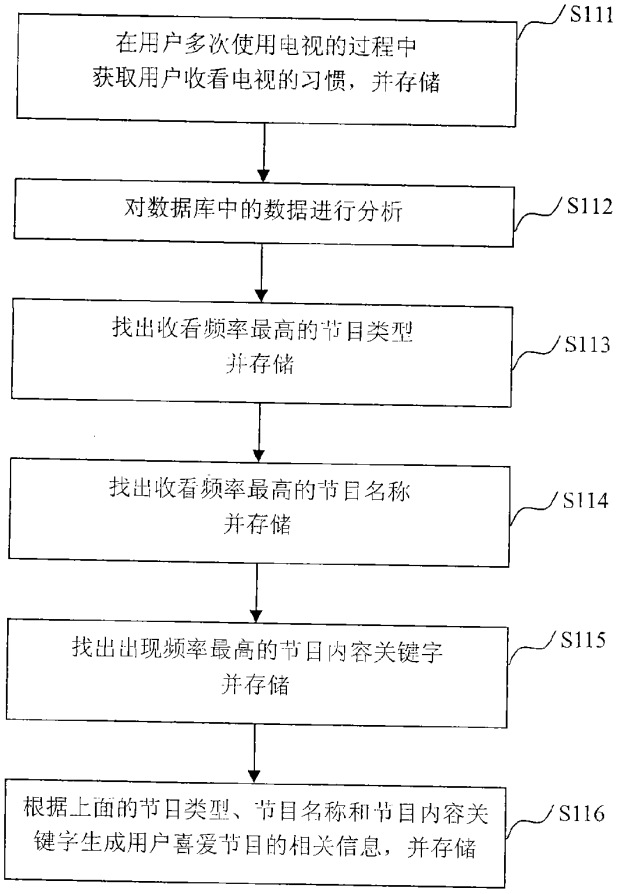


图 4

EX. 1002
LG Electronics, Inc. / Page 685 of 3523

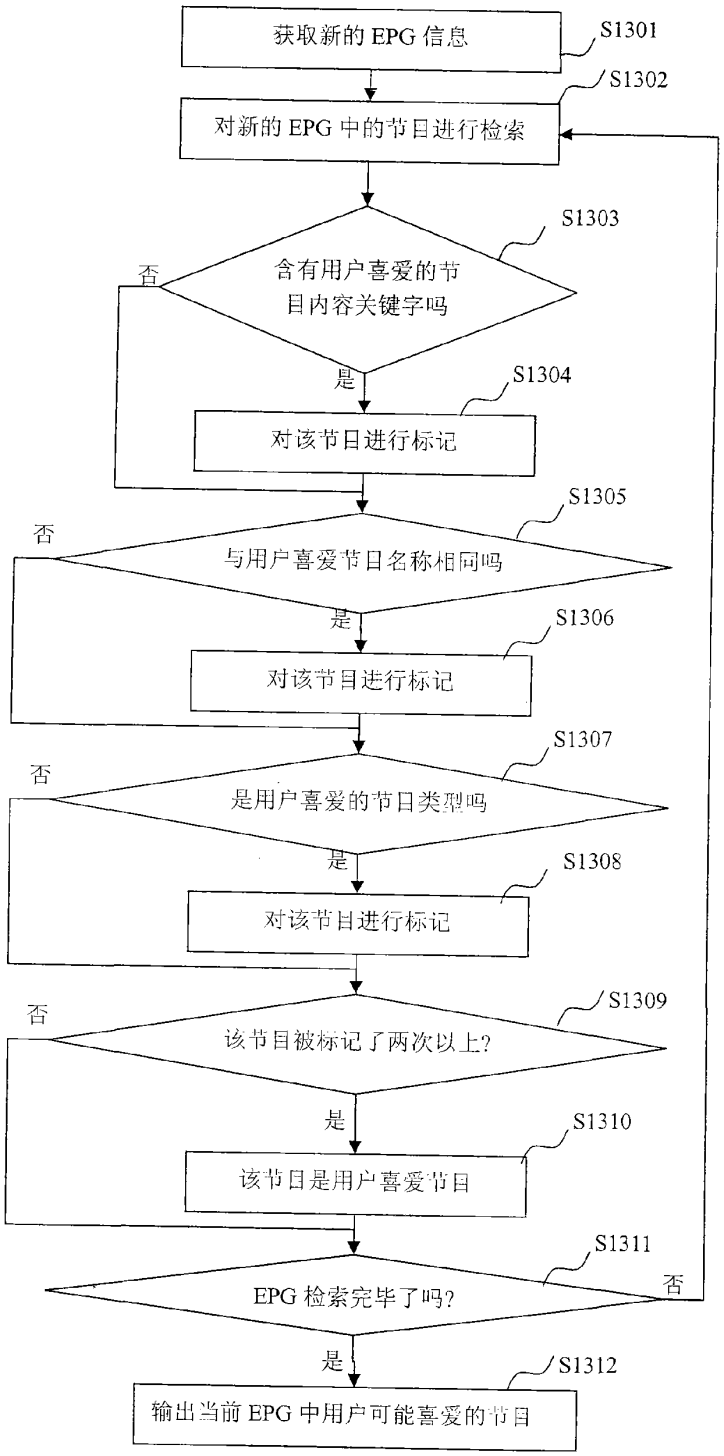


图 5

EX. 1002
LG Electronics, Inc. / Page 686 of 3523

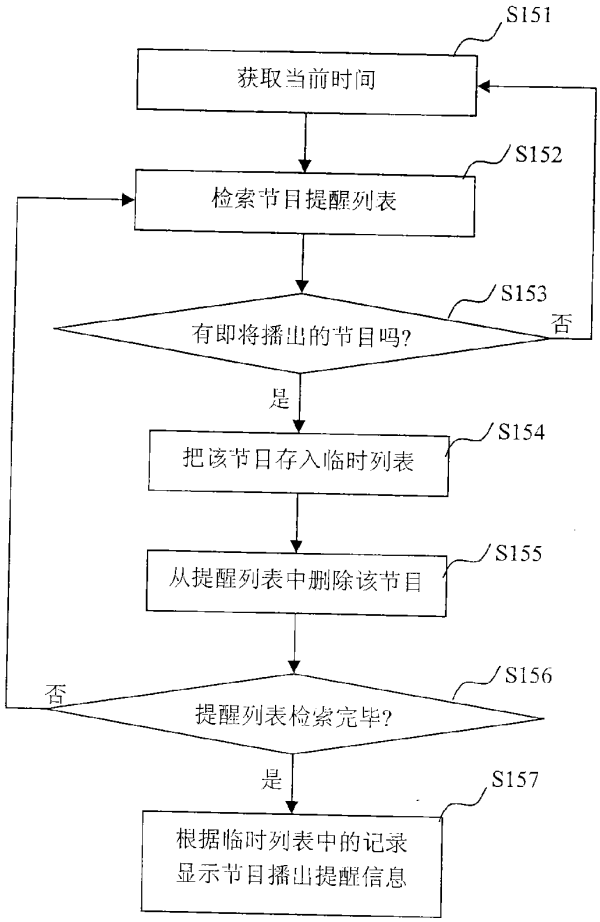


图 6

EX. 1002
LG Electronics, Inc. / Page 687 of 3523

Espacenet

Bibliographic data: CN101540850 (A) — 2009-09-23

System and method for selecting television programs

No documents available for this priority number.

Inventor(s):	ERICK CARSGAD; MARK MILLS; JIM TENBAJI + (CARSGAD.ERICK, ; MILLS.MARK, ; TENBAJI.JIM)
Applicant(s):	SHENZHEN TCL NEW TECHNOLOGY + (SHENZHEN TCL NEW TECHNOLOGY CO., LTD)
Classification:	**- international:*H04N5/445; H04N5/46; H04N7/16*** **- cooperative: H04N21/4345; H04N21/436; H04N21/4622; H04N21/4821; H04N5/44513; H04N5/50; H04N7/163**
Application number:	CN2008166107 20080318
Priority number (s):	CN2008166107 20080318
Also published as:	WO2009117009 (A1) US2011010738 (A1) EP2253133 (A1) EP2253133 (A4)

Abstract of CN101540850 (A)

The invention discloses a system for selecting television programs, which comprises a processor and a display, wherein the processor can acquire video data from various sources and generate a selection interface of screen display content on the display, and the selection interface of the screen display content provided with a graphic label respectively corresponds to each source type of the video data. The technical proposal of the invention solves the operating problems for users caused by different forms of television interfaces, and is convenient for the users to use the system.

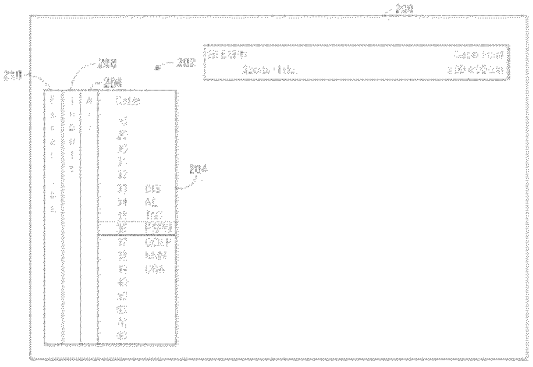


FIG. 2

EX. 1002
LG Electronics, Inc. / Page 688 of 3523

Last updated: 11.12.2013 Worldwide Database 5.8.15.10; 92p

EX. 1002
LG Electronics, Inc. / Page 689 of 3523

[19] 中华人民共和国国家知识产权局

[12] 发明专利申请公布说明书

[21] 申请号 200810066107.0

[51] Int. Cl.
H04N 5/44 (2006.01)
H04N 5/445 (2006.01)
H04N 5/46 (2006.01)
H04N 5/00 (2006.01)

[43] 公开日 2009 年 9 月 23 日

[11] 公开号 CN 101540850A

[22] 申请日 2008.3.18
[21] 申请号 200810066107.0
[71] 申请人 深圳 TCL 新技术有限公司
地址 518067 广东省深圳市南山区南海大道南 TCL 大厦
[72] 发明人 卡尔斯伽德·埃里克 米尔斯·马克 滕巴吉·吉姆

[74] 专利代理机构 北京集佳知识产权代理有限公司
代理人 逯长明

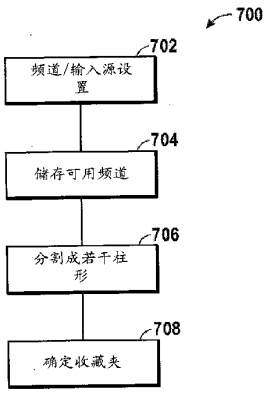
权利要求书 2 页 说明书 7 页 附图 4 页

[54] 发明名称

电视节目的选择系统和方法

[57] 摘要

本发明公开了一种电视节目的选择系统，该电视节目的选择系统包括一处理器以及一显示器，该处理器可从多种类型来源处获得视频数据，并在该显示器上产生一屏幕显示内容选择界面，该屏幕显示内容选择界面对应该视频数据的每一来源类型分别设有一图形标签。 本发明的技术方案解决了不同形式的电视界面为用户带来的操作问题，方便了用户的使用。



1. 一种电视节目的选择系统，所述电视节目的选择系统包括一处理器以及一显示器，其特征在于，所述处理器可从多种类型来源处获得视频数据，并在所述显示器上产生一屏幕显示内容选择界面，所述屏幕显示内容选择界面对应所述视频数据的每一来源类型分别设有一图形标签。

2. 如权利要求 1 所述的电视节目的选择系统，其特征在于，所述多种类型来源中包括一无线电视频道源。

3. 如权利要求 1 所述的电视节目的选择系统，其特征在于，所述多种类型来源中包括一有线电视频道源。

4. 如权利要求 1 所述的电视节目的选择系统，其特征在于，所述多种类型来源中包括一计算机接口。

5. 如权利要求 1 所述的电视节目的选择系统，其特征在于，所述多种类型来源中包括若干外围设备、一天线及一电缆。

6. 如权利要求 1 所述的电视节目的选择系统，其特征在于，所述屏幕显示内容选择界面包括一图形标签以对应用户选中的频道。

7. 如权利要求 1 所述的电视节目的选择系统，其特征在于，所述图形标签之一显示一列可选频道，所述可选频道包括模拟频道和数字频道。

8. 如权利要求 7 所述的电视节目的选择系统，其特征在于，每一可选频道均用一种与其类型相对应的字体显示。

9. 如权利要求 8 所述的电视节目的选择系统，其特征在于，所述模拟频道用红色字体显示。

10. 如权利要求 7 所述的电视节目的选择系统，其特征在于，所述可选频道包括若干输入源。

11. 如权利要求 1 所述的电视节目的选择系统，其特征在于，所述图形标签之一显示一列可选输入源，所述可选输入源包括一计算机接口。

EX. 1002
LG Electronics, Inc. / Page 691 of 3523

12. 如权利要求 1 所述的电视节目的选择系统，其特征在于，当所述显示器未显示任何菜单时，通过操作一控制器的一控制部可激活所述屏幕显示内容选择界面。

13. 如权利要求 1 所述的电视节目的选择系统，其特征在于，所述电视节目的选择系统包括一电视机、一机顶盒或一计算机系统。

14. 一种电视节目的选择方法，其特征在于，所述方法包括以下步骤：

从若干类型来源处获得视频数据；

显示一屏幕显示内容选择界面，所述屏幕显示内容选择界面对应所述视频数据的每一类型来源分别设有一图形标签。

15. 如权利要求 14 所述的电视机操作方法，其特征在于，所述方法还包括：在所述图形标签中的一被激活的标签中显示一列可选项目。

16. 如权利要求 15 所述的电视机操作方法，其特征在于，所述一列可选项目中的每一项都用一种与其来源类型相对应的字体显示。

17. 如权利要求 14 所述的电视机操作方法，其特征在于，所述方法还包括：将一被激活标签显示于其它未被激活标签的顶部。

18. 如权利要求 14 所述的电视机操作方法，其特征在于，所述方法还包括：在没有显示菜单时，接收来自控制器的一向上切换指令后激活所述屏幕显示内容选择界面。

19. 如权利要求 14 所述的电视机操作方法，其特征在于，所述方法还包括：根据用户的输入来设定一收藏夹。

EX. 1002
LG Electronics, Inc. / Page 692 of 3523

电视节目的选择系统和方法

技术领域

本发明涉及一种电视应用技术，尤指一种电视节目的选择系统和方法。

背景技术

现在，电视机可以为用户提供多种媒体内容，例如，数字电视机可提供数字电视频道、模拟电视频道、无线电视频道、有线电视频道和来自其它设备（例如 DVD 播放机、CD 播放机、硬碟机及存储卡）的输入。电视机也可以显示或提供来自非传统电视媒体的内容，例如从硬碟机及家庭网络获取的数字图片和计算机文件。

虽然有很多不同来源提供了多种媒体内容，但是现有的电视机通常只能显示其中的一部分，实际上，很多电视机仅能显示来自一个特定来源的媒体内容，因此，用户只能在其提供的媒体内容中进行选择。现有的媒体选择技术包括：通过数字键输入频道序号、用浏览键对频道进行上/下切换，或者在图形菜单中通过软按键进行选择。

传统的电视机系统会根据不同类型的媒体提供不同形式的界面，换句话说，电视机针对每种媒体类型都会提供一种特有的媒体选择方式，例如从 DVD 播放机、有线电视及硬碟机中进行内容选择的过程都各不相同。在收看有线电视时，用户需要使用节目加减键对节目进行选择，而观看数字图片时用户则需要用方向键在数字图片的菜单中滚动操作。这些导航形式的差异会给用户的媒体选则过程带来极大不便。

发明内容

EX. 1002
LG Electronics, Inc. / Page 693 of 3523

本发明所要解决的技术问题在于提供一种电视应用技术，尤指一种电视节目的选择系统和方法。

本发明是这样实现的，一种电视节目的选择系统，该电视节目的选择系统包括一处理器以及一显示器，该处理器可从多种类型来源处获得视频数据，并在该显示器上产生一屏幕显示内容选择界面，该屏幕显示内容选择界面对应该视频数据的每一来源类型分别设有一图形标签。

本发明的技术方案解决了不同形式的电视界面为用户带来的操作问题，方便了用户的使用。

附图说明

图 1 是本发明电视节目的选择系统的较佳实施方式的模块图。

图 2 是本发明较佳实施方式中包括一标签式菜单的显示器屏幕的示意图。

图 3 是本发明较佳实施方式中包括一标签式菜单的显示器屏幕的示意图。

图 4 是本发明较佳实施方式中包括一标签式菜单的显示器屏幕的示意图。

图 5 是本发明较佳实施方式中包括一标签式菜单的显示器屏幕的示意图。

图 6 是本发明另一实施方式中包括一标签式菜单的显示器屏幕的示意图。

图 7 是本发明电视节目的选择方法的较佳实施方式的流程图。

具体实施方式

为了使本发明的目的、技术方案及优点更加清楚明白，以下结合附图及实施例，对本发明进行进一步详细说明。应当理解，此处所描述的具体实施例仅仅用以解释本发明，并不用于限定本发明。

请参阅图 1，为本发明电视节目的选择系统的较佳实施方式的模块图，所述电视节目的选择系统（例如电视机、机顶盒、或计算机系统）的标号为 100，

EX. 1002
LG Electronics, Inc. / Page 694 of 3523

其包括若干如图 1 中功能模块所示的子系统。图 1 所示的功能模块可包括硬件部分（包括电路）、软件部分（包括存储于计算机可读介质中的计算机编码）或者软硬结合部分。

所述电视节目的选择系统 100 包括至少一接收器 102（例如有线电视接口、外围设备接口或天线）、一调谐器 104、一处理器 106、一存储器 108、一显示器 110、一控制器 112（例如遥控器）以及各种外围设备输入接口 114、116 和 118。所述存储器 108 包括一计算机可读介质以保存计算机编码，所述计算机编码使所述处理器 106 执行本发明提供的方法。例如，所述存储器 108 和处理器 106 可组成一控制系统以提供一屏幕显示选择界面。

本发明提供了一种可在电视机上对多种不同类型的媒体显示相同类型菜单的系统和方法，尤其涉及一种标签式菜单系统，以重叠的图形显示若干候选标签。在本发明的较佳实施方式中，所述标签式菜单系统包括一用户界面（UI），所述用户界面分别用重叠柱形或标签表示可用的输入源、媒体类型和频道，以便于快速精确的进行选择。所述用户界面或屏幕显示选择界面被称为标签式内容来源选择系统（TCSSS），其每一标签都具有相似的外形，用户可通过选择标签来选择对应的数据输入类型，此外，用户还可以设定一自定义标签，以一个标签囊括多种不同类型的媒体内容。

在此需要说明的是，通过使用设有滚珠、操纵杆或动态指示器的遥控器可使所述标签式菜单系统的导航更加便利，也可以使用普通的遥控器进行操作。从遥控器发出的一“内容”指令即可启动电视机中的标签式内容来源选择系统。例如在本发明的较佳实施方式中，当没有处于激活状态的菜单被认为是所述“内容”指令时，所述控制器 112（例如一遥控器）的方向键的节目向上切换操作即可启动电视机中的标签式内容来源选择系统。在本发明的另一实施方式中，所述控制器 112 上设有一特殊的按键以启动所述“内容”指令。

EX. 1002
LG Electronics, Inc. / Page 695 of 3523

所述标签式内容来源选择系统在所述显示器 110 上显示若干重叠图形(例如柱形或标签)。请参阅图 2，为所述显示器 110 的屏幕 200 的示意图，所述屏幕 200 包括一位于显示器边缘的菜单 202，所述菜单 202 包括四个重叠的柱形。位于顶层的图形（显示于其它所有图形之上的一个图形）是被激活的，而其它图形未被激活，例如图 2 所示的菜单 202 包括一第一柱形 204，所述第一柱形 204 被激活并代表有线电视节目可选。所述菜单 202 中未被激活的图形包括一激活时代表无线电视节目的第二柱形 206、一激活时代表输入源的第三柱形 208 以及一激活时代表收藏夹的第四柱形 210。如图 2 所示，所述未被激活的图形大部分会被隐藏，仅保留一用于识别其内容的标签。

所述标签式内容来源选择系统的每一图形都会在选中后被激活，被激活后即被置顶，该图形对应的内容或选项随即可选。例如在图 2 中，用户通过操作所述控制器的控制部（例如所述控制器 112 的操纵杆或方向键）即可控制一指针掠过所述柱形 206、208 或 210 的标签，从所述第一柱形 204 导航到其它柱形。在本发明的较佳实施方式中，用户可以通过从所述第一柱形 204 向左移动一选择器来激活所述第二柱形 206。如图 3 所示，所述第二柱形 206 被选中后将显示一屏幕 300 ，在所述屏幕 300 中所述第二柱形 206 位于顶部，且其内容可选。此外，通过向右移动所述选择器或使所述选择器离开未被激活的柱形，即可退出所述标签式内容来源选择系统。

所述标签式内容来源选择系统启动后，用户可在被激活的柱形列出的节目中进行浏览以选择需要的节目。例如在本发明的较佳实施方式中，用户可通过发送一上移或下移指令在活跃的柱形中将一亮条移到某个频道，可以是逐条浏览也可以是快速浏览，向一个方向按住遥控器一段时间即可加快浏览速度。此外，为了便于选择，在被激活的柱形中被选中的频道及该频道附近的频道以最小化形式显示，其它较远的频道设计成线条形式，例如一条横线可以代表 10 个天线频道或 100 个有线频道。

EX. 1002
LG Electronics, Inc. / Page 696 of 3523

当某个柱形处于激活状态，其对应的内容即可通过移动亮条来选中和激活。如图 3 所示，所述柱形 206 被激活，显示可供选择的无线电视频道，亮条在 302 频道上。通过输入一“输入”指令（例如按动遥控器的一特定按键）可选中亮条所在的频道，电视机在某频道被选中和激活后启动该频道的调谐处理以显示其对应的媒体内容。

当某个柱形处于激活状态，一信息条 304 也处于激活状态。所述信息条 304 显示所述亮条所在频道的详细信息，例如显示 302 频道的频道序号、频道名称、本地会员、字幕情况、屏幕高宽比、音频选项以及输入来源，所述信息条 304 也显示 302 频道的节目编排信息，例如开始时间、等级以及节目摘要等。这些资料可以从服务指南、有线卡或数据流中获取，以帮助用户决定是否选择该频道。

请参阅图 4，所述标签式内容来源选择系统的第三柱形 208 处于激活状态以显示可供选择的输入源，包括前置 A/V 402（来自电视机前置 A/V 接口的输入）、输入 404（与电视机输入接口连接的任何媒体来源）、VCR 406（来自录像机的输入）、DVD 408（来自 DVD 播放器的输入）、SAT/CABLE 410（来自卫星或电缆的输入）、HDMI 410（来自高清晰多媒体接口的输入）以及 SVGA 412（来自计算机的输入）。如图 4 所示，所述亮条在 DVD408 上，所述信息条 414 显示有关 DVD 408 的信息。

请参阅图 5，所述标签式内容来源选择系统的第四柱形 210 处于激活状态并显示收藏夹中的可选频道，所述第四柱形 210 可由用户自己定义，以录入任何媒体来源及频道，使用户在一个菜单或柱形中就可以方便的在喜欢的媒体来源及频道之间进行切换。

本发明各实施方式分别包括各种不同种类的标签或柱形。请参阅图 6，在本发明的另一实施方式中，所述标签式内容来源选择系统还包括一菜单 602 以表示一家庭网络处于激活状态。在电视机与一网络（例如家庭计算机网络）

EX. 1002
LG Electronics, Inc. / Page 697 of 3523

连接后，所述家庭网络 604 可被使用。通过所述家庭网络 604 可使用所述网络提供的内容，例如照片、视频、音频以及所述网络上的计算机内存储的其它内容，并可用字体颜色进行区分，例如白色字体代表视频内容 606、绿色字体代表音频内容 608 以及红色字体代表照片 610。

请参阅图 7，为本发明较佳实施方式的方法流程图，该方法在图中以标号 700 指示，图中该方法 700 包括的步骤只是为了说明本发明的较佳实施例，在不同的实施方式中可相应的对某些步骤进行增加或删减。

所述方法 700 首先执行一全部频道/输入源设置步骤 702，该步骤在电视机首次开机过程中执行，例如在电视机组装完成后，电视机首次开机即执行所述步骤 702，此后在每次添加频道后即重复执行所述步骤 702。所述步骤 702 包括模拟电视、数字电视、无线电视、有线电视及其它输入源的扫描步骤，和输入源的选项标识（例如 DVD 或 VCR）步骤。

如图 7 所示，在步骤 704 中，一旦可用的频道和输入源被所述步骤 702 识别，其相关信息将作为选项标识被储存于一存储器中，提供给标签式内容来源选择系统以进行节目选择，所述存储器包括闪存及暂态存储器。在步骤 706 中，所述选项标识根据频道类型被分割成若干带标签的柱形（例如无线电视、有线电视及输入源）。所述无线电视和有线电视的柱形可以同时包括模拟和数字频道，这些频道以背景、字体、字体颜色或其它方式进行区别，以便于用户识别。

步骤 708，确认喜欢的频道以收入如所述第四柱形 210 所示的收藏夹。喜欢的频道可以通过很多不同方法进行确认，例如通过用户直接指定某些频道（例如有线电视频道或其它设备的输入），或者自动指定被用户选中次数较多的频道，在本发明中仅用到以上各种方法所获得的结果。所述喜欢的频道包括被指定的频道及被指定的输入源，它们组成一独立的柱形以便于访问。收藏夹中的频道在它们出现的柱形中将以特殊的风格进行显示，例如在有线电

EX. 1002
LG Electronics, Inc. / Page 698 of 3523

视节目柱形（第一柱形 204）中，模拟电视频道选项以标准字体显示、数字电视频道选项以粗体显示，同时普通频道为黑色而喜欢的频道为黄色。

以上所述仅为本发明的较佳实施例而已，并不用以限制本发明，凡在本发明的精神和原则之内所作的任何修改、等同替换和改进等，均应包含在本发明的保护范围之内。

EX. 1002
LG Electronics, Inc. / Page 699 of 3523

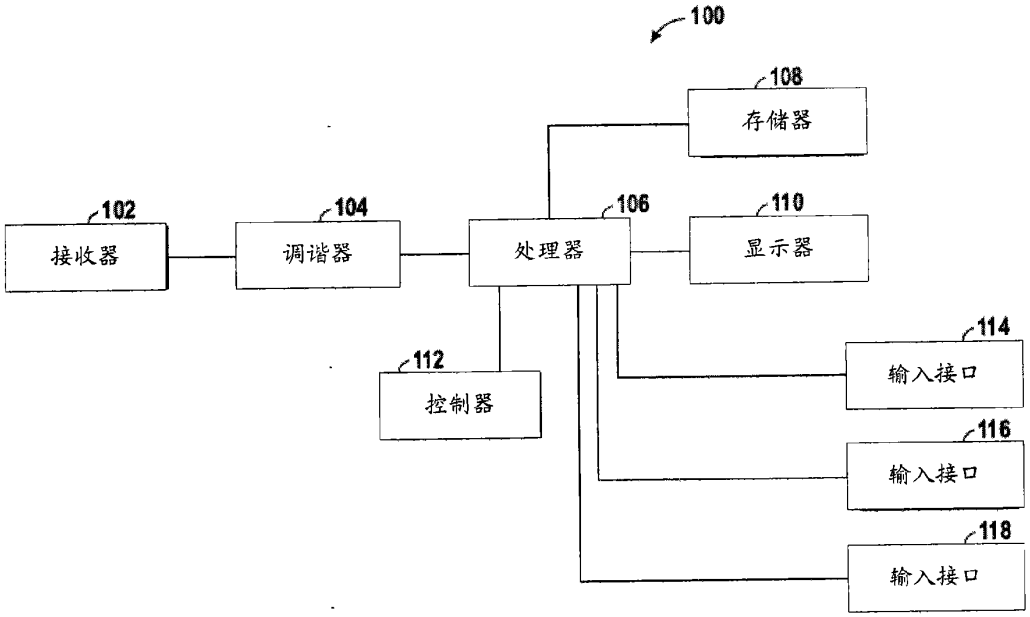


图 1

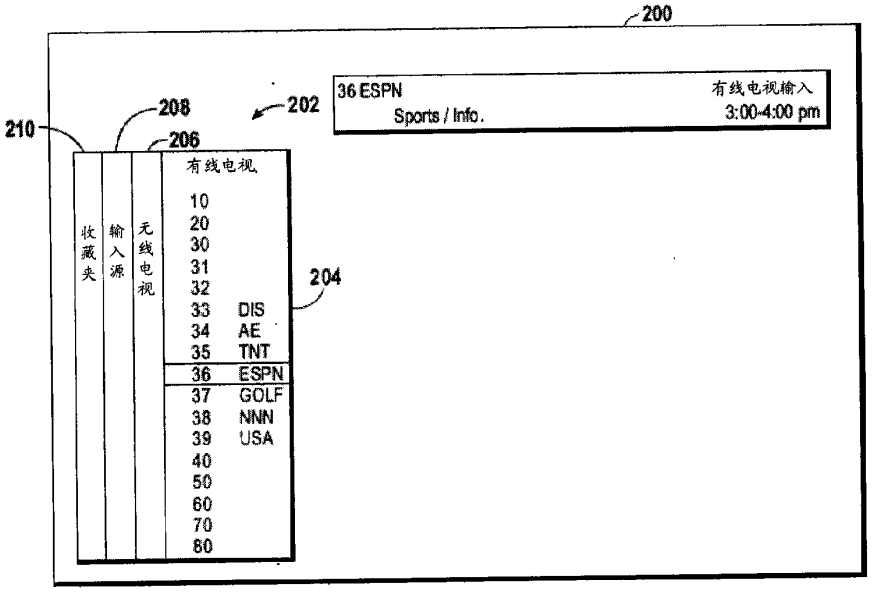


图 2

EX. 1002
LG Electronics, Inc. / Page 700 of 3523

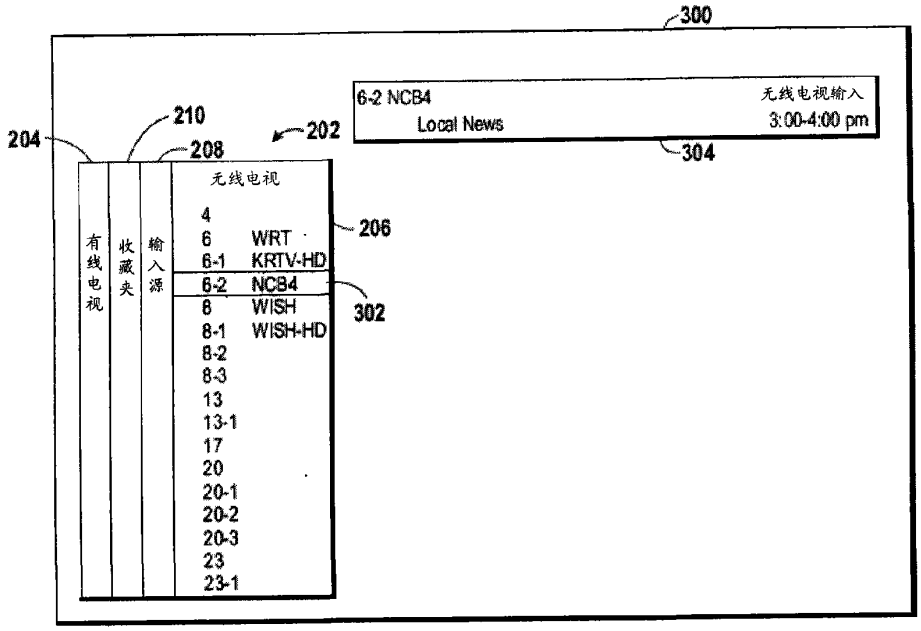


图 3

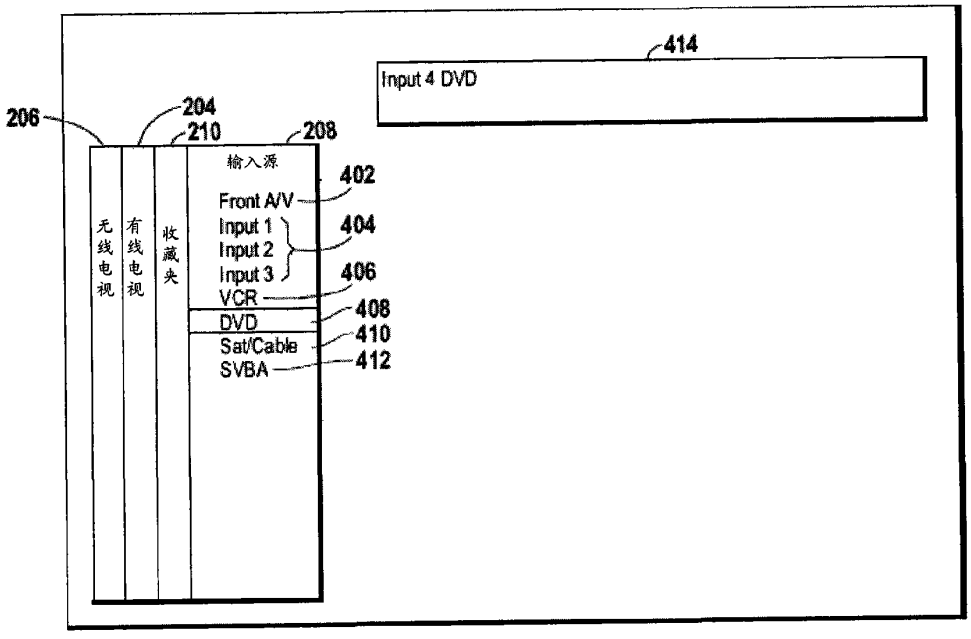


图 4

EX. 1002
LG Electronics, Inc. / Page 701 of 3523

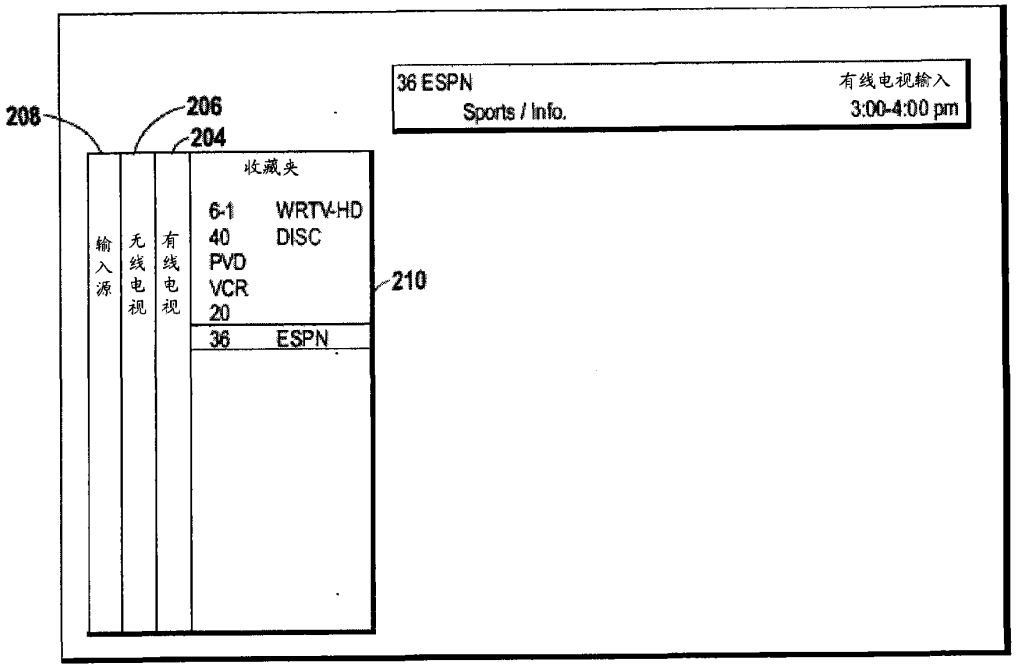


图 5

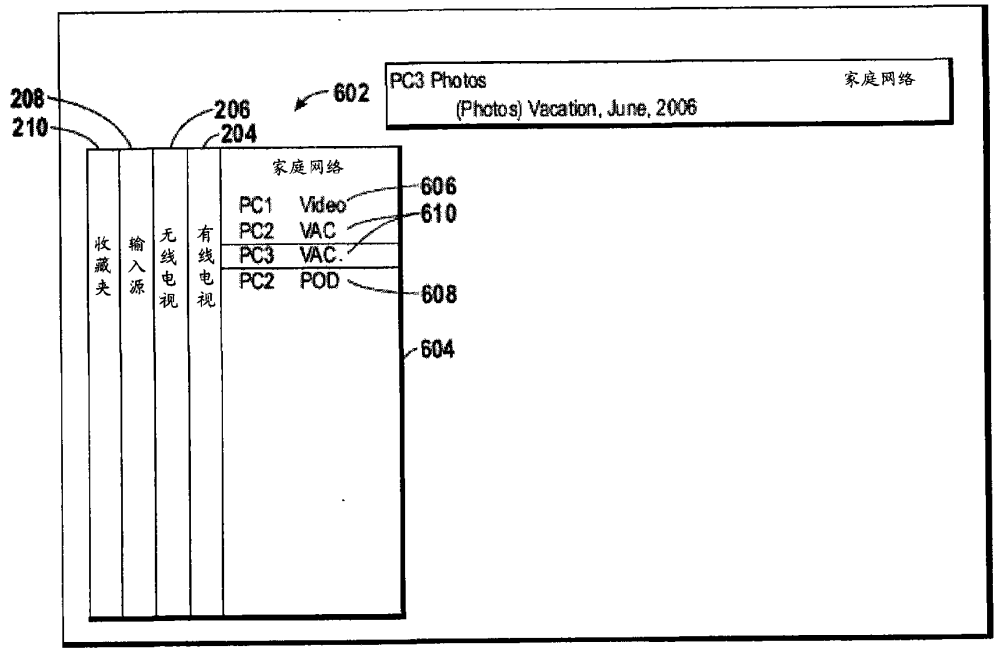


图 6

EX. 1002
LG Electronics, Inc. / Page 702 of 3523

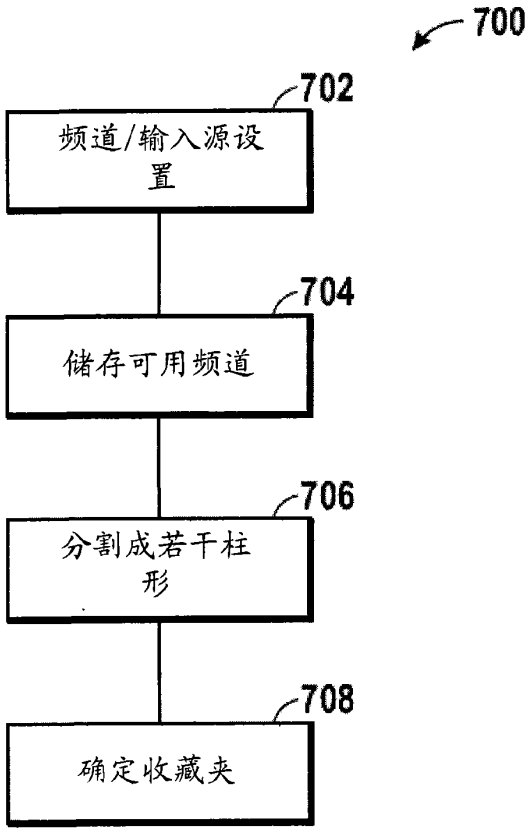


图 7

EX. 1002
LG Electronics, Inc. / Page 703 of 3523

Espacenet

Bibliographic data: CN101567992 (A) — 2009-10-28

Method for dynamically displaying auxiliary data

No documents available for this priority number.

