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(54) **Title:** PAUSING PLAYBACK OF MEDIA CONTENT BASED ON USER PRESENCE

(57) **Abstract:** Systems and methods for managing presentation of media content based on a viewer status. A system may include a television receiver that manages output of the media content for presentation through a display device based on a status data detected by a status sensor. The status data is indicative of a presence of a viewer in an environment containing the display device.
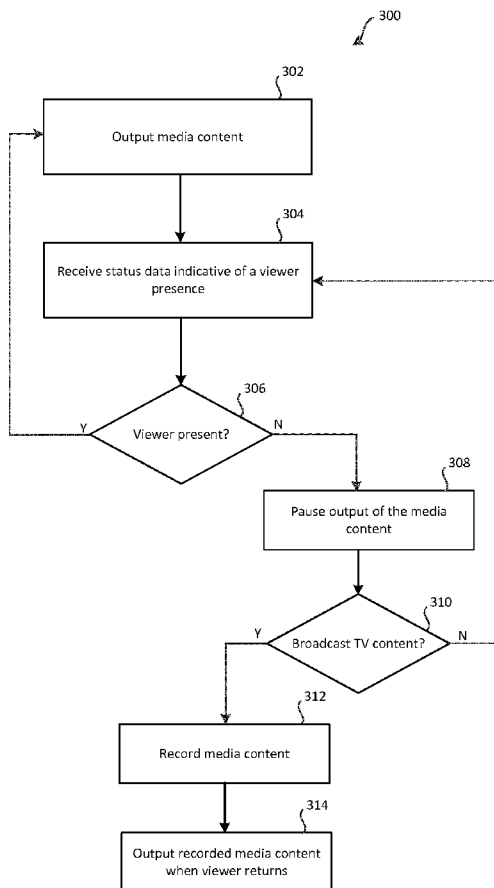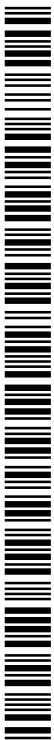
FIG. 3

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PAUSING PLAYBACK OF MEDIA CONTENT BASED ON USER PRESENCE

BACKGROUND

[0001]   Television viewers often face limited convenience and flexibility in regard to the presentation of media content during viewing. For example, television viewers often become distracted in the middle of a television show, leave the show, and return at a later point to continue watching. Typically, the show continues playing while the viewer is absent and the viewer misses a portion of it. In that case, the viewer must resume watching the rest of the show without seeing the missed portion. This may take away from viewer experience and diminish viewer satisfaction. In other cases, the viewer may forget or be unable to pause the show or movie before leaving, which results in similar inconveniences. This disclosure is intended to address these concerns and to provide related advantages.

SUMMARY

[0002]   In one embodiment, a method for pausing output of a media content based on a viewer status is provided. The method may include outputting, by a television receiver, the media content for presentation via a display device. The method may further include receiving, by the television receiver, status data detected by a status sensor, wherein the status data is indicative of a presence of a viewer in an environment containing the display device. Still, the method may include determining, by the television receiver, that the viewer is present in the environment based on the status data. The method includes, in response to determining that the viewer is present in the environment, determining, by the television receiver, that the viewer has left the environment based on the status data detected by the status sensor. In some aspects, the method may further include, in response to determining that the viewer has left the environment, pausing, by the television receiver, output of the media content via the display device.

[0003]   Various embodiments of the method may include one or more of the following features. The method may include determining, by the television receiver, that the viewer has returned to the environment, and after determining that the viewer has returned, resuming output, by the television receiver, of the media content via the display device. The method may include

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determining, by the television receiver after determining that the viewer has left the environment, that the media content includes broadcast television media content, and recording, by the television receiver after determining that the media content includes broadcast television media content, the media content. It will be appreciated that it is possible to both pause the output of

5   media content and record media content using functionality known commonly as "pause live TV", for example, whereby broadcast content is recorded to a storage device as it is received, effectively maintaining a buffer of received content that allows a user to rewind and pause content received via broadcast. In another aspect, the method may include pausing recording, by the television receiver, during a commercial event that is included in the media content. The

10   method may include determining, by the television receiver after initiating recording, that the viewer has returned to the environment based on the status data detected by the status sensor; and after determining that the viewer has returned to the environment, outputting, by the television receiver, the recorded media content for presentation via the display device. Still, the method may include outputting, by the television receiver after pausing output of the media content, a

15   message indicating a reason for pausing the output, wherein the message comprises at least one of a textual notification, a sound notification, and a graphical notification presented via the display device.

[0004]   In another aspect, the method may include presenting, by the television receiver, a user interface menu that includes at least one of resuming output of the media content after pausing

20   the media content and setting a duration of time for recording the media content. The method may include initiating, by the television receiver after pausing output of the media content, a sleep mode that causes the display device to turn off or enter standby. The method may include sending, by the television receiver after determining that the viewer has left the environment containing the display device, a first operational setting to a smart device in communication with

25   the television receiver. Still, the method may include sending, by the television receiver after determining that the viewer has returned to the environment containing the display device, a second operational setting to the smart device, wherein the second operational setting is different than the first operational setting. In a further aspect, the smart device is a lighting device located in the environment containing the display device. The first operational setting includes at least

30   one of powering down or off of the lighting device and the second operational setting includes at least one of powering up or resuming an original state of the lighting device. The method may

further include receiving, by the television receiver, status data detected by the status sensor that is indicative of a presence of a mobile device in the environment containing the display device and analyzing, by the television receiver, the status data that is indicative of the presence of the mobile device to determine the presence of the viewer in the environment containing the display

5   device.

[0005]   In another embodiment, a television receiver for managing presentation of media content based on a viewer status is provided. The television receiver may include one or more processors and a memory communicatively coupled with and readable by the one or more processors. The memory may have stored therein processor-readable instructions that, when

10   executed by the one or more processors, cause the one or more processors to output the media content for presentation via a display device and receive status data detected by a status sensor, wherein the status data is indicative of a presence of a viewer in an environment containing the displace device. The memory may further have processor-readable instructions that cause the one or more processors to determine that the viewer is present in the environment based on the status

15   data, and in response to determining that the viewer is present in the environment, determine that the viewer has left the environment based on the status data. Further, the memory may include processor-readable instructions that cause the one or more processors to, in response to determining that the viewer has left the environment, pause output of the media content via the display device.

20   [0006]   Embodiments of such a device may include one or more of the following features. The memory may include processor-readable instructions stored therein that, when executed by the one or more processors, cause the one or more processors to determine that the viewer left the environment containing the display device during a commercial event included in the media content. The processor-readable instructions may include instructions that cause the one or more

25   processors to, after determining that the viewer left the environment during the commercial event, continue output of the commercial event for presentation via the display device, detect an end of the commercial event before determining that the viewer has returned to the environment based on the status data detected by the status sensor, and in response to detecting the end of the commercial event, pause output of the media content. Further, the processor-readable

30   instructions may cause the one or more processors to record the media content. In another aspect,

the memory includes processor-readable instructions stored therein that, when executed by the one or more processors, cause the one or more processors to: determine that the viewer returned to the environment containing the display device and output the recorded media content for presentation via the display device.

5   [0007]   In yet another embodiment, a method for pausing playback of a broadcast television media content based on a viewer status is provided. The method may include receiving, by a television receiver, an incoming stream of the broadcast television media content, wherein the broadcast television media content includes a programming event, outputting, by the television receiver, the broadcast television media content for presentation via a display device, and

10   analyzing, by the television receiver, a first status data detected by a status sensor that senses a presence of a viewer in an environment containing the display device. The method may further include determining, by the television receiver, that the viewer is present in the environment based on the first status data. Further, the method may include, in response to determining that the viewer is present in the environment, determining, by the television receiver, that the viewer

15   has left the environment based on a second status data detected by the status sensor. The method may include, in response to determining that the viewer has left the environment, pausing, by the television receiver, output of the programming event in the broadcast television media content, and in response to pausing output of the programming event, recording, by the television receiver, the incoming stream of the programming event in the broadcast television media

20   content.

