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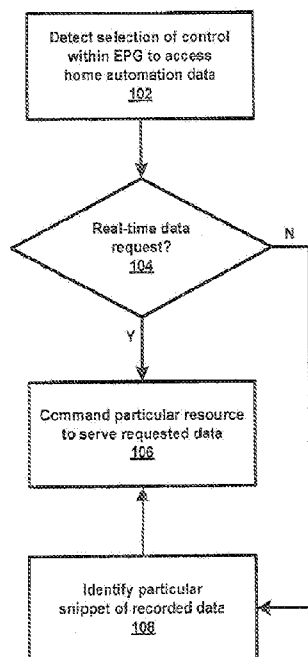


FIG. 1

(57) Abstract: Enabling an end-user to access home automation features or functionality directly from or via one or more interfaces that might normally be used to access satellite television-related programming and services.



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- as to the identity of the inventor (Rule 4.17(i))
- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

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HOME AUTOMATION SYSTEM INTEGRATION

CROSS-REFERENCE TO RELATED APPLICATION

5 [0001] This application claims the benefit of U.S. Provisional Patent Application Serial Number 61/914,856, filed 11 December 2013, entitled “METHODS AND SYSTEMS FOR HOME AUTOMATION,” the entirety of which is hereby incorporated by reference.

BACKGROUND

10 [0002] Home automation systems are becoming increasingly prevalent, the same of which may incorporate multiple “smart” devices that allow end-users to control and/or view status information for those devices. Systems and methods are contemplated herein to provide such users flexibility and convenience with respect to controlling and/or viewing status information for those and other devices incorporated into their home automation system.

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SUMMARY

[0003] In an aspect, a method may include or comprise outputting, by a television receiver to a presentation device for display, an electronic programming guide that includes a first menu item for access to programming as acquired by the television receiver over a broadcast television
20 communication link, and at least a second menu item for access to at least one of video and audio as acquired by a closed-circuit camera system that is communicatively coupled to the television receiver in a home automation environment; detecting, by the television receiver, user-selection of the second menu item for access to at least one of video and audio acquired by the closed-circuit camera system; and/or outputting, by the television receiver to the presentation device for
25 display, at least one of video and audio as acquired by the closed-circuit camera system in response to detecting user-selection of the second menu item for access to at least one of video and audio as acquired by the closed-circuit camera system.

[0004] Additionally, or alternatively, the method may include or comprise receiving a command to set a timer to acquire at least one of video and audio by the closed-circuit camera
30 system during a particular time period; and/or storing to persistent memory at least one of video

and audio acquired by the closed-circuit camera system during the particular time period for subsequent user-access via the second menu item.

[0005] Additionally, or alternatively, the method may include or comprise outputting the electronic programming guide for display by a television.

5 [0006] Additionally, or alternatively, the method may include or comprise outputting the electronic programming guide for display by a handled mobile device.

[0007] Additionally, or alternatively, the method may include or comprise outputting the electronic programming guide that which includes another menu item for access to particular home automation data acquired by a home automation system incorporated within the home automation environment and different from the closed-circuit camera system.

10 [0008] Additionally, or alternatively, the method may include or comprise receiving definition of a customized menu item for presentation within the electronic programming guide for access to particular home automation data acquired by a home automation system that is communicatively coupled to the television receiver in the home automation environment and different from the closed-circuit camera system.

[0009] Additionally, or alternatively, the method may include or comprise receiving definition of the second menu item to enable presentation of the second menu item within the electronic programming guide for access to at least one of video and audio acquired by the closed-circuit camera system.

20 [0010] Additionally, or alternatively, the method may include or comprise receiving a command to set a recording loop to acquire at least one of video and audio by the closed-circuit camera system over a finite time period; and/or periodically storing to persistent memory at least one of video and audio acquired by the closed-circuit camera system over the finite time period for subsequent user-access via the second menu item.

25 [0011] Additionally, or alternatively, the method may include or comprise outputting by the television receiver to the presentation device for display a live video feed acquired by the closed-circuit camera system.

[0012] Additionally, or alternatively, the method may include or comprise outputting by the television receiver to the presentation device for display video acquired by the closed-circuit camera system over a particular predetermined time period.

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[0013] Additionally, or alternatively, the method may include or comprise detecting by the television receiver user-selection of a particular control within the electronic programming to guide acquisition of least one of video and audio by the closed-circuit camera system.

[0014] In an aspect, a television receiver may include or comprise at least one processor; and
5 at least one memory element communicatively coupled with and readable by at least one processor and having stored therein processor-readable instructions. The processor-readable instructions when executed by the at least one processor may cause the at least one processor to: command the television receiver to output to a presentation device for display an electronic programming guide that includes a first menu item for access to satellite television programming,
10 and at least a second menu item for access to video as acquired by a closed-circuit camera system; detect user-selection of the second menu item for access to video acquired by the closed-circuit camera system; and command the television receiver to output to the presentation device for display video as acquired by the closed-circuit camera system based on the user-selection.

[0015] Additionally, or alternatively, the processor-readable instructions when executed by the
15 at least one processor may cause the at least one processor to: detect a command to set a timer to acquire video by the closed-circuit camera system during a particular time period; and/or store to the at least one memory element video acquired by the closed-circuit camera system during the particular time period for subsequent user-access via the second menu item.

[0016] Additionally, or alternatively, the processor-readable instructions when executed by the
20 at least one processor may cause the at least one processor to: command the television receiver to output the electronic programming guide for display by one of a television and a handheld mobile device.

[0017] Additionally, or alternatively, the processor-readable instructions when executed by the
25 at least one processor may cause the at least one processor to: command the television receiver to output the electronic programming guide that which includes another menu item for access to particular home automation data acquired by a home automation system that is different from the closed-circuit camera system and is incorporated within a home automation environment that includes the closed-circuit camera system.

[0018] Additionally, or alternatively, the processor-readable instructions when executed by the
30 at least one processor may cause the at least one processor to: store within the at least one memory element a definition of the second menu item to enable presentation of the second menu

item within the electronic programming guide for access to video acquired by the closed-circuit camera system.

[0019] Additionally, or alternatively, the processor-readable instructions when executed by the at least one processor may cause the at least one processor to: detect a command to set a recording loop to acquire video by the closed-circuit camera system over a finite time period; and/or store in periodic intervals to the at least one memory element video acquired by the closed-circuit camera system over a corresponding finite time period for subsequent user-access via the second menu item.

[0020] Additionally, or alternatively, the processor-readable instructions when executed by the at least one processor may cause the at least one processor to: command the television receiver to output to the presentation device for display a live video feed acquired by the closed-circuit camera system. Additionally, or alternatively, the processor-readable instructions when executed by the at least one processor may cause the at least one processor to: command the television receiver to output to the presentation device for display video acquired by the closed-circuit camera system over a particular predetermined time period.

[0021] In an aspect, a method may include or comprise detecting, by a television receiver, user-selection of a menu item within an electronic programming guide that identifies a particular channel for access to video acquired by a closed-circuit camera system that is communicatively coupled to the television receiver in a home automation environment; and outputting, by the television receiver to a presentation device for display, video acquired by the closed-circuit camera system in response to detecting user-selection of the menu item within an electronic programming guide that identifies the particular channel for access to video acquired by the closed-circuit camera system that is communicatively coupled to the television receiver in a home automation environment.

[0022] Other aspects and/or implementations are possible.

DESCRIPTION OF THE DRAWINGS

[0023] FIG. 1 shows an example method according to the disclosure.

[0024] FIG. 2 shows an example content distribution system according to the disclosure.

[0025] FIG. 3 shows an example block diagram of a television receiver of FIG. 2.

[0026] FIG. 4 shows an example home automation system according to the disclosure.

[0027] FIG. 5 shows first example aspects of the system of FIG. 4 in detail.

[0028] FIG. 6 shows second example aspects of the system of FIG. 4 in detail.

[0029] FIG. 7 shows third example aspects of the system of FIG. 4 in detail.

[0030] FIG. 8 shows fourth example aspects of the system of FIG. 4 in detail.

5 [0031] FIG. 9 shows an example computing system or device.

DETAILED DESCRIPTION

[0032] The present disclosure is directed to or towards systems and methods for enabling an end-user to access home automation features or functionality directly from or via one or more
10 interfaces that might normally be used to access satellite television-related programming and services. Advantageously, such an implementation may serve to entice new customers to subscribe to home automation services as offered by a particular satellite television provider, together or in tandem with typical satellite television programming related services, as well as provide an incentive for existing customers to maintain their loyalty and/or relationship with the
15 satellite television provider. Although not so limited, an appreciation of the various aspects of the present disclosure may be gained from the following discussion in connection with the drawings. For instance, referring now to FIG. 1, an example method 100 is shown in accordance with the principles of the present disclosure. It is contemplated that aspects of the method 100 may be implemented wholly or at least partially by a satellite television receiver, consistent with the
20 example of a satellite television implementation as discussed throughout.

[0033] At step 102, a particular television receiver that is incorporated into a home automation system as a home automation gateway device or the like may receive a command to access particular home automation data or information as acquired and/or aggregated by the particular television receiver. In some examples, the command may be instantiated upon user-
25 selection of a particular control element within an EPG (Electronic Programming Guide) to access the particular home automation data or information. For example, the EPG may provide access to a dedicated “channel” of video and/or audio as initially acquired by at least one security camera that is communicatively coupled to the particular television receiver. In one example, the dedicated channel is shown within the EPG together and in a manner similar to typical or
30 traditional television programming channels. The dedicated channel is different though in that

the content accessible via the dedicated channel is not received via a satellite communication channel, but instead via a closed-circuit security camera system. Other examples are possible.

[0034] At step **104**, the particular television receiver may make a determination as to whether the command corresponds to a request for home automation data or information currently or instantly being acquired in time, or for home automation data or information as previously acquired in time. A “live” security camera feed is an example of home automation data or information currently or instantly being acquired in time. A clip or segment of a security camera feed recorded or stored to a persistent memory location for a particular period of time is an example of home automation data or information as previously acquired in time. Other examples are possible.

[0035] When, for example, the command corresponds to a request for home automation data or information currently or instantly being acquired in time, process flow within the example method **100** may branch to step **106**. At step **106**, the particular television receiver may command a particular resource to serve requested content to a presentation device for display thereby. For example, in a remote access scenario, the particular television receiver may command a particular server or server system to serve a live security camera feed to a smartphone for display thereby. As another example, in a non-remote access scenario, the particular television receiver itself may serve the live security camera feed to a television within a particular residence in which the particular television receiver is integrated into an associated home automation system as a home automation gateway device for display thereby.

[0036] When, however, the command corresponds to a request for home automation data or information as previously acquired in time, process flow within the example method **100** may branch to step **108**. At step **108**, the particular television receiver may identify a particular clip or snippet of recorded content for the purpose of serving the same to a presentation device for display thereby. Process flow within the example method **100** may then branch back to step **106** where the particular television receiver may command a particular resource to serve requested content to a presentation device for display thereby in a manner as discussed above. Further scenarios and/or beneficial aspects associated with enabling an end-user to access home automation features or functionality directly from or via one or more interfaces that might normally be used to access satellite television-related programming and services are described in detail below in connection with **FIGS. 2-9**.

[0037] Referring now to **FIG. 2**, an example satellite television distribution system **200** is shown in accordance with the present disclosure. For brevity, the system **200** is depicted in a simplified form, and may include more or fewer systems, devices, networks, and/or other components as desired. Further, number and type of features or elements incorporated within the system **200** may or may not be implementation-specific, and at least some of the aspects of the system **200** may be similar to a cable television distribution system, an IPTV (Internet Protocol Television) content distribution system, and/or any other type of content distribution system.

[0038] The example system **200** may include a service provider **202**, a satellite uplink **204**, a plurality of satellites **206a-c**, a satellite dish **208**, a PTR (Primary Television Receiver) **210**, a plurality of STRs (Secondary Television Receivers) **212a-b**, a plurality of televisions **214a-c**, a plurality of computing devices **216a-b**, and at least one server **218** that may in general be associated with or operated or implemented by the service provider **202**. Additionally, the PTR **210**, computing devices **216a-b**, and server **218** may include or otherwise exhibit a HASI (Home Automation System Integration) module **220**. In general, and as discussed in further detail below, the HASI module **220** may be configured and/or arranged for enabling an end-user to access home automation features or functionality directly from or via one or more interfaces that might normally be used to access satellite television-related programming and services, in accordance with the principles of the present disclosure.

[0039] The system **200** may further include at least one network **224** that establishes a bi-directional communication path for data transfer between and among each respective element of the system **200**, outside or separate from the unidirectional satellite signaling path. The network **224** is intended to represent any number of terrestrial and/or non-terrestrial network features or elements. For example, the network **224** may incorporate or exhibit any number of features or elements of various wireless and/or hardwired packet-based communication networks such as, for example, a WAN (Wide Area Network) network, a HAN (Home Area Network) network, a LAN (Local Area Network) network, a WLAN (Wireless Local Area Network) network, the Internet, a cellular communications network, or any other type of communication network configured such that data may be transferred between and among elements of the system **200**.

[0040] The PTR **210**, and the STRs **212a-b**, as described throughout may generally be any type of television receiver, television converter, etc., such as a STB for example. In another example, the PTR **210**, and the STRs **212a-b**, may exhibit functionality integrated as part of or

into a television, a DVR (Digital Video Recorder), a computer such as a tablet computing device, or any other computing system or device, as well as variations thereof. Further, the PTR **210** and the network **224**, together with the STRs **212a-b** and televisions **214a-c**, and possibly the computing devices **216a-b**, may each be incorporated within or form at least a portion of a particular home computing network. Further, the PTR **210** may be configured so as to enable communications in accordance with any particular communication protocol(s) and/or standard(s) including, for example, TCP/IP (Transmission Control Protocol/Internet Protocol), DLNA/DTCP-IP (Digital Living Network Alliance/Digital Transmission Copy Protection over Internet Protocol), HDMI/HDCP (High-Definition Multimedia Interface/High-bandwidth Digital Content Protection), etc. Other examples are possible. For example, one or more of the various elements or components of the example system **200** may be configured to communicate in accordance with the MoCA® (Multimedia over Coax Alliance) home entertainment networking standard. Still other examples are possible.

[0041] In practice, the satellites **206a-c** may each be configured to receive uplink signals **226a-c** from the satellite uplink **204**. In this example, each the uplink signals **226a-c** may contain one or more transponder streams of particular data or content, such as one or more particular television channels, as supplied by the service provider **202**. For example, each of the respective uplink signals **226a-c** may contain various media or media content such as encoded HD (High Definition) television channels, SD (Standard Definition) television channels, on-demand programming, programming information, and/or any other content in the form of at least one transponder stream, and in accordance with an allotted carrier frequency and bandwidth. In this example, different media content may be carried using different ones of the satellites **206a-c**.

[0042] Further, different media content may be carried using different transponders of a particular satellite (e.g., satellite **206a**); thus, such media content may be transmitted at different frequencies and/or different frequency ranges. For example, a first and second television channel may be carried on a first carrier frequency over a first transponder of satellite **206a**, and a third, fourth, and fifth television channel may be carried on second carrier frequency over a first transponder of satellite **206b**, or, the third, fourth, and fifth television channel may be carried on a second carrier frequency over a second transponder of satellite **206a**, and etc. Each of these television channels may be scrambled such that unauthorized persons are prevented from accessing the television channels.

[0043] The satellites **206a-c** may further be configured to relay the uplink signals **226a-c** to the satellite dish **208** as downlink signals **228a-c**. Similar to the uplink signals **226a-c**, each of the downlink signals **228a-c** may contain one or more transponder streams of particular data or content, such as various encoded and/or at least partially electronically scrambled television channels, on-demand programming, etc., in accordance with an allotted carrier frequency and bandwidth. The downlink signals **228a-c**, however, may not necessarily contain the same or similar content as a corresponding one of the uplink signals **226a-c**. For example, the uplink signal **226a** may include a first transponder stream containing at least a first group or grouping of television channels, and the downlink signal **228a** may include a second transponder stream containing at least a second, different group or grouping of television channels. In other examples, the first and second group of television channels may have one or more television channels in common. In sum, there may be varying degrees of correlation between the uplink signals **226a-c** and the downlink signals **228a-c**, both in terms of content and underlying characteristics.

[0044] Further, satellite television signals may be different from broadcast television or other types of signals. Satellite signals may include multiplexed, packetized, and modulated digital signals. Once multiplexed, packetized and modulated, one analog satellite transmission may carry digital data representing several television stations or service providers. Some examples of service providers include HBO®, CBS®, ESPN®, and etc. Further, the term “channel,” may in some contexts carry a different meaning from or than its normal, plain language meaning. For example, the term “channel” may denote a particular carrier frequency or sub-band which can be tuned to by a particular tuner of a television receiver. In other contexts though, the term “channel” may refer to a single program/content service such as HBO®.