Inventor(s): GONGLIE LIAO [CN] ± (LIAO GONGLIE)

Applicant(s): ALI CORP [CN] ± (ALI CORPORATION)

Classification: - international: ***H04N5/445; H04N7/08***
- cooperative: **H04N21/47214**; **H04N21/4882**; **H04N5/44543**; H04N21/485

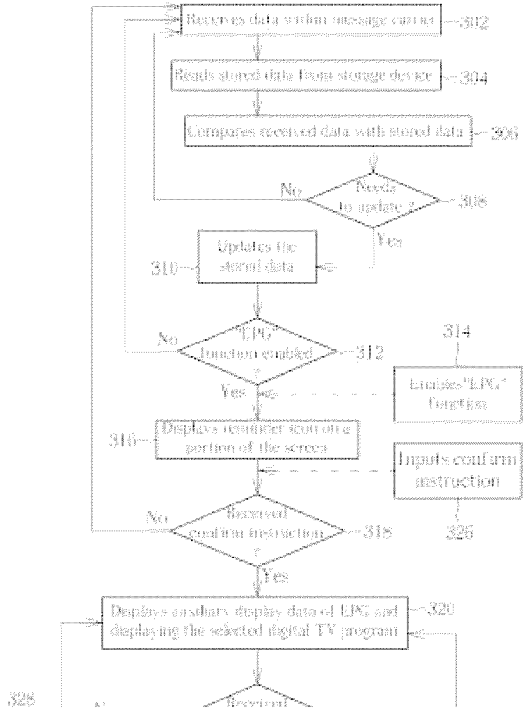
Application number: CN2008192329 20080422

Priority number(s): CN2008192329 20080422

Also published as: US2009265738 (A1)

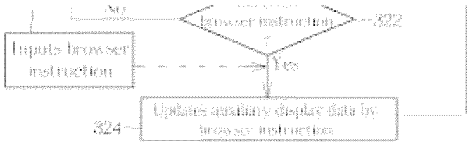
Abstract of CN101567992 (A)

The invention discloses a method for dynamically displaying auxiliary data on an image, comprising the following steps: receiving an information carrier wave, and storing the information of the information carrier wave in a storage device; comparing the receiving information of the information carrier wave with storing information inside the storage device, and storing the receiving information into the storage device to update the storing information when the receiving information is different from the storing information; judging if the auxiliary data corresponding to a changing part can be displayed, and playing the auxiliary data on the image after the updated storing information is regulated when the auxiliary data can be displayed.



EX. 1002
LG Electronics, Inc. / Page 704 of 3523

Last updated: 11.12.2013 Worldwide
Database 5.8.15.10; 92p



EX. 1002
LG Electronics, Inc. / Page 705 of 3523

[19] 中华人民共和国国家知识产权局

[51] Int. Cl.
H04N 5/445 (2006.01)
H04N 7/08 (2006.01)

[12] 发明专利申请公布说明书

[21] 申请号 200810092329.X

[43] 公开日 2009 年 10 月 28 日

[11] 公开号 CN 101567992A

[22] 申请日 2008.4.22
[21] 申请号 200810092329.X
[71] 申请人 扬智科技股份有限公司
地址 中国台湾台北市
[72] 发明人 廖珙列

[74] 专利代理机构 北京市柳沈律师事务所
代理人 蒲迈文

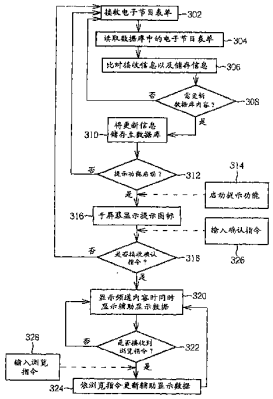
权利要求书 2 页 说明书 12 页 附图 13 页

[54] 发明名称

动态显示辅助数据的方法

[57] 摘要

本发明是揭露一种在画面上动态显示辅助数据的方法。 该方法包含有：接收消息载波，并储存该消息载波上的信息于储存装置中；比对该消息载波的接收信息及该储存装置中的储存信息，当该接收信息不同于该储存信息时，将该接收信息储存至该储存装置中以更新该储存信息；以及判断是否致能显示对应变动部分的该辅助数据，当该辅助数据显示时，是根据更新后的该储存信息做调整操作后播放该辅助数据于该画面上。



EX. 1002
LG Electronics, Inc. / Page 706 of 3523

1. 一种在画面上动态显示辅助数据的方法，包含有：

(a)接收消息载波，并储存该消息载波上的信息于储存装置中；

(b)比对该消息载波的接收信息及该储存装置中的储存信息，当该接收信息不同于该储存信息时，将该接收信息储存至该储存装置中以更新该储存信息；以及

(c)判断是否致能显示对应变动部分的该辅助数据，当该辅助数据显示时，是根据更新后的该储存信息做调整操作后播放该辅助数据于该画面上。

2. 根据权利要求 1 所述的方法，其中步骤(c)是于对应电子节目表单的辅助显示功能被致能以及该电子节目表单的内容产生异动时，判断要致能显示对应该变动部分的该辅助数据；以及该调整操作包含有：

(d)依据产生异动的节目的相关信息来设定该辅助数据，并整合该辅助数据与主要显示数据来产生调整后的主要显示数据，以使该辅助数据可通过该调整后的主要显示数据的播放而播放于该画面上。

3. 根据权利要求 2 所述的方法，其中该调整操作还包含有：

依据提示图标来设定该辅助数据，整合该辅助数据与该主要显示数据以产生该调整后的主要显示数据，以使对应该提示图标的该辅助数据可通过该调整后的主要显示数据的播放而播放于该画面上；

判断是否接收到对应该提示图标的确认指令；以及

当接收到该确认指令时，执行步骤(d)。

4. 根据权利要求 2 所述的方法，其中该调整操作还包含有：

判断是否接收到浏览指令；以及

当接收到该浏览指令时，依据该浏览指令于该电子节目表单中所选取的节目的相关信息来设定该辅助数据，整合该辅助数据与该主要显示数据以产生该调整后的主要显示数据，以使该辅助数据可通过该调整后的主要显示数据的播放而播放于该画面上。

5. 根据权利要求 1 所述的方法，其中步骤(c)是当对应使用者偏好节目的辅助显示功能被致能时，判断对应该辅助数据的该显示条件是符合；以及该调整操作是依据该使用者偏好节目的相关信息来设定该辅助数据，整合该辅助数据与主要显示数据以产生调整后的主要显示数据，以使对应该使用者

EX. 1002
LG Electronics, Inc. / Page 707 of 3523

偏好节目的相关信息的该辅助数据可通过该调整后的主要显示数据的播放而播放于该画面上。

6. 根据权利要求 5 所述的方法，其中该使用者偏好节目的相关信息包含有依使用者所设定达到预定时间后将播放该使用者偏好节目的时间倒数信息。

7. 根据权利要求 1 所述的方法，其中步骤(c)是当对应需预录节目的辅助显示功能被致能时，判断对应该辅助数据的该显示条件是符合；以及该调整操作是依据该需预录节目的相关信息来设定该辅助数据，整合该辅助数据与主要显示数据以产生调整后的主要显示数据，以使对应该需预录节目的相关信息的该辅助数据可通过该调整后的主要显示数据的播放而播放于该画面上。

8. 根据权利要求 1 所述的方法，其中步骤(c)是当对应付费凭证状态的辅助显示功能被致能时，判断对应该辅助数据的该显示条件是符合；以及该调整操作是依据该付费凭证状态的相关信息来设定该辅助数据，整合该辅助数据与主要显示数据以产生调整后的主要显示数据，以使对应该付费凭证状态的相关信息的该辅助数据可通过该调整后的主要显示数据的播放而播放于该画面上。

9. 根据权利要求 1 所述的方法，其还包含有：

自该消息载波接收在线交易的相关信息；

其中步骤(c)是当对应该在线交易的辅助显示功能被致能时，判断对应该辅助数据的该显示条件是符合；以及

该调整操作是依据该在线交易的相关信息来设定该辅助数据，整合该辅助数据与主要显示数据以产生调整后的主要显示数据，以使对应该在线交易的相关信息的该辅助数据可通过该调整后的主要显示数据的播放而播放于该画面上。

EX. 1002
LG Electronics, Inc. / Page 708 of 3523

动态显示辅助数据的方法

技术领域

本发明是有关于视频显示机制，尤指在电子装置(例如数字电视)上动态显示辅助数据的方法。

背景技术

随着科技进步，采用数字电视广播系统的数字电视装置也随着越来越普及。相较于传统采用NTSC(National Television Standard Committee)系统的模拟电视广播(Analog Television Broadcasting)系统，数字电视广播系统将电视频号由“模拟信号”转换为“数字信号”的电视系统，而数字电视广播系统(Digital Television Broadcasting)主要包含有三套技术标准，分别为美规ATSC(Advanced Television Systems Committee)、及欧规DVB-T(Digital Video Broadcasting-Terrestrial)、日本ISDB-T(Terrestrial Integrated Services Digital Broadcasting)，然而除了以上三种技术标准之外，随着地域的不同，尚有许多其它的不同标准，举例来说，中华人民共和国目前亦自订了数字电视规范。不管使用那一种数字电视规范，均需要使用数字电视接收器(其应用在一般产品数字电视盒中)来接收数字电视频号。

然而，现今使用者在观赏数字电视频道以及/或其它娱乐电子装置时，并没有一个简易、实时的辅助数据显示功能，在不影响使用者观赏播放中的频道节目的前提下，提供简易的查询/浏览除了频道节目之外其余相关信息。

举例来说，一般数字电视节目提供者可利用数字电视频号来提供相关的电子节目表单(Electronic Program Guide，EPG)予使用者参阅查询。电子节目表单会完整地显示各个频道的播放时段以及其播放节目类别，倘若使用者正在欣赏一数字频道节目时，当欲查询后续时段该频道或其它频道即将播映的频道节目时，必须按下遥控器的电子节目表单按键以跳出表格式的电子节目表单画面。传统电子节目表单的全屏幕显示方式虽然详细地显示了包含有：日期、时间、频道号码、频道名称、节目名称以及节目将播放的时段等信息，但是这种全屏幕显示的电子节目表单不仅显得庞杂，而且需耗费时间来浏览

EX. 1002
LG Electronics, Inc. / Page 709 of 3523

节目信息，更迫使使用者必须中断目前正观赏的节目内容以查询电子节目表单。除此之外，随着数字电视系统的普及，数字电视频道数目亦随之迅速增加，传统浏览方式显然相当不便利/不人性化。

发明内容

有鉴于此，本发明的目的之一即为设计可动态显示辅助数据的方式，在使用者选定/启动所需的提醒功能(reminding function)之后，通过简短篇幅的消息条列方式提供使用者于观赏频道节目的同时也可接收其所需的个人化提醒信息，以解前述问题。此外，本发明亦可应用于数字电视装置外的其它电子装置，例如具有显示屏幕的MP3随身听装置。

根据本发明的一实施例，其包含有一种在画面上动态显示辅助数据的方法。该方法包含有以下步骤：接收消息载波，并储存该消息载波上的信息于储存装置中；比对该消息载波的接收信息及该储存装置中的储存信息，当该接收信息不同于该储存信息时，将该接收信息储存至该储存装置中以更新该储存信息；以及判断是否致能显示对应变动部分的该辅助数据，当该辅助数据显示时，是根据更新后的该储存信息做调整操作后播放该辅助数据于该画面上。

相较于先前技术，本发明动态显示辅助显示信息的方法通过简易消息显示接口于屏幕(屏幕显示器)上简便地将辅助显示信息提供给使用者阅览。使用者先通过在提示功能选单(reminder menu)中来依照其需求设定，接着，经由简易消息显示接口、提示功能选单与自动搜寻管理的结合，因此使用者于欣赏数字电视时便可享受轻松、简易并人性化的操作机制以阅览辅助信息。

附图说明

图1所示为本发明应用于电子装置(例如数字电视装置)的提示功能选单的一实施例的示意图。

图2为更新电子节目表单信息的流程图。

图3为本发明动态显示电子节目表单辅助数据的一实施例的流程图。

图4为启动辅助显示功能/提示功能时所显示的提示图标的示意图。

图5为于屏幕上显示电子节目表单的辅助显示消息的示意图。

图6为使用者利用简易消息显示接口浏览不同时段节目的示意图。

EX. 1002
LG Electronics, Inc. / Page 710 of 3523

图 7 为使用者利用简易消息显示接口浏览不同频道节目的示意图。

图 8 为本发明动态显示使用者偏好节目(我的最爱)的辅助数据的一实施例的流程图。

图 9 为在一时间点时所显示的我的最爱(使用者偏好节目)的相关辅助显示消息的示意图。

图 10 为在另一时间点所显示的我的最爱(使用者偏好节目)的相关辅助显示消息的示意图。

图 11 为本发明动态显示个人视频录像的提示辅助数据的一实施例的流程图。

图 12 为于录像操作开始启动时在屏幕上显示的提示辅助数据的示意图。

图 13 为于录像过程中在屏幕上显示个人视频录像的提示辅助数据的示意图。

[主要元件标号说明]

100 提示功能选单

200～222、302～328、802～824、1102～1136 步骤

具体实施方式

为求将叙述简单化，在接下来的叙述中本发明所提及的数字电视广播系统系简称为数字电视系统。此外，本篇所述的电子装置是指使用数字电视广播系统的数字电视装置(包含有数字电视盒)。然而，如本领域技术人员所周知，本发明并不限定于采用数字电视广播系统的数字电视装置，亦可应用于其它具有显示功能/播放功能的电子装置，且以本发明所揭露的技术来动态显示辅助数据的相关设计变化均属本发明的范畴。

请参阅图 1，图 1 所示为本发明应用于电子装置(例如数字电视装置)的提示功能选单(reminder menu)100 的一实施例的示意图。如图 1 所示，提示功能选单 100 中可包含有多种提醒功能设定选项，如电子节目表单(EPG)选项、自动关机设定(Sleep Timer)选项、用来设定使用者偏好节目的我的最爱(My Favorite)选项、可显示付费凭证状态的共通接口(Common Interface, CI)选项、个人视频录制(Personal Video Recorder, PVR)选项等等…。

当使用者启动数字电视盒(机顶盒)并播放数字频道节目时，此数字电视装置(机顶盒)会于消息载波(如多媒体载波)中随时取得电子节目表单的相关

EX. 1002
LG Electronics, Inc. / Page 711 of 3523

信息(如频道、日期、时间、节目名称等等)，并将其储存于储存装置(如存储器装置或数据库)作为储存信息。在本实施例中，此储存装置可以是易失性存储器，例如动态随机存取存储器(Dynamic Random Access Memory, DRAM)，而用以提示功能选单的设定则储存于非易失性存储器，例如闪存(flash memory)，然而，这仅作为范例说明之用，并不为本发明的限定条件。

数字电视装置(机顶盒)会定期地接收电子节目表单的相关信息，并将所接收到的接收信息(亦即电子表单信息)与目前的储存信息(亦即储存于数据库内的信息)作比对，而当所接收的相关信息相较于数据库中的信息有出现变动/更新的部分时，系统便会执行调整操作将更新储存装置内的储存信息(例如:将需要变更/更新的部分写入至数据库中)。

请参阅图 2，图 2 为更新电子节目表单信息的流程图。本流程包含有以下步骤:

步骤 200: 电子节目表单更新流程开始。

步骤 202: 数字电视装置(机顶盒)开始接收消息载波上的信息(如电子节目表单)。

步骤 204: 从储存装置(数据库)读取储存于其中的储存信息(亦即电子节目表单)。

步骤 206: 比对接收信息以及储存信息(亦即比对所接收的电子节目表单与储存于数据库内的电子节目表单的信息是否相同)。

步骤 208: 是否需更新数据库中电子节目表单的节目名称? 若是，则执行步骤 214; 否则，则执行步骤 210。

步骤 210: 将对应到节目名称的旗标(Flag)设为零。

步骤 212: 是否需更新数据库中电子节目表单的节目播放时间? 若是，则执行步骤 218; 否则，则执行步骤 220。

步骤 214: 将对应到节目名称的旗标(Flag)设为一。

步骤 216: 将数据库中电子节目表单的信息更新。

步骤 218: 将对应到节目时间的旗标(Flag)设为一。

步骤 220: 将对应到节目时间的旗标(Flag)设为零。

步骤 222: 本次电子节目表单更新流程结束。

本发明利用了上述电子节目表单更新的流程，以便利地于画面(如屏幕的画面)提供使用者简易显示/浏览电子节目表单以及其它提示功能选单中相关

EX. 1002
LG Electronics, Inc. / Page 712 of 3523

的提醒功能，例如使用者偏好节目(亦即我的最爱)、个人视频录制(用以设定节目录像)等等…。

请参阅图 3，图 3 所示为本发明动态显示电子节目表单辅助数据的一实施例的流程图。请注意到，倘若实质上可达到相同的结果，并不一定需要遵照图 3 所示的流程中的步骤顺序来依序进行。本流程包含有以下步骤：

步骤 302：数字电视装置(机顶盒 410)接收消息载波上的信息(如电子节目表单)。

步骤 304：由储存装置(如数据库)读取储存于其中的储存信息(电子节目表单)。

步骤 306：比对接收信息以及储存信息(亦即比对所接收的电子节目表单与储存于数据库内的电子节目表单的信息是否相同)。

步骤 308：是否需更新数据库中的储存信息(储存装置中的电子节目表单)？若是，则执行步骤 310；否则，则回到步骤 302。

步骤 310：更新该储存信息(如将更新的电子节目表单信息储存至数据库中)。

步骤 312：数字电视装置(机顶盒 410)判断提示功能选单 100 中的电子节目表单选项是否启动？若是，则执行步骤 316；否则，回到步骤 302。

步骤 316：于数字电视装置(机顶盒 410)的屏幕 400 画面的一部分画面位置显示提示图标(在本实施例中为星号)，此时屏幕 400 是同时播放频道节目内容(如图 4 所示，图 4 为根据本发明的一实施例于屏幕 400 上显示辅助数据的示意图，其中该屏幕 400 是耦接至数字机顶盒 410。在后续的揭露中，机顶盒 410 为具有 PVR(个人视频录制)功能的机顶盒，然而在其它实施例中，亦可采用不具有个人视频录制功能的机顶盒，此相关设计变化亦属于本发明的范畴之中。)。

步骤 318：检测是否接收到使用者输出的确认指令以确认显示简便的电子节目表单信息？若是，则执行步骤 320；否则，则执行步骤 302。

步骤 320：在数字电视装置(亦即机顶盒 410)播放数字频道内容时同时于屏幕 400 其画面的部分显示相关的电子节目表单辅助数据，此辅助显示信息是以一行消息显示列的方式显示在屏幕 400 其画面的一部分画面位置(如图 5 所示)。

步骤 322：检测是否接收到使用者输出的浏览指令(例如经由方向键所输

EX. 1002
LG Electronics, Inc. / Page 713 of 3523

入的指令)以浏览电子节目表单信息？若是，则执行步骤 324；否则，执行步骤 320。

步骤 324：依据浏览指令于电子节目表单中所选取的节目的相关信息来更新该辅助数据，接着，执行步骤 320 以进行显示。

如前面所述，图 3 的详细实施方法是可利用图 2 的步骤推论而得，故本领域技术人员应可经由图 2 所示的流程了解步骤 302～步骤 310，故于此不另赘述。在步骤 312 中，当电子装置(机顶盒 410)判定了电子节目表单的提示功能启动(亦即使用者将图 1 所示的提示功能选单 100 中的电子节目表单选项设定为“启动”)时，即可根据使用者的操作来将电子节目表单以简短消息显示列的方式显示在屏幕 400 的(画面)上。于本发明的一实作方式中，此消息条列的显示方式可以用跑马灯的方式显示之。且该辅助信息的调整操作是于数字电视装置(机顶盒 410)判断使用者已经启动了显示电子节目表单的提示功能之后(例如于步骤 314 中，数字电视装置(机顶盒 410)在接收到使用者所输入的启动电子节目表单的提示功能的指令，请注意，步骤 314 的启动提示功能的操作可在任何时间点执行)，会先在屏幕 400 上显示提示图标，此时，若使用者想要阅览辅助信息，即可通过按下相对应的提示热键以输出确认指令给数字电视装置(机顶盒 410)(步骤 326)。在接收到确认指令后，简易消息显示接口即会把步骤 214 以及步骤 218 中旗标设定为“1”的数据项(亦即节目名称出现变动及/或节目时间出现变动的电子节目)显示在屏幕 400 的一部分显示位置(例如屏幕 400 其画面中底部位置)。如图 5 所示，此辅助数据包含有频道号码、频道名称、变动的电子节目的播放时间以及相关的更新部分，请注意，辅助数据的内容可根据设计需求而定，亦可由使用者来自行决定。

除此之外，使用者亦可使用这种简易消息显示接口来显示/浏览电子节目表单，通过在电视遥控器(未显示于图中)按下相对应的按键即可于一画面(位于屏幕 400)上浏览同频道其前后不同时段的节目表单，以及浏览不同频道于同一时段的节目信息。也就是说，当使用者经由电视遥控器输入确认指令至数字电视装置(机顶盒 410)(步骤 328)，则数字电视装置(机顶盒 410)便依据浏览指令于电子节目表单中所选取的单一节目的相关信息来更新并显示辅助数据于屏幕 400 的画面上(步骤 324、320)。

请注意，使用前述的简易消息显示接口来浏览电子节目表单的功能(步骤 320、322、324、328)亦可独立执行，亦即本发明并不限定将此功能整合于图

EX. 1002
LG Electronics, Inc. / Page 714 of 3523

3 所示的动态显示电子节目表单辅助数据的操作中，举例来说，于另一实施例中，无论电子节目表单的内容是否有更新，使用者亦可使用这种简易消息显示接口来显示/浏览电子节目表单(步骤 320、322、324、328)，此设计变化亦属本发明的范畴。

举例来说，原本如图 5 所示，简易消息显示接口在屏幕 400 上显示了第 99 频道的 ABC 电视台晚间九点至十点播放的节目名称为“Pro_ABC”。在使用者按下电视遥控器的相对应于浏览不同时段的功能热键后(在本实施例中为：向左、向右热键)，简易信号显示接口即会将同频道下一时段即将播放的节目数据显示在显示屏幕 400 的部分画面位置(如图 6 所示)，此时耦接至数字电视装置(在本实施例中为机顶盒 410)的显示屏幕 400 除了继续播放数字频道的节目(主要显示数据)之外，在屏幕 400 下方边框显示的辅助显示消息为第 99 频道的 ABC 电视台于晚间 10：00～11：00 时播放的节目名称为“Pro_TTV”。

此外，使用者亦可于屏幕 400 上读取邻近的其它频道于同一时段将播映的节目相关信息。请同时对照图 6 以及图 7，图 7 为使用者利用简易消息显示接口于屏幕 400 浏览不同频道节目的示意图。使用者可经由按下电视遥控器的相对应于浏览不同频道的功能热键(在本实施例中为：向上、向下热键)，来控制简易信号显示接口将邻近频道于同一时段即将播放的节目数据显示在显示屏幕 400(画面)的部分画面位置以供使用者浏览(如图 7 所示)。此时，数字电视装置(机顶盒 410)的显示屏幕 400(亦即其画面部分)除了继续正常播放数字频道的节目(主要显示数据)之外，在屏幕 400 其画面下方边框显示的辅助显示消息为第 98 频道的 BBC 电视台于晚间 10：00～11：00 时播放的节目名称为 Pro_CATV。当然，使用者可通过电视遥控器的向上/向下热键继续浏览其它频道于此时段(10：00～11：00)播映的节目相关信息。

通过本发明提供的动态显示辅助数据的方法，使用者可一边欣赏数字电视频道播映的节目内容(显示于画面的大部分显示区域中)，一边浏览其它频道/其它时间播映的电视节目信息(显示于屏幕 400 其画面的一部分显示区域中)，故不需中断现正欣赏的频道节目来读取全屏幕显示的电子节目表单。

在本实施例中，使用了提示图标(例如图 4 所示的星号)来提示使用者此时有辅助数据可供浏览，此外，辅助数据的内容是以跑马灯的方式显示在屏幕 400 的部分画面位置(例如靠近画面边缘的位置)，然而这仅为说明之用。换言之，提示图标的样式、形状、大小、辅助数据显示的位置以及方式皆不

EX. 1002
LG Electronics, Inc. / Page 715 of 3523

为本发明的限制条件，亦即在其它实施例中，使用其它图样/文字显示方式以及显示位置以达到同样辅助信息显示效果的方式皆隶属本发明的范畴。

请参阅图 8，图 8 为本发明动态显示使用者偏好节目(我的最爱)的辅助数据的一实施例的流程图。请注意到，倘若实质上可达到相同的结果，并不一定需要遵照图 8 所示的流程中的步骤顺序来依序进行。本流程包含有以下步骤：

步骤 802：数字电视装置(机顶盒 410)接收消息载波上的信息(如电子节目表单)。

步骤 804：由储存装置(如数据库)读取储存于其中的储存信息(电子节目表单)。

步骤 806：比对接收信息以及储存信息(亦即比对所接收的电子节目表单与储存于数据库内的电子节目表单的信息是否相同)。

步骤 808：我的最爱中所设定的节目的相关节目数据(节目名称及/或节目时段)是否需更新？若是，则执行步骤 810；否则，则执行步骤 812。

步骤 810：将我的最爱中需更新节目数据的节目的相对应电子节目表单信息储存至数据库中。

步骤 812：判断我的最爱所设定的节目中是否有任一使用者偏好节目即将播放(亦即播放时间与目前时间的时间差小于临界范围)？若是，则启动时间倒数功能来开始计数使用者偏好节目即将播映的时间，亦即当节目播放时间的临界范围设为十分钟时，在节目即将播映的前十分钟将启动时间倒数计时操作并执行步骤 814；否则，回到步骤 802。

步骤 814：数字电视装置(机顶盒 410)判断提示功能选单 100 中的我的最爱(使用者偏好节目)的提示功能是否启动？若是，则执行步骤 816；否则，则执行步骤 802。

步骤 816：耦接于于数字电视装置(机顶盒 410)的屏幕 400 的画面的一部分画面位置显示提示图标(在本实施例中为星号)，此时屏幕 400 是同时播放频道节目内容(请参照图 4)。

步骤 818：检测是否接收到使用者输出的确认指令以确认显示我的最爱(使用者偏好节目)的时间倒数提示？若是，则执行步骤 820；否则，则回到步骤 802。

步骤 820：在数字电视装置(机顶盒 410)播放数字频道内容时，同时于屏

EX. 1002
LG Electronics, Inc. / Page 716 of 3523

幕 400 画面的部分显示我的最爱(使用者偏好节目)即将播映的相关辅助数据(例如上述的时间倒数信息)，此辅助显示信息是以一行消息显示列的方式显示在屏幕 400 画面的一部分画面位置(如图 9、图 10 所示)。

请同时对照图 9 以及图 10，图 9 以及图 10 分别为数字电视装置(机顶盒 410)的屏幕 400 显示部分于不同时间点显示我的最爱(使用者偏好节目)的相关辅助显示消息的示意图。在使用者启动了显示我的最爱(亦即使用者偏好节目)的提示功能之后(例如于步骤 822 中，数字电视装置(机顶盒 410)接收到使用者所输入的启动我的最爱(使用者偏好节目)的提示功能的指令，亦即图 1 所示的提示功能选单 100 中我的最爱选项设定为“启动”，请注意，步骤 822 的启动提示功能的操作可在任何时间点执行)，当屏幕 400 上显示的提示图标出现时，使用者通过按下相对应的提示热键以输出确认信号给数字电视装置(机顶盒 410)(步骤 824)。在接收到确认信号后，于屏幕 400 播放正常频道内容的同时，简易消息显示接口即会在显示屏幕 400 的部分画面位置以消息显示列的方式告知使用者还剩余多少时间，使用者所设定每一使用者偏好节目即将要开始播映。

由于使用本发明动态显示辅助数据来提供我的最爱提示信息的方法与前述电子节目表单的辅助数据的显示方法大致上相同，故详细运作请参照前述的揭露内容，在此为了简明之便就不加以赘述。同样地，此实施例使用了提示图标(例如星号)来提示使用者此时有辅助数据可供浏览，且辅助数据是以跑马灯的方式显示在显示屏幕 400 的一部分位置(例如靠近画面边缘的位置)，然而这仅作为范例说明之用，换言之，诸如提示图标的样式、形状、大小、辅助数据显示的位置以及方式皆不为本发明的限制条件。

除此之外，对于可同时欣赏播映的电视节目以及进行录像的数字电视装置(此时机顶盒 410 需为具有个人视频录制(PVR)功能的数字机顶盒)而言，使用者亦可使用前述提及的简易消息显示接口来结合自动搜寻管理接口以及提示功能选单的设定操作，因此，在欲录像的节目的播放时间将至的时候，通过辅助数据的显示来让使用者可实时地启动/操作节目预录功能。使用者亦可经由简易消息显示画面及电视遥控器的操作来启动及/或停止录像，详细运作将于下详述。

请参阅图 11，图 11 为本发明动态显示个人视频录像的提示辅助数据的一实施例的流程图。请注意到，倘若实质上可达到相同的结果，并不一定需

EX. 1002
LG Electronics, Inc. / Page 717 of 3523

要遵照图 11 所示的流程中的步骤顺序来依序进行。本流程包含有以下步骤：

步骤 1102：数字电视装置(机顶盒 410)接收消息载波上的信息(如电子节目表单)。

步骤 1104：由储存装置(如数据库)读取储存于其中的储存信息(电子节目表单)。

步骤 1106：比对接收信息以及储存信息(亦即比对所接收的电子节目表单与储存于数据库内的电子节目表单的信息是否相同)。

步骤 1108：个人视频录像中所设定的需预录节目的相关节目数据(节目名称及/或节目时段)是否需更新？若是，则执行步骤 1110；否则，则执行步骤 1112。

步骤 1110：将个人视频录像中需更新节目数据的需预录节目的相对应电子节目表单信息储存至数据库中。

步骤 1112：判断个人视频录像中所设定的需预录节目中是否有任一需预录节目即将要开始播放(亦即播放时间与目前时间的时间差小于临界范围)？若是，则执行步骤 1114；否则，回到步骤 1102。

步骤 1114：数字电视装置(机顶盒 410)判断提示功能选单 100 中个人视频录像的提示功能是否启动?若是(例如于步骤 1134 中，数字电视装置(机顶盒 410)接收到使用者所输入的启动个人视频录像的提示功能的指令，请注意，步骤 1134 的启动提示功能的操作实际上可在任何时间点执行)，则执行步骤 1116；否则，回到步骤 1102。

步骤 1116：于数字电视装置(机顶盒 410)的屏幕 400 画面的一部分画面位置显示提示图标(在本实施例中为星号)，此时屏幕 400 是同时播放频道节目内容。

步骤 1118：检测是否接收到使用者输出的确认指令以确认显示个人视频录像的提示信息？若是(例如于步骤 1136 中，使用者通过按下相对应的提示热键以输出确认信号给数字电视装置(机顶盒 410))，则执行步骤 1120；否则，则回到步骤 1102。

步骤 1120：在数字电视装置(机顶盒 410)播放数字频道内容时，同时于屏幕 400 画面的部分显示即将播映的需预录节目的相关辅助数据(例如显示文字消息以提醒使用者有需预录节目即将于 1 分钟后播映)，此辅助显示信息是以一行消息显示列的方式显示在屏幕 400 画面的一部分画面位置。

EX. 1002
LG Electronics, Inc. / Page 718 of 3523

步骤 1122：确认是否执行录像功能？若是，则执行步骤 1124；否则，回到步骤 1102。

步骤 1124：当目前时间等于该需预录节目的播放时间时，启动该需预录节目的录像操作。

步骤 1126：于使用者欣赏频道节目的同时，经由简易消息显示接口在使用者欣赏频道节目(亦即主要显示数据)的同时，于数字电视装置(机顶盒 410)的屏幕 400 画面的一部分画面位置显示录像状态，例如当录像操作一开始启动时，告知使用者录像功能已经启动(请参照图 12)，或者于录像过程中告知使用者已进行的录像时间长度及/或正在录像中的节目名称(请参照图 13)。

步骤 1128：数字电视装置(机顶盒 410)判断是否要关闭录像操作？当数字电视装置(机顶盒 410)接收到使用者输出的关闭录像指令、该需预录节目已录完或者是使用者将目前所观赏的频道切换至该需预录节目的频道，则停止录像并回到步骤 1102；否则，则回到步骤 1124 继续录像。

现今技术中，一般数字电视装置可提供两个以上的频道调谐器(tuner)而可同时接收两个频道的信息，让使用者在以在观赏一个频道节目时同步对另一频道的节目进行录像。由于使用本发明动态显示辅助数据来提供个人视频录像提示信息的方法与前述实施例所揭露的辅助数据的显示方法大致上相同，故详细运作请参照前述的揭露内容，在此为了简明之便就不加以赘述。

总结来说，在前述的揭露中，数字电视装置是接收消息载波中的信息以作为接收信息，并将其与储存装置(例如数据库)内的储存信息作比对，当储存信息与接收信息不相符时，将所接收的信息更新储存至储存装置之中。当使用者于电子表单内依据使用者的喜好致能(启动)所需显示辅助信息的功能之后，数字电视装置即根据使用者所设定功能选项对储存装置内的储存信息动态地与使用者进行人机接口的互动，以依使用者的喜好来执行调整操作于画面(屏幕 400 装置)上动态地显示使用者欲浏览的辅助信息消息，提供使用者在不中断目前节目观赏的同时，可简单并人性化地随时取得所欲接收的辅助信息。

请注意，本发明所提供的动态显示辅助数据的功能亦可应用于电子装置的自动关机操作以及数字电视装置的付费凭证状态上，举例来说，当对应自动关机操作的辅助显示功能被致能以及启动该自动关机操作的剩余时间达到预定值时，通过本发明所揭露的动态显示辅助数据的方法以将自动关机操作

EX. 1002
LG Electronics, Inc. / Page 719 of 3523

的辅助信息显示于屏幕 400 画面上，以及当对应付费凭证状态的辅助显示功能被致能时，通过本发明所揭露的动态显示辅助数据的方法以将付费凭证状态的辅助信息显示于屏幕 400 的画面上。由于本领域技术人员于阅读完上述有关图 3、8、11 的流程说明之后应可轻易地了解将自动关机操作或付费凭证状态的辅助信息显示于屏幕 400 画面上的机制，故于此便不另赘述。

除了以上所述的功能之外，本发明动态显示辅助数据功能亦可应用在在线购物(例如电视购物)上。举例来说，通过与电视购物台的合作(例如通过有线数字电视(DVB-C)系统)，使用者的下单操作及/或下单成功的确认消息亦可经由其它装置的协助以辅助数据的方式显示于显示屏幕 400 上，也就是说，经数字电视广播业者与本发明所提供的动态辅助数据显示方法相互结合，亦可通过简易消息显示接口于显示屏幕 400 上显示一些特定用户的个人化提示信息(例如使用者完成交易的购物信息)。

本发明所提供的动态显示数据的方法除了可应用于通过电视载波接收主要显示数据的数字电视装置之外，诸如 MP3 随身听、个人计算机、电动游戏机等等任何需要便利简易的辅助数据的电子装置亦可应用本发明所揭露的动态显示辅助数据的方法，如此一来，在不影响使用者原本执行/操作的状态下，提供使用者个人化、人性化且便利的使用环境，而这些相关设计变化皆遵循本发明的精神，且属于本发明的范畴。

总而言之，本发明动态显示辅助数据的方法是周期性地判断对应辅助数据的显示条件是否符合(例如步骤 308、312、318、322；步骤 812、814、818；以及步骤 1112、1114、1118)，以便适时地将辅助信息告知使用者来达到提示/提醒的功能，此外，当符合显示条件时，本发明动态显示辅助数据的方法会整合辅助数据与主要显示数据(例如电视节目内容或其它类型的视频数据)以产生调整后的主要显示数据并播放该调整后的主要显示数据，其中该调整后的主要显示数据包含有该辅助数据，举例来说，主要显示数据中的一部分数据被辅助数据所取代而产生调整后的主要显示数据，因此，当依据调整后的主要显示数据来进行显示时，于实际输出的画面中，辅助数据等效是覆盖(overlay)于主要显示数据之上，换言之，画面中的一部分显示区域会用来显示该辅助数据，例如使用跑马灯或文字消息条的方式呈现。