       [0008]   Embodiments of such a device may include one or more of the following features. The method may include, after determining that the viewer has returned to the environment based on a third status data detected by the status sensor, outputting, by the television receiver, the recorded programming event. The method may further include detecting, by the television

25   receiver, a commercial event in the broadcast television media content and pausing, by the television receiver, recording of the incoming stream of the broadcast television media content until the commercial event has ended. In another aspect, the method may include outputting, by the television receiver, the commercial event for presentation via the display device, and after outputting the commercial event, detecting, by the television receiver, at least one of an end of

30   the commercial event and a beginning of the programming event. Furthermore, the method may

include, after detecting at least one of the end of the commercial event and the beginning of the programming event, pausing, by the television receiver, output of the programming event, and after pausing output of the programming event, recording, by the television receiver, the incoming stream of the programming event.

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BRIEF DESCRIPTION OF THE DRAWINGS

[0009]   FIG. 1 shows a media content presentation system having a television receiver according to various embodiments of the present disclosure;

[0010]   FIG. 2 shows the television receiver of FIG. 1;

10   [0011]   FIG. 3 shows a method of the television receiver of FIG. 1;

[0012]   FIG. 4 shows yet another method of the television receiver of FIG. 1;

[0013]   FIG. 5 shows an example user interface provided for by the television receiver of FIG. 1; and

[0014]   FIG. 6 shows a computing system related to the television receiver of FIG. 1.

15

DETAILED DESCRIPTION

[0015]   The present disclosure is directed to systems and methods for managing presentation of media content through a display device. More particularly, the disclosure provides systems and methods for pausing and/or recording the media content based on a user (herein referred to as a 20   "viewer") status. The viewer status is determined based on status data detected by a status sensor. The status data may indicate whether the viewer is present, absent, and/or busy in an environment containing the display device.

[0016]   It is contemplated that the systems and methods described herein enhance the viewer's convenience and flexibility with viewing the media content. For example, if the viewer becomes 25   distracted during the middle of a show and leaves the viewing environment, the viewer may return and pick up watching the show where he or she left off from, without having to manually pause and/or record the show. In some cases, the viewer may be unable to, or may forget to, pause and/or record the media content prior to leaving the environment. In that case, the viewer

utilizing the systems and methods described herein may still resume presentation of the media content upon returning to the environment without having to worry about missed content. Furthermore, the device described herein may monitor the user's engagement with a TV program (e.g., walking out while it is on, surfing the web for unrelated content or related content on the user's tablet) and can add to metrics it collects about programs the user likes and dislikes. The device may detect that multiple users are present and allow such information to be collected and updated for each user. It is contemplated that the collected information may be used for making future programming recommendations, targeting advertisements, and the like.

[0017]   In another aspect, the systems and methods described herein may provide advantages related to energy savings by detecting that the viewer is absent and instructing other device(s) in the presentation system and/or environment to change to a different setting. For instance, the systems and methods described herein may implement a screensaver mode on a display screen of the display device and/or signal a smart device to adjust operations according to the viewer's absence or presence, e.g. provide instructions to a lighting device within the viewing environment for dimming while the viewer is absent. Further advantages are discussed below in the succeeding paragraphs.

[0018]   The systems and methods described herein may be implemented by any computing device, such as set-top-boxes, computers, tablets, notebooks, mobile devices, and other electronics that are capable of presenting media content. Merely by way of example, **FIG. 1** illustrates one possible implementation of the present disclosure with a media content presentation system **100** having a television receiver **102**. In one aspect, the term "television receiver" may refer to a set-top-box that is used to present media content, such as live broadcast television media content, on-demand content, DVDs, radio, audiobooks, and the like. The television receiver **102** may receive and send data or instructions to a display device **104**, such as a television, computer, projector, tablet computer, or any other device capable of presenting the media content. In some cases, the media content is received by the television receiver **102** from a remotely-located service provider or content provider **106** linked to the television receiver **102** via a one or two-way communication link, such as a data network using satellites, terrestrial, internet, and the like.

[0019]   As further shown in **FIG. 1**, the television receiver **102** may be in operative, one or two-way communication with a status sensor **108** that continuously, and/or when queried by the television receiver **102**, detects status data and sends the detected status data to the television receiver **102**. The status sensor **108** may include any of a variety of sensors that are capable of detecting a presence or condition of one or more viewers in the viewing environment. Such sensors may include an image sensor provided for by a camera, biometric sensor, heat sensor, infrared sensor, wireless signal sensor, sound sensor, scent sensor, light sensor, and so on. The status data detected by the status sensor **108** is sent to the television receiver **102**, and more particularly, to a viewer status engine **110** of the television receiver **102**. The viewer status engine **110** may analyze the status data and manage presentation of the media content based on the status data and/or analysis thereof. For instance, the viewer status engine **110** may pause output of the media content on the display device **104** when the status data indicates the viewer is absent from the environment and resume playing the media content when the status data detected at a later time indicates that the viewer has returned to the environment. Further, the viewer status engine **110** may provide various user interfaces for interaction and receiving input from the viewer. These functions are described in further detail in the succeeding paragraphs.

[0020]   Still referring to **FIG. 1**, it is noted that the status sensor **108** may be incorporated in the television receiver **102**, incorporated in the display device **104**, or provided separately from the television receiver **102** and/or the display device **104**. Similarly, it is contemplated that the television receiver **102** and the display device **104** may comprise an integrated device or separate devices. Furthermore, the status sensor **108** may be in operative communication, wireless or hardwired, with the display device **104** to send various signals and/or status data to or from the display device **104**. In yet a further aspect, the television receiver **102** and/or other components of the system **100** may be connected to a smart device **112** through a smart home communication network, or any other device that may be represented by the smart device **112**. It is noted that any of the components of the system **100** may be in wireless or hardwired communication, directly or indirectly, with any other components of the system **100** and that such connections are not limited to those shown in **FIG. 1**. Further, it is noted that any number of status sensors, display devices, television receivers, and smart devices may be provided for and communicatively connected together in the system **100**.

[0021]   Turning now to **FIG. 2**, an example block diagram of various components in the television receiver **102** of **FIG. 1** is shown in accordance with the disclosure. The television receiver **102** may include one or more processors **202**, a plurality of tuners **204a-h**, at least one network interface **206**, at least one non-transitory computer-readable storage medium **208**, at

5   least one EPG database **210**, at least one television interface **212**, at least one PSI (Program Specific Information) table **214**, at least one DVR database **216**, at least one user interface **218**, at least one demultiplexer **220**, at least one smart card **222**, at least one descrambling engine **224**, and at least one decoder **226**. In other embodiments, fewer or greater numbers of components may be present. Further, functionality of one or more components may be combined; for

10   example, functions of the descrambling engine **224** may be performed by the processors **202**. Still further, functionality of components may be distributed among additional components, and possibly additional systems such as, for example, in a cloud-computing implementation.

[0022]   The processors **202** may include one or more specialized and/or general-purpose processors configured to perform processes such as tuning to a particular channel, accessing and

15   displaying EPG information, and/or receiving and processing input from a user. For example, the processors **202** 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.