[0045] Additionally, a single satellite may typically have multiple transponders (e.g., 32 transponders) each one broadcasting a channel or frequency band of about 24-27 MHz in a broader frequency or polarity band of about 500 MHz. Thus, a frequency band of about 500 MHz may contain numerous sub-bands or channels of about 24-27 MHz, and each channel in turn may carry a combined stream of digital data comprising a number of content services. For example, a particular hypothetical transponder may carry HBO®, CBS®, ESPN®, plus several other channels, while another particular hypothetical transponder may itself carry 3, 4, 5, 6, etc., different channels depending on the bandwidth of the particular transponder and the amount of

that bandwidth occupied by any particular channel or service on that transponder stream. Further, in many instances a single satellite may broadcast two orthogonal polarity bands of about 500 MHz. For example, a first polarity band of about 500 MHz broadcast by a particular satellite may be left-hand circular polarized, and a second polarity band of about 500 MHz may be right-hand circular polarized. Other examples are possible.

[0046] Continuing with the example scenario, the satellite dish **208** may be provided for use to receive television channels (e.g., on a subscription basis) provided by the service provider **202**, satellite uplink **204**, and/or satellites **206a-c**. For example, the satellite dish **208** may be configured to receive particular transponder streams, or downlink signals **228a-c**, from one or more of the satellites **206a-c**. Based on the characteristics of the PTR **210** and/or satellite dish **208**, however, it may only be possible to capture transponder streams from a limited number of transponders concurrently. For example, a particular tuner of the PTR **210** may be configured to tune to a single transponder stream from a transponder of a single satellite at a time.

[0047] Additionally, the PTR **210**, which is communicatively coupled to the satellite dish **208**, may subsequently select via tuner, decode, and relay particular transponder streams to the television **214c** for display thereon. For example, the satellite dish **208** and the PTR **210** may, respectively, be configured to receive, decode, and relay at least one premium HD-formatted television channel to the television **214c**. Programming or content associated with the HD channel may generally be presented live, or from a recording as previously stored on, by, or at the PTR **210**. Here, the HD channel may be output to the television **214c** in accordance with the HDMI/HDCP content protection technologies. Other examples are however possible.

[0048] Further, the PTR **210** may select via tuner, decode, and relay particular transponder streams to one or both of the STRs **212a-b**, which may in turn relay particular transponder streams to a corresponding one of the televisions **214a-b** for display thereon. For example, the satellite dish **208** and the PTR **210** may, respectively, be configured to receive, decode, and relay at least one television channel to the television **214a** by way of the STR **212a**. Similar to the above-example, the television channel may generally be presented live, or from a recording as previously stored on the PTR **210**, and may be output to the television **214a** by way of the STR **212a** in accordance with a particular content protection technology and/or networking standard. Still further, the satellite dish **208** and the PTR **210** may, respectively, be configured to receive, decode, and relay at least one premium television channel to one or each of the computing

devices **216a-c**. Similar to the above-examples, the television channel may generally be presented live, or from a recording as previously stored on the PTR **210**, and may be output to one or both of the computing devices **216a-c** in accordance with a particular content protection technology and/or networking standard.

5 [0049] Referring now to **FIG. 3**, an example block diagram of the PTR **210** of **FIG. 2** is shown in accordance with the disclosure. In some examples, the STRs **312a-b** may be configured in a manner similar to that of the PTR **210**. In some examples, the STRs **312a-b** may be configured and arranged to exhibit a reduced functionality as compared to the PTR **210**, and may depend at least to a certain degree on the PTR **210** to implement certain features or functionality.

10 The STRs **312a-b** in this example may be each referred to as a “thin client.”

[0050] The PTR **210** may include one or more processors **302**, a plurality of tuners **304a-h**, at least one network interface **306**, at least one non-transitory computer-readable storage medium **308**, at least one EPG database **310**, at least one television interface **312**, at least one PSI (Program Specific Information) table **314**, at least one DVR database **316**, at least one user interface **318**, at least one demultiplexer **320**, at least one smart card **322**, at least one descrambling engine **324**, at least one decoder **326**, and at least one communication interface **328**. In other examples, fewer or greater numbers of components may be present. Further, functionality of one or more components may be combined; for example, functions of the descrambling engine **324** may be performed by the processors **302**. Still further, functionality of components may be distributed among additional components, and possibly additional systems such as, for example, in a cloud-computing implementation.

25 [0051] The processors **302** may include one or more specialized and/or general-purpose processors configured to perform processes such as tuning to a particular channel, accessing and displaying EPG information, and/or receiving and processing input from a user. For example, the processors **302** may include one or more processors dedicated to decoding video signals from a particular format, such as according to a particular MPEG (Motion Picture Experts Group) standard, for output and display on a television, and for performing or at least facilitating decryption or descrambling.

30 [0052] The tuners **304a-h** may be used to tune to television channels, such as television channels transmitted via satellites **206a-c**. Each one of the tuners **304a-h** may be capable of receiving and processing a single stream of data from a satellite transponder, or a cable RF

channel, at a given time. As such, a single tuner may tune to a single transponder or, for a cable network, a single cable channel. Additionally, one tuner (e.g., tuner **304a**) may be used to tune to a television channel on a first transponder stream for display using a television, while another tuner (e.g., tuner **304b**) may be used to tune to a television channel on a second transponder for recording and viewing at some other time. If multiple television channels transmitted on the same transponder stream are desired, a particular tuner (e.g., tuner **304c**) may be used to receive the signal containing the multiple television channels for presentation and/or recording of each of the respective multiple television channels, such as in a PTAT (Primetime Anytime) implementation for example. Although eight tuners are shown, the PTR **210** may include more or fewer tuners (e.g., three tuners, sixteen tuners, etc.), and the features of the disclosure may be implemented similarly and scale according to the number of tuners of the PTR **210**.

[0053] The network interface **306** may be used to communicate via alternate communication channel(s) with a service provider. For example, the primary communication channel between the service provider **202** of FIG. 2 and the PTR **210** may be via satellites **206a-c**, which may be unidirectional to the PTR **210**, and another communication channel between the service provider **202** and the PTR **210**, which may be bidirectional, may be via the network **224**. In general, various types of information may be transmitted and/or received via the network interface **306**.

[0054] The storage medium **308** may represent a non-transitory computer-readable storage medium. The storage medium **308** may include memory and/or a hard drive. The storage medium **308** may be used to store information received from one or more satellites and/or information received via the network interface **306**. For example, the storage medium **308** may store information related to the EPG database **310**, the PSI table **314**, and/or the DVR database **316**, among other elements or features, such as the HASI module **220** mentioned above. Recorded television programs may be stored using the storage medium **308** and ultimately accessed therefrom.

[0055] The EPG database **310** may store information related to television channels and the timing of programs appearing on such television channels. Information from the EPG database **310** may be used to inform users of what television channels or programs are available, popular and/or provide recommendations. Information from the EPG database **310** may be used to generate a visual interface displayed by a television that allows a user to browse and select television channels and/or television programs for viewing and/or recording. Information used to

populate the EPG database **310** may be received via the network interface **306** and/or via satellites **206a-c** of **FIG. 2**. For example, updates to the EPG database **310** may be received periodically or at least intermittently via satellite. The EPG database **310** may serve as an interface for a user to control DVR functions of the PTR **210**, and/or to enable viewing and/or recording of multiple television channels simultaneously.

[0056] The decoder **326** may convert encoded video and audio into a format suitable for output to a display device. For instance, the decoder **326** may receive MPEG video and audio from the storage medium **308**, or the descrambling engine **324**, to be output to a television. MPEG video and audio from the storage medium **308** may have been recorded to the DVR database **316** as part of a previously-recorded television program. The decoder **326** may convert the MPEG video and audio into a format appropriate to be displayed by a television or other form of display device and audio into a format appropriate to be output from speakers, respectively. The decoder **326** may be a single hardware element capable of decoding a finite number of television channels at a given time, such as in a time-division arrangement. In the example embodiment, eight television channels may be decoded concurrently or simultaneously.

[0057] The television interface **312** output a signal to a television, or another form of display device, in a proper format for display of video and play back of audio. As such, the television interface **312** may output one or more television channels, stored television programming from the storage medium **308**, such as television programs from the DVR database **316** and/or information from the EPG database **310** for example, to a television for presentation.

[0058] The PSI table **314** may store information used by the PTR **210** to access various television channels. Information used to populate the PSI table **314** may be received via satellite, or cable, through the tuners **304a-h** and/or may be received via the network interface **306** over the network **224** from the service provider **202** shown in **FIG. 2**. Information present in the PSI table **314** may be periodically or at least intermittently updated. Information that may be present in the PSI table **314** may include: television channel numbers, satellite identifiers, frequency identifiers, transponder identifiers, ECM PIDs (Entitlement Control Message, Packet Identifier), one or more audio PIDs, and video PIDs. A second audio PID of a channel may correspond to a second audio program, such as in another language. In some examples, the PSI table **314** may be divided into a number of tables, such as a NIT (Network Information Table), a PAT (Program Association Table), and a PMT (Program Management Table).

[0059] **Table 1** below provides a simplified example of the PSI table **314** for several television channels. It should be understood that in other examples, many more television channels may be represented in the PSI table **314**. The PSI table **314** may be periodically or at least intermittently. As such, television channels may be reassigned to different satellites and/or transponders, and the PTR **210** may be able to handle this reassignment as long as the PSI table **314** is updated.

Channel	Satellite	Transponder	ECM PID	Audio PIDs	Video PID
4	1	2	27	2001	1011
5	2	11	29	2002	1012
7	2	3	31	2003	1013
13	2	4	33	2003, 2004	1013

Table 1

[0060] It should be understood that the values provided in **Table 1** are for example purposes only. Actual values, including how satellites and transponders are identified, may vary. Additional information may also be stored in the PSI table **314**. Video and/or audio for different television channels on different transponders may have the same PIDs. Such television channels may be differentiated based on which satellite and/or transponder to which a tuner is tuned.

[0061] DVR functionality of the PTR **210** may permit a television channel to be recorded for a period of time. The DVR database **316** may store timers that are used by the processors **302** to determine when a television channel should be tuned to and recorded to the DVR database **316** of storage medium **308**. In some examples, a limited amount of space of the storage medium **308** may be devoted to the DVR database **316**. Timers may be set by the service provider **202** and/or one or more users of the PTR **210**. DVR functionality of the PTR **210** may be configured by a user to record particular television programs. The PSI table **314** may be used by the PTR **210** to determine the satellite, transponder, ECM PID, audio PID, and video PID.

[0062] The user interface **318** may include a remote control, physically separate from PTR **210**, and/or one or more buttons on the PTR **210** that allows a user to interact with the PTR **210**. The user interface **318** may be used to select a television channel for viewing, view information from the EPG database **310**, and/or program a timer stored to the DVR database **316** wherein the timer may be used to control the DVR functionality of the PTR **210**.

[0063] Referring back to the tuners **304a-h**, television channels received via satellite may contain at least some encrypted or scrambled data. Packets of audio and video may be scrambled to prevent unauthorized users, such as nonsubscribers, from receiving television programming without paying the service provider **202**. When one of the tuners **304a-h** is receiving data from a particular transponder of a satellite, the transponder stream may be a series of data packets corresponding to multiple television channels. Each data packet may contain a PID, which in combination with the PSI table **314**, can be determined to be associated with a particular television channel. Particular data packets, referred to as ECMs may be periodically transmitted. ECMs may be encrypted; the PTR **210** may use the smart card **322** to decrypt ECMs.

[0064] The smart card **322** may function as the CA (Controlled Access) which performs decryption of encryption data to obtain control words that are used to descramble video and/or audio of television channels. Decryption of an ECM may only be possible when the user (e.g., an individual who is associated with the PTR **210**) has authorization to access the particular television channel associated with the ECM. When an ECM is received by the demultiplexer **320** and the ECM is determined to correspond to a television channel being stored and/or displayed, the ECM may be provided to the smart card **322** for decryption.

[0065] When the smart card **322** receives an encrypted ECM from the demultiplexer **320**, the smart card **322** may decrypt the ECM to obtain some number of control words. In some examples, from each ECM received by the smart card **322**, two control words are obtained. In some examples, when the smart card **322** receives an ECM, it compares the ECM to the previously received ECM. If the two ECMs match, the second ECM is not decrypted because the same control words would be obtained. In other examples, each ECM received by the smart card **322** is decrypted; however, if a second ECM matches a first ECM, the outputted control words will match; thus, effectively, the second ECM does not affect the control words output by the smart card **322**. When an ECM is received by the smart card **322**, it may take a period of time for the ECM to be decrypted to obtain the control words. As such, a period of time, such as about 0.2-0.5 seconds, may elapse before the control words indicated by the ECM can be obtained. The smart card **322** may be permanently part of the PTR **210** or may be configured to be inserted and removed from the PTR **210**.

[0066] The demultiplexer **320** may be configured to filter data packets based on PIDs. For example, if a transponder data stream includes multiple television channels, data packets

corresponding to a television channel that are not desired to be stored or displayed by the user may be ignored by the demultiplexer **320**. As such, only data packets corresponding to the one or more television channels desired to be stored and/or displayed may be passed to either the descrambling engine **324** or the smart card **322**; other data packets may be ignored. For each channel, a stream of video packets, a stream of audio packets and/or a stream of ECM packets may be present, each stream identified by a PID. In some examples, a common ECM stream may be used for multiple television channels. Additional data packets corresponding to other information, such as updates to the PSI table **314**, may be appropriately routed by the demultiplexer **320**.

[0067] The descrambling engine **324** may use the control words output by the smart card **322** in order to descramble video and/or audio corresponding to television channels for storage and/or presentation. Video and/or audio data contained in the transponder data stream received by the tuners **304a-h** may be scrambled. The video and/or audio may be descrambled by the descrambling engine **324** using a particular control word. Which control word output by the smart card **322** to be used for successful descrambling may be indicated by a scramble control identifier present within the data packet containing the scrambled video or audio. Descrambled video and/or audio may be output by the descrambling engine **324** to the storage medium **308** for storage, such as part of the DVR database **316** for example, and/or to the decoder **326** for output to a television or other presentation equipment via the television interface **312**.

[0068] The communication interface **328** may be used by the PTR **210** to establish a communication link or connection between the PTR **210** and one or more of the computing systems and devices as shown in **FIG. 2** and **FIG. 4**, discussed further below. It is contemplated that the communication interface **328** may take or exhibit any form as desired, and may be configured in a manner so as to be compatible with a like component or element incorporated within or to a particular one of the computing systems and devices as shown in **FIG. 2** and **FIG. 4**, and further may be defined such that the communication link may be wired and/or or wireless. Example technologies consistent with the principles or aspects of the present disclosure may include, but are not limited to, Bluetooth®, WiFi, NFC (Near Field Communication), HomePlug®, and/or any other communication device or subsystem similar to that discussed below in connection with **FIG. 9**.

[0069] For brevity, the PTR 210 is depicted in a simplified form, and may generally include more or fewer elements or components as desired, including those configured and/or arranged for implementing various features for enabling an end-user to access home automation features or functionality directly from or via one or more interfaces that might normally be used to access satellite television-related programming and services, in accordance with the principles of the present disclosure. For example, the PTR 210 is shown in FIG. 3 to include the HASI module 220 as mentioned above in connection with FIG. 2. While shown stored to the storage medium 308 as executable instructions, the HASI module 220 could, wholly or at least partially, be stored to the processor(s) 302 of the PTR 210. Further, some routing between the various modules of PTR 210 has been illustrated. Such illustrations are for exemplary purposes only. The state of two modules not being directly or indirectly connected does not indicate the modules cannot communicate. Rather, connections between modules of the PTR 210 are intended only to indicate possible common data routing. It should be understood that the modules of the PTR 210 may be combined into a fewer number of modules or divided into a greater number of modules.

[0070] Additionally, although not explicitly shown in FIG. 3, the PTR 210 may include one or more logical modules configured to implement a television steaming media functionality that encodes video into a particular format for transmission over the Internet such as to allow users to remotely view and control a home cable, satellite, or personal video recorder system from an Internet-enabled computer with a broadband Internet connection. The Slingbox® by Sling Media, Inc. of Foster City, CA, is one example of a product that implements such functionality. Further, the PTR 210 may be configured to include any number of other various components or logical modules that are implemented in hardware, software, firmware, or any combination thereof, and such components or logical modules may or may not be implementation-specific.

[0071] Referring now to FIG. 4, an example home automation system 400 is shown in accordance with the present disclosure. In general, the home automation system 400 is hosted by the PTR 210 of FIG. 2, and thus the PTR 210 may be considered a home automation gateway device or system. For example, the PTR 210 may be configured and/or arranged to communicate with multiple in-home or on-residence home automation-related systems and/or devices. Some examples of which include, but are not limited to: at least one pet door/feeder 402, at least one smoke/CO₂ detector 404, a home security system 406, at least one security camera 408, at least one window sensor 410, at least one door sensor 412, at least one weather sensor 414, at least

one shade controller **416**, at least one utility monitor **418**, at least one wireless device **420**, at least one health sensor **422**, at least one communication device **424**, at least one intercom **426**, at least one overlay device **428**, at least one display device **430**, at least one cellular modem **432**, at least one light controller **434**, at least one thermostat **436**, at least one leak detection sensor **438**,
5 at least one appliance controller **440**, at least one garage door controller **442**, at least one lock controller **444**, at least one irrigation controller **446**, and at least one doorbell sensor **448**. The home automation system **400** of **FIG. 4** is just an example. Other examples are possible, as discussed further below.