以上所述仅为本发明的较佳实施例，凡依本发明权利要求范围所做的均等变化与修饰，皆应属本发明的涵盖范围。

EX. 1002
LG Electronics, Inc. / Page 720 of 3523

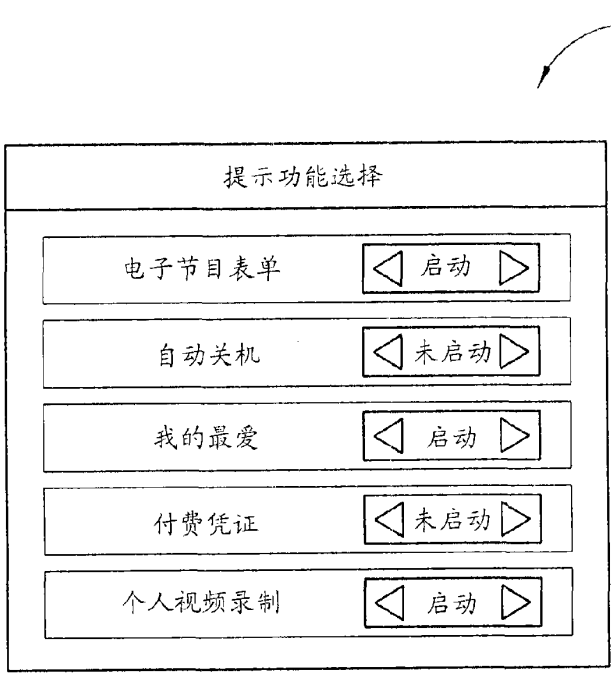


图 1

EX. 1002
LG Electronics, Inc. / Page 721 of 3523

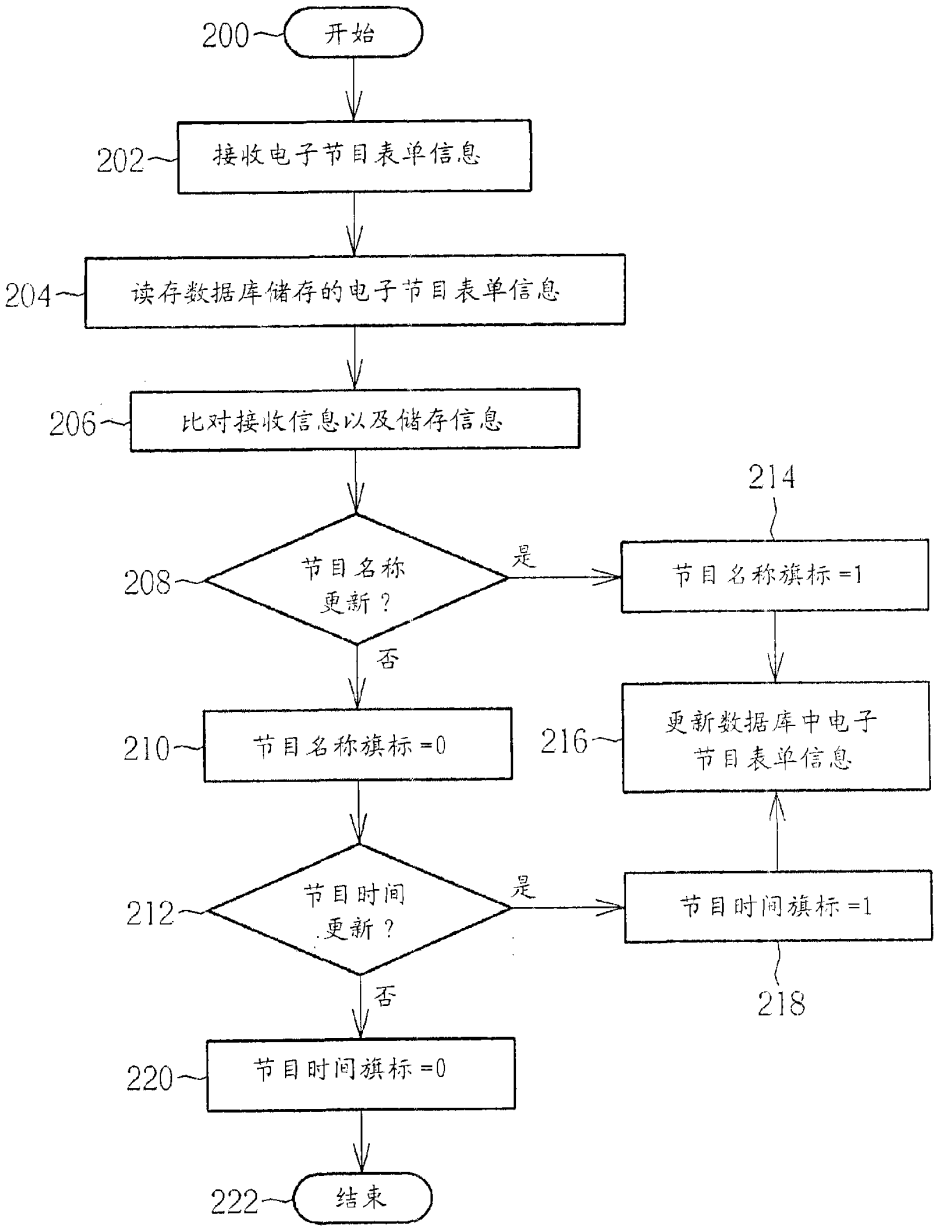


图 2

EX. 1002
LG Electronics, Inc. / Page 722 of 3523

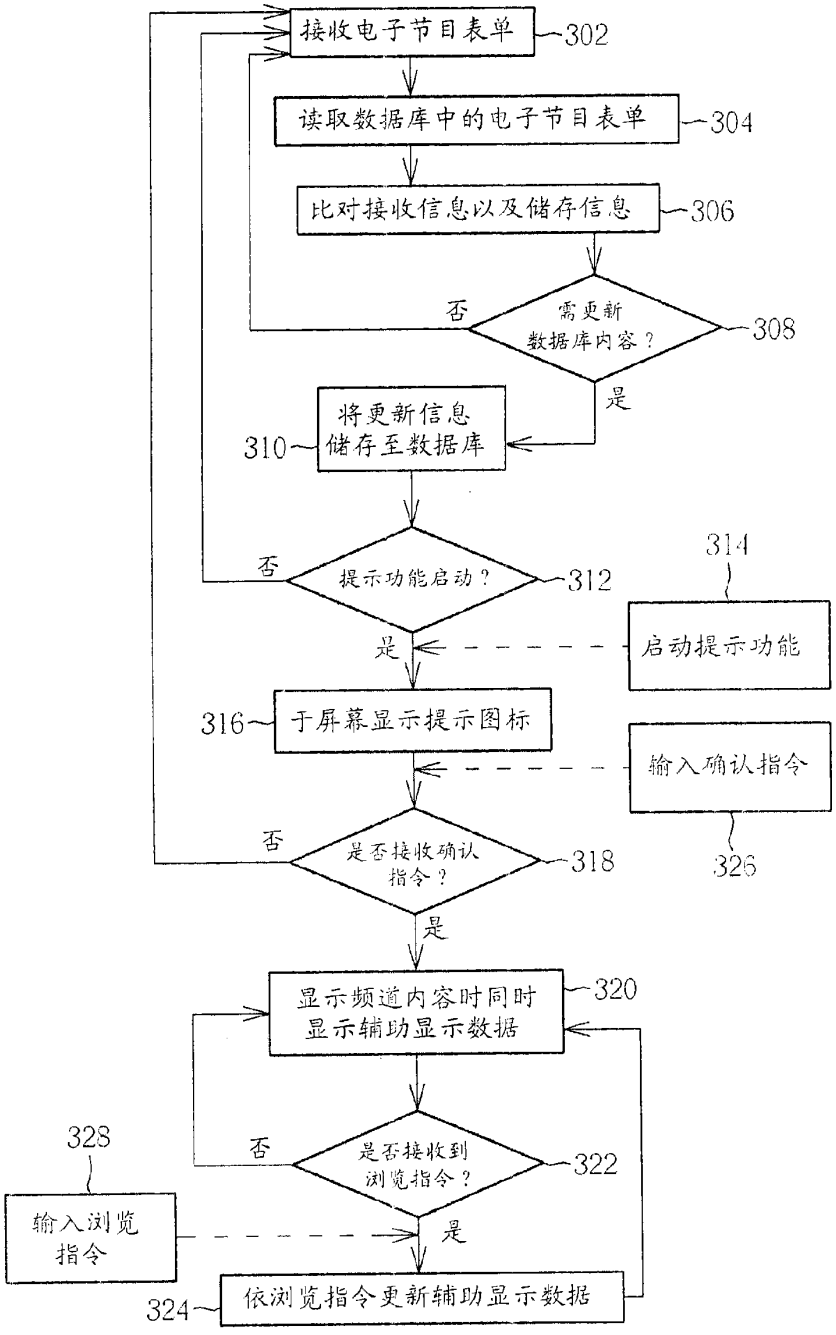


图 3

EX. 1002
LG Electronics, Inc. / Page 723 of 3523

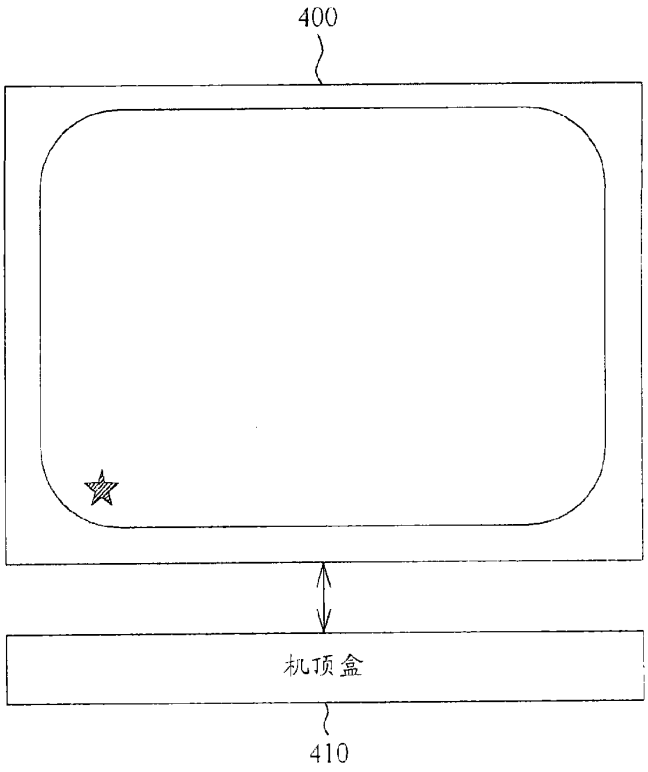


图 4

EX. 1002
LG Electronics, Inc. / Page 724 of 3523

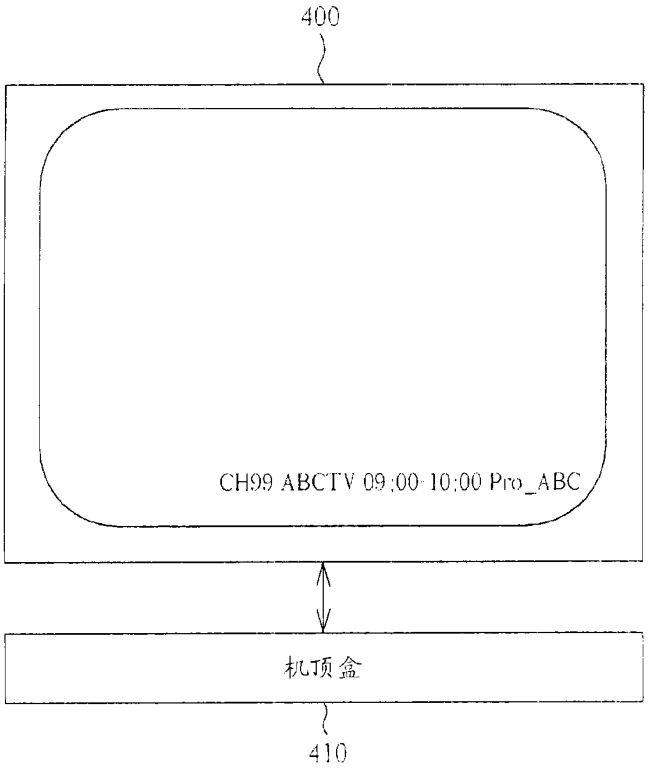


图 5

EX. 1002
LG Electronics, Inc. / Page 725 of 3523

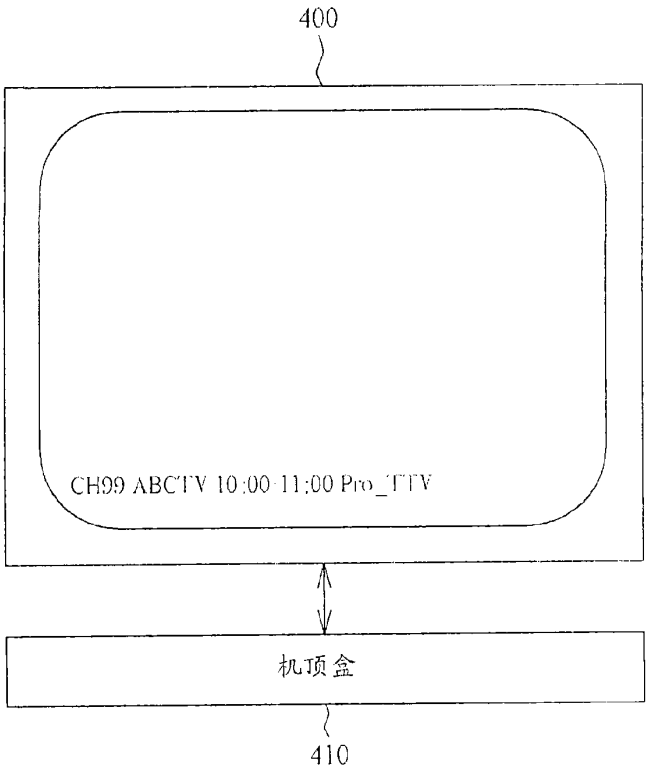


图 6

EX. 1002
LG Electronics, Inc. / Page 726 of 3523

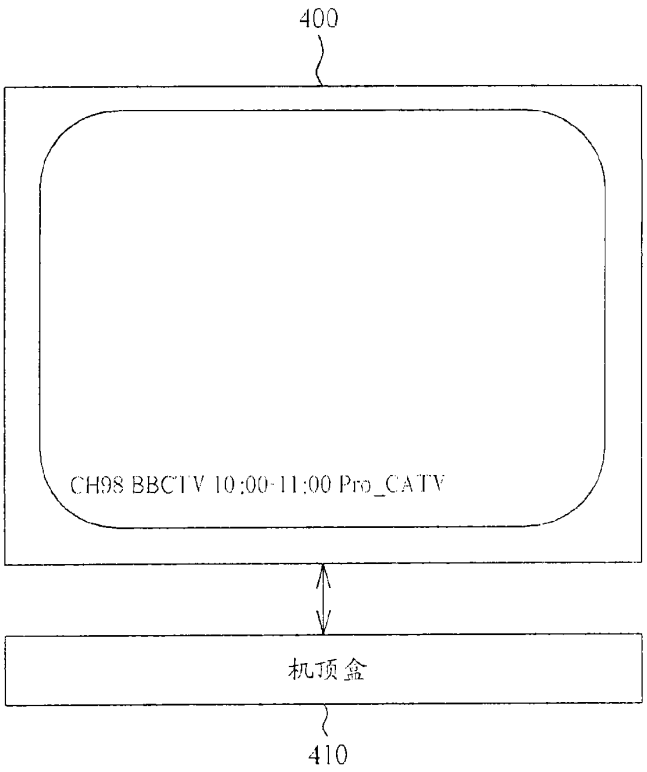


图 7

EX. 1002
LG Electronics, Inc. / Page 727 of 3523

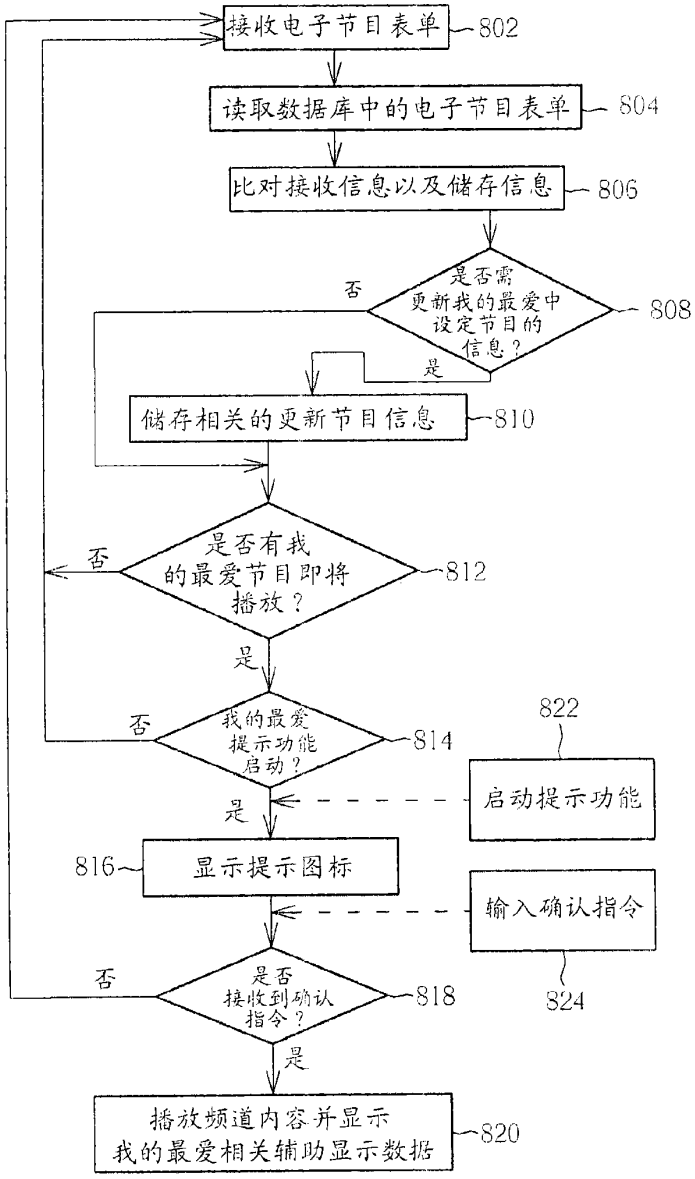


图 8

EX. 1002
LG Electronics, Inc. / Page 728 of 3523

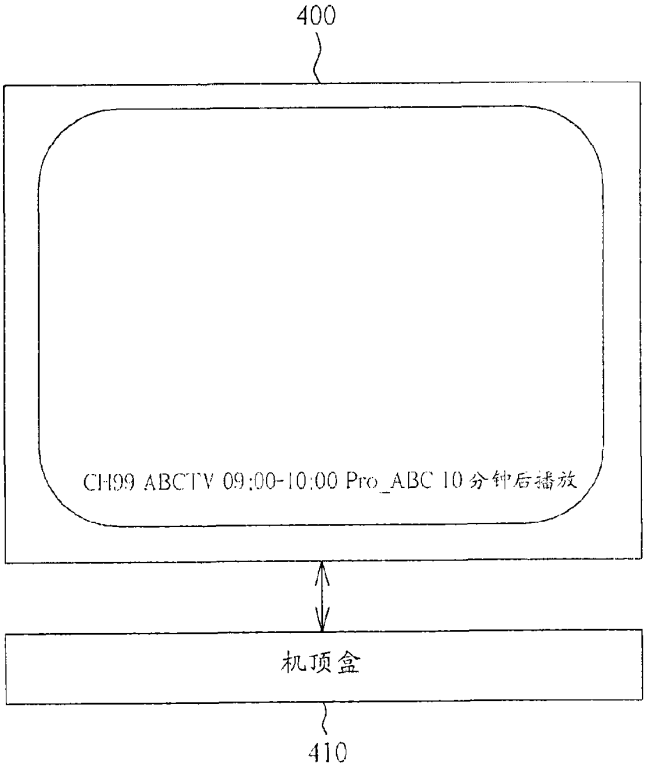


图 9

EX. 1002
LG Electronics, Inc. / Page 729 of 3523

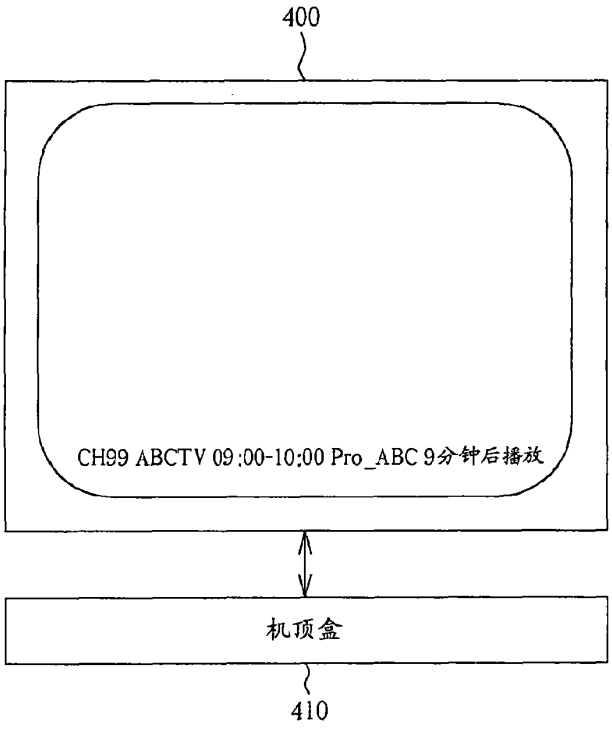


图 10

EX. 1002
LG Electronics, Inc. / Page 730 of 3523

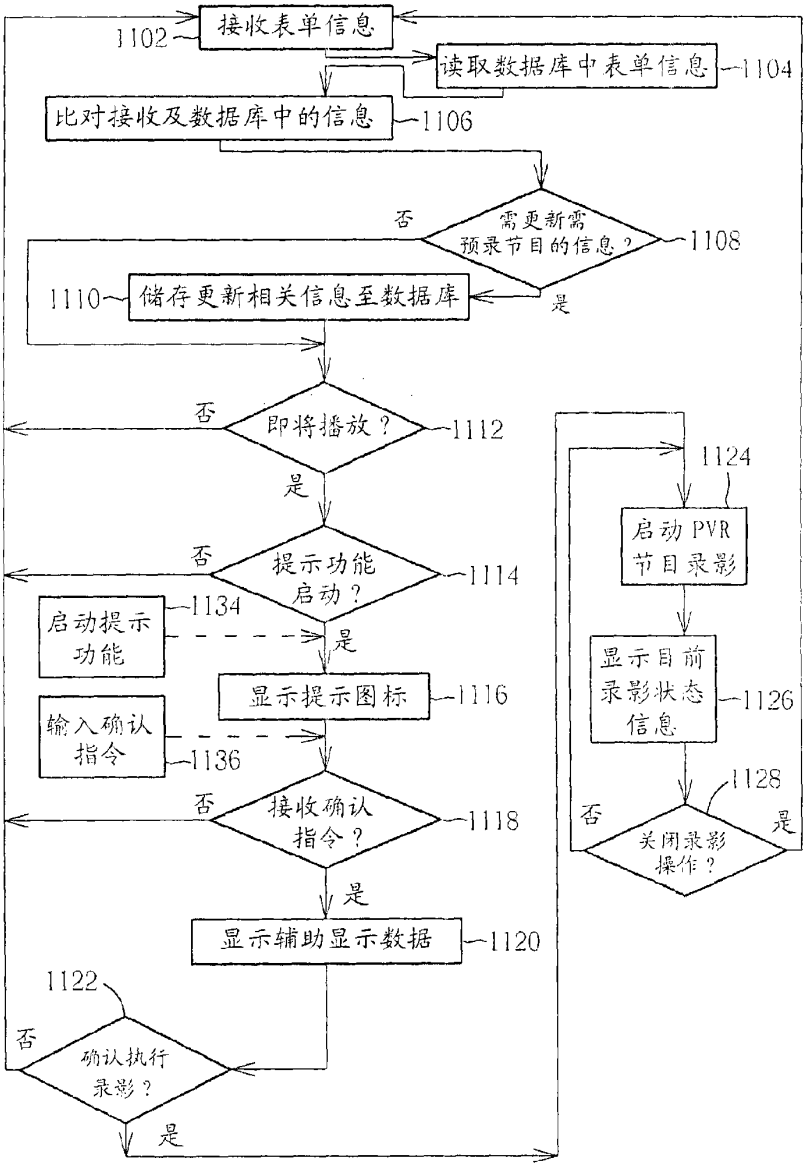


图 11

EX. 1002
LG Electronics, Inc. / Page 731 of 3523

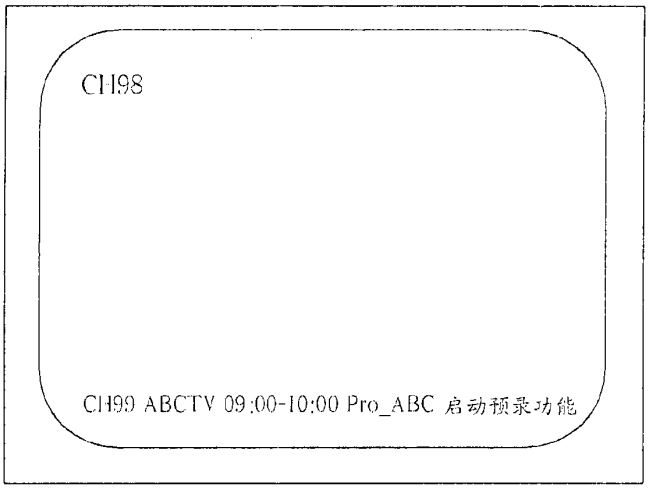


图 12

EX. 1002
LG Electronics, Inc. / Page 732 of 3523

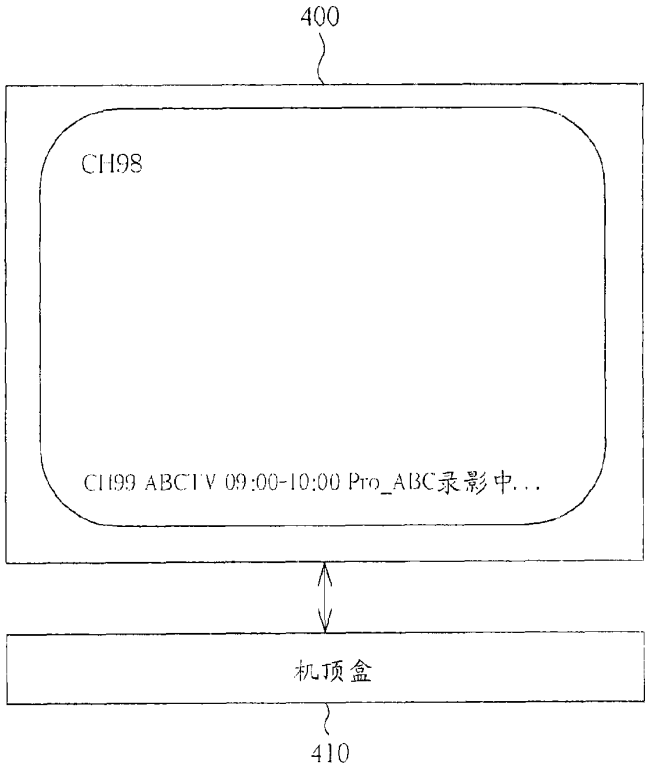


图 13

EX. 1002
LG Electronics, Inc. / Page 733 of 3523

Espacenet

Bibliographic data: CN201937743 (U) — 2011-08-17

Display device for simulated remote controller interfaces

No documents available for this priority number.

Inventor(s): YIXIN TU; SHUYING HAN ± (TU YIXIN, ; HAN SHUYING)

Applicant(s): SVA TECHNOLOGIES CO LTD ± (SVA TECHNOLOGIES, CO., LTD)

Classification: **- international:** ***H04N21/40; H04N5/44; H04N5/445***
- cooperative:

Application number: CN20102694527U 20101231

Priority number(s): CN20102694527U 20101231

Abstract of CN201937743 (U)

The utility model relates to a display device for simulated remote controller interfaces, which comprises a signal receiving module, a processing module and a display module. The signal receiving module is used for receiving key operating instruction of a remote controller and transmitting the key operating instruction to the processing module. When receiving the key operating instruction, the processing module calls corresponding simulated interface data and outputs the simulated interface data to the display module. The display module displays a simulated remote controller interface in a local area of a display according to the simulated interface data, and positions and arrangement of keys of the simulated remote controller interface are identical to those of the remote controller. A user can intuitively operate the remote controller according to prompting information by the aid of the simulated remote controller interface, and does not need to lower the head to observe the positions of keys of the remote controller or memorize the positions of the keys of the remote controller.

Last updated: 11.12.2013 Worldwide Database 5.8.15.10; 92p

EX. 1002
LG Electronics, Inc. / Page 734 of 3523

(19)中华人民共和国国家知识产权局

(12)实用新型专利

(10)授权公告号 CN 201937743 U
(45)授权公告日 2011.08.17

(21)申请号 201020694527.6

(22)申请日 2010.12.31

(73)专利权人 上海广电电子科技有限公司
地址 200233 上海市徐汇区田林路 192 号 5 楼

(72)发明人 屠 新 韩舒盈

(74)专利代理机构 上海专利商标事务所有限公司 31100
代理人 骆希聪

(51)Int.Cl.
H04N 5/44(2006.01)
H04N 5/445(2006.01)
H04N 21/40(2011.01)

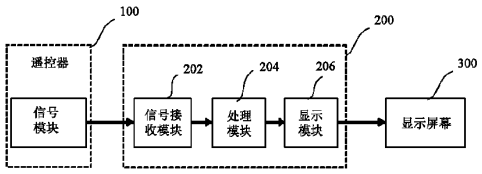
权利要求书 1 页 说明书 4 页 附图 2 页

(54)实用新型名称

遥控器模拟界面的显示装置

(57)摘要

本实用新型涉及遥控器模拟界面的显示装置，包括信号接收模块、处理模块和显示模块。信号接收模块用以接收来自一遥控器的按键操作指令，并传输给处理模块。当处理模块接收到该按键操作指令时，调用对应一模拟界面数据，并输出给显示模块。显示模块根据该模拟界面数据，在一显示屏的局部区域显示一遥控器模拟界面，该遥控器模拟界面的按键位置和布局与该遥控器相同。通过该遥控器模拟界面，用户可直观的依据提示进行操作，从而不必低头观察遥控器按键位置或者记忆遥控器按键位置。



CN 201937743 U

1. 一种遥控器模拟界面的显示装置，其特征在于包括：

信号接收模块，用以接收来自一遥控器的按键操作指令，并传输一处理模块；

处理模块，当接收到该按键操作指令时，调用对应一模拟界面数据，并输出给一显示模块；以及

显示模块，根据该模拟界面数据，在一显示屏的局部区域显示一遥控器模拟界面，该遥控器模拟界面的按键位置和布局与该遥控器相同。

2. 如权利要求 1 所述的遥控器模拟界面的显示装置，其特征在于，该处理模块具有一场景识别器，用以识别当前遥控器的功能场景，该处理模块根据该功能场景调用对应的模拟界面数据。

3. 如权利要求 1 所述的遥控器模拟界面的显示装置，其特征在于，该遥控器模拟界面的每一模拟按键具有启用和闲置两种状态，该处理模块具有一按键状态器，以记录模拟按键的状态，其中当按键被按下时，该处理模块将对应的模拟按键转换到启用状态，而该显示模块对处于启用状态的按键进行高亮显示。

4. 如权利要求 1 所述的遥控器模拟界面的显示装置，其特征在于，该处理模块具有一定时器，用以对遥控器闲置时间进行计时，当该闲置时间超过一设定值时，该处理模块通知该显示模块停止显示该遥控器模拟界面。

5. 如权利要求 1 所述的遥控器模拟界面的显示装置，其特征在于，该遥控器模拟界面的显示装置是集成于一机顶盒中。

6. 如权利要求 1 所述的遥控器模拟界面的显示装置，其特征在于，该遥控器模拟界面的显示装置是集成于一电视机中。

EX. 1002
LG Electronics, Inc. / Page 736 of 3523

遥控器模拟界面的显示装置

技术领域

[0001] 本实用新型涉及电视机，尤其是涉及在电视机上显示遥控器模拟界面的装置。

背景技术

[0002] 随着电视机、机顶盒产品的不断推陈出新，智能化已经成为了此类电子产品的发展方向。这也使得看电视这一简单的娱乐方式变得复杂。与此同时，基于数字电视平台的应用不断扩展，已经融合了互联网、多媒体播放和互动娱乐等多种应用。这对遥控器的功能提出了更高的要求，除了选台、音量调节、参数设置等十分基本的操作外，使用智能终端可能会涉及视 / 音频播放、网页浏览、文字输入、游戏等等更多功能，遥控器发射出的指令也更为复杂。

[0003] 相对于越来越多功能的智能电视机、机顶盒，遥控的操作方式最好能够变得更加简单，让每个人拿到电子产品，不需要阅读说明书，就可以进行准确的操作。提示界面就是一种很好的解决方法。通过在屏幕上显示操作说明，提示用户如何进行操作。然而，现有的提示一般有两种，一是弹出图形窗口，用户需要记忆操作提示，返回界面后再进行操作，增加了遥控操作的难度；二是屏幕某处以文字提示条显示，这样不需要用户记忆，但是不够直观，用户仍然需要在遥控器上寻找相对应的按键。

实用新型内容

[0004] 本实用新型的一个目的是提供一种遥控器模拟界面的显示装置，以方便使用者的操作。

[0005] 本实用新型所提出的一种遥控器模拟界面的显示装置，包括信号接收模块、处理模块和显示模块。信号接收模块用以接收来自一遥控器的按键操作指令，并传输给处理模块。当处理模块接收到该按键操作指令时，调用对应一模拟界面数据，并输出给显示模块。显示模块根据该模拟界面数据，在一显示屏的局部区域显示一遥控器模拟界面，该遥控器模拟界面的按键位置和布局与该遥控器相同。

[0006] 在上述的遥控器模拟界面的显示装置中，该处理模块具有一场景识别器，用以识别当前遥控器的功能场景，该处理模块根据该功能场景调用对应的模拟界面数据。

[0007] 在上述的遥控器模拟界面的显示装置中，该遥控器模拟界面的每一模拟按键具有启用和闲置两种状态，该处理模块具有一按键状态器，以记录模拟按键的状态，其中当按键被按下时，该处理模块将对应的模拟按键转换到启用状态，而该显示模块对处于启用状态的按键进行高亮显示。

[0008] 在上述的遥控器模拟界面的显示装置中，该处理模块具有一定时器，用以对遥控器闲置时间进行计时，当该闲置时间超过一设定值时，该处理模块通知该显示模块停止显示该遥控器模拟界面。

[0009] 在上述的遥控器模拟界面的显示装置中，该遥控器模拟界面的显示装置可以是集成于一机顶盒中。

EX. 1002
LG Electronics, Inc. / Page 737 of 3523

[0010] 在上述的遥控器模拟界面的显示装置中，该遥控器模拟界面的显示装置可以是集成于一电视机中。

[0011] 本实用新型由于采用以上技术方案，在电视机屏幕上显示合理尺寸的遥控器模拟界面，使之与现有技术相比，用户不需要记忆遥控器按键的位置，也不需要低头观看遥控器按键，即可顺畅的进行操作。

附图说明

[0012] 为让本实用新型的上述目的、特征和优点能更明显易懂，以下结合附图对本实用新型的具体实施方式作详细说明，其中：

[0013] 图 1 示出根据本实用新型一实施例的电视机界面。

[0014] 图 2 示出根据本实用新型一实施例的遥控器模拟界面。

[0015] 图 3 示出根据本实用新型一实施例的遥控器按键反馈示意图。

[0016] 图 4 示出本实用新型一实施例的遥控器模拟界面显示装置的方块图。

具体实施方式

[0017] 本实用新型的下述实施例描述一种遥控器模拟界面的显示装置，它可在用户触发遥控器使用时，在电视机屏幕的部分区域呈现遥控器模拟界面，该界面的大小适合用户从遥控位置观看。从而，用户可根据遥控器模拟界面的提示，完成所需的操作。

[0018] 在图 4 中示出了包含遥控器 100、遥控器模拟界面显示装置 200 以及显示屏幕 300 的系统。遥控器 100 上布置有按键，当用户按压按键时，从遥控器 200 的信号模块 102 发出操作指令给遥控器模拟界面显示装置 200。遥控器模拟界面显示装置 200 内部设有信号接收模块 202、处理模块 204 和显示模块 206。信号接收模块 202 的输出端连接处理模块 204，处理模块 204 的输出端连接显示模块 206。显示模块 206 的输出端连接显示屏幕 300。显示屏幕 300 是电视机的屏幕。

[0019] 在本实用新型的一实施例中，遥控器模拟界面显示装置 200 是集成在机顶盒中。机顶盒是电视机之外的设备，它连接电视机与外部信号源，可以将压缩的数字信号转成电视内容，并在电视机的显示屏幕 300 上显示出来。

[0020] 在本实用新型的另一实施例中，遥控器模拟界面显示装置 200 是集成在电视机中。电视机内部将处理完成的内容显示在显示屏幕 300 上。

[0021] 在又一实施例中，遥控器模拟界面显示装置 200 是集成在高清播放器中。

[0022] 下面继续参照图 1-3 和图 4 来描述本实用新型的实施例。首先参照图 1 所示，右侧是一个遥控器 100，其正面布置有键盘。该键盘以手机键盘为基础，针对电视机 / 机顶盒操作的特点，进行按键改良，以符合用户体验。键盘大致上包括数字键、方向键和功能键三部分。可以理解，本实用新型并不限定于这一特定的按键布置。在左侧的显示屏幕 300 上，示出一个包含了视频画面 304 的显示界面。

[0023] 参照图 4 所示，当用户在遥控器 100 上按下按键时，遥控器将按键信号转换为可识别的编码信号，经信号模块 102 发射出去。遥控器模拟界面显示装置 200 的信号接收模块 202 会接收到这一信号，并传输给处理模块 204。处理模块 204 在内部进行处理，调用遥控器模拟界面数据，然后传输给显示模块 206，显示模块 206 将遥控器模拟界面显示于屏幕 300