20   [0023]   The tuners **204a-h** may be used to tune to television channels, such as television channels transmitted via satellites (not shown). Each one of the tuners **204a-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 **204a**) may be used to tune to

25   a television channel on a first transponder stream for display using a television, while another tuner (e.g., tuner **204b**) 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 **204c**) may be used to receive the signal containing the multiple television channels for presentation and/or recording of each of

30   the respective multiple television channels, such as in a PTAT (Primetime Anytime)

implementation for example. Although eight tuners are shown, the television receiver **102** may include more or fewer tuners (e.g., three tuners, twelve tuners, etc.), and the features of the disclosure may be implemented similarly and scale according to the number of tuners of the television receiver **102**

5   **[0024]**   The network interface **206** may be used to communicate via alternate communication channel(s) with a service provider. For example, the primary communication channel between the content provider **106** of **FIG. 1** and the television receiver **102** may be via satellites, which may be unidirectional to the television receiver **102**, and another communication channel between the content provider **106** and the television receiver **102**, which may be bidirectional,

10   may be via a network, such as various wireless and/or hardwired packet-based communication networks, including, for example, a WAN (Wide Area Network), a HAN (Home Area Network), a LAN (Local Area Network), a WLAN (Wireless Local Area Network), the Internet, a cellular network, a home automation network, or any other type of communication network configured such that data may be transferred between and among respective elements of the system **100**. In

15   general, various types of information may be transmitted and/or received via the network interface **206**.

[0025]   The storage medium **208** may represent a non-transitory computer-readable storage medium. The storage medium **208** may include memory and/or a hard drive. The storage medium **208** may be used to store information received from one or more satellites and/or

20   information received via the network interface **206**. For example, the storage medium **208** may store information related to the EPG database **210**, the PSI table **214**, and/or the DVR database **216**, among other elements or features, such as the viewer status engine **110** mentioned above. Recorded television programs may be stored using the storage medium **208**.

[0026]   The EPG database **210** may store information related to television channels and the

25   timing of programs appearing on such television channels. Information from the EPG database **210** may be used to inform users of what television channels or programs are available, popular and/or provide recommendations. Information from the EPG database **210** 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

30   populate the EPG database **210** may be received via the network interface **206** and/or via

satellites. For example, updates to the EPG database **210** may be received periodically via satellite. The EPG database **210** may serve as an interface for a user to control DVR functions of the television receiver **102**, and/or to enable viewing and/or recording of multiple television channels simultaneously.

5   [0027]   The decoder **226** may convert encoded video and audio into a format suitable for output to a display device. For instance, the decoder **226** may receive MPEG video and audio from the storage medium **208**, or the descrambling engine **224**, to be output to a television. MPEG video and audio from the storage medium **208** may have been recorded to the DVR database **216** as part of a previously-recorded television program. The decoder **226** may convert the MPEG video

10   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 **226** 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.

15   [0028]   The television interface **212** outputs 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 **212** may output one or more television channels, stored television programming from the storage medium **208**, such as television programs from the DVR database **216** and/or information from the EPG database **210** for example, to a television for presentation.

20   [0029]   The PSI table **214** may store information used by the television receiver **102** to access various television channels. Information used to populate the PSI table **214** may be received via satellite, or cable, through the tuners **204a-h** and/or may be received via the network interface **206** over the network from the content provider **106** shown in **FIG. 1**. Information present in the PSI table **214** may be periodically or at least intermittently updated. Information that may be

25   present in the PSI table **214** 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 embodiments, the PSI table **214** may be divided into a number of tables, such as a NIT (Network Information

30   Table), a PAT (Program Association Table), a PMT (Program Management Table), etc.

[0030] DVR functionality of the PTR **210** may permit a television channel to be recorded for a period of time. The DVR database **216** may store timers that are used by the processors **202** to determine when a television channel should be tuned to and recorded to the DVR database **216** of storage medium **208**. In some embodiments, a limited amount of space of the storage medium **208** may be devoted to the DVR database **216**. Timers may be set by the content provider **106** and/or one or more viewers or users of the television receiver **102**. DVR functionality of the television receiver **102** may be configured by a user to record particular television programs. The PSI table **214** may be used by the television receiver **102** to determine the satellite, transponder, ECM PID, audio PID, and video PID.

[0031] The user interface **218** may include a remote control, physically separate from television receiver **102**, and/or one or more buttons on the television receiver **102** that allows a user to interact with the television receiver **102**. The user interface **218** may be used to select a television channel for viewing, view information from the EPG database **210**, and/or program a timer stored to the DVR database **216** wherein the timer may be used to control the DVR functionality of the television receiver **102**.

[0032] Referring back to the tuners **204a-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 content provider **106**. When one of the tuners **204a-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 **214**, 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 television receiver **102** may use the smart card **222** to decrypt ECMs.

[0033] The smart card **222** 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 television receiver **102**, has authorization to access the particular television channel associated with the ECM. When an ECM is received by the

demultiplexer **220** 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 **222** for decryption.

[0034]   When the smart card **222** receives an encrypted ECM from the demultiplexer **220**, the smart card **222** may decrypt the ECM to obtain some number of control words. In some embodiments, from each ECM received by the smart card **222**, two control words are obtained. In some embodiments, when the smart card **222** 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 embodiments, each ECM received by the smart card **222** 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 **222**. When an ECM is received by the smart card **222**, 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 **222** may be permanently part of the television receiver **102** or may be configured to be inserted and removed from the television receiver **102**.

[0035]   The demultiplexer **220** 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 **220**. 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 **224** or the smart card **222**; 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 embodiments, 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 **214**, may be appropriately routed by the demultiplexer **220**.

[0036]   The descrambling engine **224** may use the control words output by the smart card **222** 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 **204a-h** may be scrambled. The video and/or audio may be descrambled by the

descrambling engine **224** using a particular control word. Which control word output by the smart card **222** 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 **224** to the storage medium **208** for

5   storage, such as part of the DVR database **216** for example, and/or to the decoder **226** for output to a television or other presentation equipment via the television interface **212**.

[0037]   For brevity, the television receiver **102** 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 associated with intelligently allocating idle

10   tuner resources to buffer or record broadcast programming determined as desirable, as discussed in the context of the present disclosure. For example, the television receiver **102** is shown in **FIG. 2** to include the viewer status engine **110** as mentioned above in connection with **FIG. 1**. Further, some routing between the various modules of the television receiver **102** has been illustrated. Such illustrations are for exemplary purposes only. The state of two modules not

15   being directly or indirectly connected does not indicate the modules cannot communicate. Rather, connections between modules of the television receiver **102** are intended only to indicate possible common data routing. It should be understood that the modules of the television receiver **102** may be combined into a fewer number of modules or divided into a greater number of modules.

20   [0038]   Additionally, although not explicitly shown in **FIG. 2**, the television receiver **102** 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®

25   by Sling Media, Inc. of Foster City, CA, is one example of a product that implements such functionality. Further, the television receiver **102** 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.

[0039]   Still referring to **FIG. 2**, the viewer status engine **110** includes processor-readable instructions that, when executed by the one or more processors **202**, provides for the various systems and methods described herein with regard to managing presentation of the media content, and/or managing, at least in part, operational settings of various devices or smart devices **112** in communication with the television receiver **102** as shown in **FIG. 1**. In an example implementation, the viewer status engine **110** instructs the processors **202** to output, e.g. play, the media content for display to the viewer through the display device **104** and receives status data that is detected by the status sensor **108** in communication with or integrated with the television receiver **102**. It is contemplated that the term "status data" is used herein to refer to a non-constant data that may be continuously received and continuously changed depending on the detection of the viewer activity from the status sensor **108**.