[0072] It is contemplated that the each of the elements of **FIG. 4**, that which with the PTR
10 **210** communicates, may use different communication standards. For instance, one or more elements may use or otherwise leverage a ZigBee® communication protocol, while one or more other devices may communicate with the PTR **210** using a Z-Wave® communication protocol. Other forms of wireless communication may be used by particular elements of **FIG. 4** to enable communications to and from the PTR **210**, such as any particular IEEE (Institute of Electrical
15 and Electronics Engineers) standard or specification or protocol, such as the IEEE 802.11 technology for example.

[0073] In some examples, a separate device may be connected with the PTR **210** to enable communication with the smart home automation systems or devices of **FIG. 4**. For instance, the communication device **424** as shown coupled with the PTR **210** may take the form of a dongle.

20 In some examples, the communication device **424** may be configured to allow for Zigbee®, Z-Wave®, and/or other forms of wireless communication. In some example, the communication device **424** may connect with the PTR **210** via a USB (Universal Serial Bus) port or via some other type of (e.g., wired) communication port. Accordingly, the communication device **424** may be powered by the PTR **210** or may be separately coupled with another different particular power
25 source. In some examples, the PTR **210** may be enabled to communicate with a local wireless network and may use communication device in order to communicate with devices that use a ZigBee® communication protocol, Z-Wave® communication protocol, and/or some other wireless communication protocols.

[0074] In some examples, the communication device **424** may also serve to allow or enable
30 additional components to be connected with the PTR **210**. For instance, the communication device **424** may include additional audio/video inputs (e.g., HDMI), component, and/or

composite inputs to allow for additional devices (e.g., Blu-Ray players) to be connected with the PTR 210. Such a connection may allow video comprising home automation information to be “overlaid” with television programming, both being output for display by a particular presentation device. Whether home automation information is overlaid onto video on display
5 may be triggered based on a press of a remote control button by an end-user.

[0075] Regardless of whether the PTR 210 uses the communication device 242 to communicate with any particular home automation device shown in FIG. 4 or other particular home automation device not explicitly shown in FIG. 4, the PTR 210 may be configured to output home automation information for presentation via the display device 430. It is
10 contemplated that the display device 430 could correspond to any particular one of the mobile devices 216a-b and televisions 214a-c as shown in FIG. 2. Still other examples are possible. Such information may be presented simultaneously, concurrently, in tandem, etc., with any particular television programming received by the PTR 210 via any particular communication channel as discussed above in connection with at least FIG. 2. It is further contemplated that the
15 PTR 210 may also, at any particular instant or given time, output only television programming or only home automation information based on preferences or commands or selections of particular controls within an interface of or by any particular end-user. Furthermore, an end-user may be able to provide input to the PTR 210 to control the home automation system 400, in its entirety as hosted by the PTR 210 or by the overlay device 428, as discussed further below.

[0076] In some examples (indicated by intermittent line in FIG. 4), the overlay device 428
20 may be coupled with the PTR 210 to allow or enable home automation information to be presented via the display device 430. It is contemplated that the overlay device 428 may be configured and/or arranged to overlay information, such as home automation information, onto a signal that will ultimately enable the home automation information to be visually presented via
25 the display device 430. In this example, the PTR 210 may receive, decode, descramble, decrypt, store, and/or output television programming. The PTR 210 may output a signal, such as in the form of an HDMI signal. Rather than being directly input to the display device 430, however, the output of the PTR 210 may be input to the overlay device 428. Here, the overlay device 428 may receive the video and/or audio output from the PTR 210.

[0077] The overlay device 428 may add additional information to the video and/or audio
30 signal received from the PTR 210 so as to modify or augment or even “piggyback” on the same.

That video and/or audio signal may then be output by the overlay device **428** to the display device **430** for presentation thereon. In some examples, the overlay device **428** may include or exhibit an HDMI input/output, with the HDMI output being connected to the display device **430**. While **FIG. 4** shows lines illustrating communication between the PTR **210** and other various devices, it will be appreciated that such communication may exist, in addition or in alternate via the communication device **424** and/or the overlay device **428**. In other words, any particular input to the PTR **210** as shown in **FIG. 4** may additionally, or alternatively, be supplied as input to one or both of the communication device **424** and the overlay device **428**.

[0078] As alluded to above, the PTR **210** may be used to provide home automation functionality, but the overlay device **428** may be used to modify a particular signal so that particular home automation information may be presented via the display device **430**. Further, the home automation functionality as detailed throughout in relation to the PTR **210** may alternatively be provided by or via the overlay device **428**. Using the overlay device **428** to present automation information via the display device **430** may be beneficial and/or advantageous in many respects. For instance, it is contemplated that multiple devices may provide input video to the overlay device **428**. For instance, the PTR **210** may provide television programming to the overlay device **428**, a DVD/Blu-Ray player may provide video to the overlay device **428**, and a separate IPTV device may stream other programming to the overlay device **428**. Regardless of the source of particular video/audio, the overlay device **428** may output video and/or audio that has been modified or augmented, etc., to include home automation information and then output to the display device **430**. As such, regardless of the source of video/audio, the overlay device **428** may modify the audio/video to include home automation information and, possibly, solicit for user input. For instance, in some examples the overlay device **428** may have four video inputs (e.g., four HDMI inputs) and a single video output (e.g., an HDMI output). In other examples, the PTR **210** may exhibit such features or functionality. As such, a separate device, such as a Blu-ray player may be connected with a video input of the PTR **210**, thus allowing the PTR **210** to overlay home automation information when content from the Blu-Ray player is being output to the display device **430**.

[0079] Regardless of whether the PTR **210** is itself configured to provide home automation functionality and output home automation input for display via the display device **430** or such home automation functionality is provided via the overlay device **428**, home automation

information may be presented by the display device **430** while television programming is also being presented by display device **430**. For instance, home automation information may be overlaid or may replace a portion of television programming, such as broadcast content, stored content, on-demand content, etc., presented via the display device **430**. As an example, and as discussed in further detail below, **FIG. 7** shows an example display by the television **214c** of **FIG. 2**, the same of which is supplied to the television **214c** by the PTR **210** which is configured to host the home automation system **400** in accordance with the principles of the present disclosure. In **FIG. 7**, while television programming consisting of a baseball game is being presented, the display is augmented with information related to home automation. In general, the television programming may represent broadcast programming, recorded content, on-demand content, or some other form of content. The exemplary illustrated home automation information is related to motion being detected by a camera at a front door of a residence. Such augmentation of the television programming may be performed directly by the PTR **210** (which may or may not be in communication with the communication device **242**), the overlay device **428**, or even a combination thereof. Such augmentation may result in solid or opaque or partially transparent graphics being overlaid onto television programming (or other forms of video) output by the PTR **210** and displayed by the television **214c**. Furthermore, the overlay device **428** and/or the PTR **210** may add or modify sound to television programming also or alternatively. For instance, in response to a doorbell ring, a sound may be played through the television **214c** (or connected audio system). In addition or in alternate, a graphic may be displayed. In other examples, other particular camera data (e.g., nanny camera data) and/or associated sound or motion sensors may be integrated in the system and overlaid or otherwise made available to a user. For example, detection of a crying baby from a nanny camera may trigger an on-screen alert to a user watching television.

[0080] Still further, and also as discussed in further detail below in connection with **FIG. 7**, such presented home automation information may request or at least enable end-user user input. For instance, an end-user may via section of one or more controls of a particular interface output by the PTR **210** (e.g., via a remote control) and/or the overlay device **428**, can specify whether video from a camera at the front door should be presented, not presented, or if future notifications related to such motion such be ignored. If ignored, this may be for a predefined period of time, such as an hour, or until the PTR **210** or the overlay device **428** is powered down

and powered back on. Ignoring of video may be particularly useful if motion or some other event is triggering the presentation of video that is not interesting to a viewer of the display device **430** (or a wireless device), such as children playing on the lawn or snow falling.

[0081] Returning to **FIG. 4** alone, the PTR **210** and/or the overlay device **428**, depending on implementation-specific details, may communicate with one or more wireless devices, such as the wireless device **420**. The wireless device **420** may represent a tablet computer, cellular phone, laptop computer, remote computer, or some other device through which a user may desire to control home automation settings and view home automation information in accordance with the principles of the present disclosure. Such a device also need not necessarily be wireless, such as in a desktop computer embodiment. It is contemplated that the PTR **210**, communication device **424**, and/or the overlay device **428** may communicate directly with the wireless device **420**, or may use a local wireless network, such as network **224** for instance. The wireless device **420** may be remotely located and not connected with a same local wireless network as one or more of the other devices or elements of **FIG. 4**. Via the Internet, the PTR **210** and/or the overlay device **428** may transmit a notification to the wireless device **420** regarding home automation information. For instance, a third-party notification server system, such as a notification server system operated by Apple Inc., of Cupertino, CA may be used to send such notifications to the wireless device **420**.

[0082] Various home automation devices may be in communication with the HASI module **220** of the PTR **210** (collectively, "PTR **210**" throughout) and/or the overlay device **428**, depending on implementation-specific details. Such home automation devices may use similar or disparate communication protocols. Such home automation devices may communicate with the PTR **210** directly or via the communication device **424**. Such home automation devices may be controlled by a user and/or have a status viewed by a user via the display device **430** and/or wireless device **420**. Such home automation devices may include, but are not limited to:

[0083] One or more cameras, such as the security camera **408**. It is contemplated that the security camera **408** may be installed indoors, outdoors, and may provide a video and, possibly, an audio stream that may be presented via the wireless device **420** and/or display device **430**. Video and/or audio from the security camera **408** may be recorded by the overlay device **428** and/or the PTR **210** continuously, in a loop as per a predefined time period, upon an event occurring, such as motion being detected by the security camera **408**, and etc. For example,

video and/or audio from security camera **408** may be continuously recorded such as in the form of a rolling window, thus allowing a period of time of video/audio to be reviewed by a user from before a triggering event and after the triggering event. Video/audio may be recorded on a persistent storage device local to overlay device **428** and/or the PTR **210**, and/or may be recorded and stored on an external storage devices, such as a network attached storage device or the server **218** of **FIG. 2**. In some examples, video may be transmitted across a local and/or wide area network to other one or more other storage devices upon occurrence of a trigger event, for later playback. For initial setup for example, a still may be captured by the security camera **408** and stored by the PTR **210** for subsequent presentation as part of a user interface via the display device **430**. In this way, an end-user can determine which camera, if multiple cameras are present or enabled, is being set up and/or later accessed. For example, a user interface may display a still image from a front door camera (see e.g., **FIG. 7**), which may be easily recognized by the user because it shows a scene near or adjacent a front door of a residence, to allow a user to select the front door camera for viewing as desired.

[0084] Furthermore, video and, possibly, audio from the security camera **408** may be available live for viewing by a user via the overlay device **428** or the PTR **210**. Such video may be presented simultaneously with television programming being presented. In some examples, video may only be presented if motion is detected by the security camera **408**, otherwise video from the security camera **408** may not be presented by a particular display device presenting television programming. Also, such video (and, possibly, audio) from the security camera **408** may be recorded by the PTR **210** and/or the overlay device **428**. As discussed in further detail below in connection with at least **FIG. 8**, such video may be recorded based upon a user-configurable timer. For instance, features or functionality associated with the security camera **408** may be incorporated into an EPG that is output by the PTR **210** for display by a presentation or display device.

[0085] For instance, data as captured by the security camera **408** may be presented or may otherwise be accessible as a “channel” as part of the EPG along with other typical or conventional television programming channels. Accordingly, a user may be permitted to select that channel associated with the security camera **408** to access data as captured by the security camera **408** for presentation via the display device **430** and/or the wireless device **420**, and etc. The user may also be permitted to set a timer to activate the security camera **408** to record video

and/or audio for a user-defined period of time on a user-defined date. Such recording may not be constrained by the rolling window mentioned above associated with a triggering event being detected. Such an implementation may be beneficial, for example, if a babysitter is going to be watching a child and the parents want to later review the babysitter's behavior in their absence.

5 In some examples, video and/audio acquired by the security camera **408** may be backed up to a remote storage device, such as cloud-based storage hosted by the server **218** of **FIG. 3** for instance. Other data may also be cached to the cloud, such as configuration settings. Thus, if one or both of the PTR **210** and overlay device **428** malfunction, then a new device may be installed and the configuration data loaded onto the device from the cloud.

10 **[0086]** Further, one or more window sensors and door sensors, such as the window sensor **410** and the door sensor **412** may be integrated in to or as part of the home automation system **400**, and each may transmit data to the PTR **210**, possibly via the communication device **424**, or the overlay device **428**, that indicates the status of a window or door, respectively. Such status may indicate open window or door, an ajar window or door, a closed window or door, and etc.

15 When a status change occurs, an end-user may be notified as such via the wireless device **420** and/or the display device **430**, within an EPG or like interface for example. Further, a user may be able to view a status screen within an EPG or other interface to view the status one or more window sensors and/or one or more door sensors throughout the location. In some examples, the window sensor **410** and/or the door sensor **412** may have integrated "break" sensors to enable a
20 determination as to whether glass or a hinge, or other integral component, etc., has been broken or compromised. Here, as well as in all instances of home automation related data as acquired and served to the PTR **210** and/or overlay device **428** by particular elements of **FIG. 4**, it is contemplated that one or both of the window sensor **410** and the door sensor **412** may be controlled via interaction with particular controls as provided within or by an EPG or like
25 interface, and information or data as acquired by one or both of the window sensor **410** and door sensor **412** may be manipulated, consolidated, etc., as desired, and also made accessible within or by an EPG or like interface, such as a pop-up window, banner, and/or any other "interface" or "display" or the like, in accordance with the principles of the present disclosure.

[0087] Further, one or more smoke and/or CO₂ detectors, such as detector **404**, may be
30 integrated in to or as part of the home automation system **400**. As such, alerts as to whether a fire (e.g., heat, smoke), CO₂, radon, etc., has been detected can be sent to the PTR **210**, wireless

device **420**, etc., and/or one or more emergency first responders. Accordingly, when an alert occurs, a user may be notified as such the via wireless device **420** or the display device **430**, within an EPG or like interface for example. Further, it is contemplated that such an interface may be utilized to disable false alarms, and that one or more sensors dispersed throughout a residence and/or integrated within the home automation system **400** to detect gas leaks, radon, or various other dangerous situations. Here, as well as in all instances of home automation related data as acquired and served to the PTR **210** and/or overlay device **428** by particular elements of **FIG. 4**, the detector **404** may be controlled via interaction with particular controls as provided within or by an EPG or like interface, and information or data as acquired by the detector **404** may be manipulated, consolidated, etc., as desired, and also made accessible within or by an EPG or like interface in accordance with the principles of the present disclosure.

[0088] Further, a pet door and/or feeder, such as pet door and/or feeder **402** may be integrated in to or as part of the home automation system **400**. For instance, a predefined amount of food may be dispensed at predefined times to a pet. A pet door may be locked and/or unlocked. The pet's weight or presence may trigger the locking or unlocking of the pet door. For instance, a camera located at the pet door may be used to perform image recognition of the pet or a weight sensor near the door may identify the presence of the pet and unlock the door. A user may also lock/unlock a pet door and/or dispense food for example from a "remote" location. Here, as well as in all instances of home automation related data as acquired and served to the PTR **210** and/or overlay device **428** by particular elements of **FIG. 4**, the pet door and/or feeder **402** may be controlled via interaction with particular controls as provided within or by an EPG or like interface, and information or data as acquired by the pet door and/or feeder **402** may be consolidated, summarized, etc., and made accessible within or by an EPG or like interface in accordance with the principles of the present disclosure.

[0089] Further, a weather sensor, such as the weather sensor **414** may be integrated in to or as part of the home automation system **400**, and may allow or enable the PTR **210** and/or overlay device **428** to receive, identify, and/or output various forms of environmental data, including local or non-local ambient temperature, humidity, wind speed, barometric pressure, etc. Here, as well as in all instances of home automation related data as acquired and served to the PTR **210** and/or overlay device **428** by particular elements of **FIG. 4**, the weather sensor **414** may be controlled via interaction with particular controls as provided within or by an EPG or like

interface, and information or data as acquired by the pet door and/or feeder **402** may be manipulated, consolidated, etc., as desired, and also made accessible within or by an EPG or like interface in accordance with the principles of the present disclosure.