EX. 1002
LG Electronics, Inc. / Page 738 of 3523

上。

[0024] 在图 2 示出的显示界面 302 的局部区域中，出现了遥控器模拟界面 306。遥控器模拟界面 306 是根据遥控器 100 设计，界面上的按键位置和布局与遥控器可以完全相同。用户可在遥控器模拟界面 306 的提示下，不观察遥控器 100 即可完成操作，也就是所谓的盲操作。因此用户的注意力可不必再遥控器本体和屏幕之间切换。

[0025] 在一实施例中，可以比例缩小视频画面 304，使其全部内容仍能显示给观者。在另一实施例中，视频画面 304 保持不变，而是部分内容被遥控器模拟界面 306 遮蔽。在这一例子中，遥控器模拟界面 306 可以显示成半透明状。

[0026] 由于观看电视时，用户离屏幕距离较远，因此，遥控器模拟界面 306 的尺寸一方面应当以保证用户能够清楚看到遥控器模拟界面 306 上的图标或文字提示为宜。另一方面，遥控器模拟界面 306 占显示界面 302 的比例不宜过大，以影响视频画面的观看效果。在当今电视机屏幕大尺寸的趋势下，可以容易的找到这两个设计目标的平衡点。

[0027] 在本实用新型的实施例中，针对某一特定的功能场景，遥控器模拟界面 306 的按键上会显示当下按键的操作，让用户可以在直观的提示下进行遥控。举例来说，在某些场景下，遥控器模拟界面 306 的数字键上显示的是数字 0-9 和 *，# 键，供输入频道号和进行文字输入，如图 2 所示。在另一些场景下，遥控器模拟界面 306 的数字键上显示的是多媒体操作键，例如播放、停止、快进、快退等。为此，为每一功能场景配置一套遥控器模拟界面数据。不同功能场景下的界面数据，其按键位置和布局相同，但是按键功能可以不同，相应的，显示在按键上的文字、数字、图标等也可以不同。处理模块 204 内具有一场景识别器，用以识别当前遥控器的功能场景，处理模块 204 再根据功能场景调用对应的模拟界面数据。

[0028] 在本实用新型的较佳实施例中，在遥控器模拟界面 306 上提供对用户在遥控器上进行任何按键操作的反馈。如图 3 所示，当用户在遥控器 100 上按下数字键 9 时，在遥控器模拟界面 306 高亮数字键 9，以作为对用户操作的反馈。

[0029] 为实现遥控器模拟界面 306 上按键被操作时的高亮显示，遥控器按键键值与模拟遥控器的按键一一对应，模拟按键都有闲置 / 使用两种状态显示。处理模块 204 内部设有一按键状态器，以记录模拟按键的状态。其中当遥控器的实体按键被按下时，处理模块 204 将对应的模拟按键转换到启用状态，而显示模块 206 对处于启用状态的按键进行高亮显示。在若干秒后，显示模块 206 恢复启用闲置状态显示。

[0030] 处理模块 204 内部还设有一定时器，用以对遥控器闲置状态进行计时。也就是说，当遥控器模拟界面显示装置 200 未接收到遥控器的操作指令时，计时开始，当这一计时超过一设定值（如 10 秒）时，处理模块 204 通知显示模块 206 停止显示遥控器模拟界面 306。由此，显示界面 302 由图 3 所示状态恢复到图 1 所示状态。

[0031] 本实用新型的遥控器模拟界面显示装置，通过在电视机界面的局部区域显示模拟遥控器画面，使得用户可以直观地根据提示进行操作，而且不需要记忆按键。用户不需要低头看遥控器，就可知道自己按的是什么键。模拟遥控器的人机界面，最大限度降低遥控操作的难度，同时可以帮助一些人，尤其是老人和儿童克服对于新型智能产品的不适应和恐惧感。

[0032] 虽然本实用新型已以较佳实施例揭示如上，然其并非用以限定本实用新型，任何本领域技术人员，在不脱离本实用新型的精神和范围内，当可作些许的修改和完善，因此本

EX. 1002
LG Electronics, Inc. / Page 739 of 3523

实用新型的保护范围当以权利要求书所界定的为准。

EX. 1002
LG Electronics, Inc. / Page 740 of 3523

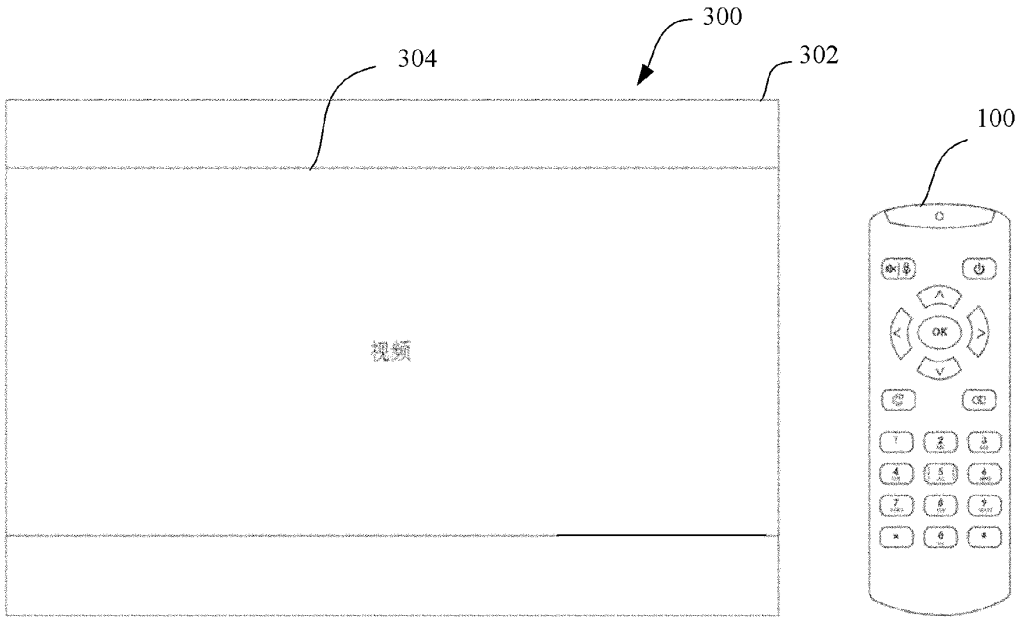


图 1

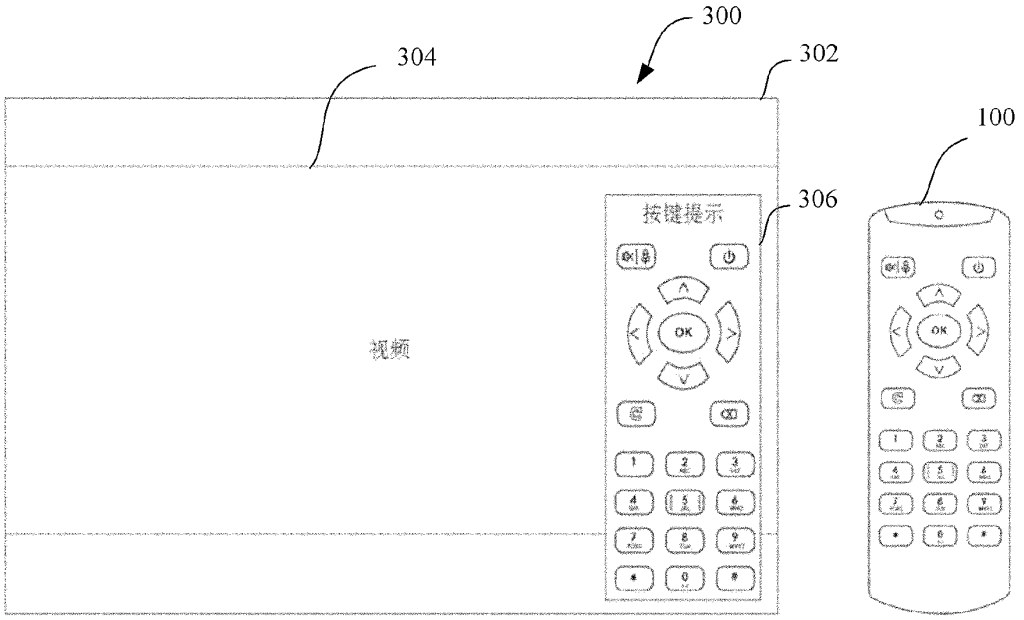


图 2

EX. 1002
LG Electronics, Inc. / Page 741 of 3523

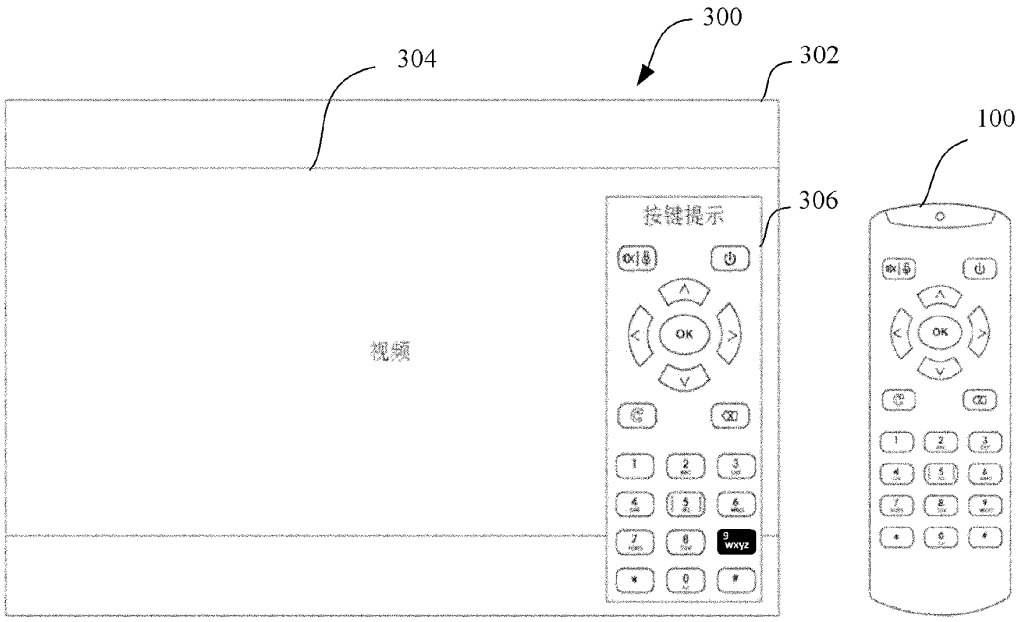


图 3

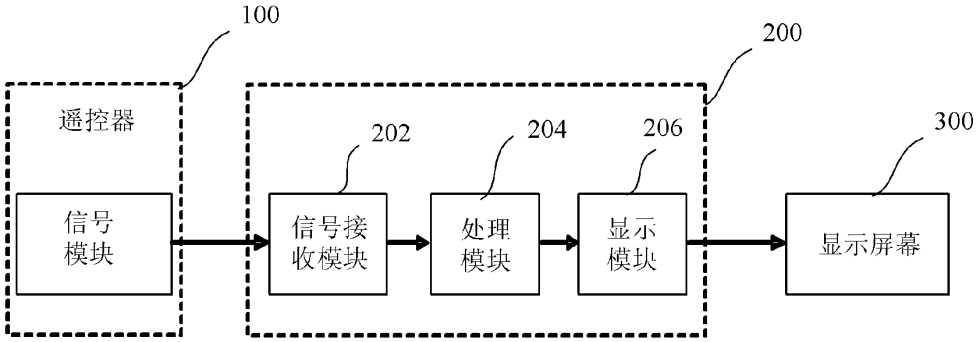


图 4

EX. 1002
LG Electronics, Inc. / Page 742 of 3523

(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 031 929 A2

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
30.08.2000 Bulletin 2000/35

(51) Int Cl.[7]: **G06F 11/14**

(21) Application number: **00301520.3**

(22) Date of filing: **25.02.2000**

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **26.02.1999 US 258582**

(71) Applicant: **Hewlett-Packard Company**
Palo Alto, California 94304 (US)

(72) Inventors:
- **Larner, Joel B.**
  Fort Collins, CO 80525 (US)
- **O'Brien, Michael J.**
  Loveland, CO 80538 (US)

(74) Representative: **Colgan, Stephen James et al**
CARPMAELS & RANSFORD
43 Bloomsbury Square
London WC1A 2RA (GB)

(54) Use of erasable non-volatile memory for storage of changing information

(57) Non-volatile write-once memory (106, 108, 110) is used for storage of variable data. In an example embodiment, segmented flash memory is used, in which individual segments can be erased. At least two segments are used. When a segment is nearly full (222), or when the segment is corrupted (224), the latest values are written to a new segment (226). During initialization, all variables of interest are written into RAM with default values (204). The flash segment being used is read sequentially from oldest entry to newest entry, and values from flash memory are used to overwrite values (or pointers to values) in RAM (216). RAM then contains (or points to) the most recent value for every variable. When a new segment is written, the new segment is written using the values from RAM (236). The method provides for identification of the latest (current) value for each stored item of information, provides for adding new types of data and deleting old types of data, provides for action when a memory segment is full, and provides for recovery from power-failure.

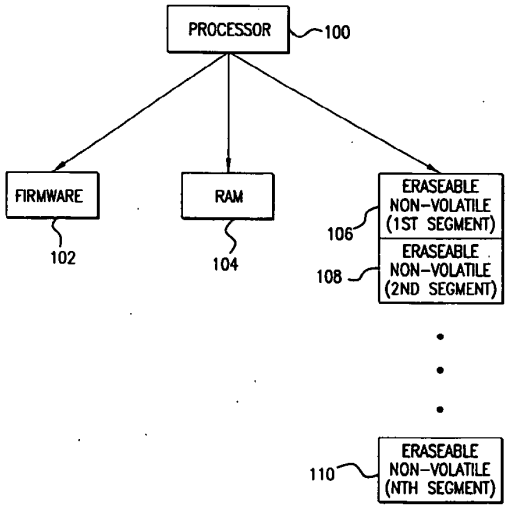


FIG.1

EP 1 031 929 A2

Printed by Jouve, 75001 PARIS (FR)

Description

FIELD OF INVENTION

[0001] This invention relates generally to computer processor based systems, and more specifically to non-volatile storage of changing information.

BACKGROUND OF THE INVENTION

[0002] Computer systems commonly store data in random access memory (RAM). Memory locations in RAM can be rapidly overwritten. RAM is typically volatile, meaning that all information is lost when power is removed. Historically, non-changing software (called firmware) for computer processor based systems was often stored in non-volatile, non-erasable, read-only memory (ROM). If the software needed to be changed, ROMs were replaced. More recently, various programmable or erasable non-volatile memory technologies have been developed. Typically, erasable non-volatile memory devices do not have to be removed for firmware updates. Examples include programmable read only memory (PROM), and electrically erasable programmable read only memory (EEPROM), also called flash memory. Flash memory chips may be electronically erased, and each erased memory location can be written once. To change the contents of a memory location, the entire chip (or in some versions, a large segment or block of the chip) must be erased, and the contents must then be rewritten.

[0003] Some information changes over time and needs to be saved in non-volatile memory. For example, an electromechanical computer peripheral system may need to track the number of hours the unit has been powered on, for preventive maintenance. A common approach is to update the power-on data every hour. The power-on information must be saved in non-volatile memory. One common approach is to save such data in low power static RAM, with a battery to retain power to the static RAM when system power is off. This approach is relatively expensive, and reliability depends on the integrity of the battery charge and the power switch over circuitry.

[0004] There is an ongoing need for non-volatile storage of changing data.

SUMMARY OF THE INVENTION

[0005] Non-volatile, write-once memory is used for storage of variable data. In an example embodiment, segmented flash memory is used, in which individual segments can be erased. At least two segments are used. When a segment is nearly full, or when the segment is corrupted, the latest values are written to a new segment. During initialization, all variables of interest are written into RAM with default values. The flash segment being used is read sequentially from oldest entry to newest entry, and values from flash memory are used to overwrite values (or pointers to values) in RAM. RAM then contains (or points to) the most recent value for every variable. When a new segment is written, the new segment is written using the values from RAM. The method provides for identification of the latest (current) value for each stored item of information, provides for adding new types of data and deleting old types of data, provides for action when a memory segment is full, and provides for recovery from power-failure.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] Figure 1 is a block diagram of a processor based system in accordance with the invention.

[0007] Figure 2A is a first part of a flow chart of a method in accordance with the invention, illustrating setting initial conditions.

[0008] Figure 2B is a second part of flow chart of a method in accordance with the invention, illustrating copying of data from non-volatile memory to RAM.

[0009] Figure 2C is a flow chart continuation of figure 2B, illustrating switching segments.

[0010] Figure 2D is flow chart providing additional detail for block 226 of figure 2C.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT OF THE INVENTION

[0011] Figure 1 is a block diagram of a processor based system in accordance with the invention. A processor 100 is controlled by firmware 102, which may be in ROM. The system also uses volatile RAM 104. In addition, the system uses non-volatile memory (106, 108, and 110). In a specific example embodiment of the invention, segmented (or blocked) flash memory is used, in which each location can be written only once, but an entire segment or block can be erased. That is, the smallest portion that can be erased is segment 106, or segment 108, or segment 110. Other types of erasable, non-volatile, write-once memory may be equally suitable. In the following discussion, the expression "the erased value" means whatever value is stored in a memory location in a non-volatile segment after erasure. In a

specific example embodiment, when non-volatile segments are erased, each memory location is set to FFFF hex.

[0012] Use of erasable, write-once, segmented memory for storage of changing parameters requires a solution to the following problems:

Identification of the latest (current) value for each stored item of information;
Provision for adding new types of data, and deleting old types of data;
Provision for action when a memory segment is full;
Provision for power-failure, to ensure that no data is lost if power is lost during transfer of data from one memory segment to another or during writing of data.

The invention solves each of the above problems and provides additional features as discussed below.

[0013] In the example embodiment, for convenience of memory management, each item of information to be stored is packaged in a data structure called a parameter, where a parameter comprises identification of the data, length of the data, and the actual data. In the example embodiment, each parameter includes a parameter ID. The parameter ID identifies the item of information, and specifies the length of the item of information. The identified data immediately follows the parameter ID in memory. In the specific example embodiment, the parameter ID is one 16-bit word, and the two most significant bits of the parameter ID specify one of three ID classes as follows:

00 16-bit data field;
01 32-bit data field;
10 Variable length data field (next word specifies length).

[0014] In a specific example application of the invention, the invention is used in a mass-memory drive mechanism having a removable storage medium. Examples of data of interest for storing in non-volatile memory include drive serial number (determined at manufacturing time), date of manufacture, the number of hours the drive has been powered-on, the number of times a medium has been loaded into the drive (load count), and the amount of data read or written over the life of the drive (read counter). These types of data are useful for maintenance and for preventive maintenance. After the drive has been used for a while, the segment of non-volatile memory being used to store the relevant parameters may appear as in the following example:

Parameter ID for drive serial number, variable length data field.
Length of data field for drive serial number (3 words).
Data (first 16 bits of drive serial number).
Data (second 16 bits of drive serial number).
Data (third 16 bits of drive serial number).
Parameter ID for date of manufacture, 16-bit data field.
Data (date of manufacture).
Parameter ID for power-on hours, 16-bit data field
Data (power-on-hours/10)
Parameter ID for load count, 32-bit data field
Data (first 16 bits of load count data)
Data (second 16 bits of load count data)
Parameter ID for read count, 32-bit data field
Data (first 16 bits of read count data)
Data (second 16 bits of read count data)
Parameter ID for load count, 32-bit data field
Data (first 16 bits of load count data)
Data (second 16 bits of load count data)
Parameter ID for read count, 32-bit data field
Data (first 16 bits of read count data)
Data (second 16 bits of read count data)
Unwritten location (erased value)
Unwritten location (erased value)
Unwritten location (erased value)

[0015] In the above example, the load-count and read-count parameters have been updated with newer information since they were first written to the non-volatile memory segment. In the example embodiment, the parameters to be stored are coded into the firmware. During initialization, the firmware creates an entry in volatile RAM for every parameter of interest and assigns a default value to each parameter. The firmware then reads the non-volatile memory segment from the beginning, reading the value for each parameter and overwriting the value in RAM. If a subsequent value of any parameter is found, the previous value in RAM is replaced. By performing this progressive walk through the non-volatile memory segment, the final resulting information in RAM is the most recent value for every parameter. In the specific example embodiment, the erased value of FFFF hex is not valid for a parameter ID, so that when the initialization firmware encounters a value of FFFF where a parameter ID is expected, the firmware knows that it has reached the end of the recorded information.

[0016] Preferably, the firmware reserves known locations in RAM for each parameter. The firmware then can reference a fixed known location for each data item, as would normally be done by a variable reference in compiled code. In addition, this provides quick read access to a parameter because there is no need for a reference look-up to find the current location of each parameter. However, if saving space in RAM is preferable, a pointer to the most recent location in non-volatile memory may be stored in RAM. Access is then slower, but this may be acceptable for infrequently changing parameters or parameters that have a large length that would consume significant amounts of RAM. The data structure in volatile RAM may be identical to the data structure in non-volatile memory, or the data structure in RAM may be different. The only requirement is that the firmware must know the RAM location for every parameter of interest. This could be done by direct compiled reference, or an embodiment of a lookup/hash table.

[0017] As updated parameter values are appended in the non-volatile memory segment, the segment will eventually fill. In the example embodiment of the invention, when one segment is full (or when a predetermined threshold is reached, or when a segment becomes corrupted due to power failure during a parameter update operation), the most recent values for the parameters, as stored in RAM, are copied to an unused non-volatile memory segment. The previously used segment may then be erased. The system may reserve two segments for changing parameters, and alternate between the two segments. Alternatively, the system may use other segment selection algorithms, the only requirement being that one unused segment must be available to copy into from volatile RAM.

[0018] After walking consecutively through the non-volatile memory segment, each parameter in volatile RAM has its latest value (either the default value or its latest value from the non-volatile memory). Each time a parameter is updated, or each time a new segment is written, the parameter with its latest value is written into non-volatile memory. Similarly, if a parameter is deleted in a new version of the firmware, the firmware does not assign a RAM location for the deleted parameter, and the parameter is not copied from non-volatile memory to volatile RAM. When a new non-volatile segment is written, the deleted parameter is not written to the new non-volatile segment. As a result, if the firmware is updated, and new parameters are added or deleted, they are automatically added to the parameters or deleted from the parameters in non-volatile memory.

[0019] The original segment is not erased until a new segment is written. If power is lost during writing of a new segment, the new segment may be left in a corrupt state. Accordingly, if two segments contain parameter data during initialization, the system must have a method for determining which of two segments is valid and current. Likewise, if power is lost while a value is being written into non-volatile memory, the segment may be left in a corrupt state. A method in accordance with the invention provides for recovery from power loss during writing of a parameter into non-volatile memory, and provides for recovery from power loss during writing of a new segment, as illustrated in figures 2A-2D.

[0020] Figures 2A - 2D are flow charts of a method of using erasable non-volatile memory to store changing data in accordance with the invention. Figure 2A illustrates setup of initial conditions, which may occur during manufacturing or may occur the first time the system is started. At step 200, two segments are designated for use in non-volatile storage of changing data. A first segment will be used until filled, and then the second segment will be used. Two segments may be dedicated to non-volatile storage of changing data (with the system switching back and forth between the two), or other algorithms may be used to identify at least two segments that may be used. Both segments should be initially erased. At step 202, a sequence number is written into the first word of the first segment to be used. As will be discussed further below, each time a new segment is used, the sequence number is incremented and written as the first word of the new segment.

[0021] Figure 2B illustrates part of an initialization process for the processor, which is executed when system power is applied, or after a hard reset. At step 204, the firmware designates RAM locations for every parameter of interest, and writes a default value in RAM for each parameter having a value in RAM (for some variable length parameters, RAM may contain a pointer to a location in non-volatile memory). At step 206, the first word of each of the designated segments is read, and test 208 determines whether exactly one segment contains a sequence number (whether only one segment has a value in the first word that is not equal to the erased value). If the first word of both segments is the erased value (test 210), then an error condition has occurred (step 212). If both segments contain a sequence number (the first word of each segment is not the erased value), then power may have been lost during writing of one of the segments. At step 214, the segment with the lowest sequence number is selected, which assumes that the segment having the lowest sequence number still has valid data, and assumes that the other segment is corrupted. At step 216, parameters are sequentially read from the segment currently being used, and values in RAM are over-written.

[0022] In figure 2C, at decision 218, if the segment that is not being used is not erased (the first word is not the erased value), then it is assumed that the segment was being written earlier, and power was lost during writing. Accordingly, the segment is erased (step 220), and the process of switching segments is started again (step 226). At decision 222, if a segment is almost full, then the process of switching segments is started (step 226). The test at decision 222 may be a predetermined threshold, such as a percentage of the segment has been used, or it may simply be determined that there is no room to store another parameter.

[0023] When parameters are stored in non-volatile memory, the value is stored first, and then the parameter ID is stored. As a result, if power is lost while a parameter is being stored, then the location for the parameter ID will have the erased value, and there will be data other than the erased value stored beyond the location of the parameter ID. At test 224, locations beyond the first erased value are checked to see if they are also equal to the erased value. If not, power may have been lost during writing of the last parameter. If there are locations beyond the first erased value that are not equal to the erased value, then the segment is corrupted. That is, without a segment ID, there is no way to determine the expected length or validity of the data. Therefore, a new segment is written (step 226), with last known values for all parameters.

[0024] Figure 2D is an expansion of step 226 (figure 2C), in which segments are switched. At step 228, the sequence number is incremented. At step 230, the new sequence number is written into the first word of the new segment. At step 232, a write pointer is set to point to the second word of the segment. In the specific example embodiment, the erasable non-volatile memory being used can be placed into either a read mode, or a write mode, but not both at the same time. If variable length parameters are not copied into RAM, reading variable length data from non-volatile memory and then writing variable length data back into a new segment would require switching the memory back and forth between a read mode and a write mode. Accordingly, at step 234, all parameters that are not normally copied in RAM are then copied to RAM. At step 236, all parameters in RAM are copied into the new segment. At step 238, the write

pointer is positioned to write a new parameter value. After step 238, it is safe to erase the old segment, and this is done at step 240.

[0025] It is possible that sequence numbers may wrap from FFFF hex to 0000 hex. FFFF is an invalid sequence number since it is the erased value. Therefore, FFFF and 0000 are special cases that must be checked when incrementing and writing the sequence number (figure 2D, steps 228 and 230) and when selecting the oldest of two segments (figure 2B, step 214).

[0026] Still another consideration is whether all of a segment is useable. During manufacturing test, it may be determined that one or more memory locations in non-volatile memory are defective. Alternatively, during the lifetime of the product, one or more memory locations within a segment may fail. A partially working segment may still be useable. One can simply write until a defective location is reached, or one can start writing beyond the last defective location, or one can map around the defective location(s). One parameter that is stored in non-volatile memory may be a map of known defective locations for specific segments. Writing to a segment, reading from a segment, and the decision as to when to switch segments, must all then take into account the parameter that identifies defective locations. For an example of defect handling for flash memory, see U.S. Patent Number 5,200,959.

[0027] The foregoing description of the present invention has been presented for purposes of illustration and description. It is not intended to be exhaustive or to limit the invention to the precise form disclosed, and other modifications and variations may be possible in light of the above teachings. The embodiment was chosen and described in order to best explain the principles of the invention and its practical application to thereby enable others skilled in the art to best utilize the invention in various embodiments and various modifications as are suited to the particular use contemplated. It is intended that the appended claims be construed to include other alternative embodiments of the invention except insofar as limited by the prior art.

Claims

1. A method for saving data in a non-volatile memory (106, 108, 110) that is erasable but not over-writable, the method comprising the following steps:

   (a) defining (204) a location in volatile memory for the data;
   (b) when the data changes, overwriting the data in the volatile memory and writing a new version of the data in a first erasable portion of the non-volatile memory;
   (c) determining (222) whether the first portion of the non-volatile memory is almost full; and
   (d) when it is determined that the first portion of the non-volatile memory is almost full, copying (234) the data from the volatile memory to a second erasable portion of the non-volatile memory.

2. The method of claim 1, further comprising the following steps after step (a):

   (a1) assigning (204) a default value to the data in volatile memory;
   (a2) reading (216) the data from the non-volatile memory; and
   (a3) overwriting (216) the value in volatile memory with the value read from non-volatile memory.

3. The method of claim 1, further comprising the following steps after step (a):

   (a1) determining (210) that two erasable portions of the non-volatile memory may both contain the data; and
   (a2) determining (214) that one of the two erasable portions identified in step (a1) was written to first, and designating that portion as a first erasable portion for use in step (b).

4. The method of claim 1, step (b) further comprising the following steps:

   (b1) designating a memory location in the first erasable portion of the non-volatile memory as an identification location;
   (b2) writing the data to the first erasable portion of the non-volatile memory, after the identification location; and
   (b3) writing an identification, corresponding to the data, in the identification location.

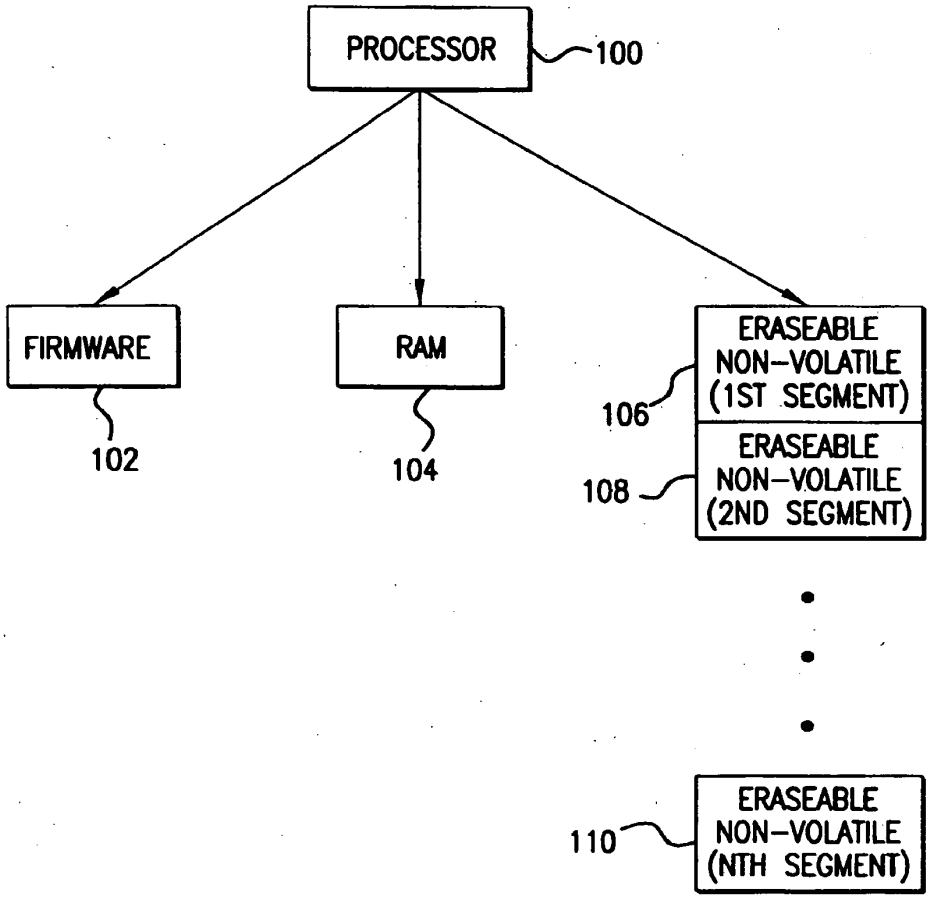

PROCESSOR
100
FIRMWARE
102
RAM
104
ERASEABLE NON-VOLATILE (1ST SEGMENT)
106
ERASEABLE NON-VOLATILE (2ND SEGMENT)
108
ERASEABLE NON-VOLATILE (NTH SEGMENT)
110

FIG.1

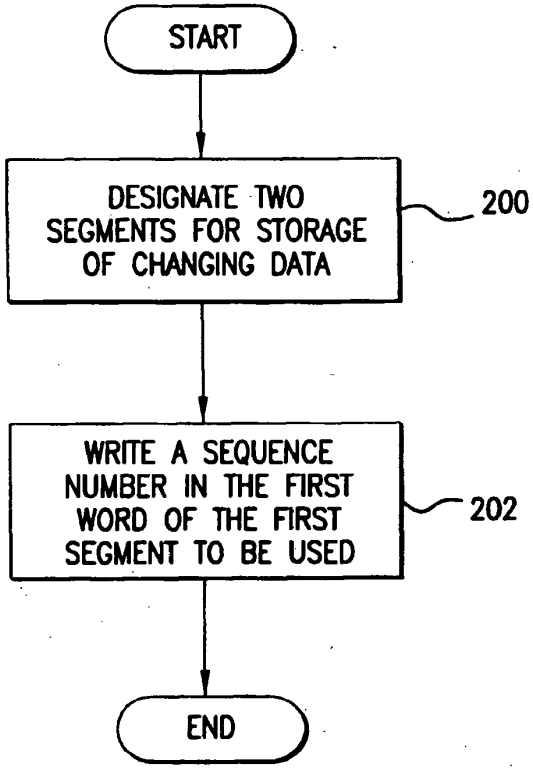

START
DESIGNATE TWO SEGMENTS FOR STORAGE OF CHANGING DATA
200
WRITE A SEQUENCE NUMBER IN THE FIRST WORD OF THE FIRST SEGMENT TO BE USED
202
END

FIG.2A

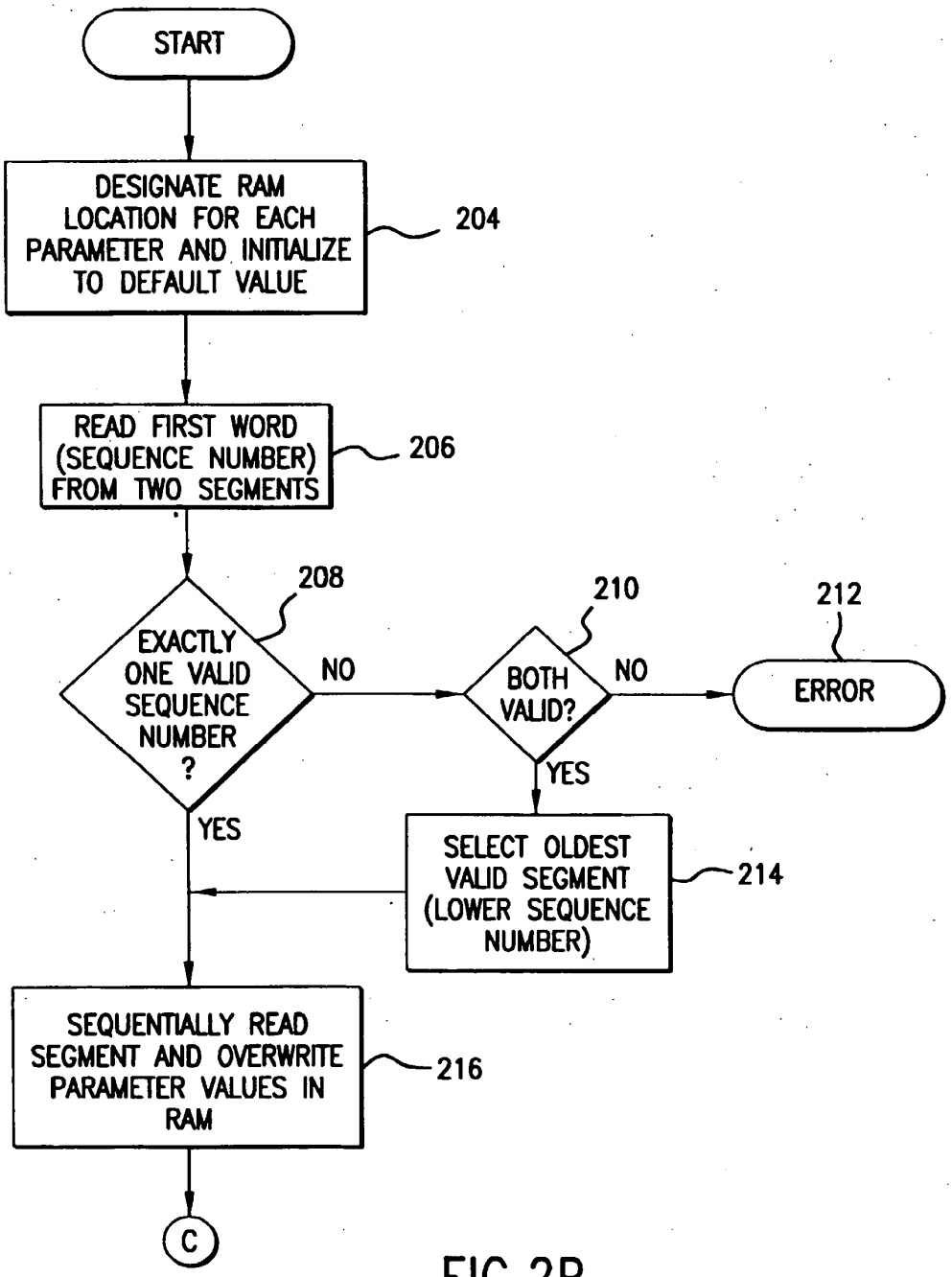

START
DESIGNATE RAM LOCATION FOR EACH PARAMETER AND INITIALIZE TO DEFAULT VALUE
204
READ FIRST WORD (SEQUENCE NUMBER) FROM TWO SEGMENTS
206
208
EXACTLY ONE VALID SEQUENCE NUMBER ?
NO
210
BOTH VALID?
NO
212
ERROR
YES
YES
SELECT OLDEST VALID SEGMENT (LOWER SEQUENCE NUMBER)
214
SEQUENTIALLY READ SEGMENT AND OVERWRITE PARAMETER VALUES IN RAM
216
C