[0040]   The viewer status engine **110** may analyze the status data to determine if the viewer is absent and/or present in the viewing environment, and/or if the viewer is busy in the environment, e.g., taking a phone call. Based on the determination of the viewer status, the viewer status engine **110** pauses and/or records the media content when the viewer is absent, and resumes playback of the media content and/or outputs the recorded content when the viewer returns. Further, the viewer status engine **110** can provide instructions for other functionalities, including sending and receiving settings to smart devices **112** in response to the detected status data. It is noted that although the viewer status engine **110** described herein is implemented in the television reciever **102**, the engine **110** can be applicable for any computing device that presents any type of audio and/or visual media content and is not limited to the television systems.

[0041]   Turning now to **FIG. 3**, a method **300** for managing presentation of the media content that may be performed by the viewer status engine **110** is shown. The method **300** comprises the step of outputting **302** the media content through the display device **104** and receiving **304** status data from the status sensor **108**. The method **300** further comprises determining **306**, based on the status data, if the viewer is present in the environment containing the display device **104**. If the viewer is determined to be present, the method returns to step **302** and continues to output the media content. If the viewer is determined to be absent, the method **300** comprises pausing **308** output of the media content through the display device **104**. In some embodiments, the method

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300 further comprises determining **310** if the media content comprises broadcast television media content, which may include one or more programming events, such as a scheduled show, and/or a commercial event being presented. If the media content is not broadcast television media content or other live content, e.g. the media content is a recording or DVD, the method **300** maintains pausing of the media content and returns to step **304** to continue monitoring the status data and check when the viewer returns. Once the viewer returns, the method **300** returns to step **302** and the media content is unpaused and output through the display device **104**.

[0042]   In another aspect, the method **300** may include a hysteresis or other momentary lag in recording and pausing the media content when the status sensor detects that the viewer has left the environment. For instance, the method **300** may include determining, based on the sensed data, that the viewer has left the environment, and upon determining that the viewer is absent, start recording the media content prior to, or without, pausing the media content until further status data is received from the sensor to confirm that the viewer has left the environment. For instance, the viewer status engine **110** may start recording the program upon receiving and/or determining that a first status data indicates the viewer has left the environment. The viewer status engine **110** may continue outputting the program through the display device **104** until a second status data, or a series of subsequent and/or consecutive status data, is received and indicative of the viewer's absence. At that point, the viewer's absence is confirmed and the media content may be paused by the viewer status engine **110**. Subsequently, upon the viewer's return, the media content may be unpaused and output starting from the first point in which the recording was initiated. Merely by way of example, the lag between recording and pausing the media content when the viewer is confirmed to be absent may be a fraction of a second, one second, or 1-2 seconds. It is contemplated that a benefit of the momentary lag is that the system may be more independent of the status sensor's sensitivity. Other examples are possible. For instance, the pausing and recording steps may be initiated more simultaneously. Furthermore, in some aspects, the method **300** may include recording, or initiating recording, during a commercial event.

[0043]   Still referring to **FIG. 3**, in another aspect, at step **310**, the media content is determined to include the broadcast television media content. In some embodiments, it is contemplated that the method **300** maintains pausing of the output of media content and records **312** the media

content, such as the incoming stream of media content being received by the television receiver 102. It is contemplated that the viewer status engine 110 continues receiving the status data and analyzing the status data to determine the viewer presence. Once the viewer is determined to be present, i.e. has returned to the environment, the method 300 continues to step 314 and the

5   recorded media content is output for presentation.

[0044]   In one aspect, the viewer status engine 110 may provide an option for the viewer to resume playback of the recorded portions at a higher speed, for instance a playback speed that is slightly quicker than real time. In some cases, the higher speed may be determined or based on a speed needed to allow the playback to catch up with live television by the time the program has

10   ended. Merely by way of example, the higher speed may be 1.1x speed with audio pitch correction may be provided. It is contemplated that this higher speed may be almost imperceptible to most viewers. In another example, the higher speed may be about 1.2x, or 1.2 times faster than the real time speed. In yet another example, a pre-set value may define a threshold value that cannot be exceeded, such as 1.2x. The pre-set value may be any speed

15   higher than the real time speed that is not noticeably different from real time by the viewer. In a further aspect, the viewer status engine 110 may calculate or otherwise determine a minimum playback speed that is needed in order to catch up with live television. For instance, the minimum playback speed may be based on the remaining time length of the particular program being aired and a time length of the recorded buffer. The viewer status engine 110 may

20   implement the minimum playback speed following unpausing of the media content, or may implement a faster speed that is still less than the pre-set value and/or within the imperceptible range. In a different example, the higher speed may be 2x, or a noticeably higher speed or fast forward option with pausing capabilities, to allow the user to view portions of interest in the missed content and to skip less interesting recorded portions, until the viewer is caught up with

25   the live broadcast television. It is contemplated that such capabilities may be beneficial for the viewer's convenience, for instance in preventing the automatically paused program from delaying the viewer's evening or running into later broadcast times of other programs that the viewer intends watch. Other examples are possible.

[0045]   Referring now to **FIG. 4**, another method 400 for managing presentation of the media

30   content that may be performed by the viewer status engine 110 is shown. The method 400 may

include, additionally or alternatively, any of the steps presented in **FIG. 3**. In one aspect, the method includes receiving **402** an incoming stream of the broadcast television media content, whereby the broadcast television media content includes the programming event and/or the commercial event. The method **400** further comprises outputting **404** the broadcast television media content for presentation and receiving **406** status data detected by the status sensor **108**. In some embodiments, the method **400** comprises analyzing **408** a first status data detected by the status sensor **108** and determining **410** that the viewer is present in the environment containing the display device **104** based on the first status data. As shown in **FIG. 4**, if the viewer is present, the method **400** returns to step **404** to continue output of the media content.

[0046]   In some cases, the method **400** comprises determining **412**, before, after, and/or in response to determining that the viewer is present in the environment, that the viewer has left the environment based on a second status data detected by the status sensor. The method **400** may then comprise determining **412** if the viewer left the environment during a commercial break by detecting a commercial event. More particularly, the viewer status engine **110** may detect a beginning or an end tag of a commercial event in an incoming stream of the broadcast television media content to determine occurrence of the commercial event. Alternatively and/or additionally, the viewer status engine **110** may retrieve and/or receive information indicative of a start or end time of a commercial event, or whether the current programming content is a commercial, from another source. In that case, the viewer status engine **110** determines that the viewer left during a commercial and may return to step **404** to continue output of the commercial event rather than pausing the commercial.

[0047]   In other embodiments, the method **400** comprises pausing **414** a recording of the media content (if recording was previously initiated) when the commercial event is detected and resuming recording after the commercial event has ended, and/or in response to determining that the commercial event has ended. For instance, if the viewer status engine **110** detects an end, such as the end tag, of the commercial event before determining that the viewer has returned to the environment based on the status data detected by the status sensor **108**, the viewer status engine **110** may pause output of the media content and record the media content. More particularly, the viewer status engine **110** may record an incoming stream of the media content from the content provider **106**, without playing the content on the display device **104** and/or

providing a frozen frame taken from the paused content. In a particular aspect, the recorded media content may be saved on the television receiver **102** or an external memory drive (not shown) connected thereto. The recorded media content may be stored in the storage medium **208** of **FIG. 2**. It is contemplated that the recording may continue through the end of a particular

5   programming event in the media content, such as automatically stop recording at an end of the scheduled show, until a storage memory is filled to capacity, and/or for a predetermined or user-defined storage capacity or recording time, such as three hours. The recording may also terminate based on a user input in the television receiver **102** to stop the recording. It is noted that step **414** is an optional step in the method **400**. Further, it is noted that any of the steps

10   provided herein and shown in **FIG. 4** may be optional.