[0090] Further, a shade controller, such as shade controller **416**, may be integrated in to or as part of the home automation system **400**, and may allow for control of one or more shades, such as window, door, and/or skylight shades, within a home or residence or any other location. The shade controller **416** may respond to commands received from the PTR **210** and/or overlay device **428** and may provide status updates, such as “shade up” or “shade 50% up” or “shade down” and etc. Here, as well as in all instances of home automation related data as acquired and served to the PTR **210** and/or overlay device **428** by particular elements of **FIG. 4**, the shade controller **416** may be controlled via interaction with particular controls as provided within or by an EPG or like interface, and information or data as acquired by the shade controller **416** may be manipulated, consolidated, etc., as desired, and also made accessible within or by an EPG or like interface in accordance with the principles of the present disclosure.

[0091] Further, a utility monitor, such as utility monitor **418**, may be integrated in to or as part of the home automation system **400**, and may serve to provide the PTR **210** and/or overlay device **428** with utility data or information, such as electricity usage, gas usage, water usage, wastewater usage, irrigation usage, etc. A user may via an EPG or like interface view a status page or may receive notifications upon predefined events occurring, such as electricity usage exceeding a defined threshold within a month, or current kilowatt usage exceeding a threshold. Here, as well as in all instances of home automation related data as acquired and served to the PTR **210** and/or overlay device **428** by particular elements of **FIG. 4**, the utility monitor **418** may be controlled via interaction with particular controls as provided within or by an EPG or like interface, and information or data as acquired by the utility monitor **418** may be manipulated, consolidated, etc., as desired, and also made accessible within or by an EPG or like interface in accordance with the principles of the present disclosure.

[0092] Further, a health sensor, such as health sensor **422**, may be integrated in to or as part of the home automation system **400**, and may permit one or more vital characteristics of a particular individual to be acquired and/or monitored, such as a heart rate for instance. In some examples, additionally or alternatively, the health sensor **422** may contain a button or other type of actuator that a user can press to request assistance. As such, the health sensor **422** may be

mounted to a fixed location, such as bedside, or may be carried by a user, such as on a lanyard. Such a request may trigger a notification to be presented to other users via the display device **430** and/or the wireless device **420**. Additionally or if the notification is not cleared by another user within a predefined period of time, a notification may be transmitted to emergency first responders to request help. In some examples, a home automation service provider may first try contacting the user, such as via phone, to determine if an emergency is indeed occurring. Such a health sensor **422** may have additional purposes, such as for notification of another form of emergency, such as a break-in, fire, flood, theft, disaster, etc.

[0093] In some examples, the health sensor **422** may be used as a medical alert pendant that can be worn or otherwise carried by an individual. It may contain a microphone and/or speaker to allow communication with other users and/or emergency first responders. The PTR **210** and/or overlay device **428** may be preprogrammed to contact a particular phone number, such as an emergency service provider, relative, caregiver, etc., based on an actuator of the health sensor **422** being activated by a user. The user may be placed in contact with a person via the phone number and the microphone and/or speaker of the health sensor **422**. Furthermore, camera data may be combined with such alerts in order to give a contacted relative more information regarding the medical situation. For example, the health sensor **422**, when activated in the family room, may generate a command which is linked with security camera footage from the same room. Furthermore, in some examples, the health sensor **422** may be able to monitor vitals of a user, such as a blood pressure, temperature, heart rate, blood sugar, etc. In some examples, an event, such as a fall or exiting a structure can be detected.

[0094] Further, in response to an alert from the health sensor **422** or some other emergency or noteworthy event, parallel notifications may be sent to multiple users at approximately the same time. As such, multiple people can be made aware of the event at approximately the same time (as opposed to serial notification). Therefore, whoever the event is most pertinent to or notices the notification first can respond. Which users are notified for which type of event may be customized by a user of the PTR **210**. In addition to such parallel notifications being based on data from the health sensor **422**, data from other devices may trigger such parallel notifications. For instance, a mailbox open, a garage door open, an entry/exit door open during wrong time, an unauthorized control of specific lights during vacation period, a water sensor detecting a leak or

flow, a temperature of room or equipment is outside of defined range, and/or motion detected at front door are examples of possible events which may trigger parallel notifications.

[0095] Additionally, a configuring user may be able to select from a list of users to notify and method of notification to enable such parallel notifications. The configuring user may prioritize which systems and people are notified, and specify that the notification may continue through the list unless acknowledged either electronically or by human interaction. For example, the user could specify that they want to be notified of any light switch operation in their home during their vacation. Notification priority could be: 1) SMS Message; 2) push notification; 3) electronic voice recorder places call to primary number; and 4) electronic voice recorder places call to spouse's number. Other examples are possible, however, it is contemplated that the second notification may never happen if the user replies to the SMS message with an acknowledgment. Or, the second notification would automatically happen if the SMS gateway cannot be contacted. Here, as well as in all instances of home automation related data as acquired and served to the PTR 210 and/or overlay device 428 by particular elements of FIG. 4, the health sensor 422 may be controlled via interaction with particular controls as provided within or by an EPG or like interface, and information or data as acquired by the health sensor 422 may be manipulated, consolidated, etc., as desired, and also made accessible within or by an EPG or like interface in accordance with the principles of the present disclosure.

[0096] Further, an intercom, such as the intercom 426, may be integrated in to or as part of the home automation system 400, and may permit a user in one location to communicate with a user in another location, who may be using the wireless device 420, the display device 430, or some other device, such another television receiver within the structure. The intercom 426 may be integrated with the security camera 408 or may use a dedicated microphone/speaker, such as a Bluetooth® microphone. Microphones/speakers of the wireless device 420, display device 430, communication device 242, overlay device 428, etc., may also or alternatively be used. A MOCA network or other appropriate type of network may be used to provide audio and/or video from the intercom 426 to the PTR 210 and/or to other television receivers and/or wireless devices in communication with the PTR 210. Here, as well as in all instances of home automation related data as acquired and served to the PTR 210 and/or overlay device 428 by particular elements of FIG. 4, the intercom 426 may be controlled via interaction with particular controls as provided within or by an EPG or like interface, and information or data as acquired

by the intercom **426** may be manipulated, consolidated, etc., as desired, and also made accessible within or by an EPG or like interface in accordance with the principles of the present disclosure.

[0097] Further, a light controller, such as light controller **434**, may be integrated in to or as part of the home automation system **400**, and may permit a light to be turned on, off, and/or dimmed by the PTR **210** or the overlay device **428**, such as based on a user command received from the wireless device **420** or directly via PTR **210** or overlay device **428**, etc. The light controller **434** may control a single light. As such, multiple different ones of the light controller **434** may be present within a house or residence. In some examples, a physical light switch, that opens and closes a circuit of the light, may be left in the “on” position such that light controller **434** can be used to control whether the light is on or off. The light controller **434** may be integrated into a light bulb or a circuit, such as between the light fixture and the power source, to control whether the light is on or off. An end-user, via the PTR **210** or overlay device **428**, may be permitted to view a status of each instance of the light controller **434** within a location.

[0098] Since the PTR **210** or overlay device **428** may communicate using different home automation protocols, different instances of the light controller **434** within a location may use disparate or different communication protocols, but may all still be controlled by the PTR **210** or overlay device **428**. In some examples, wireless light switches may be used that communicate with the PTR **210** or overlay device **428**. Such switches may use a different communication protocol than any particular instance of the light controller **434**. Such a difference may not affect functionality because the PTR **210** or overlay device **428** can serve as a hub for multiple disparate communication protocols and perform any necessary translation and/or bridging functions. For example, a tablet computer may transmit a command over a WiFi connection and the PTR **210** or overlay device **428** may translate the command into an appropriate Zigbee® or Zwave® command for a wireless light bulb. In some examples, the translation may occur for a group of disparate or different devices. For example, a user may decide to turn off all lights in a room and select a lighting command on a tablet computer, the overlay device **428** may then identify the lights in the room and output appropriate commands to all devices over different protocols, such as a Zigbee® wireless light bulb and a Zwave® table lamp.

[0099] Additionally, it is contemplated that the PTR **210** may permit timers and/or dimmer settings to be set for lights via the light controller **434**. For instance, lights can be configured to turn on/off at various times during a day according to a schedule and/or events being detected by

the home automation system **400**, etc. Here, as well as in all instances of home automation related data as acquired and served to the PTR **210** and/or overlay device **428** by particular elements of **FIG. 4**, each particular instance of the light controller **434** may be controlled via interaction with particular controls as provided within or by an EPG or like interface, and information or data as acquired by each particular instance of the light controller **434** may be manipulated, consolidated, etc., as desired, and also made accessible within or by an EPG or like interface in accordance with the principles of the present disclosure.

[00100] Further, a thermostat, such as the thermostat **436**, may be integrated in to or as part of the home automation system **400**, and may provide heating/cooling updates to the PTR **210** and/or overlay device **428** for display via display device **430** and/or wireless device **420**. Further, control of thermostat **436** may be effectuated via the PTR **210** or overlay device **428**, and zone control within a structure using multiple thermostats may also be possible. Here, as well as in all instances of home automation related data as acquired and served to the PTR **210** and/or overlay device **428** by particular elements of **FIG. 4**, the thermostat **436** may be controlled via interaction with particular controls as provided within or by an EPG or like interface, and information or data as acquired by the thermostat **436** may be manipulated, consolidated, etc., as desired, and also made accessible within or by an EPG or like interface in accordance with the principles of the present disclosure.

[00101] Further, a leak detection sensor, such as the leak detection sensor **438**, may be integrated in to or as part of the home automation system **400**, and may be used to determine when a water leak as occurred, such as in pipes supplying water-based fixtures with water. The leak detection sensor **438** may be configured to attach to the exterior of a pipe and listen for a sound of water moving within a pipe. In other examples, sonar, temperature sensors or ion infused water with appropriate sensors may be used to detect moving water. As such, cutting or otherwise modifying plumbing may not be necessary to use or leverage the leak detection sensor **438**. If water movement is detected for greater than a threshold period of time, it may be determined a leak is occurring. The leak detection sensor **438** may have a component that couples over an existing valve such that the flow of water within one or more pipes can be stopped.

[00102] For instance, if the leak detection sensor **438** determines a leak may be occurring, a notification may be provided to a user via the wireless device **420** and/or display device **430** by

the PTR **210** and/or overlay device **428**. If a user does not clear the notification, the flow of water may be shut off by the leak detection sensor **438** after a predefined period of time. A user may also be able to provide input to allow the flow of water to continue or to immediately interrupt the flow of water. Here, as well as in all instances of home automation related data as acquired and served to the PTR **210** and/or overlay device **428** by particular elements of **FIG. 4**, the leak detection sensor **438** may be controlled via interaction with particular controls as provided within or by an EPG or like interface, and information or data as acquired by the leak detection sensor **438** may be manipulated, consolidated, etc., as desired, and also made accessible within or by an EPG or like interface in accordance with the principles of the present disclosure.

[00103] Further, an applicant controller, such as the appliance controller **440**, may be integrated in to or as part of the home automation system **400**, and may permit a status of an appliance to be retrieved and commands to control operation to be sent to an appliance by the PTR **210** or overlay device **428**. For instance, the appliance controller **440** may control a washing machine, a dryer, a dishwasher, an oven, a microwave, a refrigerator, a toaster, a coffee maker, a hot tub, or any other form of appliance. The appliance controller **440** may be connected with a particular appliance or may be integrated as part of the appliance. Additionally, or alternatively, the appliance controller **440** may enable for acquisition of data or information regarding electricity usage of one or more devices (e.g., other home automation devices or circuits within a home that are monitored) to be determined. Here, as well as in all instances of home automation related data as acquired and served to the PTR **210** and/or overlay device **428** by particular elements of **FIG. 4**, the appliance controller **440** may be controlled via interaction with particular controls as provided within or by an EPG or like interface, and information or data as acquired by the appliance controller **440** may be manipulated, consolidated, etc., as desired, and also made accessible within or by an EPG or like interface in accordance with the principles of the present disclosure.

[00104] Further, a garage door controller, such as the garage door controller **442**, may be integrated in to or as part of the home automation system **400**, and may permit a status of a garage door to be checked and the door to be opened or closed by a user via the PTR **210** or overlay device **428**. In some examples, based on a physical location of the wireless device **420**, the garage door may be controlled. For instance, if the wireless device **420** is a cellular phone and it is detected to have moved a threshold distance away from a house having the garage door

controller **442** installed, a notification may be sent to the wireless device **420**. If no response is received within a threshold period of time, the garage may be automatically shut. If the wireless device **420** moves within a threshold distance of the garage door controller **442**, the garage may be opened. Here, as well as in all instances of home automation related data as acquired and served to the PTR **210** and/or overlay device **428** by particular elements of **FIG. 4**, the garage door controller **442** may be controlled via interaction with particular controls as provided within or by an EPG or like interface, and information or data as acquired by the garage door controller **442** may be manipulated, consolidated, etc., as desired, and also made accessible within or by an EPG or like interface in accordance with the principles of the present disclosure.

[00105] Further, a lock controller, such as the lock controller **444**, may be integrated in to or as part of the home automation system **400**, and may permit a door to be locked and unlocked and/or monitored by a user via the PTR **210** or overlay device **428**. In some examples, the lock controller **444** may have an integrated door sensor **412** to determine if the door is open, shut, or partially ajar. Being able to only determine if a door is locked or unlocked may not be overly useful – for instance, a lock may be in a locked position, but if the door is ajar, the lock may not prevent access to the house. Therefore, for security, a user may benefit from knowing both that a door is closed (or open) and locked (or unlocked). To accomplish such notification and control, the lock controller **444** may have an integrated door sensor **412** that allows for the lock controller **444** to lock/unlock a door and provide a status as to whether the door is open or shut. Therefore, a single device may control a lock and determine whether the associated door is shut or open. No mechanical or electrical component may need to be integrated separately into a door or doorframe to provide such functionality. Such a single device may have a single power source that allows for sensing of the lock position, sensing of the door position, and for engagement/disengagement of the lock.

[00106] For example, the lock controller **444** may have an integrated door sensor that includes a reed switch or proximity sensor that detects when the door is in a closed position, with a plate of the lock in proximity to a plate on the door frame of the door. For instance, a plate of the lock may have an integrated magnet or magnetized doorframe plate. When in proximity to the magnet, a reed switch located in the lock controller **444** may be used to determine that the door is closed; when not in proximity to the magnet, the reed switch located in the lock controller **444** may be used to determine that the door is at least partially ajar. Rather than using a reed switch,

other forms of sensing may also be used, such as a proximity sensor to detect a doorframe. In some examples, the sensor to determine the door is shut may be integrated directly into the deadbolt or other latching mechanism of the lock controller **444**. When the deadbolt is extended, a sensor may be able to determine if the distal end of the deadbolt is properly latched within a door frame based on a proximity sensor or other sensing means. Here, as well as in all instances of home automation related data as acquired and served to the PTR **210** and/or overlay device **428** by particular elements of **FIG. 4**, the lock controller **444** may be controlled via interaction with particular controls as provided within or by an EPG or like interface, and information or data as acquired by the lock controller **444** may be manipulated, consolidated, etc., as desired, and also made accessible within or by an EPG or like interface in accordance with the principles of the present disclosure.

[00107] Further, a home security system, such as the home security system **406**, may be integrated in to or as part of the home automation system **400**. In general, the home security system **406** may detect motion, when a user has armed/disarmed the home security system **406**, when windows/doors are opened or broken, etc. The PTR **210** may adjust settings of the home automation devices of **FIG. 4** based on home security system **406** being armed or disarmed. For example, a virtual control and alarm panel may be presented to a user via the display device **430**. The functions of a wall mounted panel alarm can be integrated in the graphical user interface of the TV viewing experience such as a menu system with an underlying tree hierarchical structure. It is contemplated that the virtual control and alarm panel can appear in a full screen or PiP (Picture-in-Picture) with TV content. Alarms and event notification can be in the form of scrolling text overlays, popups, flashing icons, etc.

[00108] Additionally, camera video and/or audio, such as from the security camera **408**, can be integrated with DVR content provided by the PTR **210** with additional search, zoom, time-line capabilities. The camera's video stream can be displayed full screen, PiP with TV content, or as a tiled mosaic to display multiple camera's streams at a same time. In some examples, the display can switch between camera streams at fixed intervals. The PTR **210** may perform video scaling, adjust frame rate and transcoding on video received from the security camera **408**. In addition, the PTR **210** may adaptively transcode the camera content to match an Internet connection. Here, as well as in all instances of home automation related data as acquired and served to the PTR **210** and/or overlay device **428** by particular elements of **FIG. 4**, the home

security system **406** may be controlled via interaction with particular controls as provided within or by an EPG or like interface, and information or data as acquired by the home security system **406** may be manipulated, consolidated, etc., as desired, and also made accessible within or by an EPG or like interface in accordance with the principles of the present disclosure.