FIG.2B

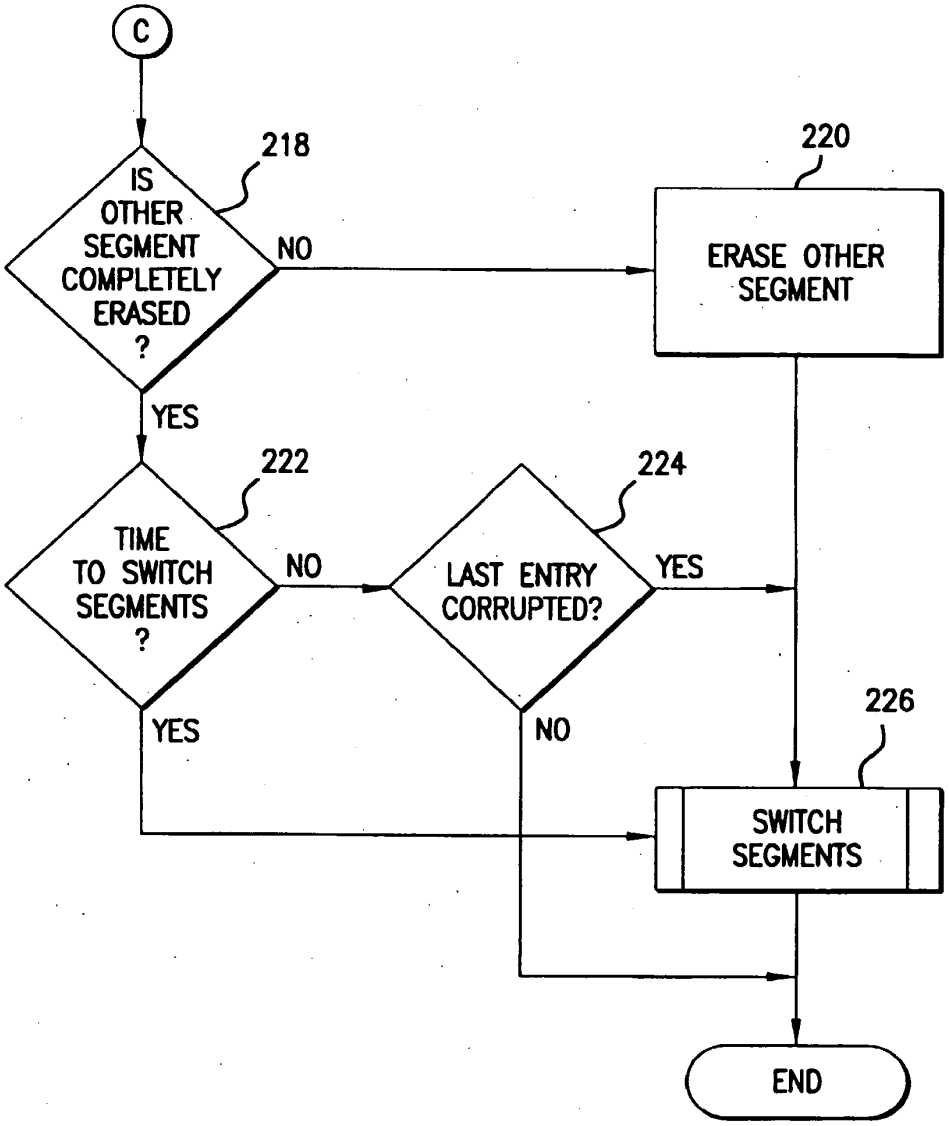

C
218
IS OTHER SEGMENT COMPLETELY ERASED ?
NO
220
ERASE OTHER SEGMENT
YES
222
TIME TO SWITCH SEGMENTS ?
NO
224
LAST ENTRY CORRUPTED?
YES
YES
NO
226
SWITCH SEGMENTS
END

FIG.2C

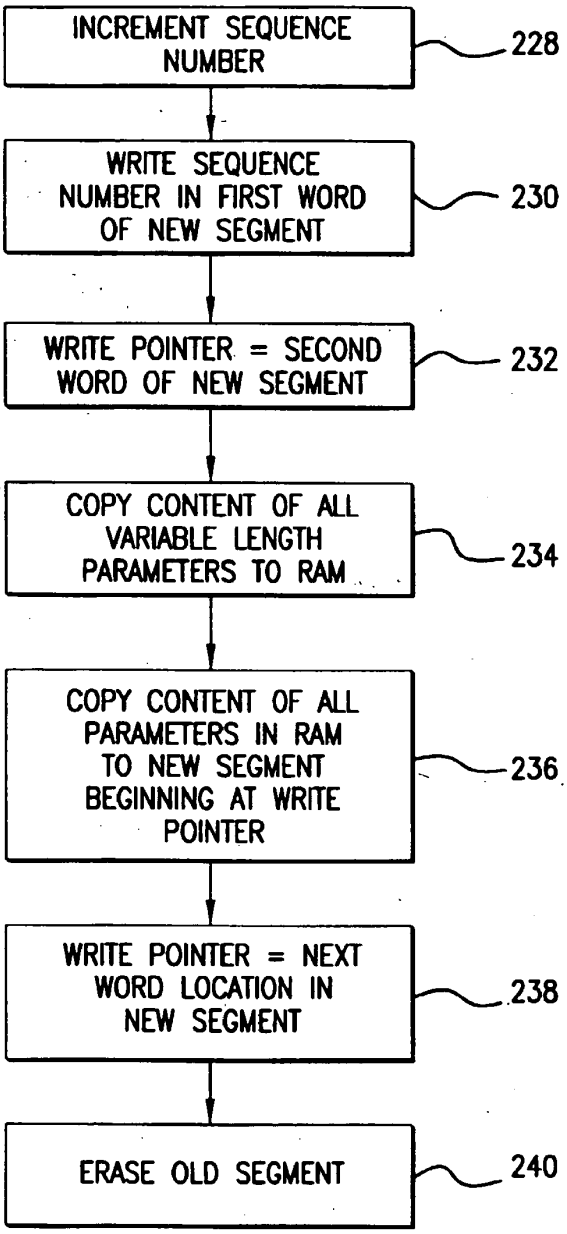

INCREMENT SEQUENCE NUMBER
228
WRITE SEQUENCE NUMBER IN FIRST WORD OF NEW SEGMENT
230
WRITE POINTER = SECOND WORD OF NEW SEGMENT
232
COPY CONTENT OF ALL VARIABLE LENGTH PARAMETERS TO RAM
234
COPY CONTENT OF ALL PARAMETERS IN RAM TO NEW SEGMENT BEGINNING AT WRITE POINTER
236
WRITE POINTER = NEXT WORD LOCATION IN NEW SEGMENT
238
ERASE OLD SEGMENT
240

FIG.2D

(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 067 458 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
10.01.2001 Bulletin 2001/02

(51) Int. Cl.[7]: **G06F 11/36**

(21) Application number: **00102043.7**

(22) Date of filing: **02.02.2000**

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **09.07.1999 EP 99401746**

(71) Applicant:
CANAL+ Société Anonyme
75711 Paris Cedex 15 (FR)

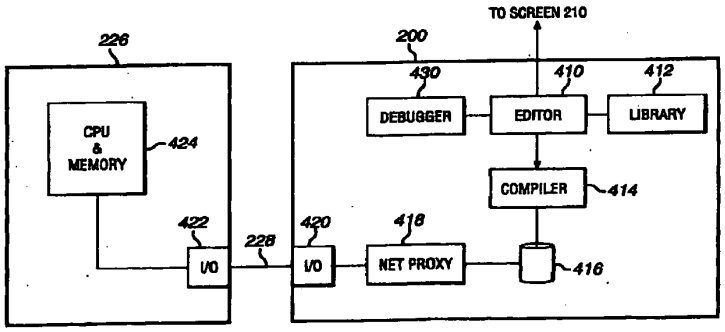
(72) Inventors:
- **Beuque, Jean-Bernard Gerard Maurice**
  92270 Bois-Colombes (FR)
- **Liao, Hongtao**
  78180 Montigny le Bretonneux (FR)
- **Boudokhane, Mahmoud,**
  Canal+ Technologies S.A.
  75516 Paris Cedex 15 (FR)
- **Vincent, Didier,**
  Canal+ Technologies S.A.
  75516 Paris Cedex 15 (FR)

(74) Representative:
Cozens, Paul Dennis et al
Mathys & Squire
100 Grays Inn Road
London WC1X 8AL (GB)

(54) Running and testing applications

(57) A receiver/decoder for testing an application, for example, for an analogue or a digital television system, is disclosed, the receiver/decoder comprising means for exchanging messages with a network, and means for running the application in dependence on a message received from the network. The receiver/decoder may be used for debugging the application. An associated workstation, and an application development tool for editing and testing applications, are also disclosed. Also disclosed is a method of transferring an application from a workstation to a receiver/decoder, and methods of running an application on a receiver/decoder.

FIG. 6



EP 1 067 458 A1

Printed by Xerox (UK) Business Services
2.16.7 (HRS)/3.6

Description

[0001] The invention relates to a receiver/decoder (for example, for an analogue or a digital television system), a workstation and an authoring tool, and to a method of transferring an application to a receiver/decoder and to methods of running an application on a receiver/decoder.

[0002] The invention has particular application in the context of developing, testing and debugging applications for receiver/decoders, although it may also be used, for example, for demonstrating such applications.

[0003] In the case of digital television systems, these transmit television channels to the viewer in digital, rather than analogue, form. The digital channels are encoded into a digital data stream at the transmitter end, and are decoded at the receiver end using a digital decoder, which may be either in a digital set-top box (DSTB) or in an integrated digital television. To allow interactivity, an uplink may be provided, either via the same medium that delivers the television channels, or else via a different medium such as a telephone link. As used herein, the term "digital television system" includes for example any satellite, terrestrial, cable and other system.

[0004] Digital decoders typically contain a processor on which programs known as applications may be run. Examples of such applications include program guides, tele-shopping, quizzes, home-banking and tele-voting. Such applications typically display a menu on the television screen from which the user may select a particular option. The data used in the application may be transmitted to the decoder in the same data stream as the television channels. The result of the selection can be directly interpreted by the application running on the decoder or it can be transmitted via the uplink to allow the appropriate action to be taken.

[0005] Applications may be permanently resident in the DSTB or integrated digital television, or they may be downloaded via the digital medium as and when required. To run applications, the decoder has a run time environment such as a virtual machine (VM) to run, for example, Java applications.

[0006] With the rapidly increasing number of services that are being provided to the user, there is a demand for application development tools, which can allow applications to be designed, created, debugged and tested. An example of such an application tool is *Media*highwayApplication Workshop, supplied by *CANAL+*.

[0007] Known application development tools typically allow applications to be developed on a workstation, such as a PC or UNIX workstation. When the application is ready for testing, it is downloaded to a digital decoder such as a DSTB.

[0008] As disclosed in International Patent Application Number WO 98/43165 in the name of the present applicant, the subject matter of which is incorporated herein by reference, a workstation coupled to a receiver/decoder type unit may be provided for debugging applications. In order to debug the application, it is downloaded in its entirety to the receiver/decoder using a link. A debugger on the workstation is then used to monitor and/or to control operation of the application, using two further links for passing control signals to and from the receiver/decoder.

[0009] According to one aspect of the present invention there is provided a receiver/decoder operable in a debugging mode for debugging an application, comprising means for communicating a debugging message over a network.

[0010] Hitherto, such an arrangement had not been considered, principally due to the extra complexity involved in providing the receiver/decoder with networking capabilities, in comparison to a simple one-to-one link. However, it has now been appreciated pursuant to the present invention that, in the context of testing and/or debugging applications, various advantages may result from providing a receiver/decoder with network capabilities.

[0011] By providing the receiver/decoder with means for communication debugging messages over a network, the receiver/decoder can become part of an application developer's environment, so that, for example, files, control signals or information signals can be exchanged between the receiver/decoder and a workstation while testing an application. This can allow more flexibility in the testing of applications than was previously the case.

[0012] Furthermore, resources may be shared between the receiver/decoder, the workstation, and other devices connected to the network. For example, the receiver/decoder may have direct access to an external storage device, such as a hard disk in the workstation, via the network.

[0013] Due to the provision of networking capabilities, the receiver/decoder may be physically remote from the workstation while the application is being debugged. The network may provide for amplification of signals, so that the receiver/decoder may be separated by greater distances than would otherwise be possible.

[0014] The term "debugging" as used herein preferably implies that the application is controlled and/or monitored to enable errors, or "bugs", in the application to be identified. Debugging messages preferably include control and/or monitoring messages for debugging the application, which messages may be received or transmitted by the receiver/decoder. For example, the receiver/decoder may receive a command instructing it to send certain information about the status of the application or the receiver/decoder, and both the command and the information are termed debugging messages. In this way, debugging functions such as monitoring variables, starting and stopping execution, trace function, monitoring status of the receiver/decoder, and other debugging functions may be implemented.

[0015] The term "network" preferably implies that devices are assigned address. This preferably provides the ability to have more than two devices in a logical network, the devices being distinguished by means of addresses. This is dis-

tinct from, for example, a simple serial link between two devices. Preferably the network has a protocol which enables the receiver/decoder to access files on a remote storage device, such as the hard disk of a workstation. Preferably the network transmits signals in the form of packets of data having a destination address. Preferably, the receiver/decoder includes means for storing the address (or identifier) of the receiver/decoder.

[0016] Where the application comprises a plurality of files, the receiver/decoder may comprise means for selectively reading at least one of the files from an external storage means, although a receiver/decoder without such means may also be provided.

[0017] The means for communicating a debugging message may be adapted to receive the debugging message from the network, preferably to control the execution of the application in dependence on the message. An operator at a remote location (such as a workstation) can thereby control execution of the application.

[0018] Preferably, the debugging mode is invoked by the debugging message, which message includes an identifier of a remote host, and the means for communicating a debugging message is adapted to communicate a further debugging message with the remote host identified in the message.

[0019] The means for communicating the debugging message may also or alternatively be adapted to transmit a debugging message to the network, the message preferably containing information concerning execution of the application. An operator at a remote location can thereby monitor execution of the application.

[0020] The receiver/decoder preferably includes means for running the application, which means may be runtime means such as a processor, a virtual machine, a runtime engine, or another suitable runtime means or environment.

[0021] In another aspect of the invention there is provided a receiver/decoder comprising a processor programed to operate in a debugging mode for debugging an application, and an interface (such as an input/output port) for communicating a debugging message over a network. It will be appreciated that the receiver/decoder may include intermediate means, such as a virtual machine, between the processor and the application.

[0022] In another aspect of the invention there is provided a workstation adapted to debug an application running on a receiver/decoder, comprising means for communicating a debugging message with the receiver/decoder over a network, preferably to control and/or to monitor execution of the application on the receiver/decoder.

[0023] The invention also provides an application development tool comprising a receiver/decoder in any of the forms described above and a workstation in any of the forms described above. The application development tool may include a net proxy operative to implement communication between the receiver/decoder and the workstation.

[0024] The invention also provides an application development environment comprising an application development tool as described above and a network over which the workstation and the receiver/decoder exchange messages.

[0025] In a method aspect of the present invention there is provided a method of debugging an application on a receiver/decoder comprising operating the receiver/decoder in a debugging mode and communicating a debugging message over a network.

[0026] The receiver/decoder may receive a debugging message from the network, preferably to control the execution of the application in dependence on the message. The method may further comprise invoking the debugging mode by the debugging message, which message includes an identifier of a remote host, and communicating a further debugging message with the remote host identified in the message.

[0027] The method may also or alternatively comprising transmitting a debugging message to the network, the message preferably containing information concerning execution of the application.

[0028] A problem in the prior art which has been identified pursuant to the present invention, is that, if any changes are required to be made to the application as a result of testing on the receiver/decoder, the appropriate changes must be made in the application development tool, the application re-compiled as resident, and then the entire resident application and the virtual machine downloaded to the decoder, which process may be time consuming and cumbersome.

[0029] According to another aspect of the present invention, which may be provided either independently or in dependence on the receiver/decoder in any of the forms described above, there is provided a receiver/decoder comprising means for running an application, the application comprising a plurality of files, and means for selectively reading at least one of the files from the network.

[0030] The invention also provides a receiver/decoder comprising means for running an application, the application comprising a plurality of files, and means for selectively reading at least one of the files from an external storage means. Preferably the external storage means is connected to the network and the receiver/decoder comprises means for selectively reading the at least one of the files from the network.

[0031] By providing a receiver/decoder which can selectively read a file from the network, parts of the application may be read by the receiver/decoder, for example following a modification of some of the parts.

[0032] In any aspect, the means for running an application may be runtime means such as a processor, a virtual machine, a runtime engine, or another suitable runtime means or environment, and the means for reading at least one of the files from the network or external storage means may be an input/output port and associated drivers. The external storage means may be the hard disk of a computer or a network file store, or any other storage medium.

[0033] The term "receiver/decoder" used herein may connote a receiver for receiving either encoded or non-

encoded signals, for example, television and/or radio signals, which may be broadcast or transmitted by some other means. The term may also connote a decoder for decoding received signals. Embodiments of such receiver/decoders may include a decoder integral with the receiver for decoding the received signals, for example, in a "set-top box", such a decoder functioning in combination with a physically separate receiver, or such a decoder including additional functions, such as a web browser, a video recorder, or a television. As used herein, the term "receiver/decoder" also includes a receiver/decoder-type unit which may be used for testing and/or debugging applications.

[0034] Preferably the receiver/decoder is adapted to receiver a message which includes an identifier of the location where the files are stored. Preferably the receiver/decoder is adapted to read an individual file from the network or external storage means, so that no more data than necessary is transferred.

[0035] The application may contain some files which are not always required to run the application, and thus rather than downloading the whole of the application at one time, the receiver/decoder is preferably adapted to read said at least one file as it is required to run the application.

[0036] The receiver/decoder may be adapted to read updated files, so that if files are modified, the receiver/decoder will be updated with the modified files.

[0037] The external storage means may be part of a workstation, for example, a workstation which is used to edit applications. The external storage means may also be a file store mounted on a network. In order to compensate for the fact that the receiver/decoder may not have a network stack, the receiver/decoder may be adapted to use as its network stack a simulated network stack on the workstation. Alternatively, the receiver/decoder may be provided with a network stack.

[0038] In order to initiate the application, the receiver/decoder is preferably adapted to load a boot file from the external storage means.

[0039] According to another aspect of the present invention, which may be provided either independently or in dependence on the workstation in any of the forms described above, there is provided a workstation comprising storage means (such as a hard disk or other storage medium) storing an application to be run on a receiver/decoder, the application comprising a plurality of files, and means (such as an input/output port and associated drivers) for allowing access to at least one of the files by a receiver/decoder connected to the workstation by a network.

[0040] According to another aspect of the present invention there is provided a workstation comprising storage means (such as a hard disk or other storage medium) for storing an application, the application comprising a plurality of files, and means (such as an input/output port and associated drivers) for allowing access to at least one of the files by a receiver/decoder.

[0041] The means for allowing access to said at least one file may be adapted to allow an individual file to be read. The workstation may further comprise means for editing the application.

[0042] According to another aspect of the invention, which may be provided either independently or in dependence on the application development tool in any of the forms described above, there is provided an application development tool comprising a workstation for editing an application and a receiver/decoder for running the application, wherein the receiver/decoder has means for selectively reading at least a part of the application from a network file store and the workstation has means for initiating communication of the or each part to the receiver/decoder.

[0043] According to another aspect of the present invention there is provided an application development tool comprising a workstation for editing an application and a receiver/decoder for running the application, wherein the receiver/decoder has means for selectively reading at least a part of the application from the workstation and the workstation has means for communicating the or each part to the receiver/decoder. The workstation may further comprise storage-means, such as a hard disk or other storage medium, for storing the application.

[0044] In the above aspects, the application may comprise a plurality of files. The receiver/decoder may be adapted to read an individual file from the storage means. The receiver/decoder may be adapted to read a file as it is required to run the application. The editing tool may be adapted to update a file and the receiver/decoder may be adapted to read said file once updated.

[0045] In order to ensure that updated files are used by the receiver/decoder, the receiver/decoder may be adapted to read the most recent version of a file. Additionally or alternatively, the workstation may be adapted to instruct the receiver/decoder to discard a file, for example an old version of a file that has been updated, so that when the receiver/decoder next needs that file, the updated file will be read from the workstation.

[0046] The application development tool may further include a net proxy operative to implement communication between the receiver/decoder and a network. Moreover, the workstation is typically also connected to the network.

[0047] In preferred embodiments of an application development tool, the workstation further comprises a debugger operable to control and/or monitor execution of the application on the receiver/decoder. The debugger and the application may exchange control signals over a network. In particular, the files and the control signals may be carried on the same network.

[0048] According to a method aspect of the present invention there is provided a method of transferring an application from a workstation to a receiver/decoder, the application comprising a plurality of files, comprising transferring (typ-

ically over a network) an individual file from the workstation to the receiver/decoder. The file may be transferred only when it is required to run the application. The method may further comprise updating a file and transferring the updated file to the receiver/decoder.

[0049] According to another method aspect there is provided a method of running an application on a receiver/decoder, the application comprising a plurality of files, comprising transferring files to the receiver/decoder as they are required to run the application.

[0050] According to another method aspect there is provided a method of running an application on a receiver/decoder, the application comprising a boot file, comprising:

transferring (optionally over a network) a boot file to the receiver/decoder; and
executing the boot file in the receiver/decoder.

[0051] In some circumstances the boot file may contain the whole application, and thus only the boot file need be transferred. However, the application may contain the boot file and at least one further file. Thus, according to a further method aspect there is provided a method of running an application on a receiver/decoder, the application comprising a boot file and at least one further file, comprising:

transferring (optionally over a network) a boot file to the receiver/decoder;
executing the boot file in the receiver/decoder; and
transferring (optionally over a network) the at least one further file when it is required.

[0052] In either of the last two aspects of the invention, at least one of the boot file and the at least one other file may be transferred from a network file store.

[0053] From a further aspect, the invention provides a receiver/decoder comprising runtime means (e.g. a runtime environment, a processor, or a virtual machine, amongst other possibilities) in which the runtime means is operative to receive signals from a remote workstation over a network, which signals control execution of an application by the receiver/decoder.

[0054] Moreover, the invention further provides a receiver/decoder, optionally according to the last-preceding paragraph, comprising runtime means (e.g. a runtime environment, a processor, or a virtual machine, amongst other possibilities) in which the runtime means is operative to send signals to a remote workstation over a network, which signals contain information relating to execution of an application by the receiver/decoder.

[0055] A receiver/decoder according to either of the two last-preceding paragraphs may be operable in a debugging mode, in which signals sent to and/or received from a remote workstation control and/or monitor execution of an application by the runtime means.

[0056] Another aspect of the invention provides a method of operating a receiver/decoder in which a control signals for controlling and/or monitoring operation of the receiver/decoder are sent between the receiver/decoder and a remote workstation over a network.

[0057] The invention also provides a computer readable medium having stored thereon a program for carrying out any of the methods described above, and a computer program product comprising a program for carrying out any of the methods described above.

[0058] The invention also provides apparatus substantially as described with reference to and as illustrated in the accompanying drawings, and a method substantially as described with reference to Figure 7 of the accompanying drawings.

[0059] Features of one aspect may be applied to other aspects; apparatus features may be applied to the method aspects and *vice versa*.

[0060] Preferred features of the present invention will now be described, purely by way of example, with reference to the accompanying drawings, in which:-

Figure 1 shows the architecture of a typical digital television system;
Figure 2 shows the architecture of an interactive system of the digital television system of Figure 1;
Figure 3 is a schematic diagram of the structure of a receiver/decoder of the system of Figure 1;
Figure 4 is a functional block diagram of the layered architecture of the receiver/decoder;
Figure 5 shows an overview of an authoring tool;
Figure 6 shows the main components of the authoring tool of Figure 5;
Figure 7 shows the operation of the authoring tool of Figure 5; and
Figure 8 shows the architecture of input/output layers of the authoring tool of Figure 5;
Figure 9 is a diagram illustrating a network data frame; and
Figure 10 is a functional diagram of another embodiment of the invention.

Overview of a digital television system

[0061] An overview of a digital television system 1 is shown in Figure 1. The invention includes a mostly conventional digital television system 2 that uses the known MPEG-2 compression system to transmit compressed digital signals. In more detail, MPEG-2 compressor 3 in a broadcast centre receives a digital signal stream (typically a stream of video signals). The compressor 3 is connected to a multiplexer and scrambler 4 by linkage 5.

[0062] The multiplexer 4 receives a plurality of further input signals, assembles the transport stream and transmits compressed digital signals to a transmitter 6 of the broadcast centre via linkage 7, which can of course take a wide variety of forms including telecommunications links. The transmitter 6 transmits electromagnetic signals via uplink 8 towards a satellite transponder 9, where they are electronically processed and broadcast via notional downlink 10 to earth receiver 12, conventionally in the form of a dish owned or rented by the end user. Other transport channels for transmission of the data are of course possible, such as terrestrial broadcast, cable transmission, combined satellite/cable links, telephone networks etc.

[0063] The signals received by receiver 12 are transmitted to an integrated receiver/decoder 13 owned or rented by the end user and connected to the end user's television set 14. The receiver/decoder 13 decodes the compressed MPEG-2 signal into a television signal for the television set 14. Although a separate receiver/decoder is shown in Figure 1, the receiver/decoder may also be part of an integrated digital television. As used herein, the term "receiver/decoder" includes a separate receiver/decoder, such as a set-top box, and a television having a receiver/decoder integrated therewith.

[0064] In a multichannel system, the multiplexer 4 handles audio and video information received from a number of parallel sources and interacts with the transmitter 6 to broadcast the information along a corresponding number of channels. In addition to audiovisual information, messages or applications or any other sort of digital data may be introduced in some or all of these channels interlaced with the transmitted digital audio and video information.

[0065] A conditional access system 15 is connected to the multiplexer 4 and the receiver/decoder 13, and is located partly in the broadcast centre and partly in the decoder. It enables the end user to access digital television broadcasts from one or more broadcast suppliers. A smartcard, capable of deciphering messages relating to commercial offers (that is, one or several television programmes sold by the broadcast supplier), can be inserted into the receiver/decoder 13. Using the decoder 13 and smartcard, the end user may purchase commercial offers in either a subscription mode or a pay-per-view mode. As used herein, the term "smartcard" includes, but not exclusively so, any chip-based card device, or object of similar function and performance, possessing, for example, microprocessor and/or memory storage. Included in this term are devices having alternative physical forms to a card, for example key-shaped devices such as are often used in TV decoder systems.

[0066] As mentioned above, programmes transmitted by the system are scrambled at the multiplexer 4, the conditions and encryption keys applied to a given transmission being determined by the access control system 15. Transmission of scrambled data in this way is well known in the field of pay TV systems. Typically, scrambled data is transmitted together with a control word for descrambling of the data, the control word itself being encrypted by a so-called exploitation key and transmitted in encrypted form.

[0067] The scrambled data and encrypted control word are then received by the decoder 13 having access to an equivalent to the exploitation key stored on a smart card inserted in the decoder to decrypt the encrypted control word and thereafter descramble the transmitted data. A paid-up subscriber will receive, for example, in a broadcast monthly ECM (Entitlement Control Message) the exploitation key necessary to decrypt the encrypted control word so as to permit viewing of the transmission.

[0068] An interactive system 16, also connected to the multiplexer 4 and the receiver/decoder 13 and again located partly in the broadcast centre-and partly in the decoder, enables the end user to interact with various applications via a modemmed back channel 17. The modemmed back channel may also be used for communications used in the conditional access system 15. An interactive system may be used, for example, to enable the viewer to communicate immediately with the transmission centre to demand authorisation to watch a particular event, to download an application etc.

[0069] Figure 2 shows the general architecture of the interactive television system 16 of the digital television system 1 of the present invention.

[0070] For example, the interacting system 16 allows an end user to buy items from on-screen catalogues, consult local news and weather maps on demand and play games through their television set.

[0071] The interactive system 4000 comprises in overview four main elements:-

- an authoring tool 4004 at the broadcast centre or elsewhere for enabling a broadcast supplier to create, develop, debug and test applications;
- an application and data server 4006, at the broadcast centre, connected to the authoring tool 4004 for enabling a broadcast supplier to prepare, authenticate and format applications and data for delivery to the multiplexer and scrambler 4 for insertion into the MPEG-2 transport stream (typically the private section thereof) to be broadcast to

the end user;

- a virtual machine including a run time engine (RTE) 4008, which is an executable code installed in the receiver/decoder 13 owned or rented by the end user for enabling an end user to receive, authenticate, decompress, and load applications into the working memory of the decoder 13 for execution. The engine 4008 also runs resident, general-purpose applications. The engine 4008 is independent of the hardware and operating system; and
- a modemmed back channel 17 between the receiver/decoder 13 and the application and data server 4006 to enable signals instructing the server 4006 to insert data and applications into the MPEG-2 transport stream at the request of the end user.

[0072] The interactive television system operates using "applications" which control the functions of the receiver/decoder and various devices contained therein. Applications are represented in the engine 4008 as "resource files". A "module" is a set of resource files and data. A "memory volume" of the receiver/decoder is a storage space for modules. Modules may be downloaded into the receiver/decoder 13 from the MPEG-2 transport stream.

Receiver/decoder

[0073] Referring to Figure 3, the elements of the receiver/decoder 13 or set-top box will now be described. The elements shown in this figure will be described in terms of functional blocks.

[0074] The receiver/decoder 13 comprises a central processor 20 including associated memory elements and adapted to receive input data from a serial interface 21, a parallel interface 22, a modem 23 (connected to the modem back channel 17 of Fig. 1), and switch contacts 24 on the front panel of the decoder.

[0075] The receiver/decoder is additionally adapted to receive inputs from an infra-red remote control 25 via a control unit 26 and also possesses two smartcard readers 27, 28 adapted to read bank or subscription smartcards 29, 30 respectively. The subscription smartcard reader 28 engages with an inserted subscription card 30 and with a conditional access unit 29 to supply the necessary control word to a demultiplexer/descrambler 30 to enable the encrypted broadcast signal to be descrambled. The decoder also includes a conventional tuner 31 and demodulator 32 to receive and demodulate the satellite transmission before being filtered and demultiplexed by the unit 30.

[0076] Processing of data within the receiver/decoder is generally handled by the central processor 20. Figure 4 illustrates the software architecture of the central processor 20 of the receiver/decoder. With reference to Figure 4, the software architecture comprises a Run-Time-Engine 4008, a Device Manager 4068 and a plurality of Devices 4062 and Device Drivers 4066 for running one or more applications 4056.

[0077] As used in this description, an application is preferably a piece of computer code for controlling high level functions of preferably the receiver/decoder 13. For example, when the end user positions the focus of remote control 25 on a button object seen on the screen of the television set 14 and presses a validation key, the instruction sequence associated with the button is run.

[0078] An interactive application proposes menus and executes commands at the request of the end user and provides data related to the purpose of the application. Applications may be either resident applications, that is, stored in the ROM (or FLASH or other non-volatile memory) of the receiver/decoder 13, or broadcast and downloaded into the RAM or FLASH memory of the receiver/decoder 13.

[0079] Applications are stored in memory locations in the receiver/decoder 13 and represented as resource files. The resource files may for example comprise graphic object description unit files, variables block unit files, instruction sequence files, application files and data files, as described in more detail in the above-mentioned patent specifications.

[0080] The receiver/decoder contains memory divided into a RAM volume, a FLASH volume and a ROM volume, but this physical organization is distinct from the logical organization. The memory may further be divided into memory volumes associated with the various interfaces. From one point of view, the memory can be regarded as part of the hardware; from another point of view, the memory can be regarded as supporting or containing the whole of the system shown apart from the hardware.

[0081] The central processor 20 can be regarded as centred on a run time engine 4008 forming part of a virtual machine 4007. This is coupled to applications on one side (the "high level" side), and, on the other side (the "low level" side), via various intermediate logical units discussed below, to the receiver/decoder hardware 4061, comprising the various ports as discussed above (that is, for example, the serial interface 21, the parallel interface 22, modem 23, and control unit 26).

[0082] With specific reference to Figure 4, various applications 4057 are coupled to the virtual machine 4007; some of the more commonly used applications may be more or less permanently resident in the system, as indicated at 4057, while others will be downloaded into the system, eg from the MPEG data stream or from other ports as required.

[0083] The virtual machine 4007 includes, in addition to the run time engine 4008, some resident library functions 4006 which include a toolbox 4058. The library contains miscellaneous functions in C language used by the engine

4008. These include data manipulation such as compression, expansion or comparison of data structures, line drawing, etc. The library 4006 also includes information about firmware in the receiver/decoder 13, such as hardware and software version numbers and available RAM space, and a function used when downloading a new device 4062. Functions can be downloaded into the library, being stored in FLASH or RAM memory.

[0084] The run time engine 4008 is coupled to a device manager 4068 which is coupled to a set of devices 4062 which are coupled to device drivers 4060 which are in turn coupled to the ports or interfaces. In broad terms, a device driver can be regarded as defining a logical interface, so that two different device drivers may be coupled to a common physical port. A device will normally be coupled to more than one device driver; if a device is coupled to a single device driver, the device will normally be designed to incorporate the full functionality required for communication, so that the need for a separate device driver is obviated. Certain devices may communicate among themselves.

[0085] Each function of the receiver/decoder 13 is represented as a device 4062 in the software architecture of the receiver/decoder 13. Devices can be either local or remote. Local devices 4064 include smartcards, SCART connector signals, modems, serial and parallel interfaces, a MPEG video and audio player and an MPEG section and table extractor. Remote devices 4066, executed in a remote location, differ from local devices in that a port and procedure must be defined by the system authority or designer, rather than by a device and device driver provided and designed by the receiver/decoder manufacturer.

[0086] The run time engine 4008 runs under the control of a microprocessor and a common application programming interface. They are installed in every receiver/decoder 13 so that all receiver/decoders 13 are identical from the application point of view.

[0087] The engine 4008 runs applications 4056 on the receiver/decoder 13. It executes interactive applications 4056 and receives events from outside the receiver/decoder 13, displays graphics and text, calls devices for services and uses functions of the library 4006 connected to the engine 4008 for specific computation.

[0088] The run time engine 4008 is an executable code installed in each receiver/decoder 13, and includes an interpreter for interpreting and running applications. The engine 4008 is adaptable to any operating system, including a single task operating system (such as MS-DOS). The engine 4008 is based on process sequencer units (which take various events such as a key press, to carry out various actions), and contains its own scheduler to manage event queues from the different hardware interfaces. It also handles the display of graphics and text. A process sequencer unit comprises a set of action-groups. Each event causes the process sequencer unit to move from its current action-group to another action-group in dependence on the character of the event, and to execute the actions of the new action-group.

[0089] The engine 4008 comprises a code loader to load and download applications 4056 into the receiver/decoder memory. Only the necessary code is loaded into the RAM or FLASH memory, in order to ensure optimal use. The downloaded data is verified by an authentication mechanism to prevent any modification of an application 4056 or the execution of any unauthorized application. The engine 4008 further comprises a decompressor. As the application code (a form of intermediate code) is compressed for space saving and fast downloading from the MPEG stream or via a built-in receiver/decoder mode, the code must be decompressed before loading it into the RAM. The engine 4008 also comprises an interpreter to interpret the application code to update various variable values and determine status changes, and an error checker.

Authoring tool

[0090] As mentioned above, authoring tool 4004 is provided to enable applications to be designed, created, tested and debugged. The authoring tool is run on a workstation (WS), such as a personal computer (PC) running Windows NT, Windows 95 or Windows 98, or a UNIX machine, or a workstation running any other operating system. The authoring tool allows an application developer to design and create applications by editing them on the workstation screen.

[0091] According to a preferred embodiment, in order to test and debug applications, a receiver/decoder is provided which is linked to the workstation. The receiver/decoder is linked to the workstation in such a way that the various files which make up an application can be downloaded to the receiver/decoder as and when they are needed.

[0092] Referring to Figure 5, in overview the authoring tool comprises workstation 200 which is linked to receiver/decoder 226 by link 228. The workstation 200 comprises screen 210, computer 212, keyboard 214 and mouse 216. Computer 212 comprises a processor 218, memory 220, hard disk 222, input/output (I/O) ports 224, as well as other pieces of hardware and software that are conventional in such computers. Receiver/decoder 226 is connected to television 230, or other display.

[0093] The various components of the authoring tool 4004 are shown in more detail in Figure 6. The authoring tool comprises an editor 410 for creating and editing the various files that make up an application, library 412 which stores existing files for use by the editor 410, and compiler 414 for compiling files which have been produced by editor 410 into the intermediate language which can be understood by a virtual machine, such as virtual machine 4007 in Figure 4. The compiled files, which are called "class files" are saved in directory 416, which is a directory on the hard disk 222 of

the workstation 200 or in another volume on a network to which the workstation is connected. Receiver/decoder 226 comprises CPU 424 and associated memory, input/output (I/O) port 422, as well as other components found in conventional receiver/decoders, such as those shown in Figure 3. Net proxy 418 (as described later) is provided in the workstation to allow the receiver/decoder 226 to access class files stored in directory 416 via receiver/decoder I/O port 422, serial link 228, and workstation I/O port 420. Also provided is debugger 430 (as described later) for debugging applications running on receiver/decoder 226.

[0094] An application developer creates new files, and/or makes use of existing files which are stored in the library 412, to produce files for his application using the editor 410. An application comprises source files, which contain instructions written in comprehensive language, such as Java, designed for a virtual machine, and, optionally, data files, which contain data which is to be used by the application. Files which are being edited are displayed on the workstation screen 210 and changes are entered using keyboard 214 and mouse 216. The files may be displayed in various ways; for example graphic files may be displayed as graphics on the screen, whereas for resource files, the code in the files may be displayed, or a representation of the overall structure or architecture of the code may be displayed.

[0095] In a specific implementation, which uses a programming language known as Pantalk, an application may comprise one of more of the following types of resource files:

- source files - to define the entry points of the application
- panel files - to define the screens (these are graphical source files)
- class files - to define the data structures used by the application
- optionally, script files - to define the behaviour of the application

[0096] Examples of data files are as follows:

- icon library files - these contain a collection of, for example, 4 bits per pixel bitmaps. These icons can be used by the panels as buttons or as decoration.
- images - these files contain a single bitmap of any size with four bits per pixel, giving 256 colours. This type of image is typically used as a background to a panel.
- colour tables - these are used to define the colours which a module can display on the screen.
- user data files - these files are defined by the user for use by the application. They are ASCII text files or binary data files..