[0048]   At a later point after the recording has begun, the viewer status engine **110** may determine **420**, based on the status data, that the viewer has returned to the environment containing the display device **104** and output **422** the recorded media content for presentation through the display device **104**.

15   [0049]   In another embodiment, the method **400** at step **412** does not detect the commercial event. In this case, it is contemplated that a programming event having viewer-desired content is being provided. With the viewer being absent from the environment, the method **400** continues to pause **416** the output of the media content through the display device **104** and record **418** the incoming stream of the media content, such as the broadcast television media content being

20   streamed from the content provider **106** to the television receiver **102**. The method **400** further comprises determining **420** if the viewer has returned to the environment. If the viewer has returned, the method **400** outputs **422** the recorded media content for display to the user. If the viewer has not yet returned, the method **400** continues to detect for commercial events at step **412** to pause or unpause the recording until the viewer has returned.

25   [0050]   Still further, it is contemplated that the method **400** may include initiating a sleep mode that causes the display device to turn off or enter standby while the viewer is absent from the environment for a period of time that can be set by the viewer. In another aspect, the method **400** may include receiving wireless status data detected by the status sensor that is indicative of a presence of a mobile device in the environment containing the display device. The wireless

30   status data may further indicate if the mobile device is being used, e.g. the person has received

and/or answered a phone call, in which case the method **400** may determine that the viewer is not present. The method may include analyzing the wireless status data to determine the presence of the viewer in the environment containing the display device.

[0051]   Still, in other aspects, the method may utilize a home automation system that is linked
5   to the television receiver **102** and/or the viewer status engine **110**. For instance, the method **400** may include the steps of sending a first operational setting to the smart device **112** in communication with the television receiver **102** after and/or in response to determining that the viewer has left the environment, and sending a second operational setting to the smart device **112** after and/or in response to determining that the viewer has returned to the environment
10   containing the display device. It is contemplated that the first and second operational settings are different settings to control a power level and/or other operation of the smart device **112** located in the environment containing the display device **104**. For example, the smart device **112** may comprise a lighting device located in the environment, the first operational setting may include powering down, e.g. dimming, and/or off of the lighting device upon detection that the viewer is
15   absent for a period of time that can be set by the user, and the second operational setting may include powering up or resuming an original state of the lighting device after and/or in response to determining that the viewer has returned to the environment. In a different example, the first operational setting may comprise turning down or off the smart device **112**, e.g. a dishwashing cycle of a dishwasher when the viewer is present, and the second operational setting may
20   comprise turning on the smart device **112**, e.g. resuming wash of the dishwasher when the viewer is absent, which eliminates noise disturbances during the viewer's viewing of the show if the smart device **112** is in the environment of the display device **104**, or in proximity thereto.

[0052]   In further aspects, it is contemplated that the method **400** includes presenting a user interface overlay and/or menu on the screen of the display device **104,** such as the interface **500**
25   illustrated below in **FIG. 5**. In particular, the user interface **500** may be presented if the media content is paused. In one aspect, the method **400** includes presenting an option for the viewer to resume output of the media content after pausing the media content and/or setting a duration of time for recording the media content. Even further, the method may include the step of outputting, after and/or in response to pausing output of the media content, a message indicating
30   a reason for pausing the output. It is contemplated that the message may comprise a textual

notification, a sound notification, and/or a graphical notification presented via the display device **104** or incorporated in the user interface. Such notifications may further include information regarding operational changes to smart devices **112**.

[0053]   Referring now to **FIG. 5**, an example user interface **500** is shown on a window **502** of the display device **104**. Optionally, the user interface **500** or various elements thereof may be pushed, by the viewer status engine **110**, to the viewer's portable device, e.g. an app on a smart phone. The user interface **500** may be provided for by the viewer status engine **110** of the television receiver **102** and appear in the window **502** when the viewer is determined to be absent. However, it is also noted that the user interface **500** may appear while the viewer is determined to be present. For instance, the user interface **500** may be provided upon request by the viewer. The user interface **500** may be a graphical user interface having a menu and configured to receive user input. For instance, the user interface **500** may include a notification information **504** indicating a reason for the paused content and/or if the content is being recorded. Merely by way of example, the notification information **504** may include text stating, "Content paused and being recorded due to viewer absence." In a different aspect, the notification information **504** may be provided in an audio format that may be heard by the viewer when located in a different environment away from the display device **104**. Still further, the notification information **504** may contain information regarding a smart device **112**. For instance, the notification may state, "Lights dimmed; content paused and being recorded due to viewer absence." Furthermore, any of the components described herein may display a timer showing a duration of time that the media content has been paused and/or recorded, and/or a length of time related to how long the recorded media content minus the commercial events is.

[0054]   Still referring to **FIG. 5**, in addition to the notification information **504**, in some embodiments, the user interface **500** may include one or more buttons for the viewer to select, via voice recognition, touch screen, and/or a remote control, to resume **506** output of the media content. A benefit of this feature may include un-pausing the programming event if the viewer chooses to listen to the media content while being absent from the environment. In another aspect, the user interface **500** may include a record settings **508** option to allow the viewer to input recording options, such as a recording time, recording duration, a memory size allocated for saving the recording, and desirable or undesirable content for recording. For instance, the

record settings **508** may permit the viewer to input one or more undesirable events that should not be recorded, and/or should not be paused. Such undesirable events may include particular commercial events, programming events, production credit events, and previews events. The viewer status engine **110** may identify such events by event tags in the media content and/or by identifying programmed air times for such events to pause and/or record the events based on the viewer's selection. To receive various viewer inputs, the record settings **508** button may open one or more additional interfaces and/or menus designed to receive the viewer selections. Further, any of the components of the user interface **500** described herein may link to additional interfaces. In another aspect, any of the buttons described herein may be operated through other devices, including other computing devices, mobile phones, tablets, and the like.

[0055]   Still in reference to **FIG. 5**, the user interface **500** may include a timer settings **510** option to receive viewer input related to timing of various functions offered by the viewer status engine **110**. In one embodiment, the timer settings **510** receives viewer input for a duration of time for keeping the display device **104** and/or the television receiver **102** paused until either device **104, 102** is automatically turned off or placed in standby mode. Merely by way of example, the duration of time may be between about 1.5 hours to about 5 hours. In a different aspect, the timer settings **510** may receive user input on when to notify one or more smart devices **112**. For instance, the timer settings **510** may receive user input for a wait period before dimming lights after and/or in response to detecting the viewer's absence and/or displaying a screensaver in the window **502**. Merely by way of example, the wait period may be between about 5 to 10 minutes. Additionally and/or alternatively, the viewer status engine **110** may use an HDMI CEC to power off the display screen sometime after initiating the screensaver to save power. In a further aspect, the timer settings **510** may receive input regarding a pause period, whereby the viewer status engine **110** detects that the viewer is absent, pauses the media content, and initiates the pause period prior to initiating recording of the media content, so that the viewer status engine **110** does not initiate recording immediately after and/or immediately in response to determining that the viewer is absent. Merely by way of example, the pause period may be about 10 seconds to about 2 minutes, or any other time selected by the viewer.

[0056]   Referring yet again to **FIG. 5**, the user interface **500** may include a sensor settings **512** option. For instance, the sensor settings **512** may be configured to receive viewer input on a time

of day and/or duration for the status sensor **108** and/or the viewer status engine **110** to be active and operate. Merely by way of example, sensor settings may permit the viewer to set a detection period and/or sensitivity. For instance, the status sensor **108** may be detect a viewer absence,

5   presence, and busy status during daytime hours between 6 AM to 9 PM. In another aspect, the status sensor **108** may detect for viewer movement and determine if the viewer is asleep to pause and/or record the show, such as during afternoon and/or nighttime hours. In another aspect, the sensor settings **512** may indicate a type of sensed data to detect, such as a wireless signal during the daytime, and viewer movement during the nighttime, particularly if a variety of different status sensors **108** are provided in communication with the viewer status engine **110**. In other

10   aspects, detection may still occur but the detected status data may not be registered by the viewer status engine **110**. Still, in further aspects, the status sensors **108** may be in different environments and the sensor settings **512** may be configured to store and operate settings for each status sensor **108**.