5 [00109] Further, an irrigation controller, such as the irrigation controller **446**, may be integrated in to or as part of the home automation system **400**, and may allow for a status and control of an irrigation system, such as a sprinkler system, to be controlled by a user via the PTR **210** and/or overlay device **428**. The irrigation controller **446** may be used in conjunction with the weather sensor **414** to determine whether and/or for how long (duration) the irrigation controller
10 **446** should be activated for watering. Further, a user, via the PTR **210** and/or overlay device **428**, may turn on, turn off, or adjust settings of the irrigation controller **446**. Here, as well as in all instances of home automation related data as acquired and served to the PTR **210** and/or overlay device **428** by particular elements of **FIG. 4**, the irrigation controller **446** may be controlled via interaction with particular controls as provided within or by an EPG or like interface, and
15 information or data as acquired by the irrigation controller **446** may be manipulated, consolidated, etc., as desired, and also made accessible within or by an EPG or like interface in accordance with the principles of the present disclosure.

[00110] Further, a doorbell sensor, such as the doorbell sensor **448**, may be integrated in to or as part of the home automation system **400**, and may permit an indication of when a doorbell has
20 been rung to be sent to multiple devices, such as the PTR **210** and/or the wireless device **420**. In some examples, the doorbell sensor **448** detecting a doorbell ring may trigger video to be recorded by the security camera **408** of the area near the doorbell and the video to be stored until deleted by a user, or stored for predefined period of time. Here, as well as in all instances of home automation related data as acquired and served to the PTR **210** and/or overlay device **428**
25 by particular elements of **FIG. 4**, the doorbell sensor **448** may be controlled via interaction with particular controls as provided within or by an EPG or like interface, and information or data as acquired by the doorbell sensor **448** may be manipulated, consolidated, etc., as desired, and also made accessible within or by an EPG or like interface in accordance with the principles of the present disclosure.

30 [00111] For example, “selection” of a doorbell by an individual so as to “trigger” the doorbell sensor **448** may activate or engage the PTR **210** to generate and output for display by a

presentation device, such as the television **214c**, a user interface, display, pop-up, etc., that which may include particular information such as “There is someone at your front door ringing the doorbell” for example. Additional, or alternative, actions such as activating, by the PTR **210**, a security camera to record video and/or audio of the individual at the front door are contemplated as well. Further, similar steps or actions may be taken or implemented by the PTR **210** for example in response to a signal generated in response to detection of an event, etc., received by the PTR **210** from any of the elements of **FIG. 2**.

[00112] Additional forms of sensors not illustrated in **FIG. 2** may also be incorporated as part of the home automation system **400**. For instance, a mailbox sensor may be attached to a mailbox to determine when mail is present and/or has been picked up. The ability to control one or more showers, baths, and/or faucets from the PTR **210** and/or the wireless device **420** may also be possible. Pool and/or hot tub monitors may be incorporated into the home automation system **400**. Such sensors may detect whether or not a pump is running, water temperature, pH level, a splash/whether something has fallen in, etc. Further, various characteristics of the pool and/or hot tub may be controlled via the home automation system. In some examples, a vehicle “dashcam” may upload or otherwise make video/audio available to the PTR **210** when within range of a particular residence. For instance, when a vehicle has been parked within range of a local wireless network with which the PTR **210** is connected, video and/or audio may be transmitted from the dashcam to the PTR **210** for storage and/or uploading to a remote server, such as the server **218** as shown in **FIG. 2**. Here, as well as in all instances of home automation related data as acquired and served to the PTR **210** and/or overlay device **428** by particular elements of **FIG. 4**, such systems or sensors or devices may be controlled via interaction with particular controls as provided within or by an EPG or like interface, and information or data as acquired by such systems or sensors or devices may be manipulated, consolidated, etc., as desired, and also made accessible within or by an EPG or like interface in accordance with the principles of the present disclosure.

[00113] Referring now to **FIG. 5**, first example aspects of the home automation system **400** of **FIG. 4** are shown in detail. In particular, the PTR **210** in an in-home implementation or scenario, and/or possibly the server **218** in a remote access implementation or scenario, may be configured to output an EPG (Electronic Programming Guide) **502** to and for presentation the television **214c**, or the mobile device **216a**, for example. The EPG **502** may at least present various

information related to television channels and the timing of programs or programming appearing on such television channels. For example, as shown in **FIG. 5**, the EPG **502** may display information associated with a Channel 2012, where just as an example the World Series is listed as scheduled to appear on that channel starting at a particular time on a particular day, and etc. In this example, and assuming that a current time is sometime during the time period 8-10 PM, a viewer may manipulate a cursor **504** using a pointing device (not shown) to select, as indicated by stipple shading in **FIG. 5**, the World Series for immediate viewing within a window **506** on the television **214c**. Other examples are possible. For example, it is contemplated that any menu-driven navigation technique or implementation may be used to enable user-interaction with the EPG **502**, along with any other elements or interfaces output by the PTR **210** to the television **214c** or the mobile device **216a**.

[00114] In addition to Channel 2009 and Channel 2012 as shown within the EPG **502** in **FIG. 5**, the PTR **210** may be configured and/or arranged to output various other interactive elements or interfaces within the EPG **502**. For example, the HASI module **220** as shown in **FIG. 5** may be configured and/or arranged to output a Channel **508** within the EPG **502**, together or simultaneously with Channel 2009 and Channel 2012, that may enable an end-user to access audio and/or video as captured by the security camera **408** (i.e., video and/or audio as captured by a closed-circuit surveillance camera) of the home automation system **400** of **FIG. 4**. It is contemplated that the way by which an end-user accesses audio and/or video as captured by the security camera **408** may be similar to that discussed above in connection with the World Series. For example, assuming that a current time is sometime during the time period 9-10 PM, a viewer may manipulate the cursor **504** using a pointing device to select a video and/or audio clip, Clip D, for immediate viewing within a window **506** on the television **214c**. Although not so limited, it is contemplated that each “clip” listed within the Channel **508** within the EPG **502** may be or comprise of a 60 minute loop of video and/or audio as captured by the security camera **408**, during the associated time period. For example, Clip A may be or comprise of about a 60 minute loop of video and/or audio as captured by the security camera **408** during the associated time period of 6-7PM. As discussed in further detail below in connection with **FIG. 8**, it is contemplated that the duration of each clip of video and/or audio listed within the Channel **508** within the EPG **502** is a user-configurable parameter. It is further contemplated that audio and/or

video as captured by the security camera **408** may be presented within the EPG **502** in many different, possibly implementation-specific, ways.

[00115] For example, it is contemplated that a control **510** located within the EPG **502** near or adjacent the channel **508** may be selected using the cursor **504** and, in response, the HASI module **220** may generate and output for display within the EPG **502** a fly-out channel listing **512** that includes or exhibits a scroll control **514** and a live feed control **516**. Advantageously, the scroll control **514** may enable an end-user to navigate forwards, when available, and backwards in time within or in the EPG **502** to access any particular clip of video and/or audio as desired. For example, it is contemplated that a backwards control **518** located within the scroll control **514** may be selected using the cursor **504** to enable an end-user to access a particular clip of audio and/or video as captured by the security camera **408** at a time period between 5-6 PM, immediately prior the 6-7 PM time period shown in the EPG **502** in **FIG. 5**. It is contemplated that the only limiting factor as to how far “back in time” an end-user may navigate is the amount of persistent memory is available or accessible to or by the PTR **210** and/or the server **218**.

[00116] Continuing the with example implementation, a forwards control **520** located within the scroll control **514** may then, optionally, be selected using the cursor **504** to enable the end-user to scroll forward in time until a “present” or “current” or “instant” time or time period is reached. For example, assume that a current time is 9:30 PM, it is contemplated that the forwards control **520** may be “tapped” or selected to enable the end-user to scroll forward in time until Clip D is reached or otherwise displayed within the EPG **502**. Additionally, if for example the current time is 9:30 PM, it is contemplated that the live feed control **516** may be selected using the cursor **504** to enable the end-user to access a live feed of video (and/or audio) as captured by the security camera **408**, that which may be instantly or immediately presented within the window **506**. In other words, real-time video and/or audio, or recorded clips of the same, as captured by the security camera **408** may be presented to an end-user in response to a command to do so. Other implementations of the EPG **502** are contemplated, some discussed below.

[00117] In addition to the Channel **508** and the fly-out channel listing **512**, the HASI module **220** shown in **FIG. 5** may output within the EPG **502** a control selection **522** and a configuration selection **524**. In general, the control selection **522** may be considered an access control mechanism to prevent those who may not necessarily be authorized from accessing the Channel **508** or any other home automation-related “channel” contemplated throughout as or for

presentation within the EPG 502. Accordingly, in practice, an end-user may manipulate the cursor 504 to select the control selection 522, via a “point and double-click” action, for example and, in response, the HASI module 220 may output an access interface 526 to and for presentation by the television 214c. In this example, the access interface 526 may include a prompt “Enter Your PIN” along with a data field 528 and an enter selection 530. Here, the particular individual may enter into the data field 528 an alphanumeric sequence, or the like, and then “select” the enter selection 530 in order to gain access, upon validation by the HASI module 220, to functionality associated with the Channel 508 and the configuration selection 524, discussed in further detail below in connection with FIG. 8.

[00118] Many other EPG-like interfaces that which provide access to home automation-related channels are contemplated. For example, referring now to FIG. 6, second example aspects of the home automation system 400 of FIG. 4 are shown in detail. In particular, FIG. 6 illustrates an EPG-like interface 602 that which only provides access to home automation-related channels, each of which may make available particular user-configurable or preference-based content associated with home automation-related data or information. This is different than the EPG 502 of FIG. 5 that which provides access to home automation-related channels in addition to conventional television programming channels. As shown in FIG. 6, it is contemplated that a discreetly-positioned control element 604 positioned with the window 506 may be selected using the cursor 504 and, in response, the HASI module 220 may “overlay” a collapsible window 606 over programming as instantly displayed within the window 506. In this example, the EPG-like interface 602 may include a plurality of channels 608 each one associated with a particular “smart” home automation-related system and/or device consistent with that discussed above in connection with FIG. 4.

[00119] For example, Device A listed within the EPG-like interface 602 (or Device B, etc.) may correspond to or be selected from any one of the pet door and/or feeder 402, the smoke/CO₂ detector 404, the home security system 406, the security camera 408, the window sensor 410, the door sensor 412, the weather sensor 414, the shade controller 416, the utility monitor 418, the health sensor 422, the intercom 426, the light controller 434, the thermostat 436, the leak detection sensor 438, the appliance controller 440, the garage door controller 442, the lock controller 444, the irrigation controller 446, and the doorbell sensor 448 discussed above on connection with FIG. 4. Here, a particular data set associated with Device A, such as Data Set

A1, may be selected in a manner similar to that discussed above in connection with **FIG. 5**, and so on. Next, but not necessarily so, a collapse control **610** positioned within the EPG-like interface **602** may be selected to “close” the collapsible window **606** so that an end-user may continue to view the programming as instantly displayed within the window **506**, without further obscuring of the same.

[00120] Still many other implementations are contemplated. For example, the “channel” associated with Device A as shown in **FIG. 6** may be defined as a “hybrid” channel. For example, assume that Device A corresponds to a first security camera and that Device B, as shown in **FIG. 6** associated with a channel separate than that of Device A, corresponds to a second different security camera. Here, the channel associated channel associated with Device A as shown in **FIG. 6** may instead be defined by and end-user to be a “security camera” channel that makes available, in a single channel, video and/or audio as captured by both the Device A and Device B, the details of which may vary widely, and may be implementation-specific. For example, the Data Set A1 and Data Set A2 as shown in **FIG. 6** may correspond to particular clips of video and/or audio as captured by the Device A, whereas the Data Set A3 and Data Set A4 as shown in **FIG. 6** may correspond to particular clips of video and/or audio as captured by the Device B. Still many other implementations are possible.

[00121] Referring now to **FIG. 7**, third example aspects of the home automation system **400** of **FIG. 4** are shown in detail. In this example, a first individual **702** is approaching a residence **704**. Here, one or more of a plurality of motion-sensitive security cameras **708a-b** each affixed to a roofline **710** of the residence **704** may “sense” or detect that the first individual **702** is approaching the residence **704**. In response, the HASI module **220** of the PTR **210** (not shown), that which is coupled to the television **214c**, may output a message **712** to and for display by the television **214c** to a second individual **714** located within the residence, along with a still or moving image of the first individual **702** approaching the residence **704**. For example purposes, assume that the message **712** further includes a “live feed” control, similar to the live feed control **516** shown and discussed above in connection with **FIG. 5**, and that the second individual **714** has selected said live feed control.

[00122] In response, the HASI module **220** of the PTR **210** may output an overlay **716** so that a split-screen is displayed by the television **214c**, including the overlay **716** and particular broadcast programming within the window **506**. It is contemplated that the overlay **716** may

include or comprise a still or moving image **718** of the first individual **702** as captured by a particular one of the security cameras **708a-b**, along with a plurality of controls **720-728** to enable the second individual **714** to investigate the situation and possibly take action. For example, a rewind control **720** when selected may enable the second individual **714** to playback a video and/or audio recording as captured by one or both of the security cameras **708a-b** at any particular point in time of the first individual **702** approaching the residence **704**. As another example, an audio control **724** when selected may enable the second individual **714** to verbally communicate with the first individual **702**. This might be realized, for example, via a microphone and/or speaker incorporated in to or within one or both of the security cameras **708a-b**, the PTR **210**, television **214c**, etc. As another example, an alert control **726** when selected may enable the second individual **714** to activate a deterrent such as a “loud” sound or noise such as a succession of “beeps” in event the second individual **714** considers the first individual **702** to be threatening, etc. Similar to the audio control **724**, this might be realized via a microphone and/or speaker incorporated into or within one or both of the security cameras **708a-b**, the PTR **210**, television **214c**, etc.

[00123] As another example, an interface control **728** when selected (indicated by intermittent line in **FIG. 7**) may enable the second individual **714** to access a particular interface **730** to take other or different actions. For example, the particular interface **730** may itemize each of a plurality of “smart” home automation devices installed to a particular location or feature of or within the residence **704**. For example, assume that the home automation system **400** discussed above in connection with **FIG. 4** is integrated in to or within the residence **704**. Here, each of the security cameras **708a-b** may correspond to an instance of the security camera **408**. Additionally, the particular interface **730** may at least include an entry associated with each one of the security cameras **708a-b**, along with a corresponding status such as “On-display” to indicate that video associated with security camera **708a** is currently being shown on or within overlay **716**.

[00124] Each entry within the particular interface **730** may further have a particular control **732** associated therewith, similar to control **510** discussed above in connection with **FIG. 5**, whereby upon selection of the same a particular action or additional interface may be taken or generated for display by the television **214c**. For example, the particular control **732** associated with the “Front Door Lock” may be selected to “unlock” the same to allow or permit the first individual **702** to enter the residence **704**. As another example, the particular control **732**

associated with the security camera **708b** may enable the second individual **714** to acquire an image at a different angle of the first individual **702** for display within the overlay **716**. In this manner, the particular interface **730** may enable the second individual to access and/or control each of the respective “smart” home automation devices installed to a particular location or feature of or within the residence **704**, and the particular functionality associated with a corresponding particular control **732** may be device- or system-specific.

[00125] Referring now to **FIG. 8**, fourth example aspects of the home automation system **400** of **FIG. 4** are shown in detail. In particular, and as mentioned above in connection with **FIG. 5**, the HASI module **220** may output within the EPG **502** a control selection **522** and a configuration selection **524**. In practice, assuming that the above-mentioned alphanumeric sequence is authenticated by the HASI module **220** following the described sequence, the configuration selection **524** may become “active” so that upon selection of the same a configuration interface **802** may be output to and for presentation by the television **214c**. In **FIG. 5**, the configuration selection **524** is shown as “inactive,” indicated by a perimeter line that is weighted less than that of the control selection **522**, or by a perimeter line that is lighter in terms of boldness than that of the control selection **522**. When the configuration selection **524** becomes active the perimeter line of the same would be similar to that of the control selection **522**, as shown in **FIG. 8**.

[00126] Again, assuming that the alphanumeric sequence is authenticated by the HASI module **220** following the described sequence, the particular individual may manipulate the cursor **504** to select the configuration selection **524** and, in response, the HASI module **220** may output the configuration interface **802** to and for presentation by the television **214c**. Here, it is contemplated that the particular individual may utilize the configuration interface **802** to configure the HASI module **220** of any particular device (e.g., mobile device **216a**), as desired, so as to implement one or more features or aspects of the present disclosure according to particular end-user preferences. For instance, in one example, the configuration interface **802** may include a device discover selection **804** and a preferences selection **806**. The configuration interface **802** as shown in **FIG. 8** is just an example. Other examples may include more or fewer “selections” as desired, and may be implementation-specific, and further may evolve as technology evolves.

[00127] In practice, the device discover selection **804** may be selected to “pair” or otherwise establish a communication link or connection between the PTR **210** and any of the other devices as introduced in **FIG. 2** that may have installed thereto a corresponding HASI module **220** and, when successfully paired, a corresponding device may be listed, possibly persistently, within the configuration interface **802**. For example, as shown in **FIG. 8**, the device discover selection **804** may be selected to pair or otherwise establish a communication link or connection between the PTR **210** and the mobile device **216a**, and then an indicator that identifies the mobile device **216a** is shown within the configuration interface **802**. In this manner, an individual may interact with the television **214c**, and ultimately the PTR **210**, to program or configure at least the mobile device **216a**, for example, to implement various features or aspects of the present disclosure.