[0097] In alternative implementations other programming languages, such as Java, are used. As will be apparent to the skilled person, different languages may result in different application structures, appropriate to that language.

Testing applications

[0098] Once an application has been created, it is converted into the intermediate language which can be understood by a virtual machine by compiler 414, and stored as class files in directory 416. The application may then be tested by running it on the processor 424 of receiver/decoder 226. In order to test an application, the workstation 200 sends a request to the receiver/decoder 226 in the form of a message containing the name of the server which is to be used for communication and the name of the directory in which the class files are stored.

[0099] In contrast to a conventional receiver/decoder, the receiver/decoder 226 of the present embodiment is programmed such that, when it is first turned on, it runs a resident program called network file system (NFS) loader. This program waits for a request to be received from the workstation 200. When the program receives a request, it accesses the directory specified in the request, using the specified port. The directory 416 contains a file called startup.txt which contains the name of the boot file, that is, the file which initiates the application. The NFS loader reads the name of the boot file and then downloads that file from the workstation directory and stores it in memory in the receiver/decoder. The boot file is then run by the processor 424 in the receiver/decoder.

[0100] The boot file may contain calls to routines which are contained in other files, in which case the required file needs to be loaded into the processor. In this case, the processor first looks in the receiver/decoder memory to see if the file that it needs is stored locally, for example, because it has already been used. If the file is not stored locally, then the processor looks in the workstation directory, specified in the request from the workstation, to find the file. The file is then downloaded and stored in the receiver/decoder memory (for example RAM or FLASH memory) for use by the receiver/decoder. In this way, applications which have been created by the editor 410 and stored in directory 416, are run on the receiver/decoder 226. The output from receiver/decoder 226 is displayed on television set 230. This allows the application developer to see how the application looks when run on a receiver/decoder and television.

[0101] Referring to Figure 7, the various steps in creating and testing an application will be described. In step 450 an application is created using the editor 410. In step 452 the application is compiled, and in step 454 the compiled

application is saved in directory 416 as class files. In step 456 a request is sent from the workstation to the receiver/decoder, specifying the name of the directory and the port to be used for communication. In step 458 the boot file is loaded from the directory into the receiver/decoder and in step 460 the boot file is run on the processor of the receiver/decoder. In step 462, it is decided by the processor whether or not a new class file is required. If a new class file is required, then in step 464 that new class file is loaded into the receiver/decoder and in step 466 the new class file is run. Further class files are loaded into the receiver/decoder and run by the processor as required.

[0102] The editor 410 may be used to make changes to the application, for example as a result of the testing. As a result of such changes, some or all of the files stored in the directory 416 may be updated. The updated files may then be transferred to the receiver/decoder 226 in one of several ways, as-will now be described.

[0103] In one embodiment, no special provision is made for updating files in the receiver/decoder 226. When the receiver/decoder is turned on, it simply downloads the files that it requires from the directory 416. In this case, if changes have been made to files that have already been downloaded into the receiver/decoder, then the receiver/decoder must be restarted, so that the updated files will be downloaded. This may be done, for example, by switching the receiver/decoder off and then on again. The receiver/decoder then downloads all files, including any modified files, that are needed to run the application.

[0104] In another embodiment, files in the receiver/decoder are updated by sending an "unload file" command from the workstation to the receiver/decoder. When the receiver/decoder receives this command, it deletes the specified files. The next time that the file is required, it will not be present locally in the receiver/decoder, and so the updated version of the file will be downloaded from the directory 416.

[0105] In a further embodiment, the receiver/decoder checks the time and date of last modification of all files that are available to it both locally and in the workstation, and uses the latest version of all files. In this way, modified files are transferred automatically to the receiver/decoder.

Authoring tool network

[0106] Figure 8 illustrates the architecture of the various layers that are used to give the receiver/decoder 226 access to the workstation's hard disk, or the network volume, as the case may be, containing the directory 416. The receiver/decoder is provided with a client network file system (NFS) which permits the receiver/decoder to use the workstation's hard disk or a directory on a network volume as if it were a local storage device. In the present example, the receiver/decoder does not have a network stack, and so a proxy stack ("NetProxy") 418 is provided on the workstation for use by the receiver/decoder. This proxy establishes a link between the workstation's network stack and the physical port which is connected to the receiver/decoder.

[0107] Referring to Figure 8, the receiver/decoder 226 includes a physical layer 250, a data link layer 252, a net proxy layer 254, a NFS/RPC layer 256 and a file system layer 258.

[0108] The physical layer 250 provides the physical port between the receiver/decoder 226 and the workstation 200. As such, it may include (amongst other possibilities) any or all of a serial port, a parallel port or a modem.

[0109] The purpose of the data link layer 252 is to handle exchange of frames of data between the physical layer 250 and the net proxy layer 254. It serves to ensure the integrity of the frames which are exchanged, and to demultiplex frames arriving from different destinations.

[0110] The data link layer 252 may use a protocol identified as SLPD. SLPD protocol handles data in frames which include five fields, represented diagrammatically in Figure 9. The fields contained within this frame as follows:

- SYNC_WORD (500): a fixed 16-bit value that identifies the start of a SLPD frame.
- LENGTH (502): a 16-bit value being the count of bytes to follow in the SLPD frame.
- PROTOCOL_ID (504): a 16-bit value that identifies the protocol of the data contained within the SLPD frame. This field is used in multiplexing of data.
- DATA (506): A variable-length field containing LENGTH - 4 bytes of data transported by the SLPD frame.
- CRC 16 (508): A 16-bit field containing data to verify the integrity of the SLPD frame. The field contains a 16-bit cyclic redundancy checking value calculated on the fields PROTOCOL_ID and DATA.

[0111] The functionality of the data link layer 252 includes provision of the following public methods:

[0112] *MhwNFSRpcComRegisterProtocol*: This function registers callback functions associated with a protocol. Two callback functions, *aSendCallback* and *aRevCallback*, are associated with each protocol, and are respectively, called to indicate completion of the transmission of a frame of data and the other to indicate reception of a frame of data.

[0113] *MhwNFSRpcComUnregisterProtocol*: This function is used to delete callback functions associated with a protocol.

[0114] *MhwNFSRpcComPortInit, MhwNFSRpcComPortClose*: Used, respectively, to initialise and to close a communication port (such as a serial port, a parallel port, or a modem device) and to obtain a context address of the port.

In a preferred embodiment, it is permitted to call this function several times for the same device. Initialisation of the device is not effected other than on the first call. The data link layer 252 stores in a counter the number of calls made to *MhwNFSRpcComPortInit* for each device. Each time a subsequent call is made to *MhwNFSRpcComPortClose* for a device, the counter for that device is decremented. The port is not actually closed until its counter reaches zero.

[0115] *MhwNFSRpcComInit, MhwNFSRpcComClose*: These functions are called, respectively, to initialise and to correctly close down the data link layer 252.

[0116] *MhwNFSRpcComDatagramSend*: This function transmits a SLPD frame *via* a communication port. On completion of transmission, the callback function *aSendCallback* for the protocol identified in the SLPD frame is called to indicate to the client that the frame has been sent.

[0117] The net proxy layer 254 is a software layer which compensates for the absence of a network stack in the decoder. The net proxy 254 layer communicates with a net proxy layer 264 in the workstation 200 through intermediate data link layers 252,262 and physical layers 250,260 in the receiver/decoder 226 and the workstation 200. Within the workstation 200, all messages received by the net proxy layer 264 are passed to a network stack 266 for onward transmission to a remote host via a UDP socket 268; similarly all messages received by the UDP socket 268 are transferred to receiver/decoder 226. NFS/RPC layer 256 in the receiver/decoder provides the interface between the file system 258 of the receiver/decoder and the NetProxy layer, while NFS/RPC layer 270 in the workstation provides the interface between the workstation's file system and the network stack.

[0118] The net proxy layer (whether in the receiver/decoder 226 or in the workstation 200) handles data packets which contain a host name and a data packet of arbitrary length. The net proxy layer provides the following public methods:

[0119] *NFSRpcProxyInit, NFSRpcProxyClose*: These functions respectively initialise and close down the net proxy layer.

[0120] *NFSRpcProxyBindHostName, NFSRpcProxyUnbindHostName*: The first of these functions associates a host name with a physical interface. The latter deletes a previously-registered host name from the list of hosts maintained by the net proxy.

[0121] NFSRpcProxyBindResolveName: This function obtains the address of a host identified by name.

[0122] *NFSRpcProxyRpcSend*: This function is used to make an RPC call on a remote host.

[0123] The NFS/RPC layer implements the functionality necessary to invoke RPC commands in conformity with RFC1057, RFC1094 and relevant ISO standards.

[0124] A modified embodiment is shown in Figure 10. In this embodiment, the directory 416 is stored in network volume on an NFS server 600 remote from the workstation 200. A developer working on a development workstation 620 can gain access to the files in the directory 416 *via* a network 612 connection to the server 600. A net proxy 610 separate from the developer's workstation 620 is provided in order that the receiver/decoder 226 can gain access to the network.

[0125] In the arrangement of Figure 10, the receiver/decoder is configured as described above with reference to the preceding figures. The net proxy 610 can conveniently be implemented as software executing on hardware such as a PC workstation. Typically, the development workstation is a more powerful development machine, such as a Unix workstation. It will be understood that the execution environment of the receiver/decoder 226 can, through the net proxy 610, access files on a number of directories in various volumes connected to the network 612, including the developer's workstation 620, a common file server 600, and other local or remote developer's workstations (not shown).

Debugger

[0126] Referring again to Figure 6, the workstation 200 includes a debugging tool 430 in the form of software which monitors and controls execution of code in the runtime execution environment of the receiver/decoder 226. As was disclosed in International Patent Application number WO 98/43165 cited above, a debugger running on a development workstation can exchange control messages with an execution environment of a receiver/decoder 226 to control and/or to monitor execution of a program executing in the execution environment.

[0127] In the present embodiment, in order that the debugger can control operation of an application running on receiver/decoder 226, control messages are carried between the network and the receiver/decoder 226 by way of net proxy 418 or 610. On initiation of a remote debugging session, the debugger 430 is invoked with the host name of the remote host as an invocation parameter. This causes a data packet to be sent to the specified remote host, and thence via the net proxy 418 or 610 to the receiver/decoder 226. The data packet contains a command signal for the execution environment which instructs it to enter debugging mode, and further contains the name of a host to and from which debugging control signals are to be sent (normally, the host name of the developer's workstation). During debugging operation, the execution environment will then send and receive control signals through the net proxy of the receiver/decoder and through a local communication port.

[0128] During debugging operation, an application running on the receiver/decoder is monitored and controlled in

accordance with commands sent to the debugger. Class files forming the application are downloaded to the receiver/decoder as they are needed, in the same way as described above in relation to testing operations. Updated files may also be transferred to the receiver/decoder in any of the ways described in relation to testing operations.

[0129] Various debugging operations may be carried out by debugger 430. For example, the debugger 430 can monitor variables in the- application, a list of variables to be monitored being defined for this purpose. The values of the defined variables can be displayed at defined points in the execution of the application, and/or the values of variables can be displayed (along with the variable names) on any change of value. Further, the debugger 430 can be used to modify variable values in the receiver/decoder; this gives the operator the ability to see almost immediately what the effect of setting variables to different values will have. These variable control functions can, of course, also be cleared by the debugger (as all debugger functions can be cleared).

[0130] Similarly, the debugger 430 can set the receiver/decoder to signal when other types of entity, such as modules, variables block unit files, and objects, are encountered during the running of the application.

[0131] The debugger 430 can also control the execution of the application, by inserting break-points (and deleting them). More specifically, execution may be allowed to run without interruption, to run to a break-point and stop, to run to a break-point and step on (restart) when desired, to run to a subroutine call or return from a subroutine, or to proceed step by step (ie stepping on from each statement only in response to the operator), either between defined points and/or defined sub-routines or for the full application. (A sub-routine may be an instruction sequence, which is a sequence of statements which can be called or executed by the application.)

[0132] The debugger 430 can operate a trace function, which detects and signals one or more of a variety of operations such as continuing, loading, returning or jumping to, starting or ending the execution of, or interrupting one or more specified routines or types thereof.

[0133] The debugger 430 can also monitor and report the status of the receiver/decoder and the application at desired points in the execution of the application. Among the elements whose status can be so monitored and reported are the following: memory size, free memory, buffer pool characteristics, system version number, and so on; the memory contents (memory dump) of the whole memory or specified parts thereof (eg RAM, Flash, and ROM); volumes mounted, modules loaded (and current module), and variables block unit files (number, memory used, list of variables block unit files); instruction sequence status (number, number running and/or interrupted, memory used, etc); and return stack contents (ie a list of subroutines to be returned to).

[0134] Examples of debugger functions which are available in a preferred embodiment are shown in the following table.

Command	Description
next	execution of a line of code without following its functions
step	execution of a line of code following its functions
cont	continue execution until a stop point or the end of the program
until (line number)	continue execution until the specified line number
finish	continue execution until the end of the current function
break (string)	insert a break point
break (string if (condition)	insert a conditional break point
breakcount (number) (string)	insert a break point with a counter (the program will stop after break point has been passed a specified number of times)
breakcount (number) (string) if (condition)	insert a conditional break point with counter
delete (breakpoint number)	delete break point
disable (breakpoint number)	deactivate a break point
enable (breakpoint number)	activate a break point
command (breakpoint number)	associate a command with a break point
watchexception (exception)	insert a break point when an exception is raised
unwatchexception (watchexeception number)	suppress a break point associated with an exception

(continued)

Command	Description
info	display list and status of break points
print ⟨expression⟩	print the value of an expression
set ⟨expression1⟩⟨expression2⟩	set the value of expression 2 to expression 1
whatis ⟨expression⟩	indicate the type of the expression
inherit ⟨expression⟩	display list of mother classes of the expression
fields ⟨expression⟩	display list of fields of an expression
methods ⟨expression⟩	display list of methods of an expression
dump ⟨format⟩⟨address⟩⟨count⟩	display the contents of a section of memory
where	display the stack of current thread
up	select the frame calling the current frame
down	select the called frame
threads	display a list of threads and their main attributes
getthr	display a detailed list of the attributes of a thread
monitors	display list of monitors of threads
getmon	display detailed list of attributes of a monitor
dbginfo	lists modules for which a trace level is defined
dbgset	modify the trace level of a module
fs ⟨action⟩⟨parameters⟩	used to obtain information from the file system

[0135] In some circumstances, it may be desirable for more than one host to be in communication with the receiver/decoder 226. For example, the execution environment may be configured to send debugging information in real time to a network printer.

[0136] In an alternative embodiment, the receiver/decoder 226 is provided with a network stack, and the NetProxy layers described above are dispensed with.

[0137] A workstation and receiver/decoder have been described above with reference to an authoring tool; however the receiver/decoder and workstation may also be used for other purposes, such as for demonstrating applications.

[0138] The device simulator described in co-pending European Patent Application Number 99401744.0 in the name of the present applicant may be used in conjunction with the present invention. The subject matter of that patent application is incorporated herein by reference.

[0139] It will be understood that the present invention has been described above purely by way of example, and modifications of detail can be made within the scope of the invention.

[0140] Each feature disclosed in the description, and (where appropriate) the claims and drawings may be provided independently or in any appropriate combination.

[0141] Reference numerals appearing in the claims are by way of illustration only and shall have no limiting effect on the scope of the claims.

Claims

1. A receiver/decoder operable in a debugging mode for debugging an application, comprising means for communicating a debugging message over a network.

2. A receiver/decoder according to claim 1 wherein the means for communicating a debugging message is adapted to receive the debugging message from the network, preferably to control the execution of the application in dependence on the message.

3. A receiver/decoder according to claim 2 wherein the debugging mode is invoked by the debugging message, which message includes an identifier of a remote host, and the means for communicating a debugging message is

adapted to communicate a further debugging message with the remote host identified in the message.

4. A receiver/decoder according to claim 1, 2 or 3 wherein the means for communicating the debugging message is adapted to transmit a debugging message to the network, the message preferably containing information concerning execution of the application.

5. A workstation adapted to debug an application running on a receiver/decoder, comprising means for communicating a debugging message with the receiver/decoder over a network.

6. An application development tool comprising a receiver/decoder according to any of claims 1 to 4 and a workstation according to claim 5.

7. An application development tool according to claim 6 including a net proxy operative to implement communication between the receiver/decoder the workstation.

8. An application development environment comprising an application development tool according to claim 6 or 7 and a network over which the workstation and the receiver/decoder communicate.

9. A method of debugging an application on a receiver/decoder comprising operating the receiver/decoder in a debugging mode and communicating a debugging message over a network.

10. A receiver/decoder preferably according to any of claims 1 to 4 comprising means for running an application, the application comprising a plurality of files, and means for selectively reading at least one of the files from the network.

11. A workstation preferably according to claim 5 comprising storage means storing an application to be run on a receiver/decoder, the application comprising a plurality of files, and means for allowing access to at least one of the files by a receiver/decoder connected to the workstation by a network.

12. An application development tool preferably according to claim 6 or 7 comprising a workstation for editing an application and a receiver/decoder for running the application, wherein the receiver/decoder has means for selectively reading a part of the application from a network file store and the workstation has means for initiating communication of the part to the receiver/decoder.

13. A method of running an application on a receiver/decoder, the application comprising a boot file and at least one further file, comprising:

transferring a boot file to the receiver/decoder;
executing the boot file in the receiver/decoder; and
transferring the at least one further file when it is required,
at least one of the boot file or the at least one further file being transferred over a network.

14. A method according to claim 13 in which at least one of the boot file and the at least one other file is transferred from a network file store.

FIG. 1

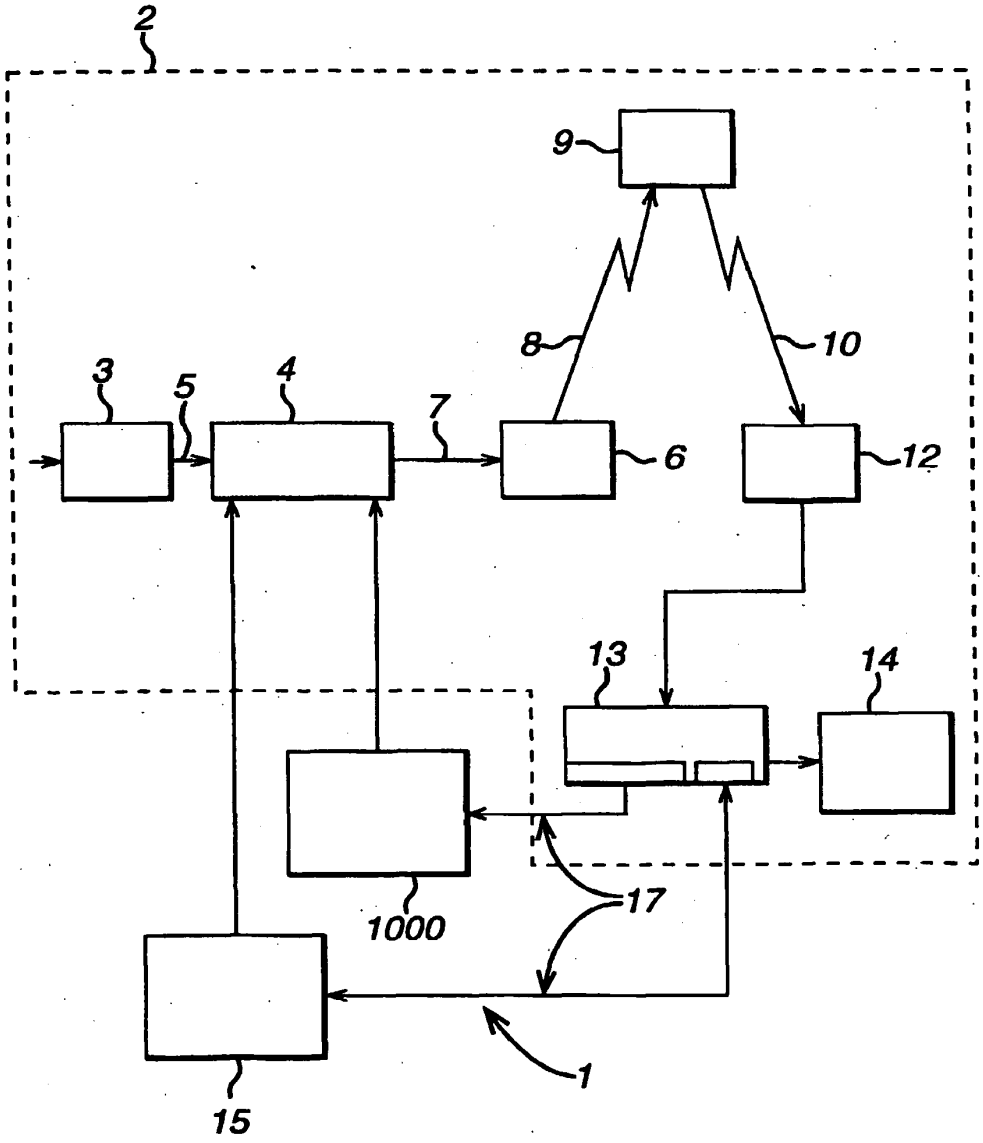


FIG. 2

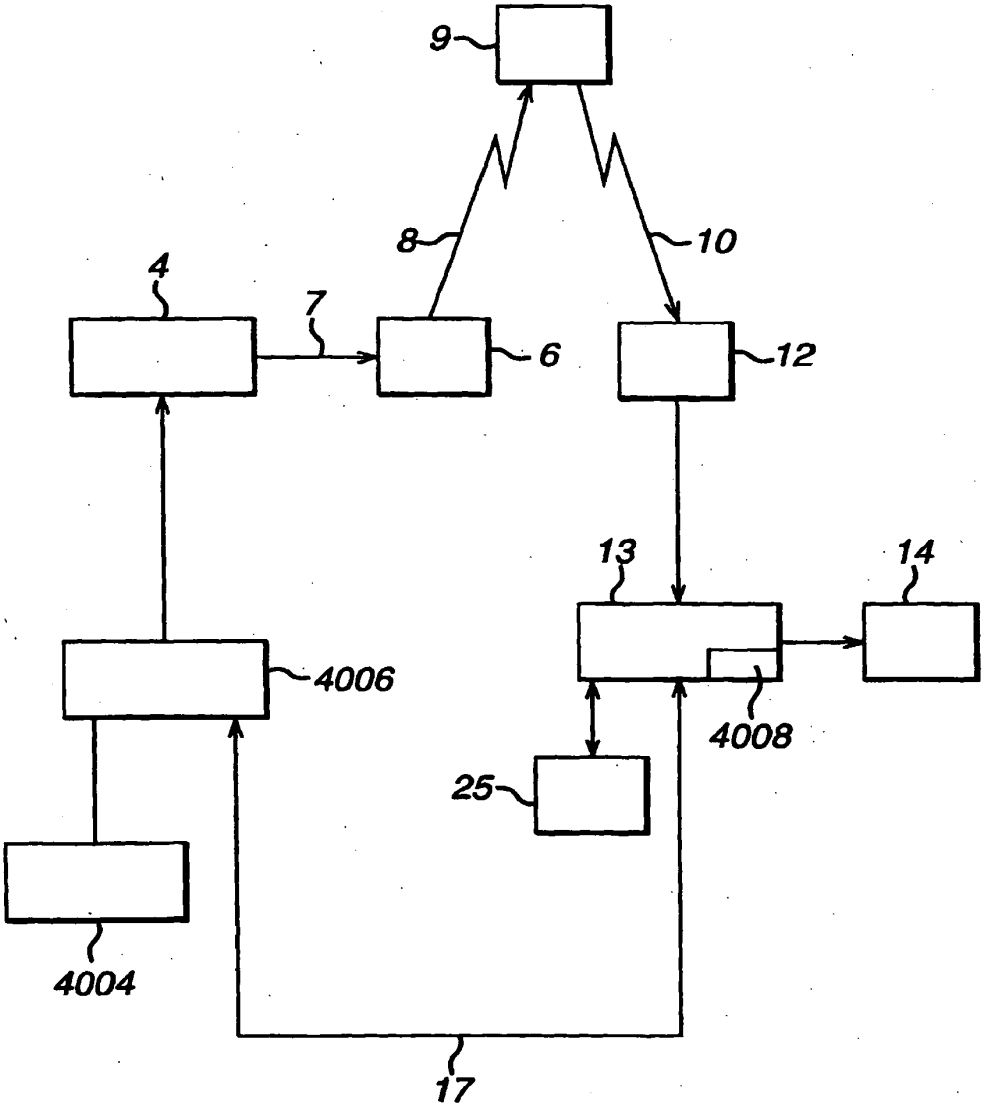


FIG. 3

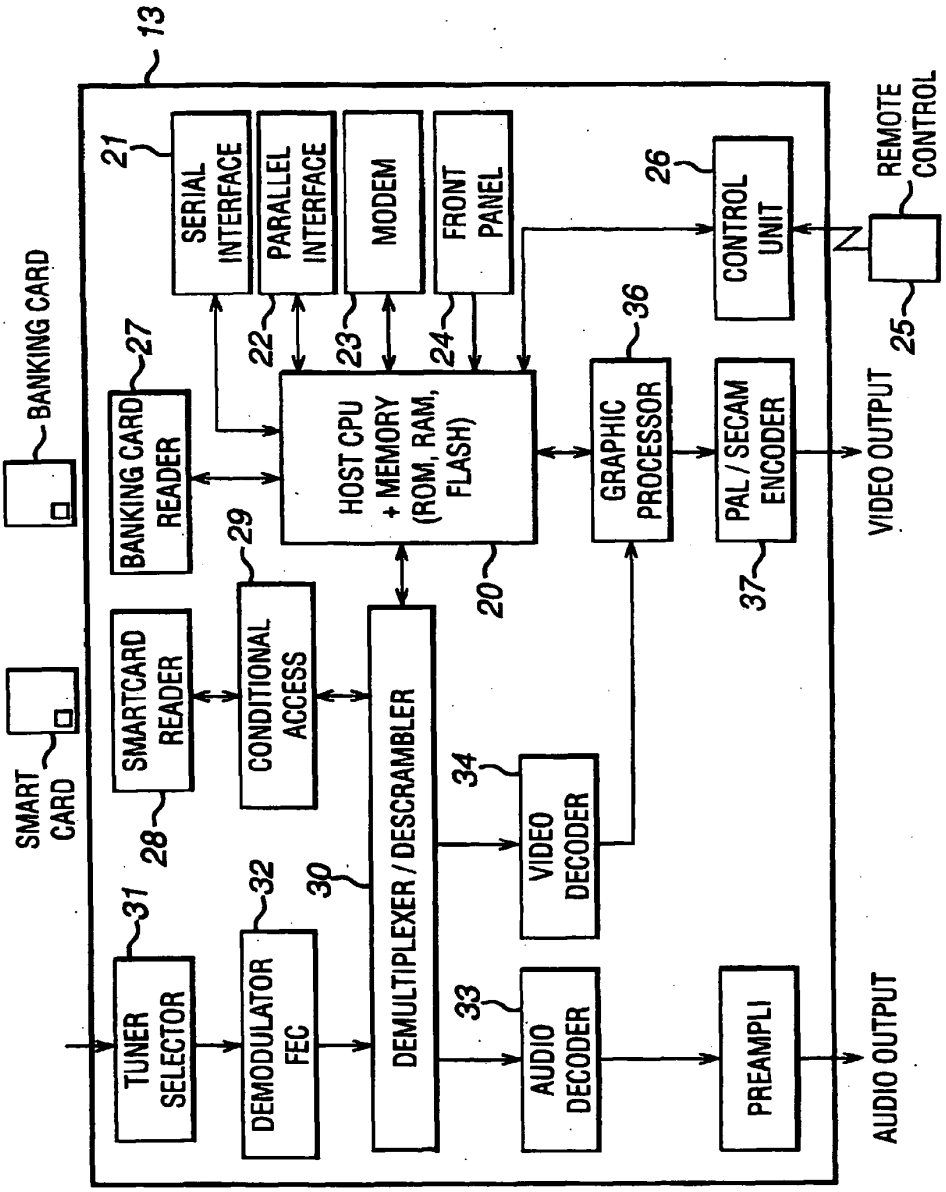

13
21
SERIAL INTERFACE
PARALLEL INTERFACE
MODEM
FRONT PANEL
22
23
24
26
CONTROL UNIT
REMOTE CONTROL
25
BANKING CARD
27
BANKING CARD READER
HOST CPU + MEMORY (ROM, RAM, FLASH)
20
36
GRAPHIC PROCESSOR
PAL / SECAM ENCODER
37
VIDEO OUTPUT
29
CONDITIONAL ACCESS
SMART CARD
28
SMARTCARD READER
34
VIDEO DECODER
30
DEMULTIPLEXER / DESCRAMBLER
31
TUNER SELECTOR
32
DEMODULATOR FEC
33
AUDIO DECODER
PREAMPLI
AUDIO OUTPUT

FIG. 4

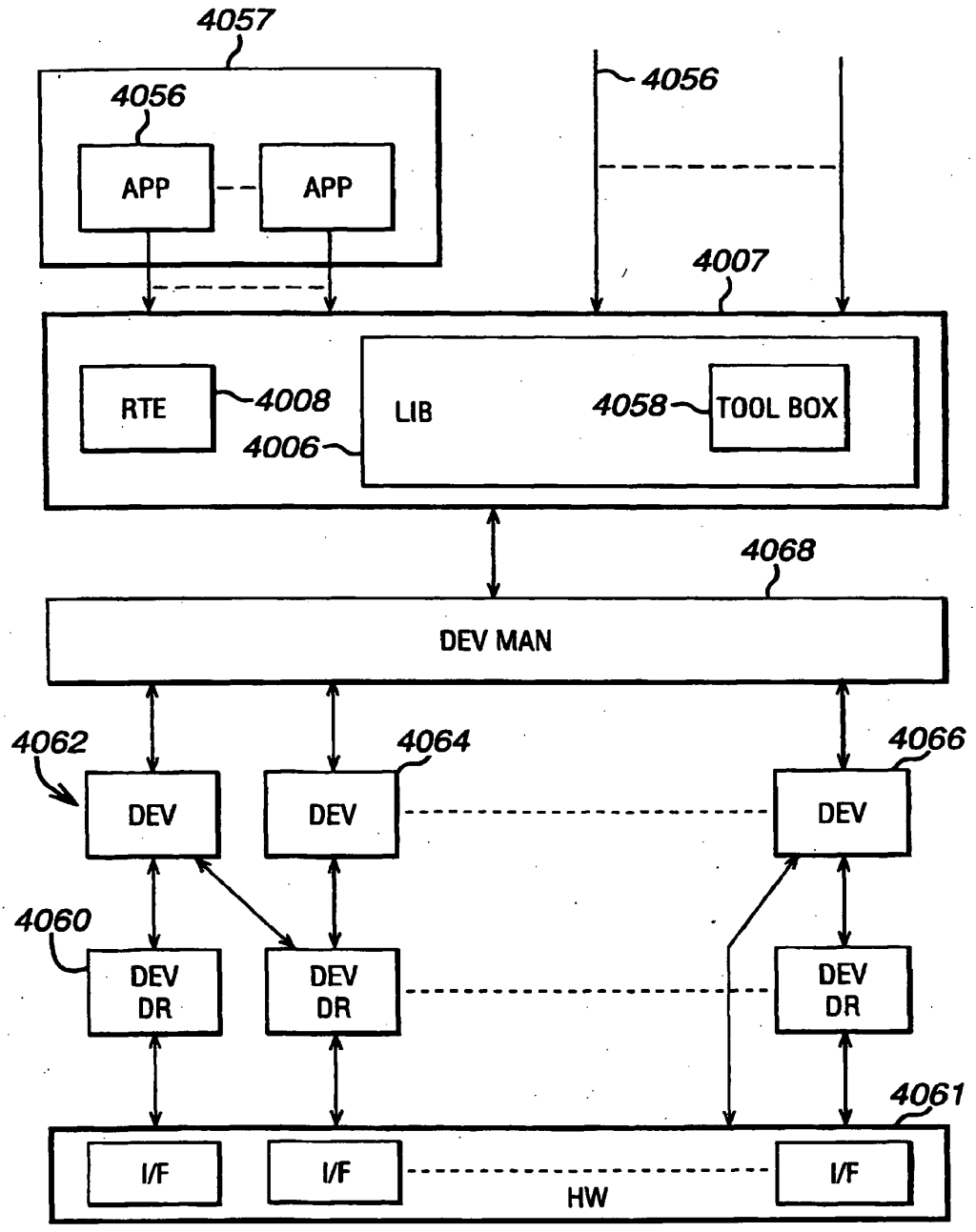

4057
4056
APP
APP
4056
4007
RTE
4008
4006
LIB
4058
TOOL BOX
4068
DEV MAN
4062
4064
4066
DEV
DEV
DEV
4060
DEV DR
DEV DR
DEV DR
4061
I/F
I/F
I/F
HW

FIG. 5

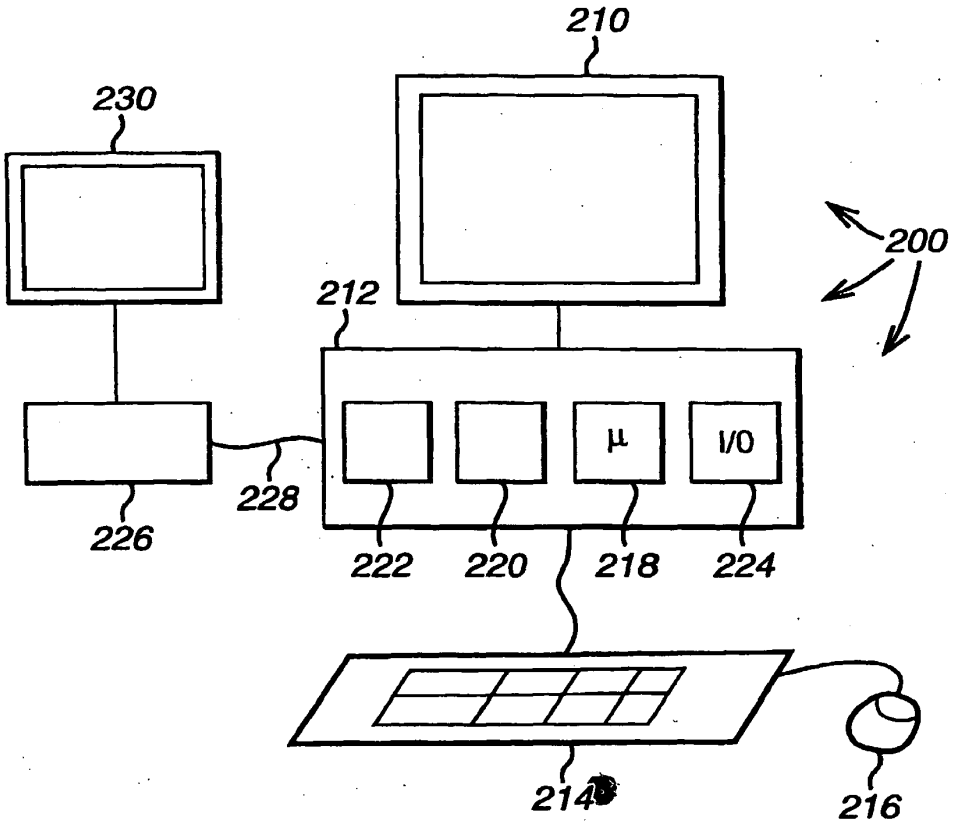


FIG. 6

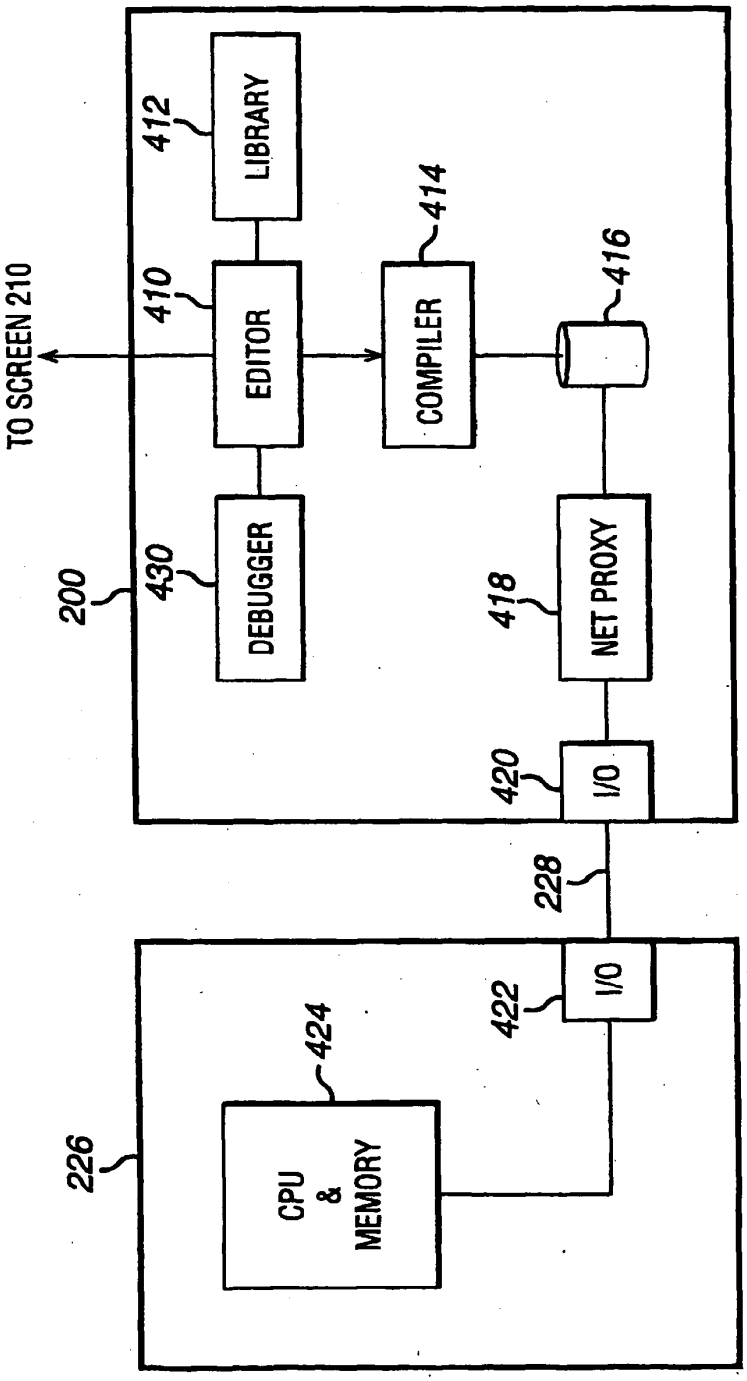

TO SCREEN 210
412
LIBRARY
410
EDITOR
414
COMPILER
416
200
430
DEBUGGER
418
NET PROXY
420
I/O
228
422
I/O
424
CPU & MEMORY
226