[0057]   Still, in regard to the sensor settings **512**, the viewer may select to turn the voice

15   notification information on or off. In a different aspect, the viewer status engine **110** may store several viewer preferences and lists of undesirable and/or desirable contents for a unique viewer under a viewer profile. In the sensor settings **512**, the viewer may indicate which viewer from a plurality of viewer profiles to identify and activate in the viewer status engine **110**. For instance, if the status sensor **108** is a camera, the viewer may select which facial features to detect for

20   determining the viewer status and management of the media content. In this way, the viewer status engine **110** manages output of the media content based on a particular viewer even if multiple viewers are in the environment.

[0058]   Further shown in **FIG. 5**, the user interface **500** may include programming event information and/or images **514,** and/or advertisements. The programming information **514** may

25   provide information about the particular media content being paused, such as a currently programmed time slot, future air times and channels, casting information, production date, links to external webpages to order the show or find more information about it, trailers, and the like. Furthermore, the programming event **514** may include dynamically changing images and/or information rather than a still image or text. Even further, the programming information 514 may

30   also show advertisements for other shows and/or paid advertisements from third party

companies. It is contemplated that the user interface **500** may include any combination of the components introduced above on the window **502** of the display device **104** or on any other device in wireless or hardwired communication with the viewer status engine **110**. For instance, the user interface **500** options may be provided through an mobile phone application, which may

5   alert the viewer's mobile phone on when the media content is paused, recorded, and/or when the connected devices are operationally altered due to the sensed viewer status.

[0059]   **FIG. 6** shows an example computer system or device **600** in accordance with the disclosure. An example of a computer system or device includes an enterprise server, blade server, desktop computer, laptop computer, tablet computer, personal data assistant, smartphone,

10   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 **600**, such as any of the respective elements of at least **FIGS. 1 and 2**. In this manner, any of one or more of the respective elements of at least **FIGS. 1 and 2** may be configured to perform and/or

15   include instructions that, when executed, perform the method of **FIG. 3** and/or the method of **FIG. 4**. Still further, any of one or more of the respective elements of at least **FIGS. 1 and 2** may be configured to perform and/or include instructions that, when executed, instantiate and implement functionality of the television receiver **102** and/or the server(s).

[0060]   The computer device **600** is shown comprising hardware elements that may be

20   electrically coupled via a bus **602** (or may otherwise be in communication, as appropriate). The hardware elements may include a processing unit with one or more processors **604**, 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 **606**, which may include without limitation a remote control, a

25   mouse, a keyboard, and/or the like; and one or more output devices **608**, which may include without limitation a presentation device (e.g., television), a printer, and/or the like.

[0061]   The computer system **600** may further include (and/or be in communication with) one or more non-transitory storage devices **610**, which may comprise, without limitation, local and/or network accessible storage, and/or may include, without limitation, a disk drive, a drive array, an

30   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.

[0062]   The computer device **600** might also include a communications subsystem **612**, 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, 802.11 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 **612** 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 herein. In many embodiments, the computer system **600** will further comprise a working memory **614**, which may include a random access memory and/or a read-only memory device, as described above.

[0063]   The computer device **600** also may comprise software elements, shown as being currently located within the working memory **614**, including an operating system **616**, device drivers, executable libraries, and/or other code, such as one or more application programs **618**, which may comprise computer programs provided by various embodiments, and/or may be designed to implement methods, and/or configure systems, provided by other embodiments, 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 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.

[0064]   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) **610** described above. In some cases, the storage medium might be incorporated within a computer system, such as computer system **600**. In other embodiments, 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 code, which is executable by the computer device **600** and/or might take the form of source and/or installable code, which, upon compilation and/or installation on the computer system **600** (e.g., using any of a variety of generally available compilers, installation programs, compression/decompression utilities, etc.), then takes the form of executable code.

[0065]   It will be apparent that substantial variations may be made in accordance with specific 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.

[0066]   As mentioned above, in one aspect, some embodiments may employ a computer system (such as the computer device **600**) to perform methods in accordance with various embodiments of the disclosure. According to a set of embodiments, some or all of the procedures of such methods are performed by the computer system **600** in response to processor **604** executing one or more sequences of one or more instructions (which might be incorporated into the operating system **616** and/or other code, such as an application program **618**) contained in the working memory **614**. Such instructions may be read into the working memory **614** from another computer-readable medium, such as one or more of the storage device(s) **610**. Merely by way of example, execution of the sequences of instructions contained in the working memory **614** may cause the processor(s) **604** to perform one or more procedures of the methods described herein.

[0067]   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 **600**, various computer-readable media might be involved in providing instructions/code to processor(s) **604** 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) **610**. Volatile media may include, without limitation, dynamic memory, such as the working memory **614**.

[0068] 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, RAM, 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

5   computer-readable media may be involved in carrying one or more sequences of one or more instructions to the processor(s) **604** 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 **600**.

10   [0069] The communications subsystem **612** (and/or components thereof) generally will receive signals, and the bus **602** then might carry the signals (and/or the data, instructions, etc. carried by the signals) to the working memory **614**, from which the processor(s) **604** retrieves and executes the instructions. The instructions received by the working memory **614** may optionally be stored on a non-transitory storage device **610** either before or after execution by the processor(s) **604**.

15   [0070] It should further be understood that the components of computer device **600** 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 **600** may be similarly distributed. As such, computer device **600** may be interpreted as a distributed computing system that

20   performs processing in multiple locations. In some instances, computer system **600** may be interpreted as a single computing device, such as a distinct laptop, desktop computer, or the like, depending on the context.

[0071] The methods, systems, and devices discussed above are examples. Various configurations may omit, substitute, or add various method steps or procedures, or system

25   components as appropriate. For instance, in alternative configurations, the methods may be performed in an order different from that described, and/or various stages 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

30   are examples and do not limit the scope of the disclosure or claims.

[0072]   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

5   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.

10   [0073]   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,

15   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.

[0074]   Furthermore, the example embodiments described herein may be implemented as

20   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.

[0075]   Although the subject matter has been described in language specific to structural

25   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 for pausing output of a media content based on a viewer status, comprising:

outputting, by a television receiver, the media content for presentation via a display device;

receiving, by the television receiver, status data detected by a status sensor, wherein the status data is indicative of a presence of a viewer in an environment containing the display device;

determining, by the television receiver, that the viewer is present in the environment based on the status data;

receiving, by the television receiver, updated status data detected by the status sensor;

determining, by the television receiver, that the viewer has left the environment based on the updated status data detected by the status sensor; and

in response to determining that the viewer has left the environment, pausing, by the television receiver, output of the media content via the display device.

2.   The method of claim 1, further comprising:

determining, by the television receiver, that the viewer has returned to the environment; and

after determining that the viewer has returned, resuming output, by the television receiver, of the media content via the display device.

3.   The method of claim 1 or 2, further comprising:

determining, by the television receiver after determining that the viewer has left the environment, that the media content includes broadcast television media content; and

recording, by the television receiver after determining that the media content includes broadcast television media content, the media content.

4.   The method of claim 3, further comprising pausing recording, by the television receiver, during a commercial event that is included in the media content.