[00128] Next, but not necessarily so, the individual may configure the HASI module **220** as shown in **FIG. 8** to implement various features or aspects of the present disclosure. For example, the indicator that identifies the television **214c** as shown within the configuration interface **802** may initially be selected, as indicated by intermittent line in **FIG. 8**, and then the preferences selection **806** may be selected to enable and define if desired (e.g., default parameter values are contemplated) one or more device-specific parameters and one or more system (e.g., home automation system **400**) parameters.

[00129] For example, the individual may manipulate the cursor **504** to select the preferences selection **806** as shown within the configuration interface **802** and, in response, the HASI module **220** may output an interface **808** to and for presentation by the television **214c**. In this example, it is contemplated that the individual may set a preference for surfacing making available home automation-related data or information in accordance with the present disclosure selected from: EPG, such as shown and describe above in connection with **FIG. 5**; and Overlay, such as shown and described above in connection with **FIG. 6**. It is further contemplated that the individual may set a preference or setting for how particular home automation-related data or information is acquired and/or presented to an end-user. For example, it is contemplated that the individual may set a 30 minute duration of each “clip” listed within the channel **508** within the EPG **502** as captured by the security camera **408**, during the associated time period. Many other configuration settings associated with the security camera **408** may be defined as well. For example, the individual may utilize the interface **808** to set a timer to activate the security camera

408 to record video and/or audio for a user-defined period of on a user-defined date, for instance Friday, September 12, 2014, 10 PM-12 AM.

[00130] Still many other preference settings and/or parameters may be defined via the interface **808** as well. For example, as shown in **FIG. 8**, a customized “energy use” channel **810** may be defined for presentation within the EPG **502**, where data collected from various home automation-related sensors or devices, consistent with that discussed above in connection with **FIG. 4**, may be acquired, aggregated, etc., and then made accessible via particular “cells” of the channel **810**, such as a Total usage cell **812**, an HVAC usage cell **814**, a Lighting usage cell **816**, and a Historical usage cell **818**. Upon “selection” of any particular one of those cells the HASI module **220** as shown in **FIG. 8** may query one or more localized and/or non-localized resources and manipulate, aggregate, etc., various home automation-related data and/or information and then present the same in an interactive user interface in a manner consistent with the principles of the present disclosure. Still many other examples are possible, and it is contemplated that type or form of such customized channels may only be limited by type of home automation devices as incorporated within a particular home automation system, such as home automation system **400**, for example. An enable selection **820** may then be selected to program the HASI module **220** as shown in **FIG. 8** in accordance with the device-specific and system-wide settings and/or parameters and define within the interface **808**.

[00131] As mentioned above, the various features or aspects of the present disclosure are directed to or towards systems and methods for enabling an end-user to access home automation features or functionality directly from or via one or more interfaces that might normally be used to access satellite television-related programming and services. Advantageously, such an implementation may enable integration of home automation monitoring/control into with at least one device or system that might normally only be associated with a satellite television implementation, e.g., PTR **210**, that which a consumer may already be comfortable with using and may further elimination the need for additional or multiple display devices. In addition, smart device can leverage the PTR **210** hardware and interfaces generated by the PTR **210** to consolidate and share information.

[00132] In one example implementation, a method may include or comprise outputting, by a television receiver to a presentation device for display, an electronic programming guide that includes a first menu item for access to programming acquired by the television receiver over a

broadcast television communication link, and at least a second menu item for access to at least one of video and audio acquired by a closed-circuit camera system that is communicatively coupled to the television receiver in a home automation environment, detecting, by the television receiver, user-selection of the second menu item for access to at least one of video and audio acquired by the closed-circuit camera system, and outputting, by the television receiver to the presentation device for display, at least one of video and audio acquired by the closed-circuit camera system in response to detecting user-selection of the second menu item for access to at least one of video and audio acquired by the closed-circuit camera system. Advantageously, such an implementation may provide or enable access to both satellite television programming and data as acquired by elements of a particular home automation environment within a single electronic programming guide. Other advantages are possible.

[00133] Additionally, or alternatively, the method may include or comprise receiving a command to set a timer to acquire at least one of video and audio by the closed-circuit camera system during a particular time period, and storing to persistent memory at least one of video and audio acquired by the closed-circuit camera system during the particular time period for subsequent user-access via the second menu item. Advantageously, such an implementation may provide or enable an end-user to control and/or customize the closed-circuit camera system as needed or desired. Other advantages are possible.

[00134] Additionally, or alternatively, the method may include or comprise outputting the electronic programming guide for display by a television. Additionally, or alternatively, the method may include or comprise outputting the electronic programming guide for display by a handled mobile device. Additionally, or alternatively, the method may include or comprise outputting the electronic programming guide that which includes another menu item for access to particular home automation data acquired by a home automation system incorporated within the home automation environment and different from the closed-circuit camera system. Advantageously, such an implementation may provide or enable an end-user to control and/or customize and/or access any particular element incorporated into their home automation system via their television receiver(s), from the comfort of their own home and/or remotely as desired.

[00135] Many other implementation may provide or enable an end-user to control and/or customize and/or access any particular element incorporated into their home automation system via their television receiver(s), from the comfort of their own home and/or remotely as desired.

For example, additionally, or alternatively, the method may include or comprise receiving definition of a customized menu item for presentation within the electronic programming guide for access to particular home automation data acquired by a home automation system that is communicatively coupled to the television receiver in the home automation environment and different from the closed-circuit camera system. Additionally, or alternatively, the method may include or comprise receiving definition of the second menu item to enable presentation of the second menu item within the electronic programming guide for access to at least one of video and audio acquired by the closed-circuit camera system.

[00136] Additionally, or alternatively, the method may include or comprise receiving a command to set a recording loop to acquire at least one of video and audio by the closed-circuit camera system over a finite time period; and periodically storing to persistent memory at least one of video and audio acquired by the closed-circuit camera system over the finite time period for subsequent user-access via the second menu item. Additionally, or alternatively, the method may include or comprise outputting by the television receiver to the presentation device for display a live video feed acquired by the closed-circuit camera system. Additionally, or alternatively, the method may include or comprise outputting by the television receiver to the presentation device for display video acquired by the closed-circuit camera system over a particular predetermined time period. Additionally, or alternatively, the method may include or comprise detecting by the television receiver user-selection of a particular control within the electronic programming to guide acquisition of least one of video and audio by the closed-circuit camera system.

[00137] Many other implementations, along with benefits and/or advantages associated with enabling an end-user to access home automation features or functionality directly from or via one or more interfaces that might normally be used to access satellite television-related programming and services, are possible as well.

[00138] FIG. 9 shows an example computer system or device 900 in accordance with the disclosure. An example of a computer system or device includes a particular “smart” home automation-related sensor or device or system or controller or monitor or detector or the like, an enterprise server, blade server, desktop computer, laptop computer, tablet computer, personal data assistant, smartphone, gaming console, STB, television receiver, and/or any other type of machine configured for performing calculations. Any particular one of the previously-described

computing devices may be wholly or at least partially configured to exhibit features similar to the computer system **900**, such as any of the respective elements of at least **FIG. 2** and **FIG. 4**. In this manner, any of one or more of the respective elements of at least **FIG. 2** and **FIG. 4** may be configured and/or arranged, wholly or at least partially, for enabling an end-user to access home automation features or functionality directly from or via one or more interfaces that might normally be used to access satellite television-related programming and services, in manner consistent with that discussed above in connection with **FIGS. 1-8**. For example, any of one or more of the respective elements of at least **FIG. 2** and/or **FIG. 4** may be configured and/or arranged to perform and/or include instructions that, when executed, implement wholly or at least partially the method of **FIG. 1**. Still further, any of one or more of the respective elements of at least **FIG. 2** may be configured to perform and/or include instructions that, when executed, instantiate and implement functionality of the HASI module **220**.

[00139] The computer device **900** is shown comprising hardware elements that may be electrically coupled via a bus **902** (or may otherwise be in communication, as appropriate). The hardware elements may include a processing unit with one or more processors **904**, including without limitation one or more general-purpose processors and/or one or more special-purpose processors (such as digital signal processing chips, graphics acceleration processors, and/or the like); one or more input devices **906**, which may include without limitation a remote control, a mouse, a keyboard, and/or the like; and one or more output devices **908**, which may include without limitation a presentation device (e.g., television), a printer, and/or the like.

[00140] The computer system **900** may further include (and/or be in communication with) one or more non-transitory storage devices **910**, which may comprise, without limitation, local and/or network accessible storage, and/or may include, without limitation, a disk drive, a drive array, an optical storage device, a solid-state storage device, such as a random access memory, and/or a read-only memory, which may be programmable, flash-updateable, and/or the like. Such storage devices may be configured to implement any appropriate data stores, including without limitation, various file systems, database structures, and/or the like.

[00141] The computer device **900** might also include a communications subsystem **912**, which may include without limitation a modem, a network card (wireless and/or wired), an infrared communication device, a wireless communication device and/or a chipset such as a Bluetooth™ device, 902.11 device, WiFi device, WiMax device, cellular communication facilities such as

GSM (Global System for Mobile Communications), W-CDMA (Wideband Code Division Multiple Access), LTE (Long Term Evolution), etc., and/or the like. The communications subsystem **912** may permit data to be exchanged with a network (such as the network described below, to name one example), other computer systems, and/or any other devices described
5 herein. In many examples, the computer system **900** will further comprise a working memory **914**, which may include a random access memory and/or a read-only memory device, as described above.

[00142] The computer device **900** also may comprise software elements, shown as being currently located within the working memory **914**, including an operating system **916**, device
10 drivers, executable libraries, and/or other code, such as one or more application programs **918**, which may comprise computer programs provided by various examples, and/or may be designed to implement methods, and/or configure systems, provided by other examples, as described herein. By way of example, one or more procedures described with respect to the method(s) discussed above, and/or system components might be implemented as code and/or instructions
15 executable by a computer (and/or a processor within a computer); in an aspect, then, such code and/or instructions may be used to configure and/or adapt a general purpose computer (or other device) to perform one or more operations in accordance with the described methods.

[00143] A set of these instructions and/or code might be stored on a non-transitory computer-readable storage medium, such as the storage device(s) **910** described above. In some cases, the
20 storage medium might be incorporated within a computer system, such as computer system **900**. In other examples, the storage medium might be separate from a computer system (e.g., a removable medium, such as flash memory), and/or provided in an installation package, such that the storage medium may be used to program, configure, and/or adapt a general purpose computer with the instructions/code stored thereon. These instructions might take the form of executable
25 code, which is executable by the computer device **900** and/or might take the form of source and/or installable code, which, upon compilation and/or installation on the computer system **900** (e.g., using any of a variety of generally available compilers, installation programs, compression/decompression utilities, etc.), then takes the form of executable code.

[00144] It will be apparent that substantial variations may be made in accordance with specific
30 requirements. For example, customized hardware might also be used, and/or particular elements might be implemented in hardware, software (including portable software, such as applets, etc.),

or both. Further, connection to other computing devices such as network input/output devices may be employed.

[00145] As mentioned above, in one aspect, some examples may employ a computer system (such as the computer device 900) to perform methods in accordance with various examples of the disclosure. According to a set of examples, some or all of the procedures of such methods are performed by the computer system 900 in response to processor 904 executing one or more sequences of one or more instructions (which might be incorporated into the operating system 916 and/or other code, such as an application program 918) contained in the working memory 914. Such instructions may be read into the working memory 914 from another computer-readable medium, such as one or more of the storage device(s) 910. Merely by way of example, execution of the sequences of instructions contained in the working memory 914 may cause the processor(s) 904 to perform one or more procedures of the methods described herein.

[00146] The terms “machine-readable medium” and “computer-readable medium,” as used herein, may refer to any non-transitory medium that participates in providing data that causes a machine to operate in a specific fashion. In an embodiment implemented using the computer device 900, various computer-readable media might be involved in providing instructions/code to processor(s) 904 for execution and/or might be used to store and/or carry such instructions/code. In many implementations, a computer-readable medium is a physical and/or tangible storage medium. Such a medium may take the form of a non-volatile media or volatile media. Non-volatile media may include, for example, optical and/or magnetic disks, such as the storage device(s) 910. Volatile media may include, without limitation, dynamic memory, such as the working memory 914.

[00147] Example forms of physical and/or tangible computer-readable media may include a floppy disk, a flexible disk, hard disk, magnetic tape, or any other magnetic medium, a compact disc, any other optical medium, ROM (Read Only Memory), RAM (Random Access Memory), and etc., any other memory chip or cartridge, or any other medium from which a computer may read instructions and/or code. Various forms of computer-readable media may be involved in carrying one or more sequences of one or more instructions to the processor(s) 904 for execution. By way of example, the instructions may initially be carried on a magnetic disk and/or optical disc of a remote computer. A remote computer might load the instructions into its dynamic

memory and send the instructions as signals over a transmission medium to be received and/or executed by the computer system **900**.

[00148] The communications subsystem **912** (and/or components thereof) generally will receive signals, and the bus **902** then might carry the signals (and/or the data, instructions, etc. carried by the signals) to the working memory **914**, from which the processor(s) **904** retrieves and executes the instructions. The instructions received by the working memory **914** may optionally be stored on a non-transitory storage device **910** either before or after execution by the processor(s) **904**. It should further be understood that the components of computer device **900** can be distributed across a network. For example, some processing may be performed in one location using a first processor while other processing may be performed by another processor remote from the first processor. Other components of computer system **900** may be similarly distributed. As such, computer device **900** may be interpreted as a distributed computing system that performs processing in multiple locations. In some instances, computer system **900** may be interpreted as a single computing device, such as a distinct laptop, desktop computer, or the like, depending on the context.

[00149] The methods, systems, and devices discussed above are examples. Various configurations may omit, substitute, or add various method steps or procedures, or system components as appropriate. For instance, in alternative configurations, the methods may be performed in an order different from that described, and/or various stages or steps or modules may be added, omitted, and/or combined. Also, features described with respect to certain configurations may be combined in various other configurations. Different aspects and elements of the configurations may be combined in a similar manner. Also, technology evolves and, thus, many of the elements are examples and do not limit the scope of the disclosure or claims.

[00150] Specific details are given in the description to provide a thorough understanding of example configurations (including implementations). However, configurations may be practiced without these specific details. For example, well-known circuits, processes, algorithms, structures, and techniques have been shown without unnecessary detail in order to avoid obscuring the configurations. This description provides example configurations only, and does not limit the scope, applicability, or configurations of the claims. Rather, the preceding description of the configurations will provide those of skill with an enabling description for

implementing described techniques. Various changes may be made in the function and arrangement of elements without departing from the spirit or scope of the disclosure.

[00151] Also, configurations may be described as a process which is depicted as a flow diagram or block diagram. Although each may describe the operations as a sequential process, many of the operations may be performed in parallel or concurrently. In addition, the order of the operations may be rearranged. A process may have additional steps not included in the figure. Furthermore, examples of the methods may be implemented by hardware, software, firmware, middleware, microcode, hardware description languages, or any combination thereof. When implemented in software, firmware, middleware, or microcode, the program code or code segments to perform the necessary tasks may be stored in a non-transitory computer-readable medium such as a storage medium. Processors may perform the described tasks.

[00152] Furthermore, the example examples described herein may be implemented as logical operations in a computing device in a networked computing system environment. The logical operations may be implemented as: (i) a sequence of computer implemented instructions, steps, or program modules running on a computing device; and (ii) interconnected logic or hardware modules running within a computing device.

[00153] Although the subject matter has been described in language specific to structural features and/or methodological acts, it is to be understood that the subject matter defined in the appended claims is not necessarily limited to the specific features or acts described above. Rather, the specific features and acts described above are disclosed as example forms of implementing the claims.

WHAT IS CLAIMED IS:

1. A method, comprising:

outputting, by a television receiver to a presentation device for display, an electronic programming guide that includes a first menu item for access to programming acquired by the television receiver over a broadcast television communication link, and at least a second menu item for access to at least one of video and audio acquired by a closed-circuit camera system that is communicatively coupled to the television receiver in a home automation environment;

detecting, by the television receiver, user-selection of the second menu item for access to at least one of video and audio acquired by the closed-circuit camera system; and

outputting, by the television receiver to the presentation device for display, at least one of video and audio acquired by the closed-circuit camera system in response to detecting user-selection of the second menu item for access to at least one of video and audio acquired by the closed-circuit camera system.

2. The method of claim 1, further comprising:

receiving a command to set a timer to acquire at least one of video and audio by the closed-circuit camera system during a particular time period; and

storing to persistent memory at least one of video and audio acquired by the closed-circuit camera system during the particular time period for subsequent user-access via the second menu item.

3. The method of claim 1, further comprising:

outputting the electronic programming guide for display by a television.

4. The method of claim 1, further comprising:

outputting the electronic programming guide for display by a handled mobile device.