FIG. 7

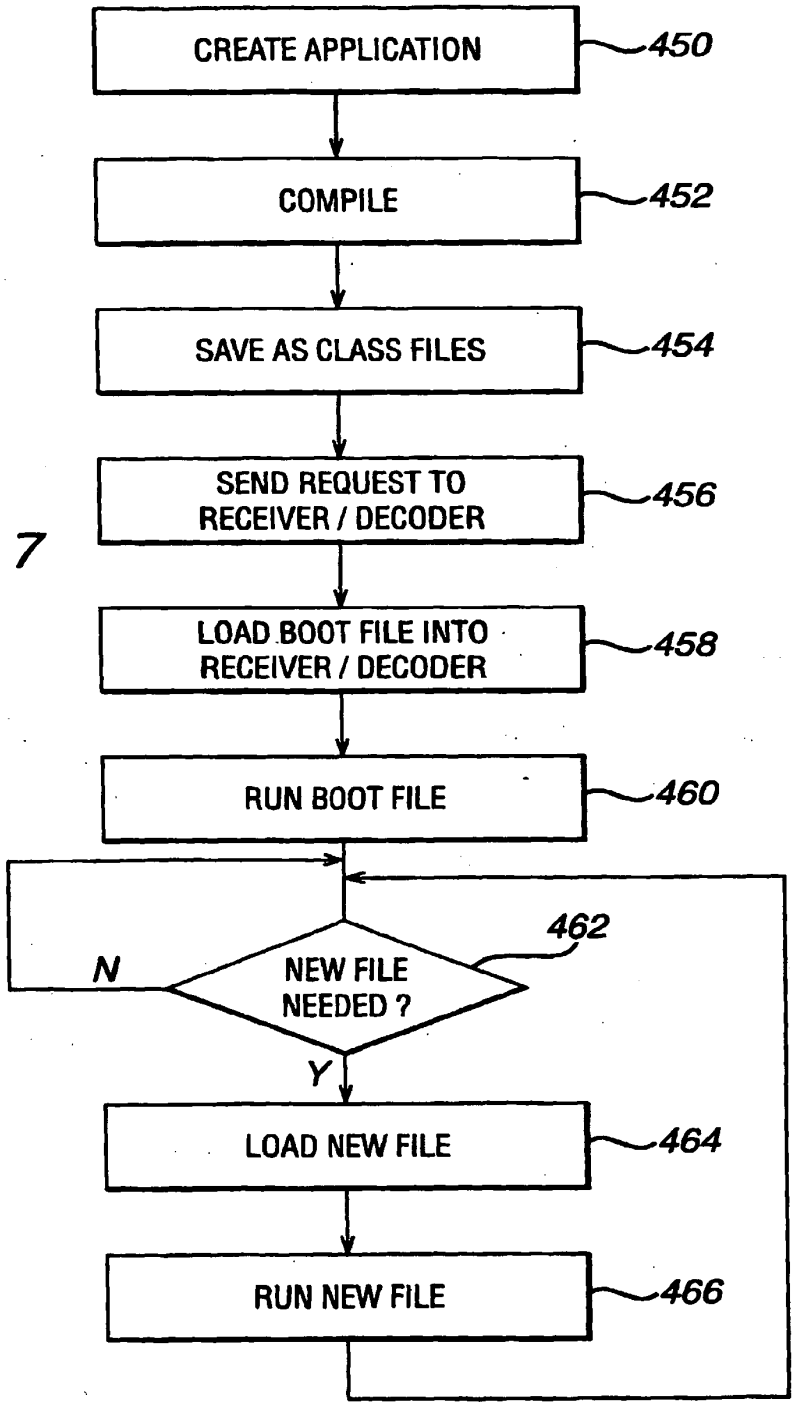

CREATE APPLICATION
450
COMPILE
452
SAVE AS CLASS FILES
454
SEND REQUEST TO RECEIVER / DECODER
456
LOAD BOOT FILE INTO RECEIVER / DECODER
458
RUN BOOT FILE
460
462
N
NEW FILE NEEDED ?
Y
LOAD NEW FILE
464
RUN NEW FILE
466

FIG. 8

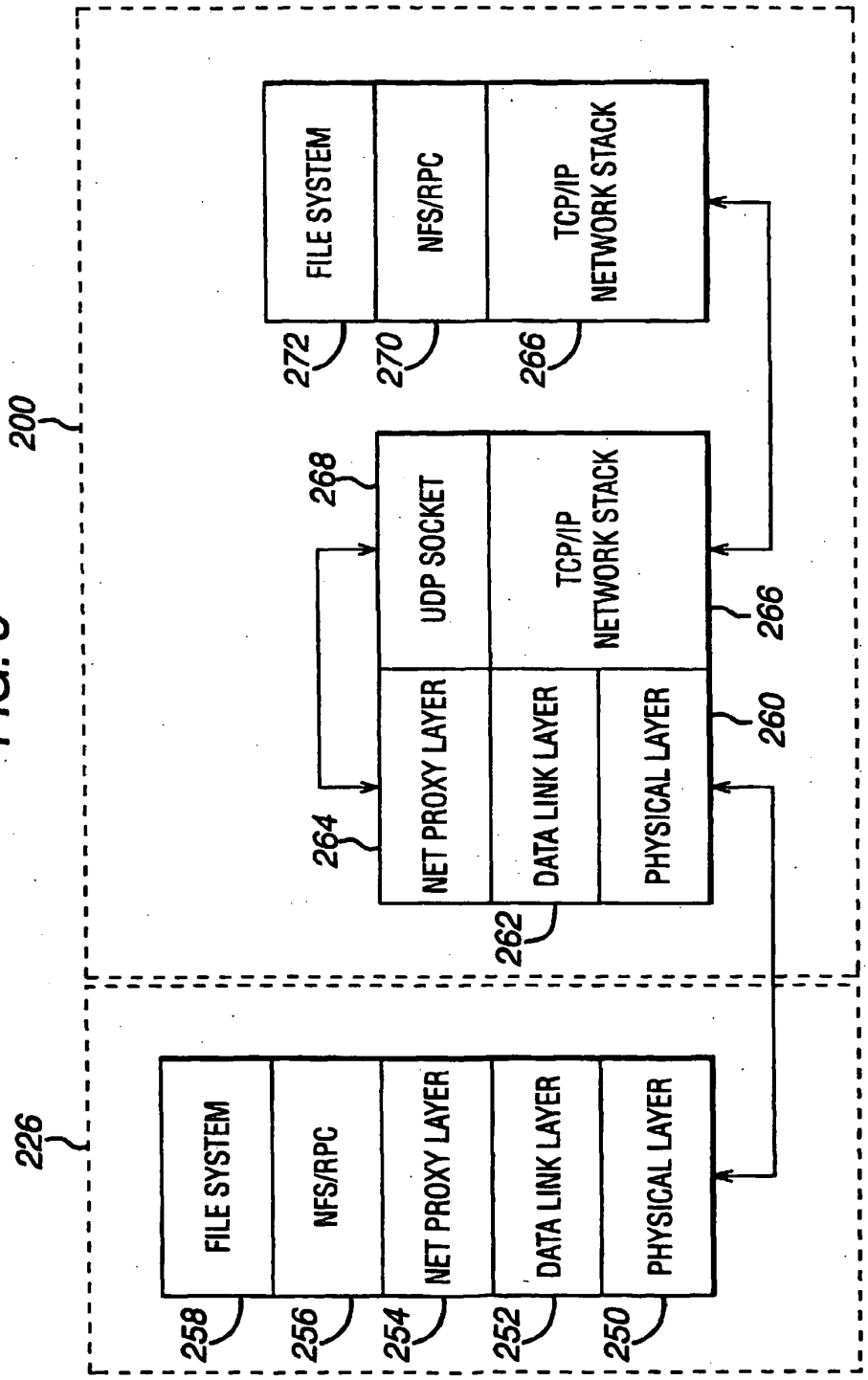

200
226
FILE SYSTEM
NFS/RPC
TCP/IP NETWORK STACK
272
270
266
268
UDP SOCKET
TCP/IP NETWORK STACK
266
NET PROXY LAYER
DATA LINK LAYER
PHYSICAL LAYER
260
264
262
FILE SYSTEM
NFS/RPC
NET PROXY LAYER
DATA LINK LAYER
PHYSICAL LAYER
258
256
254
252
250

FIG. 9

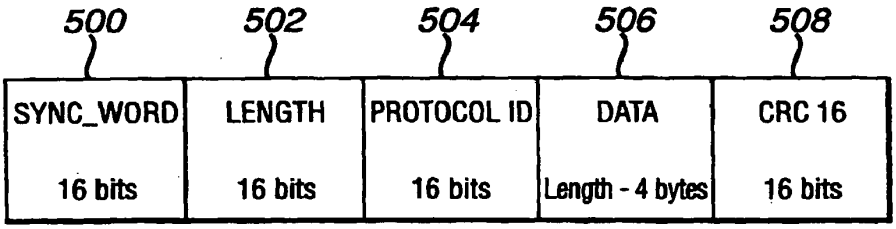
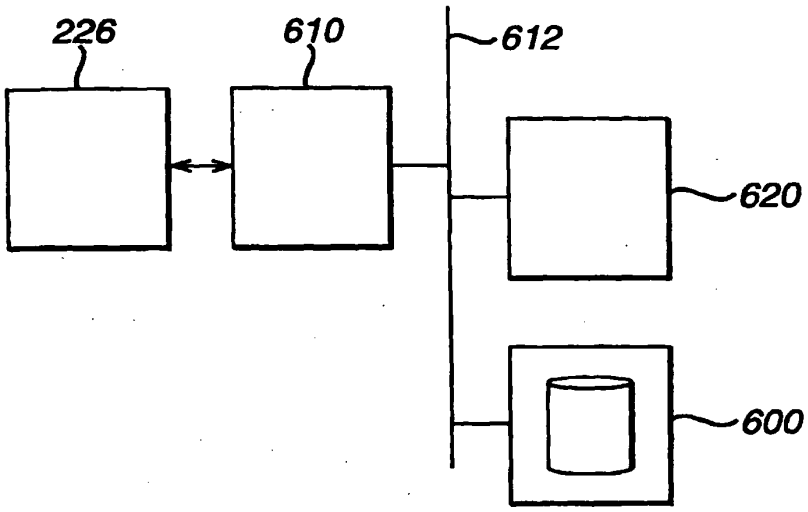

500
502
504
506
508
SYNC_WORD
16 bits
LENGTH
16 bits
PROTOCOL ID
16 bits
DATA
Length - 4 bytes
CRC 16
16 bits

FIG. 10


226
610
612
620
600

EP 1 067 458 A1

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 00 10 2043

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	WO 98 36356 A (ADVANCED MICRO DEVICES, INC.) 20 August 1998 (1998-08-20) * abstract *	1-14	G06F11/36
X	WO 98 21653 A (SYMBIOS, INC.) 22 May 1998 (1998-05-22) * abstract *	1-14	
X	US 5 615 331 A (TOORLANS ET AL.) 25 March 1997 (1997-03-25) * abstract *	1-14	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			G06F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	30 May 2000	Corremans, G

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 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 00 10 2043

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

30-05-2000

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9836356 A	20-08-1998	EP 0961971 A	08-12-1999
WO 9821653 A	22-05-1998	US 5983017 A	09-11-1999
		AU 5249198 A	03-06-1998
US 5615331 A	25-03-1997	NONE	

EPO FORM P0459

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

(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 770 956 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
04.04.2007 Bulletin 2007/14

(51) Int Cl.:
H04L 29/08 *(2006.01)*

(21) Application number: **05256148.7**

(22) Date of filing: **30.09.2005**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR MK YU

(71) Applicant: **BRITISH TELECOMMUNICATIONS public limited company**
London EC1A 7AJ (GB)

(72) Inventor: **The designation of the inventor has not yet been filed**

(74) Representative: **Lidbetter, Timothy Guy Edwin et al**
BT Group Legal
Intellectual Property Department
PP C5A
BT Centre
81 Newgate Street
London EC1A 7AJ (GB)

(54) Information based on location and activity of a user

(57) The present invention relates to context or location aware computing, and in particular though not exclusively to providing an activity based view of a location. The invention provides a method for providing activity based information for a virtual location (100), and comprises determining the virtual location (410); automatically determining data about a process associated with an activity on a device within the virtual location (430); receiving at another device within the virtual location activity based information which is dependent on the determined process data (420).

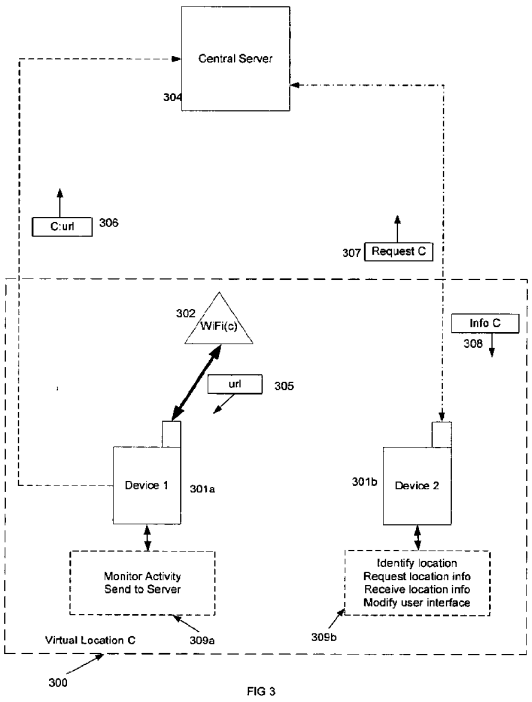


FIG 3

Printed by Jouve, 75001 PARIS (FR)

EP 1 770 956 A1

Description

Field of the Invention

[0001] The present invention relates to context or location aware computing, and in particular though not exclusively to providing an activity based view of a location.

Background of the Invention

[0002] The Internet and World Wide Web (The Web) have been successful in providing users with the ability to access information and computing or information technology (IT) services from virtually any location. This has been further enhanced by the development of wireless access technologies which in addition to enhancing the connectivity coverage, additionally provides the user with mobility. On the other hand, there has also been a growing demand for context aware provision of connectivity and IT services. Such services include the provision of local information such as nearby restaurants and the automatic connection to different types of networks depending on location, for example home or work. Numerous other examples of context aware services are increasingly available.

[0003] "Future of Location Based Experiences" by Steve Benford University of Nottingham, TSW0501, JISC Technology and Standards Watch, January 2005, describes various examples of context aware computing, including the ability of tourists to upload comments about a tourist attraction for later download by other tourists, and the ability to adjust the virtual location of a computer game depending on the actual physical location of the player.

[0004] The Massachusetts Institute of Technology (MIT) Media Lab Reality Mining Project at http://reality.media.mit.edu/ describes monitoring user activities of time and place using wireless identifiers such as Bluetooth ™ fixed equipment (eg printer) as locators. This information is used to model human interactions.

[0005] US2005/0020307 discloses configuring computing or electronic devices depending on the user's current context which in turn is related to their current location. For example a so configured device may only show secure work-related wireless connections when the user is at work, but any wireless connections when the user is elsewhere, for example at home.

[0006] US2004/0203851 discloses monitoring of activities the user engages in at a location for uploading to service providers serving that location; in order that they may better configure their services at that location based on user activity.

[0007] JP9053957 (English Abstract) discloses monitoring of activities over location and time on a device, for use in re-configuring the device to better service the user's habits.

Summary of the Invention

[0008] In general terms the present invention provides a method and system for providing activity based information for a virtual location. The virtual location may be defined according to an actual physical or geographical location, or it may be defined solely according to the services provided there, for example a virtual location may be defined by a WiFi identifier which could change its physical location. The virtual location is also associated with the current and/or past activities performed there, for example by a high percentage of user media streaming in that virtual location. This information can be used by new devices entering the virtual location, or devices already in the virtual location, to reconfigure themselves, dependent on the activities of other devices in the virtual location. For example if the virtual location is associated with a library, this may result in a lot of wireless connections being established to download the library's information index, and this activity based information could be used to automatically present the user of a device entering the virtual location with an option to do the same activity. In another example, as more and more devices within a virtual location associated with a theatre start turning their device ringers off prior to the performance, this might prompt other user's who have not yet done this with the option to switch off their device ringers.

[0009] Such an arrangement eases operation of user interfaces on devices by automatically providing likely options for a user. Also the provision of an activity based view of a location allows a user to manually re-configure their device according to user preferences and expectations, for example the activities the user believes they are most likely to engage in. Users may set their device to automatically action (rather than manually action) local dynamic group activity such as the theatre example outlined above.

[0010] The activity information gathered about a virtual location may also be used by service providers supporting the virtual location, for example to rationalize their information delivery processes. This could include the caching of 'popular' information on a local server that is most likely to be requested by others in that location. Alternatively, likely information could be temporarily cached on the users device in anticipation of it being requested.

[0011] In one aspect the present invention provides a method of providing activity based information associated with a virtual location. The method comprises automatically determining data about a process on a device within the virtual location, the process associated with an activity; and receiving at another device activity based information which is dependent on the determined process data.

[0012] An embodiment provides a view of most popular information requested at this location, for example the top 10 WebPages viewed at this virtual location, or the most popular games. Alternatively or additionally the user

EX. 1002
LG Electronics, Inc. / Page 780 of 3523

device may be configured such that a user looking for places and times where people gather to play mobile a specific Bluetooth games is alerted by their mobile device that the virtual location they have just encountered is a 'gaming hotspot'.

[0013] The virtual location is defined by reference to services provided within a space or area, for example a WLAN having a specific WiFi BSSID and/or encryption key. Thus any device which is able to receive the corresponding WLAN beacon is said to be within the virtual location. The beacon provides a virtual location clue, and can be used by the device to identify that it has entered a predefined virtual location. The predefined virtual location may be stored on the device's memory, such that when it detects the corresponding signature or clue, it assumes it has entered the virtual location. Alternatively, the WLAN access point may transmit an identifier according to a predetermined protocol which the device is able to recognise. In another alternative, the device may send a request to a central server together with the virtual location clue or clues it has detected. In another alternative, a service provider such as a Wi-Fi access point associated with defining a virtual location may recognise devices that enter its network coverage area. This information can then be used by the server to forward a virtual location identifier and/or virtual location dependent activity based information. The virtual location clues will typically correspond to one or more wireless technologies, for example a WiFi and a Bluetooth beacon carrying a respective identifier which can be used together with the technology type (eg IEEE802.11g and BT v2).

[0014] The virtual location may or may not correspond with a geographical location, for example the definition of the virtual location may also include a range of GPS coordinates. On the other hand, where the virtual location is defined by reference to a WLAN, the WLAN could move geographical location but the virtual location defined by it would be the same. In an embodiment, the virtual locations are defined by reference to one or more wireless technologies, for example a WiFi identifier and/or GPS provided coordinates. Virtual locations could also be defined using GPS or even WLAN signal strength to subdivide a large wireless network thereby creating a cluster of individual Virtual Locations.

[0015] Alternatively the virtual location may be defined by the devices that form it, for example whenever three predetermined devices are within a certain range of each other, they are said to be in a virtual location and carry out the above defined method. The range may be that sufficient for them to communicate with each other using a nominated wireless technology for example Bluetooth. A record of activities performed at this virtual location can be recorded (on the devices rather than on a server) for future reference. Rather than the system being reliant on a server in this example a smaller system could run on each host device.

[0016] More generally a virtual location is an area defined by available wireless network technologies (server-client or peer-to-peer) for the purpose of situation or activity profiling. Situation profiling combines the users activities (applications, services, content utilised be users), activity chronology, and user or device profiling to provide enhanced application, service or content customisation.

[0017] The process data may be determined by each device within the virtual location uploading its respective data to a central server. Alternatively, each device may use peer-to-peer connections with other devices within the virtual location in order to determine the process data. The process data corresponds to an application executed or a function carried out on the device. Examples include an email client, a web browser, or switching the devices backlight or ringer off. The processes are associated with an activity such as sending and receiving email, surfing the internet, or putting the device in a "sleep" mode. The activities are typically user initiated in the sense that a user of the device activates or instructs the device to carry out the function or application associated with the process. This can include an automatic procedure that a user has previously set-up. For example when entering a virtual location (toilet, library, managers office, customer reception area) divert all incoming calls to my answer phone or turn my ringer off.

[0018] The relationship between the process data and the activity based information could be one-to-one, or typically the process data is processed for example by deriving statistics relating to the process data from a number of devices within the location. For example the most popular activity in a virtual location as determined from the process data from all the devices in the virtual location can be provided to a requesting device.

[0019] Either a client-server or a peer-to-peer architecture can be used for implementing the automatic gathering and provision of activity based information to the devices within the virtual location. Virtual location definition in a peer-to-peer architecture may use a predetermined virtual location clue such as a WLAN beacon, or alternatively devices within a space or area may form a virtual location according to a predetermined protocol, for example using an ad hoc WLAN in which each device is with range of every other device within the WLAN. Thus the virtual location definition or clue can be the identifier or BSSID and the corresponding beacon.

[0020] The virtual location can be defined using multiple wireless technologies, for example WiFi; Bluetooth; UMTS; and/or GPS. In an embodiment a virtual location is defined using a number of clues which combine the wireless technology and a corresponding identifier such as a WiFi BSSID.

[0021] Examples of user initiated activities include: establishing an Internet connection; establishing an email connection; establishing a streaming media connection; changing the user interface of the device, for example switching on the backlight or executing a process such as a game. Some of this information may be more specific such as the web-site visited or the game played - though this type of information would typically not be linked to a

EX. 1002
LG Electronics, Inc. / Page 781 of 3523

particular user for privacy reasons, but used only to provide an indication of the most popular web-site or game currently in the virtual location for example.

[0022] A time dimension may also be added to the activity based information, which may change depending on the time of day. For example users in a coffee shop at lunchtime may receive different activity based information than users in the same coffee shop after work.

[0023] A user profile dimension can also be added to the activity based information, for example the activity based information downloaded to a teenage user of a virtual location may be different to that downloaded for a middle-aged salesman. For example the teenager may be more interested in gaming levels or popularity for the virtual location whereas the salesman may be more interested in the most popular websites visited in the same virtual location. Similarly, mobile police officers may be interested in information related to the activities of previous police officers, such as relevant and/or recent incidents at the same virtual location.

[0024] Thus the activity based information downloaded to a device may be provided in the form of a virtual location profile (VLP) whose content may vary depending on the time of day and/or a user profile for the downloading device. The VLP may include for example the most popular websites visited at that virtual location, the most popular games played, the most popular media streamed, and the most common device control resetting such as ringer volume reduction in an eBook zone.

[0025] The activity based information provided about a virtual location may be used to infer additional information or context likelihood's, for example a high number of gaming activities might designate a virtual location as a gaming hot-spot. In another example, high eBook application usage may indicate that the virtual location is likely to offer seating and food facilities.

[0026] The activity based information associated with a virtual location can also be used by other devices or users not within the virtual location, for example a home personal computer (PC). Where the virtual location can be associated with a geographical location, the activity based information can be mapped for use by others in identifying locations corresponding to certain activity profiles. For example a teenager may use a map based application or search engine on their home PC to find local gaming hotspots, such as places where people in the past (or possibly currently) have played a particular peer-to-peer game. Similarly, a local area suitable for reading an eBook could be identified based on the activities (ie reading eBooks) of others.

[0027] In another aspect the presenting invention provides a method of providing activity based information associated with a location. The method comprises automatically determining data about a process on a number of devices within the location, the process associated with an activity; and receiving at another device activity based information which is dependent on the determined process data. The activities are not limited to interactions with a single wireless service provider, and include all of a number of predetermined activities on the devices within the location.

[0028] The location may be a virtual location, or it may be a physical location.

[0029] The determined process data can be associated with a geographical identifier corresponding of the location, for example GPS co-ordinates or a post code. This data or information can then be used with mapping applications, for example to identify physical locations having a high incidence of a particular activity, such as gaming or a particular P2P game.

Brief Description of the Drawings

[0030] Embodiments will now be described with reference to the following drawings, by way of example only and without intending to be limiting, in which:

Figure 1 illustrates a number of virtual locations according to an embodiment;

Figure 2 illustrates a client-server architecture for automatically gathering activity based data from devices within a virtual location according to an embodiment;

Figure 3 illustrates the provision of activity based information to a device entering a virtual location according to an embodiment;

Figure 4 is a flow chart illustrating a method of operating a device according to an embodiment;

Figure 5 is a flow chart illustrating a method of operating a server according to an embodiment;

Figure 6 illustrates a number of virtual locations according to another embodiment;

Figure 7 illustrates the gathering of activity based information using a peer-to-peer architecture according to another embodiment; and

Figure 8 is a flow chart illustrating a method of operating a device in the peer-to-peer architecture of figure 7.

Detailed Description

[0031] Referring to figure 1, a number of virtual locations 100 (A-D) are illustrated. These virtual locations are defined by reference to a number of virtual location clues, in this case provided by a number of wireless technology providers 102. These wireless service providers 102 include a global positioning system satellite (GPS), WLAN access points WiFi(a), WiFi(b), and WiFi(c), static Bluetooth devices such as printers or PC's BT, and a cellular

EX. 1002
LG Electronics, Inc. / Page 782 of 3523

radio network base station GSM. The clues are provided by an identifier associated with each wireless service provider 102 relied upon to define the virtual location 100. For example the virtual location clue provided by the GPS satellite are coordinates, the clue provided by the WLAN access points WiF(a)-(c) are their respective BSSID's, the virtual location clue provided by the static Bluetooth device is its Bluetooth MAC address, and the clue provided by the cellular base station is the cellular ID. The clues may also comprise an identifier for each respective wireless technology, for example for virtual location C, the clue may be - "IEEE802.11b + BSSID=BT00223029", and may also comprise an encryption key.

[0032] The first virtual location 100A is defined according to predetermined GPS coordinates, a WLAN identifier WiFi(a), and a Bluetooth device MAC address BT. Thus to be in virtual location A, the GPS coordinates of a candidate device must be within a predetermined range - of longitude, latitude, and altitude. The candidate device must also be able to receive the beacon from the WLAN access point (102WiFi(a)), and the beacon from the static Bluetooth device (102BT). Thus each of the identifiers or clues received matches those required for defining the virtual location A. If one of these virtual location identifiers or "clues" if not detected by the candidate device, then it is not within the virtual location A - it may perhaps be in another virtual location. Indeed it is possible that one virtual location may be within a larger virtual location, for example when seeing only the GPS coordinates and the WiFi(a) clues, the candidate device may be within a larger virtual location A' (not shown).

[0033] The second virtual location B is identified or defined by reference to identifiers for two wireless service providers 102, and is detected or confirmed when a candidate device (not shown) can detect both the beacon from another WLAN (102WiFi(b)) and the beacon from the cellular base station (GSM). This may or may not overlap the first virtual location A.

[0034] The third virtual location C is defined solely by reference to a third WLAN beacon - 102 WiFi(c) - provided by the corresponding wireless service provider or access point 102. If a device can detect this WLAN (WiFi (c)), then it is said to be in the virtual location C. Note that this virtual location C is not associated with a permanent physical location, as the WiFi(c)access point 102 for the WLAN could be moved to another geographical location. This compares with the first virtual location A, which is defined by reference to GPS coordinates and so is associated with a permanent physical location - unless it is later defined by different location clues.

[0035] The fourth virtual location D is defined solely be reference to geographical coordinates provided by the GPS wireless service provider 102. The "clue" in this case is simply geographical coordinates within a predetermined range.

[0036] The virtual locations A-D are all defined by wireless technologies - GPS (global positioning system), WLAN for example WiFi, cellular wireless such a GSM, CDMA2000, UMTS, and piconets such a Bluetooth. Other types of wireless technologies could also be used, and the virtual locations 100 may be defined by reference to two or more wireless technologies for greater certainty and accuracy. In some cases redundancy may also be an issue, in which case if for example the WLAN access point 102 (WiFi(a)) of virtual location A was disabled, the virtual location A might be temporarily redefined according to the remaining two wireless technologies - GPS and BT.

[0037] Figure 2 illustrates a number of devices 201 within a virtual location 200 and communicating with a number of wireless access points or gateways 202, using wireless links 203. The communication between the devices and the wireless service providers 202 allow the devices to carry out various activities or processes. Examples of activities include surfing the Internet, sending and/or receiving email, and streaming media. The activities carried out need not involve the wireless communications links 203, for example playing a game on a device 201, or switching on the backlight. The activities may be user initiated such as surfing the Internet, or may be automatic such as adjusting the device's sound output according to ambient sound levels. Various processes are carried out on the device in order to support the user activities, for example to support a user surfing the Internet a wireless application must establish and maintain a connection with one of the wireless service providers 202, and an Internet browsing application must be executed. Data about the types of processes carried out on each device 201 are monitored and uploaded to a central server 204, via a suitable upload channel 205. The uploading 205 of the processes or activity based data may be carried out using the wireless links 203 or some other manner. For example some devices may have a wired as well as a wireless capability, in which case the uploaded or determined process data may be uploaded using the wired link.

[0038] As discussed with respect to figure 1, the virtual location 200 each of the devices 201 is operating within can be defined by reference to the various wireless service providers 202 shown.

[0039] The activity data uploaded may simply be a virtual location identifier (eg A from figure 1) together with a predetermined activity type such as playing a game, sending email and so on. In this way the user's identity is not associated with the activity, and merely the numbers or types of different activities being engage in within the virtual location is made available to the server 204. Devices using the system may be configured to send the processes or activity data periodically, for example once every minute. More specific information may be gathered, for example actual URL's visited during web browsing activities, or songs downloaded or Internet radio stations "tuned" to during streaming activities. In this way, the most requested song in the virtual location may be made available to other user's in the location. Similarly at a concert, where an unknown band has taken the

EX. 1002
LG Electronics, Inc. / Page 783 of 3523

stage, the most popular activity may be visiting the band's web-site, and this may then be provided to users of the system, for example so that they can go straight to the web-site as well. Thus the activity based information provided to a user in a virtual location may simply be the most popular activities within a number of categories.

[0040] Typically the data about processes activated or running on a device described above is related to user initiated activity in which the user is required to actuate a user interface button for example, and that is context or location dependent, such as an eBook or Gaming application. However in some configurations it may be extended to location independent activities such as receiving information, for example emails.

[0041] Figure 3 illustrates determining process data on a first device 301a and receiving activity based information at another device 301b within the same virtual location 300. In the example the first device 301a is interacting with a WLAN access point WiFi(c) 302 to surf the Internet, and has just downloaded a website 305. Additional functionality 309a within the device 301 a monitors the processes carried out on the device to support these user activities, and sends this process data or data dependent on it to a central server 304. The data 306 uploaded to the server 304 may be a periodic packet with the virtual location's identifier C together with the URL of the website visited, or simply a code corresponding to the generic activity of web-browsing or internet surfing; and depending on configuration of the system the connection (eg to WiFi(c)) supporting this. The central server 304 may process this data from a number of similar devices 301 within the same virtual location C, for example by determining the most visited web-sites within the last ten minutes within the virtual location, or simply that the most popular current activity within the virtual location C is web-browsing.

[0042] When a second device 301b enters the virtual location C, additional functionality 309b within it determines the virtual location C and requests 307 from the system the corresponding activity based information. Determining the virtual location may involve noting the various wireless service 302 available to the new device 301b, and sending this information with the request 307 to the server 304 which returns a corresponding virtual location identifier C. The server 304 forwards the processed information 308 (and if appropriate the virtual location identifier C) to the second device 301b, which may simply display this for the user, or may use this information to reconfigure the device for use in the virtual location C. Thus a user of the new device 301b may be able to determine that a particular url or web-site is currently very popular within the virtual location, and may be prompted to visit this. Alternatively at a lower level of information granularity, the user of the device may be informed that the most popular activity within the virtual location is media streaming, and the device's start top-level menu may be adjusted to show this activity at the top of the list. Each of the devices 301 within the virtual location C may be configured to periodically request 307 activity based information from the server 304, or this might be provided automatically to each device "registered" in the virtual location C.

[0043] The embodiment might be alternatively configured such that each device 301 monitoring its own processes sends an "activity ranking list" to the central server 304, rather than each process at a time.

[0044] Alternatively or additionally, each device 301 may be further configured to notify the server 304 of its type, for example laptop or mobile phone. In this way, the process data provided by each device 301 may be categorised such that devices only receive activity based information for their own device type within the virtual location. Thus what occurs on a laptop may have little effect on what information is provided to a mobile device which has substantially less processing power and likely less bandwidth over wireless communications links. Alternatively the same activity based information may be downloaded to each device 301, but the device itself may be configured to handle it differently depending on its device type.

[0045] Each device may also or alternatively be categorised by a user type or profile. Examples include teenager interested in gaming; middle aged executive; elderly retired; male/female. The user profile may be extended to membership of special interest groups such as the police; specific employer or company; fan club; and so on. This may be indicated to the server using a predetermined tag on capable devices for uploading gathered process data 306, and requesting virtual location profile (VLP) data or activity based information in a request 307. The server 304 can then send VPL or information 308 according to the device's associated user profile.

[0046] The server 304 may also be configured to vary the downloaded activity based information according to the time of day. Thus the activity based view of a café/bar at lunchtime may differ significantly from the activity based view of the same virtual location in the evening. Similarly the activity based characterisation of the virtual location may be different at weekends compared with week days; or there may even be seasonal or annual variations.

[0047] Figure 4 illustrates a method of operating a device according to an embodiment. Referring also to figure 3, when a device 301b is operating according to the method (400), it looks for wireless systems or service providers 302 that can offer clues as to its virtual whereabouts or location. These can include GPS, Bluetooth, GPRS, and WLAN signatures or beacons. The device 301b monitors for predetermined virtual location clues (410), such as identifiers associated with the identified wireless systems 302, for example GPS coordinates, WLAN BSSID, and GPRS cell ID. The device may be configured to periodically send these clues (415) to the system server 304, or it may have various virtual locations pre-identified within its memory and then simply match the detected clues with those stored in order to determine that it has entered

EX. 1002
LG Electronics, Inc. / Page 784 of 3523

the virtual location. As a further alternative it may only request a virtual location identity when a new clue and/or wireless service provider 302 is identified.

[0048] The device then receives the virtual location information (420), and if required a virtual location identifier C. The device may not require the virtual location identifier at all, and may simply receive the activity based location information. The device may be configured simply to display or store this information, or it may be configured to adjust an operating or user interface parameter dependent on the received activity based information (425). For example the user interface start menu may be rearranged to put the most popular activities currently or historically engaged in by others in the virtual location towards the top of the menu. As mentioned above, the other users on which the downloaded activity based information is dependent may be restricted to suers having the same profile - for example middle aged executive compared with teenage gamer. In an alternative arrangement, the user may be directly prompted as to whether they wish to start the most popular activity. If the virtual location corresponds to a darkened room for example, other users may have switched their backlights on, and the device of the user newly entering the virtual location may be configured to automatically switch its backlight on.

[0049] Another example of device adjustment or automatic re-configuration when receiving the activities based information, the device may determine that it is unlikely to carry out certain activities such as playing games, and may therefore shut down its 3D graphics capability in order to reduce power consumption. The device may also be configured to provide a quick-link list of things to do in the new virtual location. Other examples include changing on-line presence from "Available" to "Do not disturb" in a chat application for example, automatically downloading some service or content, and vibrate on ringer off.

[0050] The activity based information (or VLP) provided to a user device by the system or server is system configurable. For example the information may simply be a list of the most popular activities within certain predefined activity categories such as web browsing, media streaming, gaming, and device re-configuring. Respective activity examples include most popular web-sites visited within the virtual location, most popular songs or videos streamed, most popular peer-to-peer games played, and the most common device adjustments such as ringer off and/or backlight on. These lists of activities in each activity category may be further categorised for example according to user profile and/or time.

[0051] The provided activity based information may alternatively relate to changes or anomalies in activity patterns. For example some groups (eg Police) may be interested in building a view of the least popular activities or significant changes in type of content consumed at a location.

[0052] The device 301 is also likely to be configured to automatically monitor its own user activities (430), for example by simply noting a code for each of a number of predetermined processes - web-browser application, email client, media streaming client, game playing application, e-book reading application, and so on. This information may be accumulated locally over a period, and then sent to the central server (435). This may even extend to the device 301 storing activity related data for a number of different virtual locations and then uploading the data to the central server 304 say at the end of the day, when it is synchronised with a wired PC for example. Alternatively each new process activated on the device may trigger it to report this to the server 304. As a further alternative, the device 301 may have a standard template which is updated periodically and forwarded to the server after a period. The recorded processes can be time-stamped in order to aid processing by the central server, and the data sent may also include the length of time over which a process was active. The method (400) then returns to the receiving activity based information step (420) to refresh this information. In this way, users of devices in a virtual location may affect each other over time, for example an event may cause a number of users to access a particular web-site, which in turn may prompt other users in the virtual location to do the same.

[0053] The system may be configured to bias towards current or recent user activity information, or it may be more historically based, using data about the processes run on many devices over a considerable period of time.