5.   The method of claim 3 or 4, further comprising:

determining, by the television receiver after initiating recording, that the viewer has returned to the environment based on the status data detected by the status sensor; and

after determining that the viewer has returned to the environment, outputting, by the television receiver, the recorded media content for presentation via the display device.

6. The method of any preceding claim, further comprising outputting, by the television receiver after pausing output of the media content, a message indicating a reason for pausing the output, wherein the message comprises at least one of a textual notification, a sound notification, and a graphical notification presented via the display device.

7. The method of any preceding claim, further comprising presenting, by the television receiver, a user interface menu that includes options for at least one of resuming output of the media content after pausing the media content and setting a duration of time for recording the media content.

8. The method of any preceding claim, further comprising initiating, by the television receiver after pausing output of the media content, a sleep mode that causes the display device to turn off or enter standby.

9. The method of any preceding claim, further comprising sending, by the television receiver after determining that the viewer has left the environment containing the display device, a first operational setting to a smart device in communication with the television receiver.

10. The method of claim 9, further comprising sending, by the television receiver after determining that the viewer has returned to the environment containing the display device, a second operational setting to the smart device, wherein the second operational setting is different than the first operational setting.

11. The method of claim 10, further wherein:

the smart device is a lighting device located in the environment containing the display device;

the first operational setting includes at least one of powering down or off of the lighting device; and

the second operational setting includes at least one of powering up or resuming an original state of the lighting device.

12. The method of any preceding claim, further comprising:

receiving, by the television receiver, status data detected by the status sensor that is indicative of a presence of a mobile device in the environment containing the display device; and

analyzing, by the television receiver, the status data that is indicative of the presence of the mobile device to determine the presence of the viewer in the environment containing the display device.

13.   A television receiver for managing presentation of media content based on a viewer status, comprising:

one or more processors; and

a memory communicatively coupled with and readable by the one or more processors and having stored therein processor-readable instructions that, when executed by the one or more processors, cause the one or more processors to:

output the media content for presentation via a display device;

receive status data detected by a status sensor, wherein the status data is indicative of a presence of a viewer in an environment containing the displace device;

determine that the viewer is present in the environment based on the status data;

receive, by the television receiver, updated status data detected by the status sensor;

determine that the viewer has left the environment based on the updated status data; and

in response to determining that the viewer has left the environment, pause output of the media content via the display device.

14.   The television receiver of claim 13, wherein the memory further includes processor-readable instructions stored therein that, when executed by the one or more processors, cause the one or more processors to:

determine that the viewer left the environment containing the display device during a commercial event included in the media content;

after determining that the viewer left the environment during the commercial event, continue output of the commercial event for presentation via the display device;

detect an end of the commercial event before determining that the viewer has returned to the environment based on the status data detected by the status sensor;

after detecting the end of the commercial event, pause output of the media content; and

record the media content.

15.   The television receiver of claim 14, wherein the memory further includes processor-readable instructions stored therein that, when executed by the one or more processors, cause the one or more processors to:

determine that the viewer returned to the environment containing the display device; and

output the recorded media content for presentation via the display device.

16.   A method for pausing playback of a broadcast television media content based on a viewer status, comprising:

receiving, by a television receiver, an incoming stream of the broadcast television media content, wherein the broadcast television media content includes a programming event;

outputting, by the television receiver, the broadcast television media content for presentation via a display device;

analyzing, by the television receiver, a first status data detected by a status sensor that senses a presence of a viewer in an environment containing the display device;

determining, by the television receiver, that the viewer is present in the environment based on the first status data;

determining, by the television receiver, that the viewer has left the environment based on a second status data detected by the status sensor;

in response to determining that the viewer has left the environment, pausing, by the television receiver, output of the programming event in the broadcast television media content; and

in response to pausing output of the programming event, recording, by the television receiver, the incoming stream of the programming event in the broadcast television media content.

17. The method of claim 16, further comprising:

after determining that the viewer has returned to the environment based on a third status data detected by the status sensor, outputting, by the television receiver, the recorded programming event.

18.   The method of claim 17, further comprising:

detecting, by the television receiver, a commercial event in the broadcast television media content; and

pausing, by the television receiver, recording of the incoming stream of the broadcast television media content until the commercial event has ended.
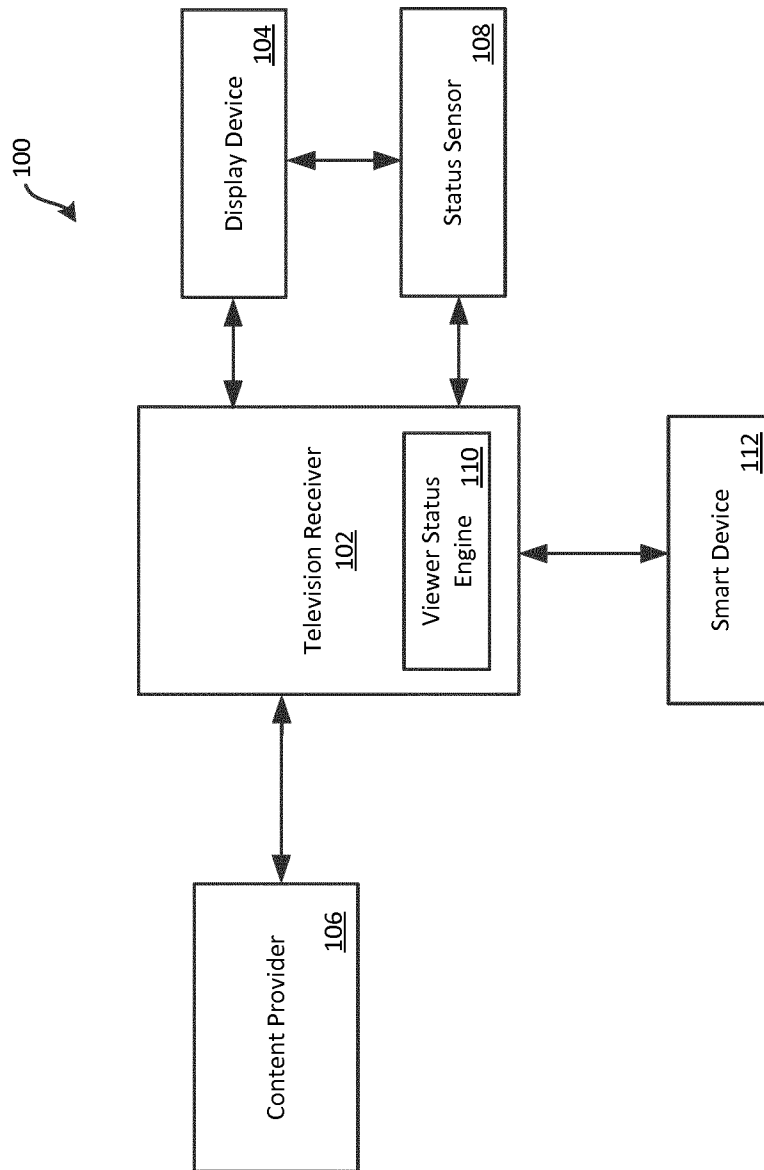
19.   The method of claim 18, further comprising:

outputting, by the television receiver, the commercial event for presentation via the display device;

after outputting the commercial event, detecting, by the television receiver, at least one of an end of the commercial event and a beginning of the programming event;

after detecting at least one of the end of the commercial event and the beginning of the programming event, pausing, by the television receiver, output of the programming event; and

after pausing output of the programming event, recording, by the television receiver, the incoming stream of the programming event.