5. The method of claim 1, further comprising:

outputting the electronic programming guide that which includes another menu item for access to particular home automation data acquired by a home automation system incorporated within the home automation environment and different from the closed-circuit camera system.

5 6. The method of claim 1, further comprising:
receiving definition of a customized menu item for presentation within the electronic programming guide for access to particular home automation data acquired by a home automation system that is communicatively coupled to the television receiver in the home automation environment and different from the closed-circuit camera system.

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7. The method of claim 1, further comprising:
receiving definition of the second menu item to enable presentation of the second menu item within the electronic programming guide for access to at least one of video and audio acquired by the closed-circuit camera system.

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8. The method of claim 1, further comprising:
receiving a command to set a recording loop to acquire at least one of video and audio by the closed-circuit camera system over a finite time period; and
periodically storing to persistent memory at least one of video and audio acquired by the
20 closed-circuit camera system over the finite time period for subsequent user-access via the second menu item.

9. The method of claim 1, further comprising:
outputting by the television receiver to the presentation device for display a live video
25 feed acquired by the closed-circuit camera system.

10. The method of claim 1, further comprising:
outputting by the television receiver to the presentation device for display video acquired
by the closed-circuit camera system over a particular predetermined time period.

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11. The method of claim 1, further comprising:

detecting by the television receiver user-selection of a particular control within the electronic programming to guide acquisition of least one of video and audio by the closed-circuit camera system.

5 **12.** A television receiver, comprising:
 at least one processor; and
 at least one memory element communicatively coupled with and readable by at least one processor and having stored therein processor-readable instructions that, when executed by the at least one processor, cause the at least one processor to:

10 command the television receiver to output to a presentation device for display an electronic programming guide that includes a first menu item for access to satellite television programming, and at least a second menu item for access to video acquired by a closed-circuit camera system;

 detect user-selection of the second menu item for access to video acquired by the closed-circuit camera system; and

15 command the television receiver to output to the presentation device for display video acquired by the closed-circuit camera system based on the user-selection.

13. The television receiver of claim **12**, wherein the processor-readable instructions when executed by the at least one processor cause the at least one processor to:

20 detect a command to set a timer to acquire video by the closed-circuit camera system during a particular time period; and

 store to the at least one memory element video acquired by the closed-circuit camera system during the particular time period for subsequent user-access via the second menu item.

14. The television receiver of claim **12**, wherein the processor-readable instructions when executed by the at least one processor cause the at least one processor to:

30 command the television receiver to output the electronic programming guide for display by one of a television and a handheld mobile device.

15. The television receiver of claim 12, wherein the processor-readable instructions when executed by the at least one processor cause the at least one processor to:

command the television receiver to output the electronic programming guide that which includes another menu item for access to particular home automation data acquired
5 by a home automation system that is different from the closed-circuit camera system and is incorporated within a home automation environment that includes the closed-circuit camera system.

16. The television receiver of claim 12, wherein the processor-readable instructions
10 when executed by the at least one processor cause the at least one processor to:

store within the at least one memory element a definition of the second menu item to enable presentation of the second menu item within the electronic programming guide for access to video acquired by the closed-circuit camera system.

17. The television receiver of claim 12, wherein the processor-readable instructions
15 when executed by the at least one processor cause the at least one processor to:

detect a command to set a recording loop to acquire video by the closed-circuit camera system over a finite time period; and

store in periodic intervals to the at least one memory element video acquired by
20 the closed-circuit camera system over a corresponding finite time period for subsequent user-access via the second menu item.

18. The television receiver of claim 12, wherein the processor-readable instructions when executed by the at least one processor cause the at least one processor to:

25 command the television receiver to output to the presentation device for display a live video feed acquired by the closed-circuit camera system.

19. The television receiver of claim 12, wherein the processor-readable instructions when executed by the at least one processor cause the at least one processor to:

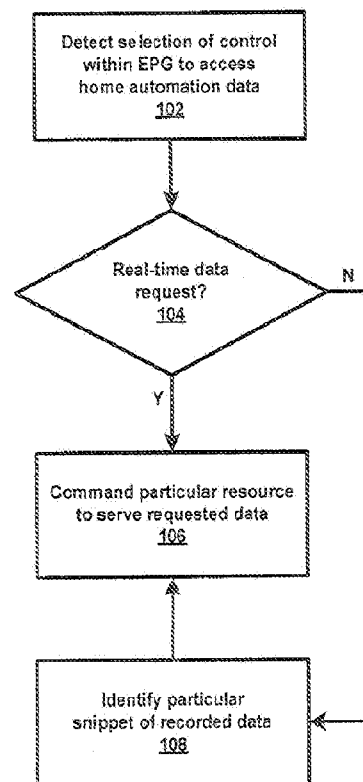
command the television receiver to output to the presentation device for display video acquired by the closed-circuit camera system over a particular predetermined time period.

5 **20.** A method, comprising:

detecting, by a television receiver, user-selection of a menu item within an electronic programming guide that identifies a particular channel for access to video acquired by a closed-circuit camera system that is communicatively coupled to the television receiver in a home automation environment; and

10 outputting, by the television receiver to a presentation device for display, video acquired by the closed-circuit camera system in response to detecting user-selection of the menu item within the electronic programming guide that identifies the particular channel for access to video acquired by the closed-circuit camera system that is communicatively coupled to the television receiver in the home automation environment.

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100**FIG. 1**

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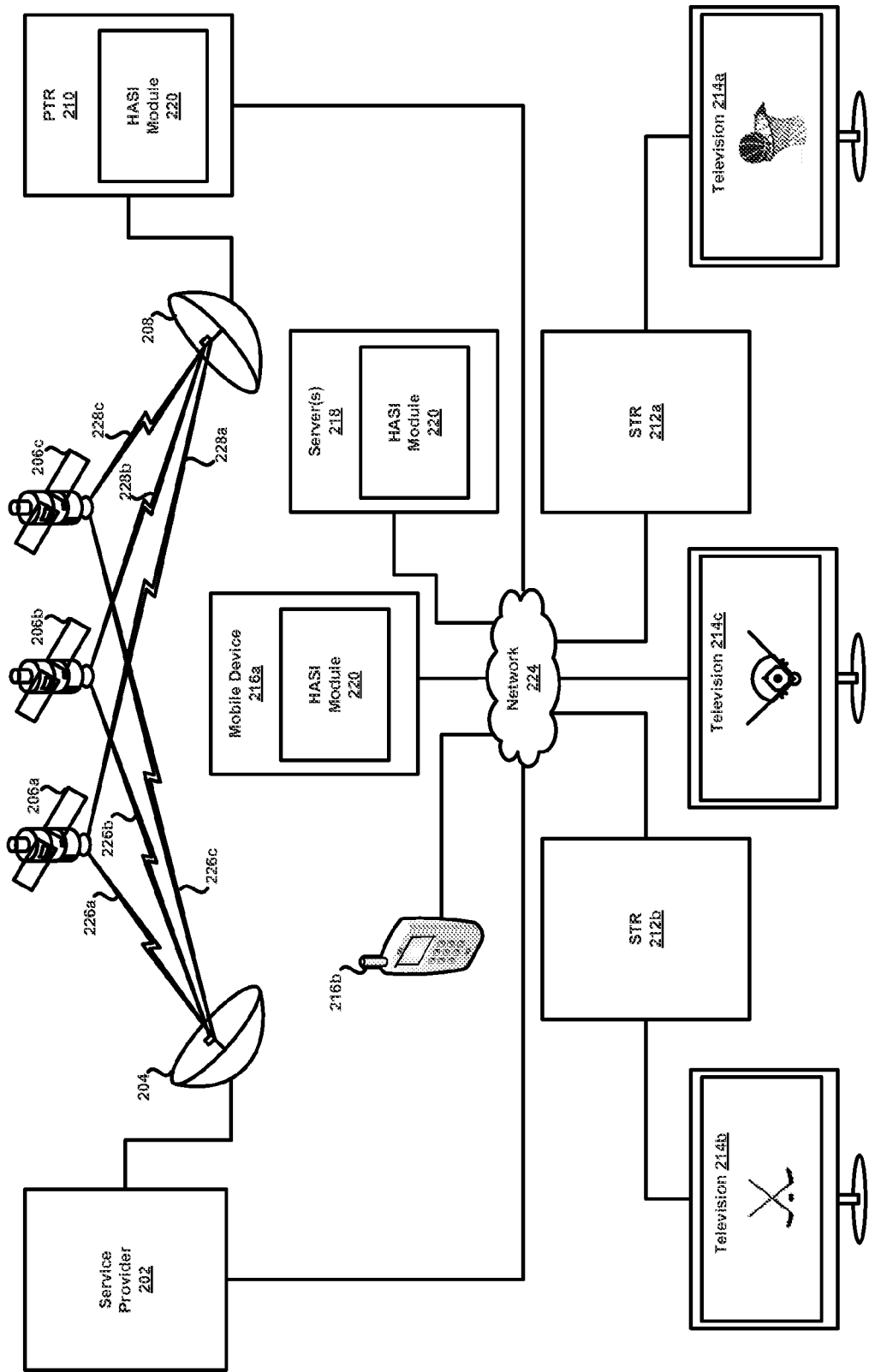


FIG. 2

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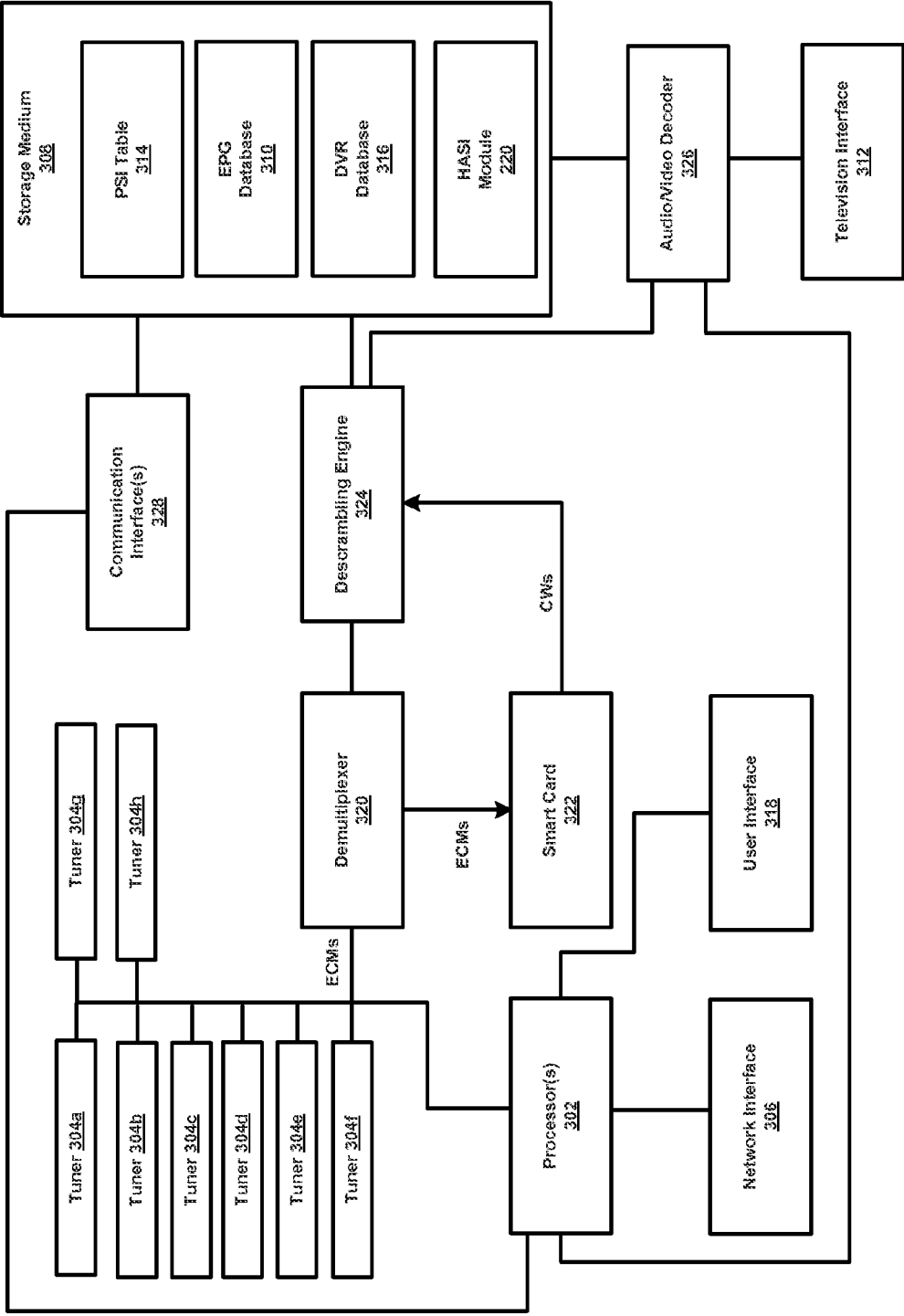
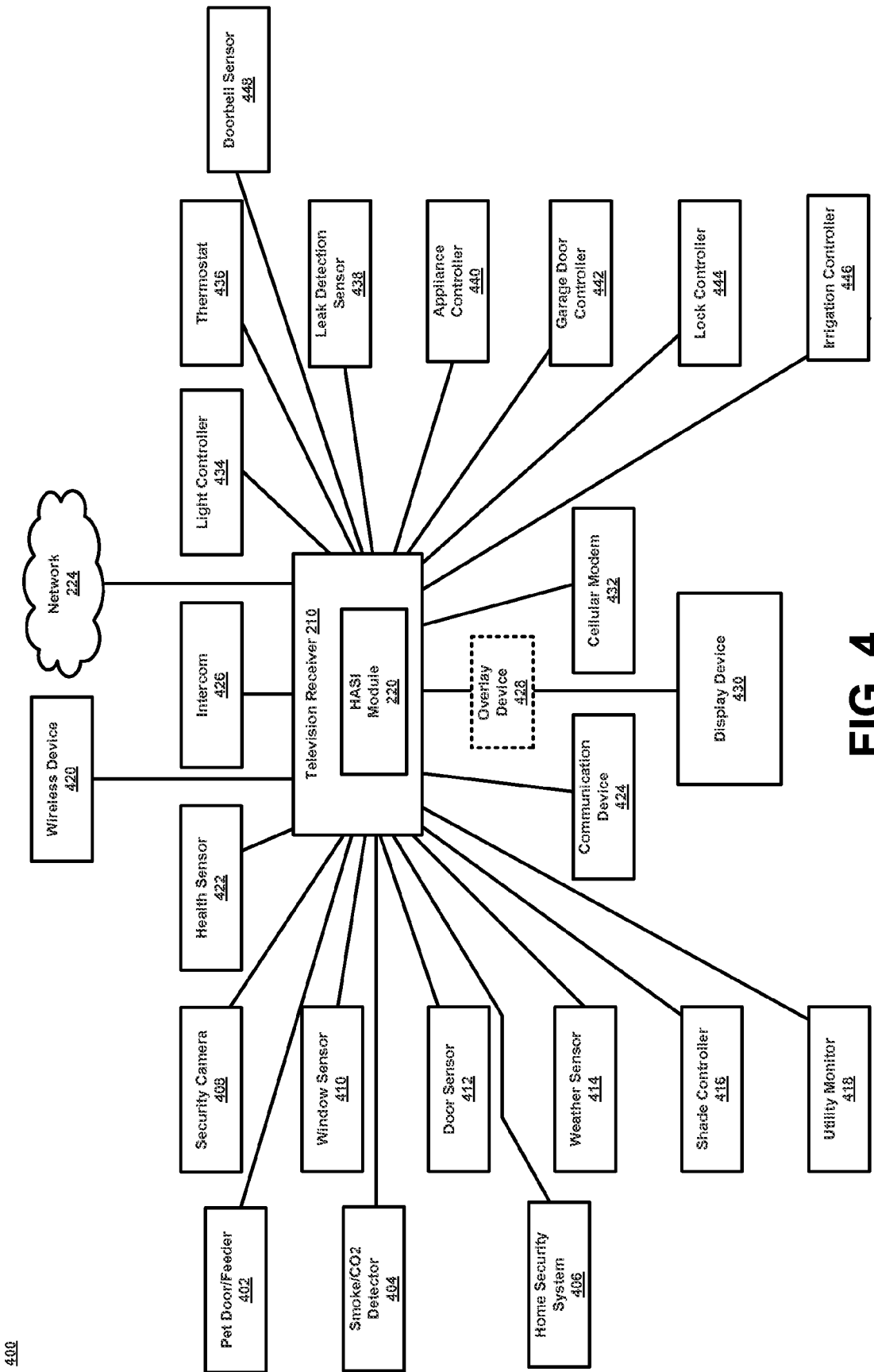