[0054] Figure 5 shows a method for the central server 304 which receives device process data from a number of devices 301 in a number of virtual locations 300. The method (500) comprises two branches, in the first the server processes requests for identifiers for virtual locations, and receives clues from devices (505) such as the various wireless services providers it is able to currently access and/or their identifiers. The server determines from these clues a corresponding virtual location (515). This may be achieved simply by attempting to match the received clues with clues corresponding to a number of predetermined virtual locations. The server 304 then retrieves and sends the virtual location identifier to the requesting device (520). The method (500) then moves on to sending activity based information for that virtual location to the requesting device (535).

[0055] The second branch of the method (500) relates to monitoring and sending activity based information to devices within a virtual location. The server 304 receives data about processes on each device within a virtual location (525), and updates the activity based information it holds for that virtual location (530). This may comprise re-processing all the stored activity based information, for example the new process data may be used to adjust a "top activities" list within the activity based information. The updated information is then sent to the devices within the corresponding virtual location (535), and the method returns to receive further data about processes on the devices (525).

EX. 1002
LG Electronics, Inc. / Page 785 of 3523

[0056] Figure 6 illustrates another embodiment in which virtual locations can include non-wireless devices. The virtual locations 600 include wireless devices 601 which determine whether they are within a virtual location 600 by reference to wireless clues associated with a number of wireless service providers 602. For example in the case of the first virtual location A, the wireless clues 602 are a coordinates range provided by the GPS system, a WLAN access point identifier WiFi(a), and a Bluetooth MAC address BT. If the device 601 detects all three clues 602, then it can assume it is within virtual location A.

[0057] However a fixed or wired device 603a can also be determined to be within the virtual location A without reference to the wireless clues 602. In this example, a personal computer PC is connected for example by Ethernet to the WLAN access point WiFi(a), and by virtue of the type of wired connection (Ethernet is typically used only locally) is determined to be within the virtual location. For example the system could automatically link wired devices together by fact that they are all connected into a switch and use specific IP addresses within a certain range. The wireless access point that provides the wireless network would also be connected on to the same LAN and switch and have a specific IP addresses within the same range. Also the LAN switch and WLAN access point may be connected to the Internet via a specific router or gateway. An external service could therefore assume that any information request via this router or gateway was within the same virtual location. Alternatively a static PC could simply be assigned to a virtual location. In this way the system still records user initiated activities (time, device and user specific) at specified locations and provides that information back to any device, service, or application within that virtual location that could benefit.

[0058] For example, in a library setting corresponding to a virtual location, all the wired computers provided to users of the library may be determined to be within the library virtual location. The wired device 603a may in fact not be within the physical range of the various wireless service providers 602 providing the virtual location clues, however is consider logically to be within the virtual location.

[0059] In the example of virtual location B, there is no Ethernet or other (relatively) short distance wired connection between the wired device 603b and a wireless service provider 602 associated with that virtual location. In this case, a personal computer PC or other device is not at all associated by physical location with other devices within the virtual location, but is logically associated by being assigned as being part of the virtual location B. The remote device 603b may be connected to the server via the internet for example. For example, a pub regular may be in another country on business but may want to virtually interact with his friends in their usual or local pub, and may do so according to this embodiment by assigning the PC the virtual location identifier B of the virtual location B, in order to receive the activities based information corresponding to the virtual location B from the server. The assigned PC 603b may or may not upload data about its own activities or processes to the central server. In this way, the remote PC 603b may also be influenced by what other devices are doing within the virtual location B. This might be extended for example to supporters of a football team, some of whom may not be in a particular location to watch a match, but want to participate remotely at the location with other members of the football team supporters club. This concept could even be used as a way to build and support virtual communities, groups and Special Interest Groups.

[0060] Figure 7 illustrates another embodiment using a peer-to-peer architecture to implement the activities based view of a virtual location. As with the arrangement of figure 2, each of the devices 701 is using a number of wireless gateways or service providers 702 to perform various activities such as surfing the Internet. Other activities not requiring wireless links 703 may also be carried out on the devices 701. Each device 701 also includes additional functionality 704 to carry out the monitoring of device based processes within the virtual location. Each device polls 705 each other device 701 within the virtual location 700 about the types of activities it is engaging in. Instead of this data being stored in a central server, each respective device 701 stores this information locally and if so configured, adjusts its user interface or some other operating parameter depending on the activities based information received.

[0061] A protocol for determining and agreeing a virtual location can be used, for example all devices that recognise the Bluetooth piconet coordinator BT, the WLAN access point WiFi, and the cellular base station CDMA.

[0062] Figure 8 is a flow chart showing operation of a device using the peer-to-peer architecture of figure 7. Following initiation (805) of the system or method (800), the device determines location clues (810) for example various wireless technology beacons and GPS coordinates. It agrees with other wireless devices within its vicinity that it is within a particular virtual location, and requests data from other devices using the same virtual location identifier about the user processes running on them (815). Activity based information from the other devices in the same virtual location is received (820), and the device updates its own on-board database or store of activity based information within the virtual location (825). The device may then adjust its user interface or other operating parameter as described above according to the activities based information recovered (830). The method then returns to the requesting step (815) in order to refresh the activity based information for the devices current virtual location.

[0063] Although not shown, the device is also configured to respond to requests for its own processes data from other devices within the same virtual location, forwarding this data to them.

[0064] Whilst the embodiments have been described with respect to providing or acting on downloaded activity based information, this information could also be used

EX. 1002
LG Electronics, Inc. / Page 786 of 3523

to infer further information or context about a virtual location. For example a high number or percentage of eBook applications may indicate a library or coffee shop with a high likelihood of having seating and food facilities for reading eBooks.

[0065] Whilst embodiments have been described with respect to automatically determining process data related to user activities in a virtual location, and providing this to other users within the virtual location, this gathered information or process data could additionally or alternatively be provided to others who are not in the virtual location. For example a user at a home PC may be reviewing the activity based view of a number of nearby locations, to identify a gaming hotspot. This facility may also be used by others at significant geographical distances but who are intending to visit a city and want to view it in an activity based way, for example in order to plan a nightlife "tourist" itinerary. The gathered process data in this case may be associated with a geographical location, which may be provided using a definition of the virtual location which includes real coordinates such as provided by GPS.

[0066] This geographically associated activity based information can then be used by other users, for example in mapping and/or search engine type applications. Thus a map of a city may show gaming hotspots, quiet spaces for reading eBooks, areas having high numbers of website hits relating to a particular pop-star, or even bars or cafes where certain user profiles are prevalent.

[0067] The skilled person will recognise that the above-described apparatus and methods may be embodied as processor control code, for example on a carrier medium such as a disk, CD- or DVD-ROM, programmed memory such as read only memory (Firmware), or on a data carrier such as an optical or electrical signal carrier. For many applications embodiments of the invention will be implemented on a DSP (Digital Signal Processor), ASIC (Application Specific Integrated Circuit) or FPGA (Field Programmable Gate Array). Thus the code may comprise conventional programme code or microcode or, for example code for setting up or controlling an ASIC or FPGA. The code may also comprise code for dynamically configuring re-configurable apparatus such as reprogrammable logic gate arrays. Similarly the code may comprise code for a hardware description language such as Verilog ™ or VHDL (Very high speed integrated circuit Hardware Description Language). As the skilled person will appreciate, the code may be distributed between a plurality of coupled components in communication with one another. Where appropriate, the embodiments may also be implemented using code running on a field-(re) programmable analogue array or similar device in order to configure analogue hardware.

[0068] The skilled person will also appreciate that the various embodiments and specific features described with respect to them could be freely combined with the other embodiments or their specifically described features in general accordance with the above teaching. The skilled person will also recognise that various alterations and modifications can be made to specific examples described without departing from the scope of the appended claims.

Claims

1. A method for providing activity based information for a virtual location, the method comprising:

   defining a geographical location;
   automatically determining data about a process associated with an activity on a device within the location;
   receiving at another device activity based information which is dependent on the determined process data and the geographical location.

2. A method according to claim 1 wherein the activity based information comprises a geographical identifier.

3. A method according to claim 1 or 2 wherein the determined process data comprises a geographical identifier.

4. A method according to claim 2 or 3 wherein the geographical identifier comprises GPS coordinates and/or a post code.

5. A method according to any one preceding claim wherein the determining data about activity associated processes comprises uploading said data to a server and wherein the activity based information is downloaded from the server to the receiving device.

6. A method according to any one preceding claim wherein the determining data about activity associated processes comprises the receiving device requesting said data from other devices within the virtual location over peer-to-peer communication links; and wherein receiving said information comprises receiving said data over said links.

7. A method according to any one preceding claim wherein the activity comprises: establishing an Internet connection and/or browsing the Internet; establishing an email connection; establishing a streaming media connection; downloading files; uploading files; changing the user interface of the respective device; executing an application on the respective device.

8. A method according to any one preceding claim wherein the received activity based information comprises a number of the most popular activities in a number of activity categories.

EX. 1002
LG Electronics, Inc. / Page 787 of 3523

9. A method according to any one preceding claim wherein the automatically determined process data comprises an indication of each of a number of predetermined processes running on the device together with a virtual location identifier.

10. A method according to any one preceding claim wherein the received activity based information is further dependent on a user profile associated with the other device.

11. A method according to any one preceding claim wherein the received activity based information is further dependent on the time at which it is received.

12. A method according to any one preceding claim wherein operational parameters of the receiving device are adjusted according to the received activity based information.

13. A carrier medium carrying processor code which when implemented on a processor is arranged to carry out a method according to any one preceding claim.

14. A system for providing activity based information for a virtual location, the system comprising:

means for defining a geographical virtual location;
means for automatically determining data about a process associated with an activity on a device within the virtual location;
means for receiving at another device within the virtual location activity based information which is dependent on the determined process data and the geographical location.

15. A device comprising:

means for identifying a geographical location;
means for automatically determining data about a process on the device associated with an activity;
means for receiving activity based information which is dependent on determined process data associated with other devices and the geographical location.

16. A device according to claim 15 wherein the activity based information and/or the determined process data comprises a geographical identifier.

17. A device according to claim 15 or 16 wherein the means for determining data about activity associated processes comprises means for uploading said data to a server and wherein the means for receiving activity based information comprises means for downloading said information from the server.

18. A device according to claim 15 or 16 wherein the determining data about activity associated processes comprises means for requesting said data from other devices within the virtual location over peer-to-peer communication links; and wherein the means for receiving said information comprises means for receiving said information over said links from the other devices.

19. A device according to any one of claims 15 to 18 wherein the means for determining the process data comprises means for sending an indication of each of a number of predetermined processes running on the device together with a virtual location identifier.

20. A device according to any one of claims 15 to 19 wherein the received activity based information is further dependent on a user profile associated with the device.

21. A device according to any one claims 15 to 20 and arranged such that operational parameters of said device are adjusted according to the received activity based information.

22. A server for providing activity based information for a virtual location, the server comprising:

means for identifying a geographical location;
means for receiving from a device within the location automatically determined data about a process associated with an activity on the device;
means for forwarding to another device within the virtual location activity based information which is dependent on the determined process data and the geographical location.

EX. 1002
LG Electronics, Inc. / Page 788 of 3523

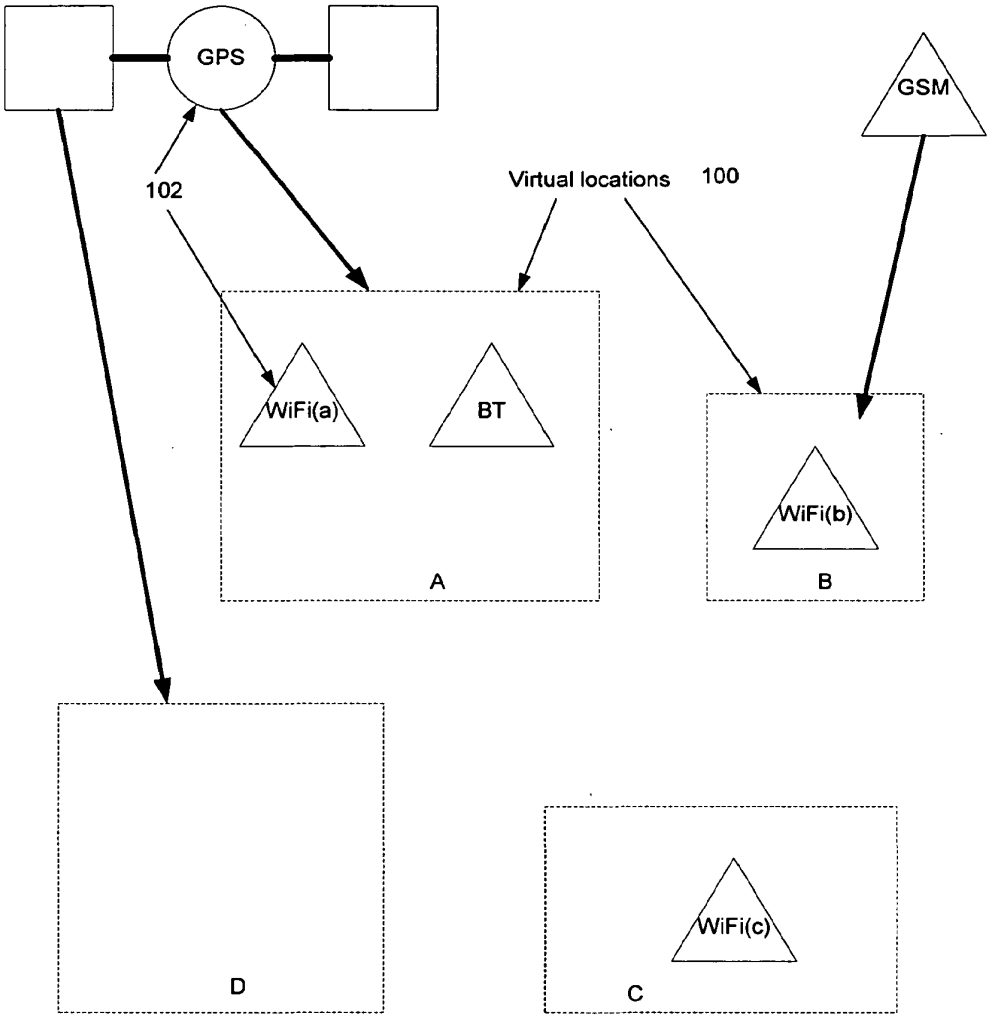


FIG 1

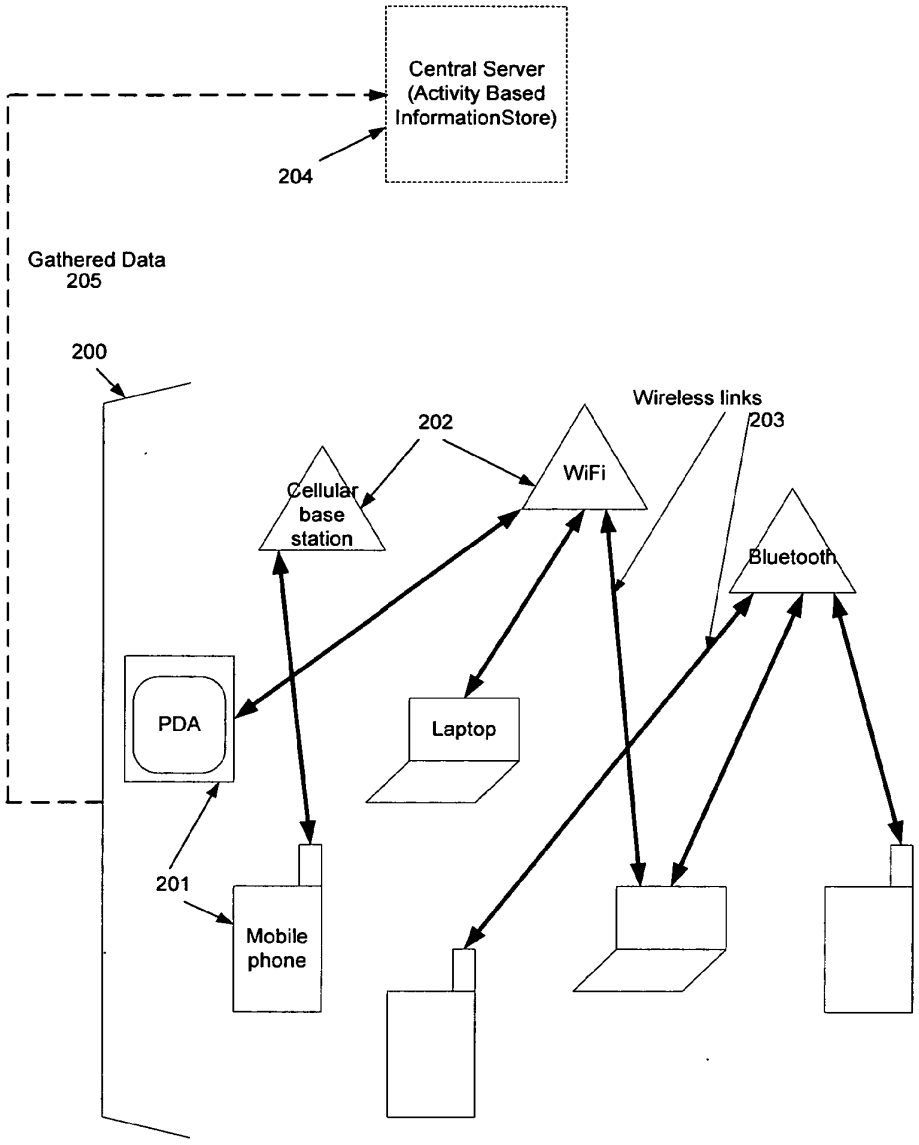

Central Server
(Activity Based
InformationStore)
204
Gathered Data
205
200
202
Wireless links
203
WiFi
Cellular
base
station
Bluetooth
PDA
Laptop
201
Mobile
phone

FIG 2

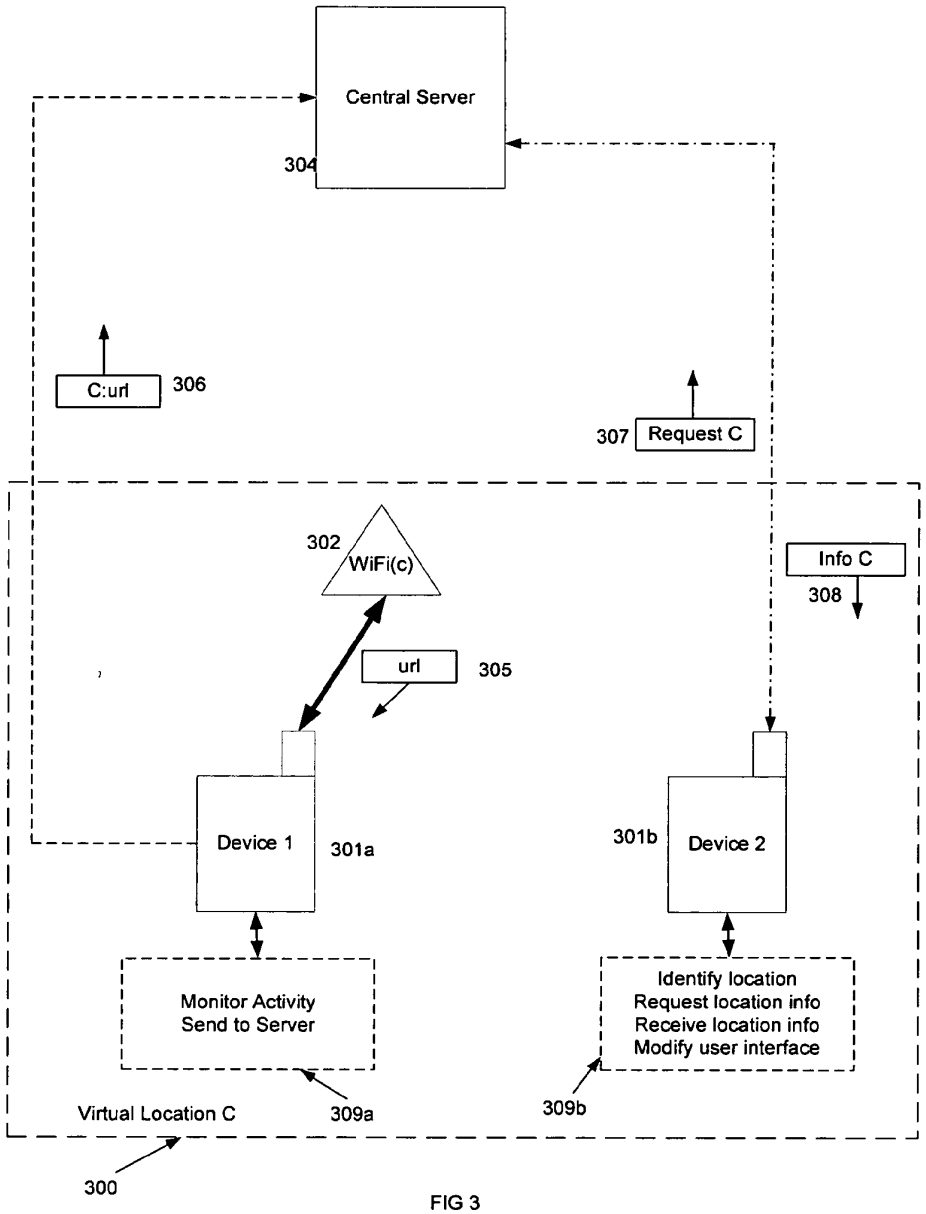

Central Server
304
C:url
306
307
Request C
302
WiFi(c)
Info C
308
url
305
Device 1
301a
301b
Device 2
Monitor Activity
Send to Server
Identify location
Request location info
Receive location info
Modify user interface
Virtual Location C
309a
309b
300

FIG 3

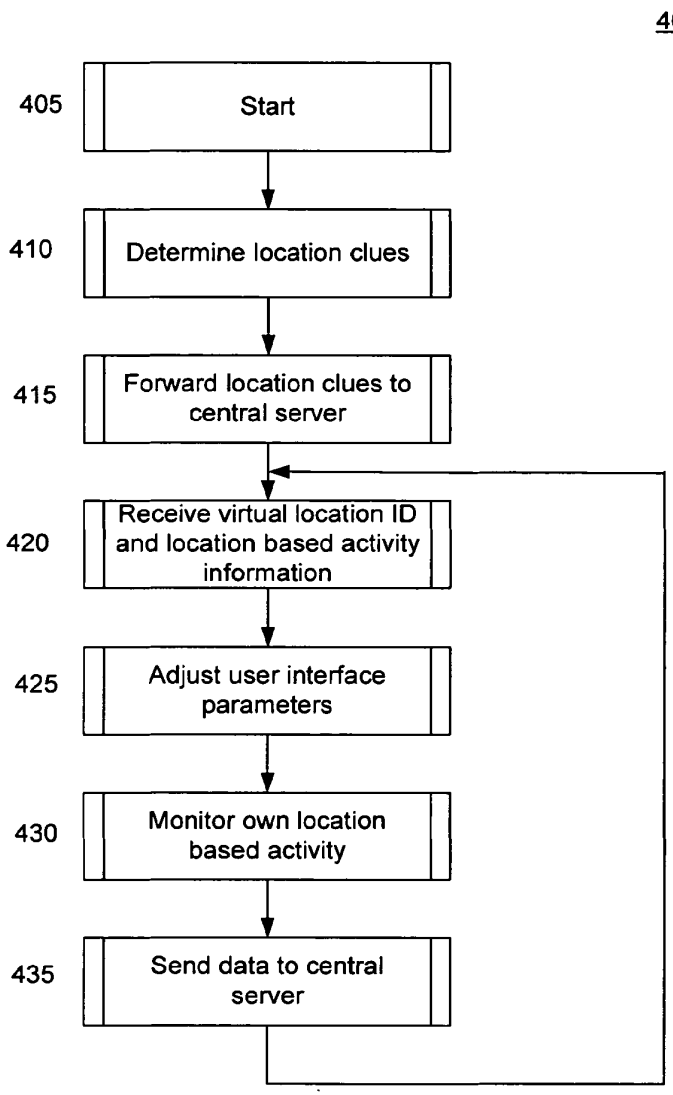

400
405
Start
410
Determine location clues
415
Forward location clues to central server
420
Receive virtual location ID and location based activity information
425
Adjust user interface parameters
430
Monitor own location based activity
435
Send data to central server

FIG 4

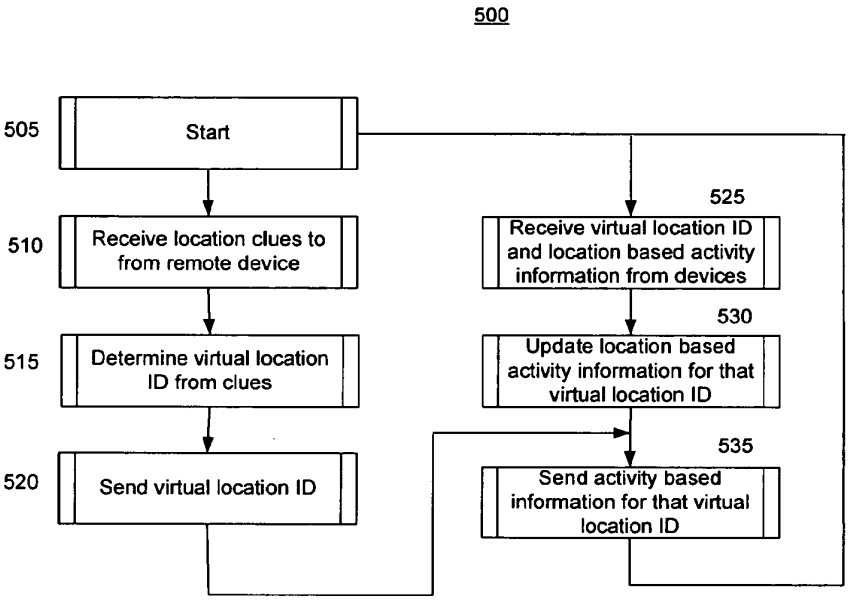

500
505
Start
510
Receive location clues to from remote device
515
Determine virtual location ID from clues
520
Send virtual location ID
525
Receive virtual location ID and location based activity information from devices
530
Update location based activity information for that virtual location ID
535
Send activity based information for that virtual location ID

FIG 5

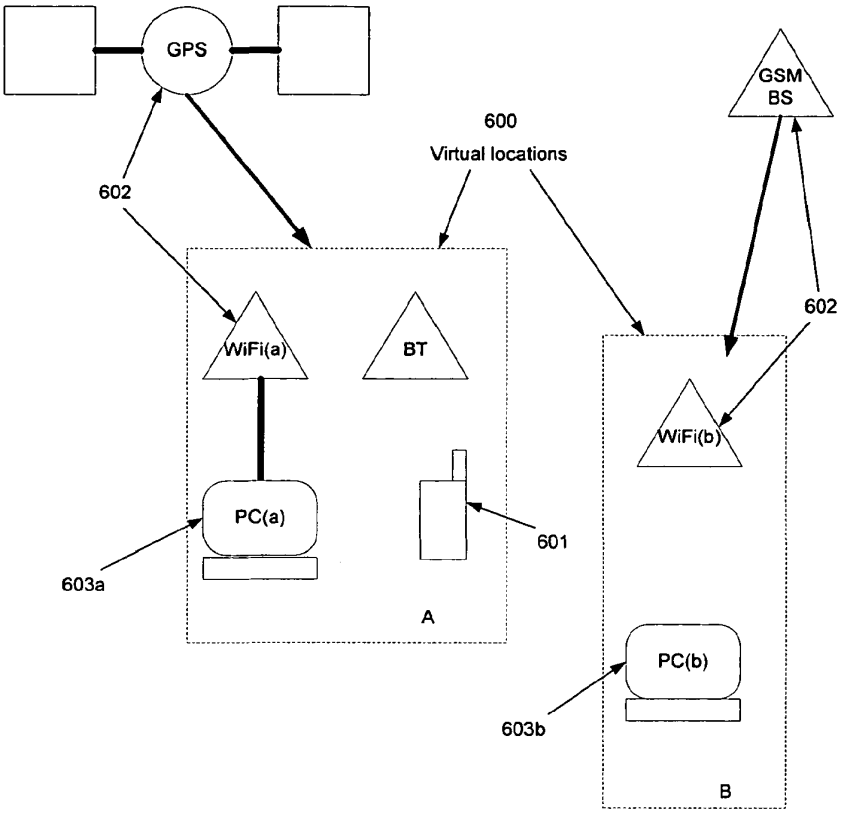

GPS
GSM
BS
600
Virtual locations
602
602
WiFi(a)
BT
WiFi(b)
PC(a)
601
603a
A
PC(b)
603b
B

FIG 6

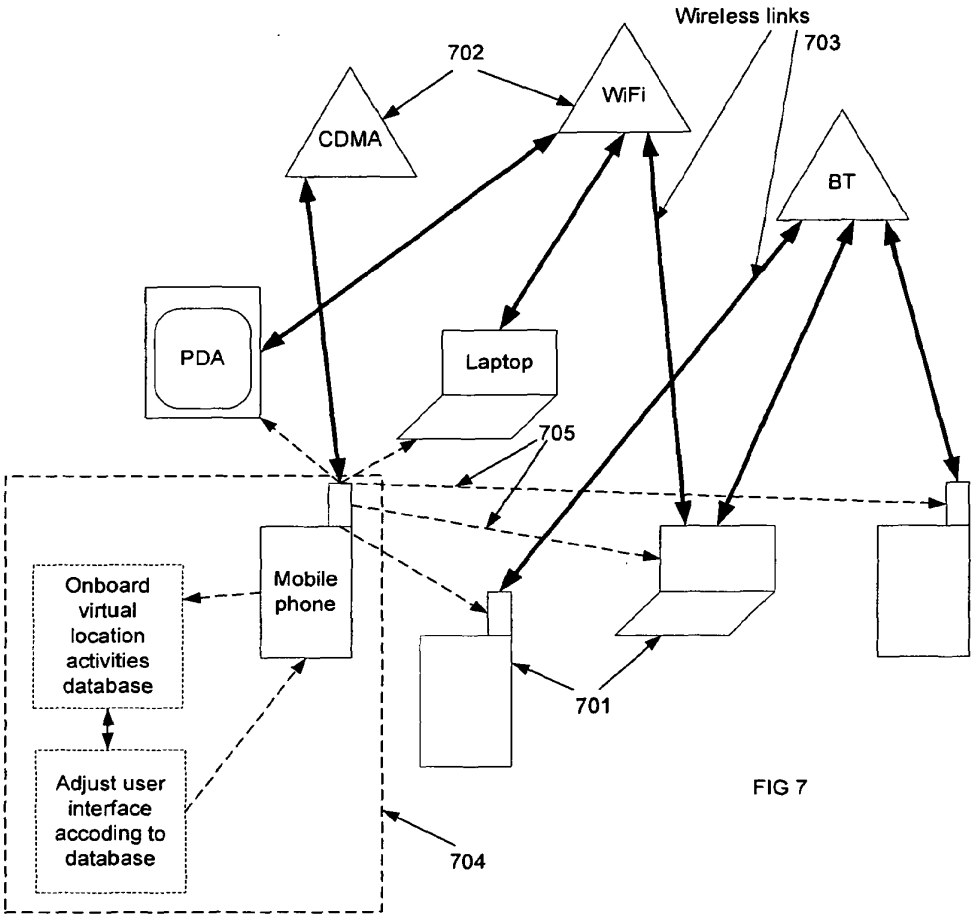

Wireless links
703
702
WiFi
CDMA
BT
PDA
Laptop
705
Mobile phone
Onboard virtual location activities database
Adjust user interface accoding to database
701
704

FIG 7

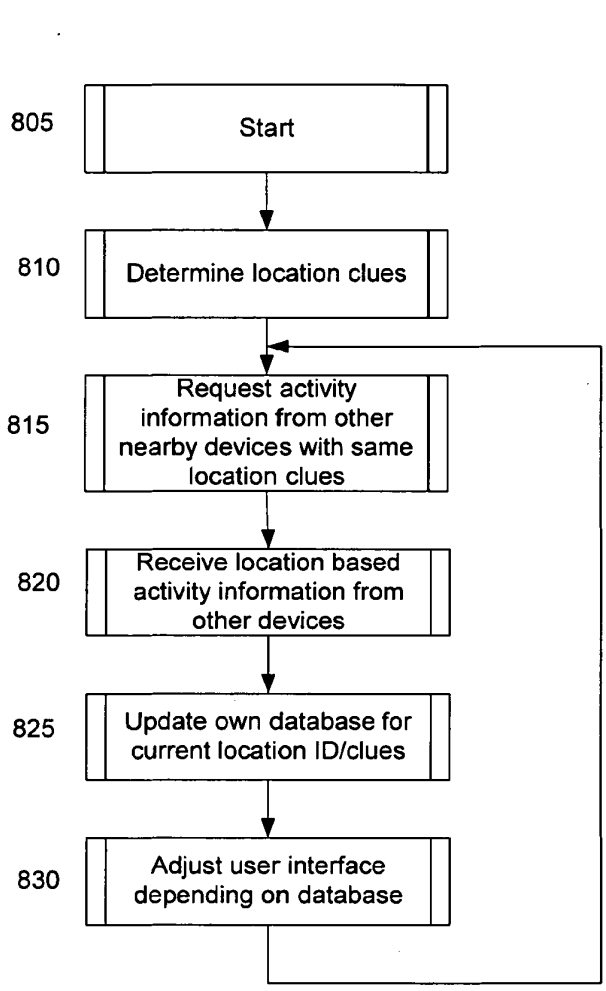

800
805
Start
810
Determine location clues
815
Request activity information from other nearby devices with same location clues
820
Receive location based activity information from other devices
825
Update own database for current location ID/clues
830
Adjust user interface depending on database

FIG 8

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 05 25 6148

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 5 603 054 A (THEIMER ET AL) 11 February 1997 (1997-02-11) * abstract * * figures 1-3 * * column 2, paragraph 7 * * column 4, paragraph 2 * * column 4, paragraph 5 * * column 8, paragraph 2 - column 10, paragraph 3 *	1-11, 13-20,22	H04L29/08
X Y	WO 02/42921 A (BUTTERFLY.NET, INC) 30 May 2002 (2002-05-30) * abstract * * page 3, paragraph 4 - page 5, paragraph 3 *	1-11, 13-20,22 12,21	
D,Y	US 2005/020307 A1 (PARUPUDI GOPAL ET AL) 27 January 2005 (2005-01-27) * abstract * * paragraphs [0008], [0034] *	12,21	
D,A	US 2004/203851 A1 (VETRO ANTHONY ET AL) 14 October 2004 (2004-10-14) * abstract * * paragraphs [0013] - [0016], [0020] *	1-22	TECHNICAL FIELDS SEARCHED (IPC) H04L

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	8 February 2006	Hackl, A

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 03.82 (P04C01)

EX. 1002
LG Electronics, Inc. / Page 797 of 3523

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 05 25 6148

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

08-02-2006

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5603054 A	11-02-1997	US 5555376 A	10-09-1996
		US 5717955 A	10-02-1998
		US 5611050 A	11-03-1997
		US 5544321 A	06-08-1996
WO 0242921 A	30-05-2002	AU 1985702 A	03-06-2002
US 2005020307 A1	27-01-2005	NONE	
US 2004203851 A1	14-10-2004	CN 1516947 A	28-07-2004
		EP 1493259 A1	05-01-2005
		WO 03085930 A1	16-10-2003
		JP 2005522763 T	28-07-2005

EPO FORM P0459

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

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.

Patent documents cited in the description

- US 20050020307 A **[0005]**
- US 20040203851 A **[0006]**
- JP 9053957 B **[0007]**

EX. 1002
LG Electronics, Inc. / Page 799 of 3523

(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 865 723 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
12.12.2007 Bulletin 2007/50

(51) Int Cl.:
H04N 7/173 (2006.01) *H04N 5/445* (2006.01)

(21) Application number: **06252937.5**

(22) Date of filing: **07.06.2006**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR MK YU

(71) Applicant: **Sony NetServices GmbH**
5081 Anif (AT)

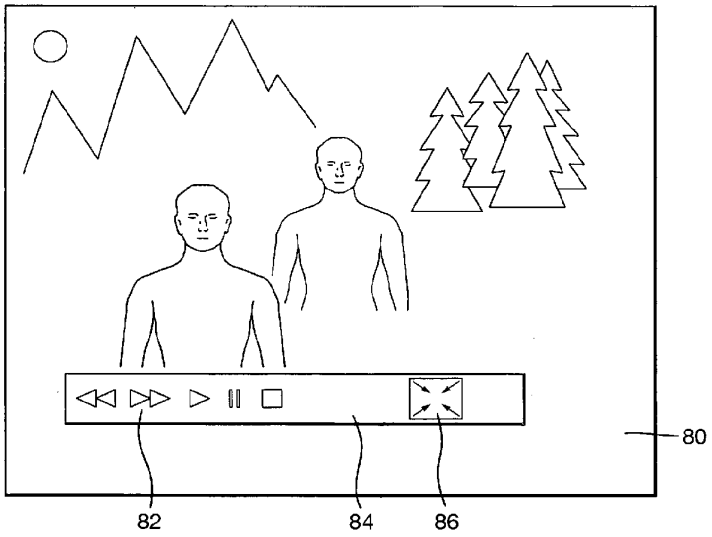
(72) Inventors:
- **Martin, Andreas**
  5020 Salzburg (AT)
- **Foetschl, Hans-Peter**
  5582 St. Michael (AT)

(74) Representative: **Smith, Samuel Leonard**
J.A. Kemp & Co.,
14 South Square,
Gray's Inn
London WC1R 5JJ (GB)

(54) Video-on-demand system

(57) A video-on-demand system in which an optical disk can be used to configure an optical disk player without a hard-drive memory to operate as a video-on-demand player. The server of the system makes use of a unique identifier for the disk so as to store profiles of the history of viewing video-on-demand programmes for the users of the respective disks. Recommendations of video-on-demand programmes can be made on the basis of the stored profiles. Furthermore, video-on-demand programmes can be provided in a first layer of a multi-layer page wherein overlay images relating to advertising content can be provided in another layer. Similarly, overlay images corresponding to respective control functions for the video-on-demand stream can be provided in other layers.

Fig.7.



EP 1 865 723 A1

Printed by Jouve, 75001 PARIS (FR)