FIG. 3



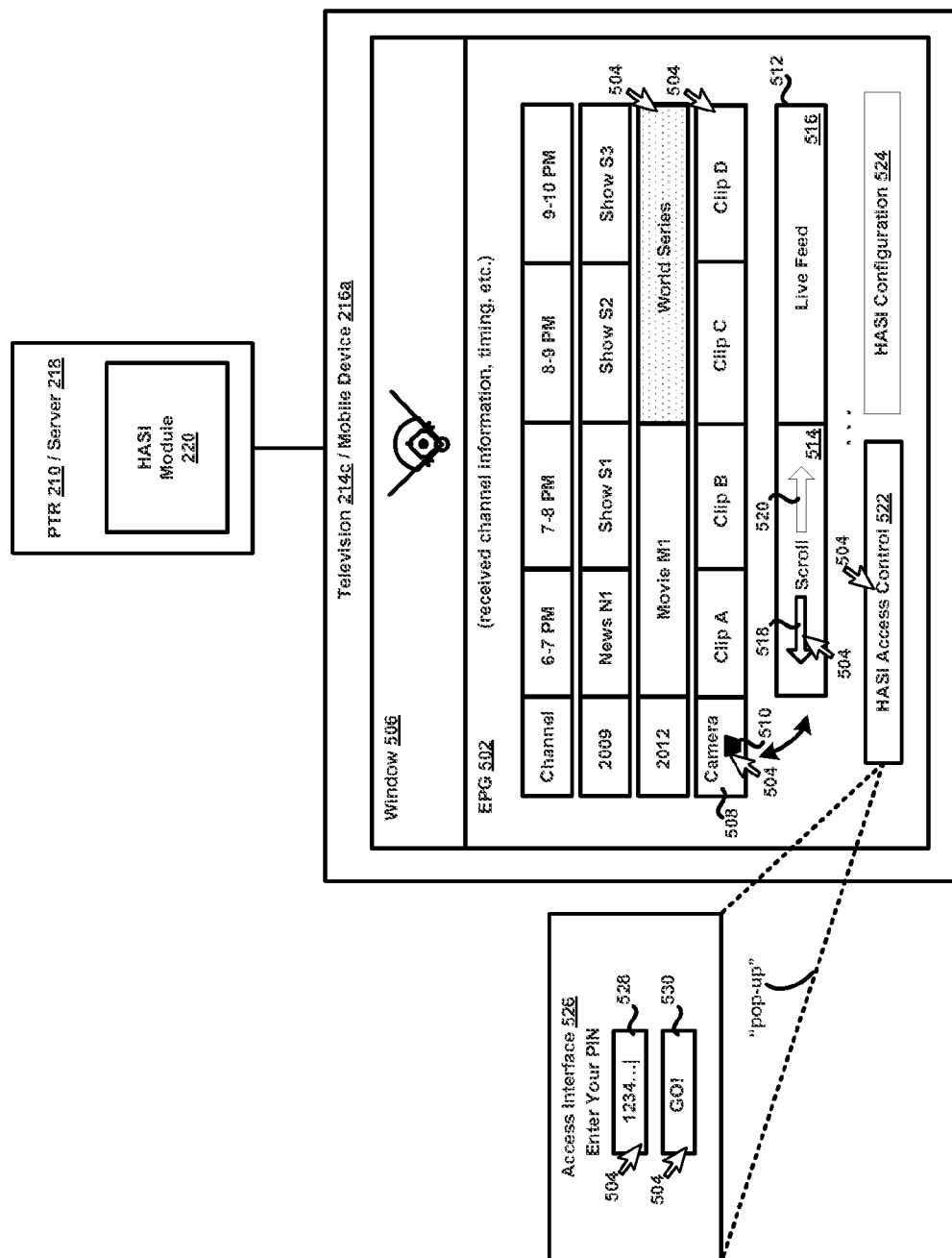


FIG. 5

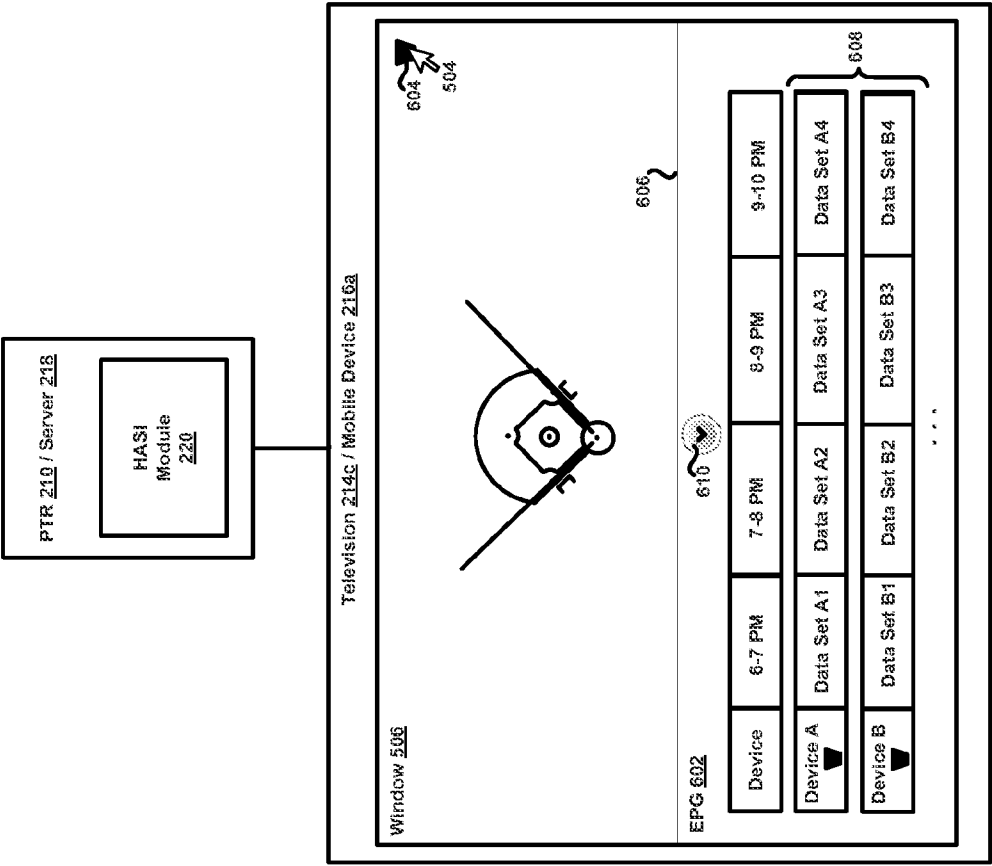


FIG. 6

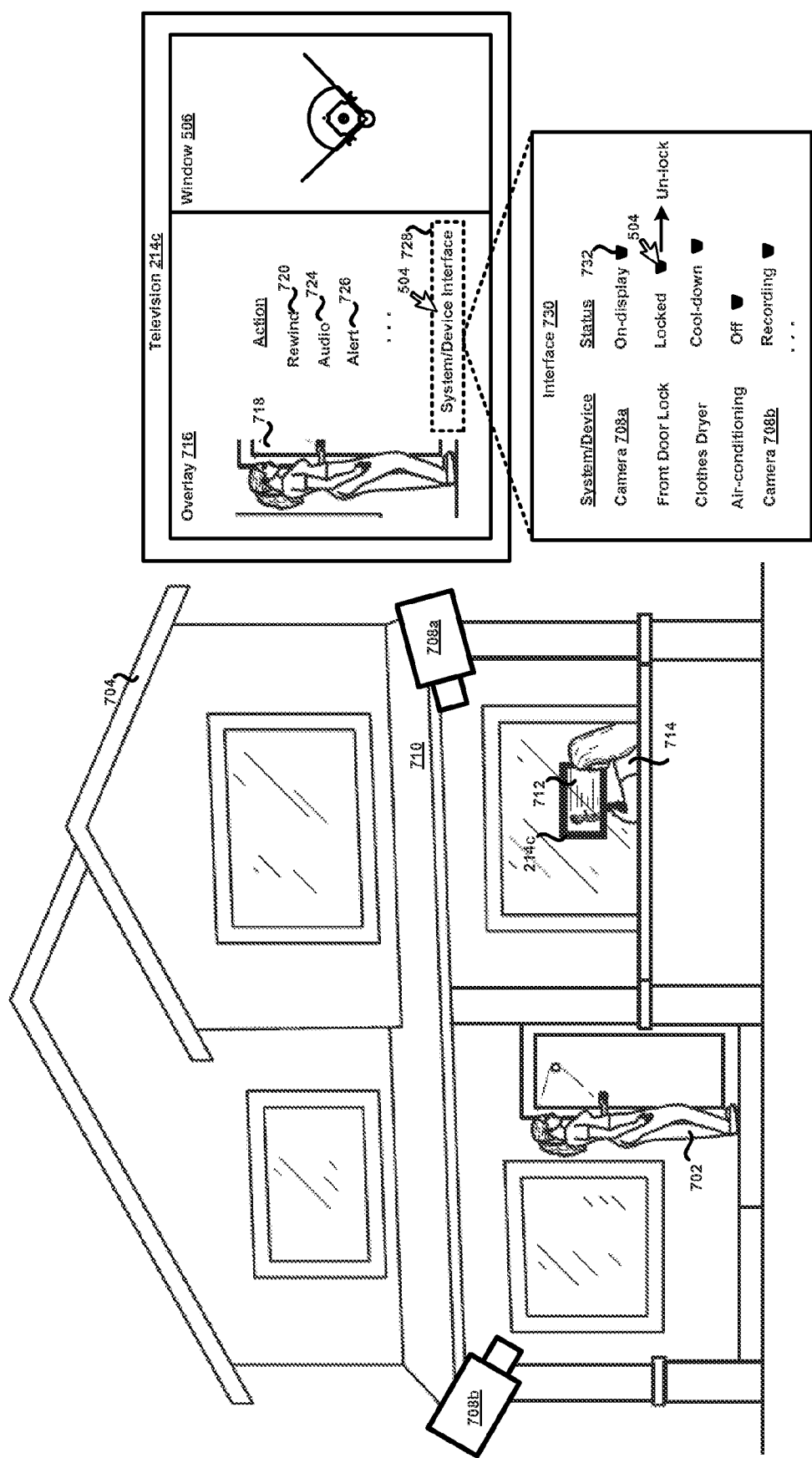


FIG. 7

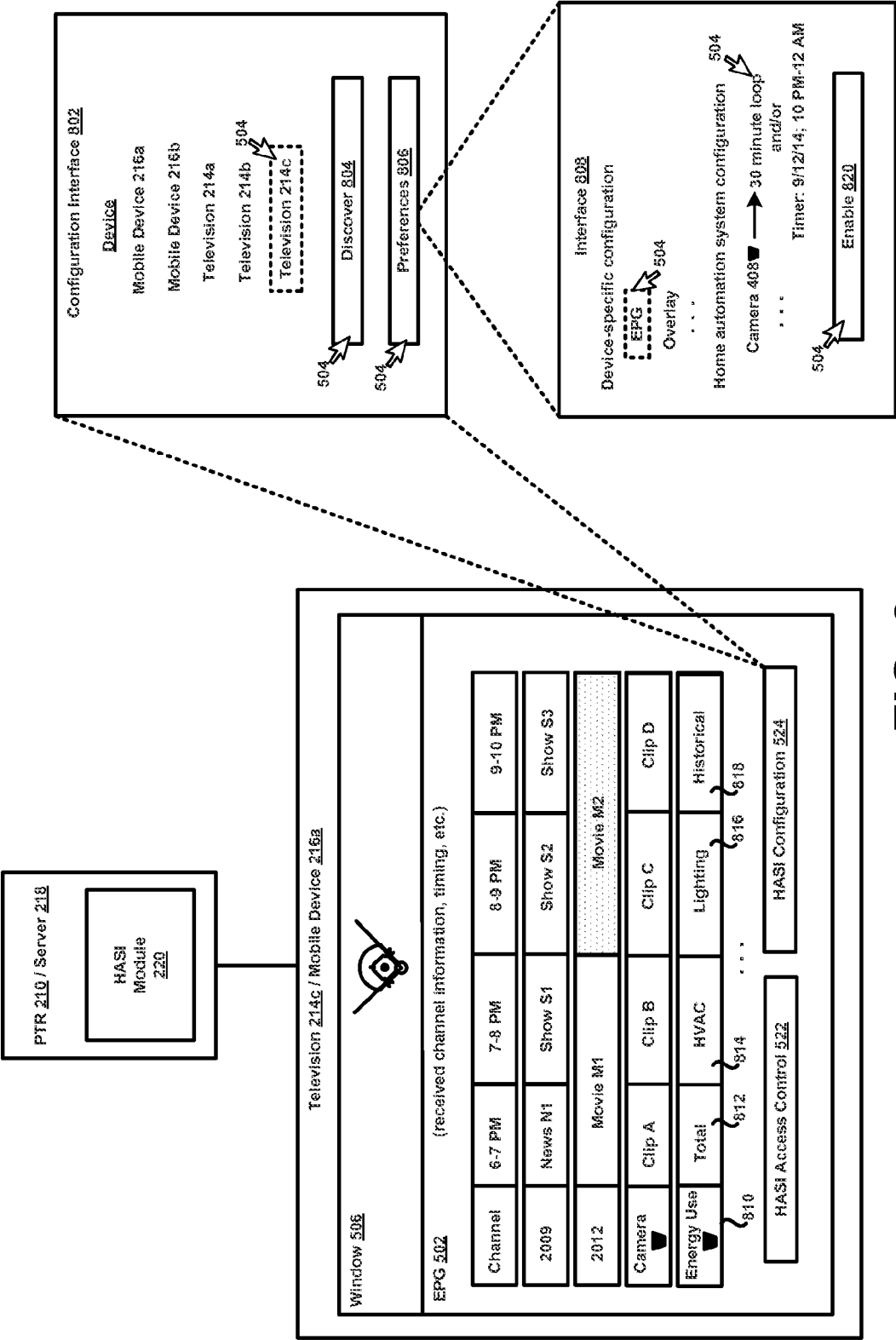


FIG. 8

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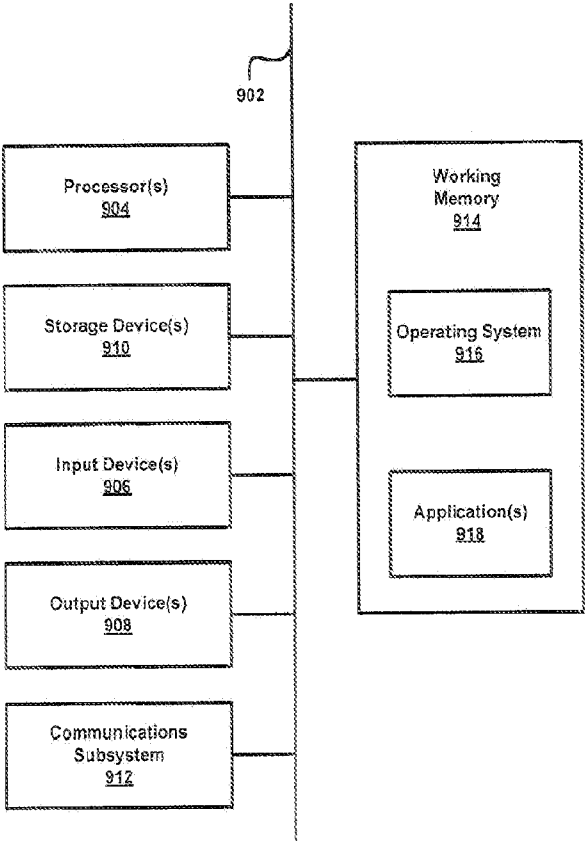


FIG. 9

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US14/55476

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - H04N 21/40; H04N 7/18; G06F 3/048 (2014.01)

CPC - H04L 12/2803, H04L 12/282, H04N 21/43615

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) - H04N 21/40, 43 H04B1/38, G06F 3/048, H04N 7/18, H04N 21/2665, H04N 21/47 (2014.01)

CPC - H04L 12/2803, H04L 12/282, H04N 21/20, H04N 21/21805, H04N 21/43615, H04N 21/4104, H04N 21/4223, G05B 2219/24097

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-G, DE-A, DE-T, DE-U, GB-A, FR-A); ProQuest; IEEE; Google Scholar;

KEYWORDS: television, receive, satellite, couple, home automation, close-circuit camera, user, menu, selection, video, audio, output, transmit, display, portable, presentation, device, screen

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2012/0047532 A1 (MCCARTHY, III, BA) 23 February 2012; abstract; figures 1-5; paragraphs [0011]-[0017], [0020]-[0023], [0032], [0035]-[0040], [0053]-[0055],[0063]	1-20
A	US 2007/0142022 A1 (MADONNA, RP et al.) 21 June 2007; entire document	1-20
A	US 2012/0326835 A1 (COCKRELL, RA et al.) 27 December 2012; entire document	1-20
P,Y	US 2014/0192197 A1 (HANKO, JG et al.) 10 July 2014; entire document	1-20

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"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

10 November 2014 (10.11.2014)

Date of mailing of the international search report

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Name and mailing address of the ISA/US

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