20.   The method of any of claims 16 to 19, further comprising recording, by the television receiver, for a duration of time through an end of the programming event.
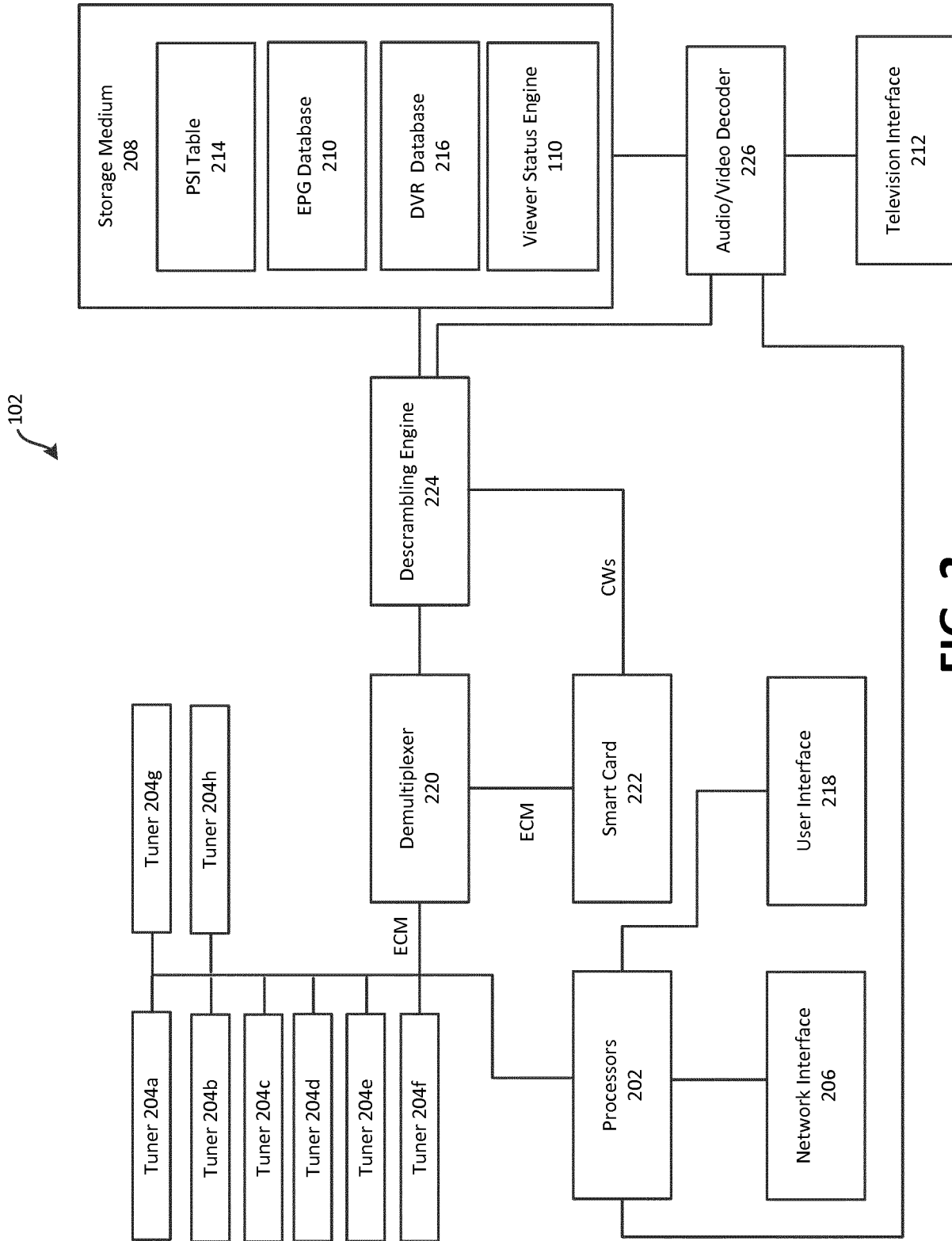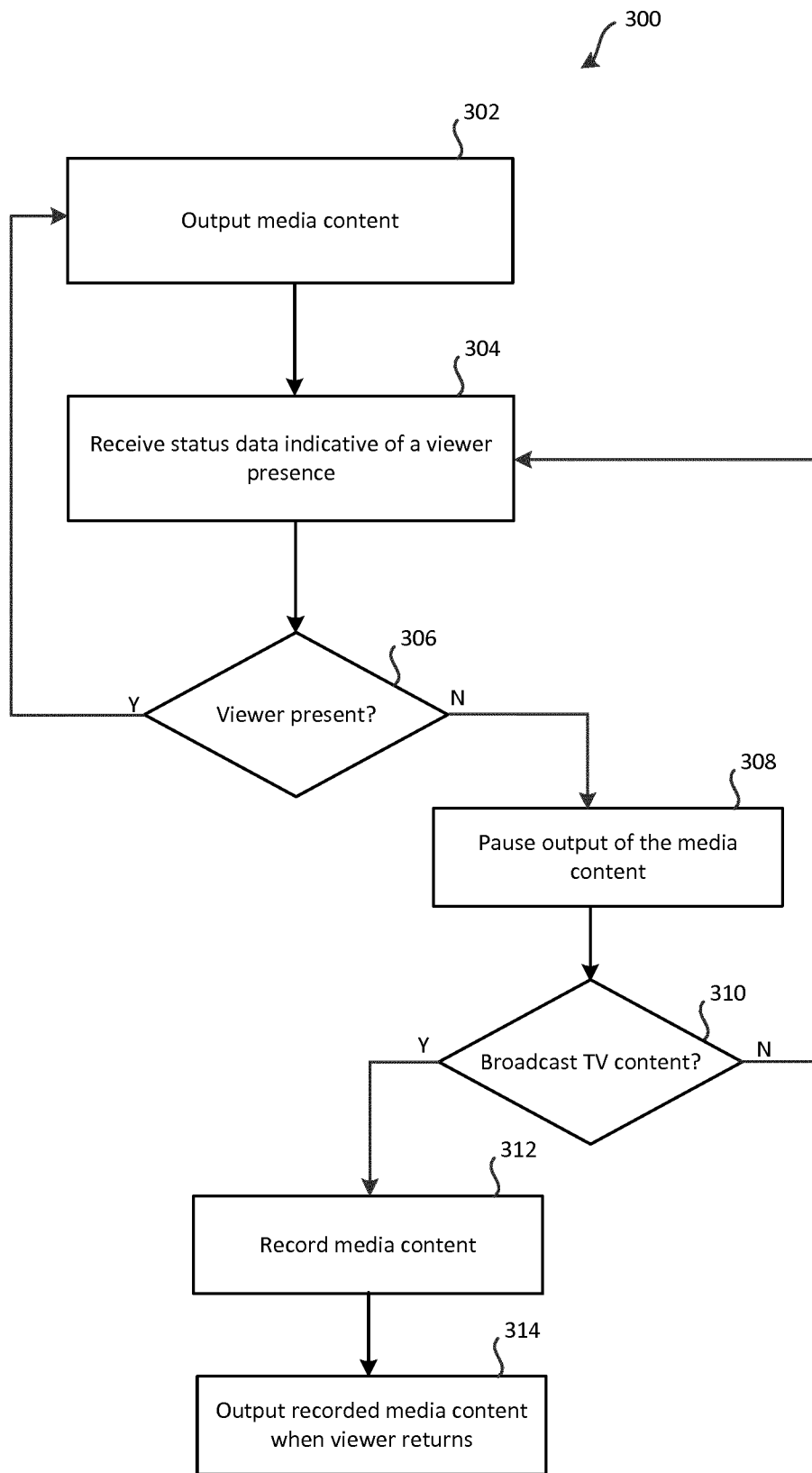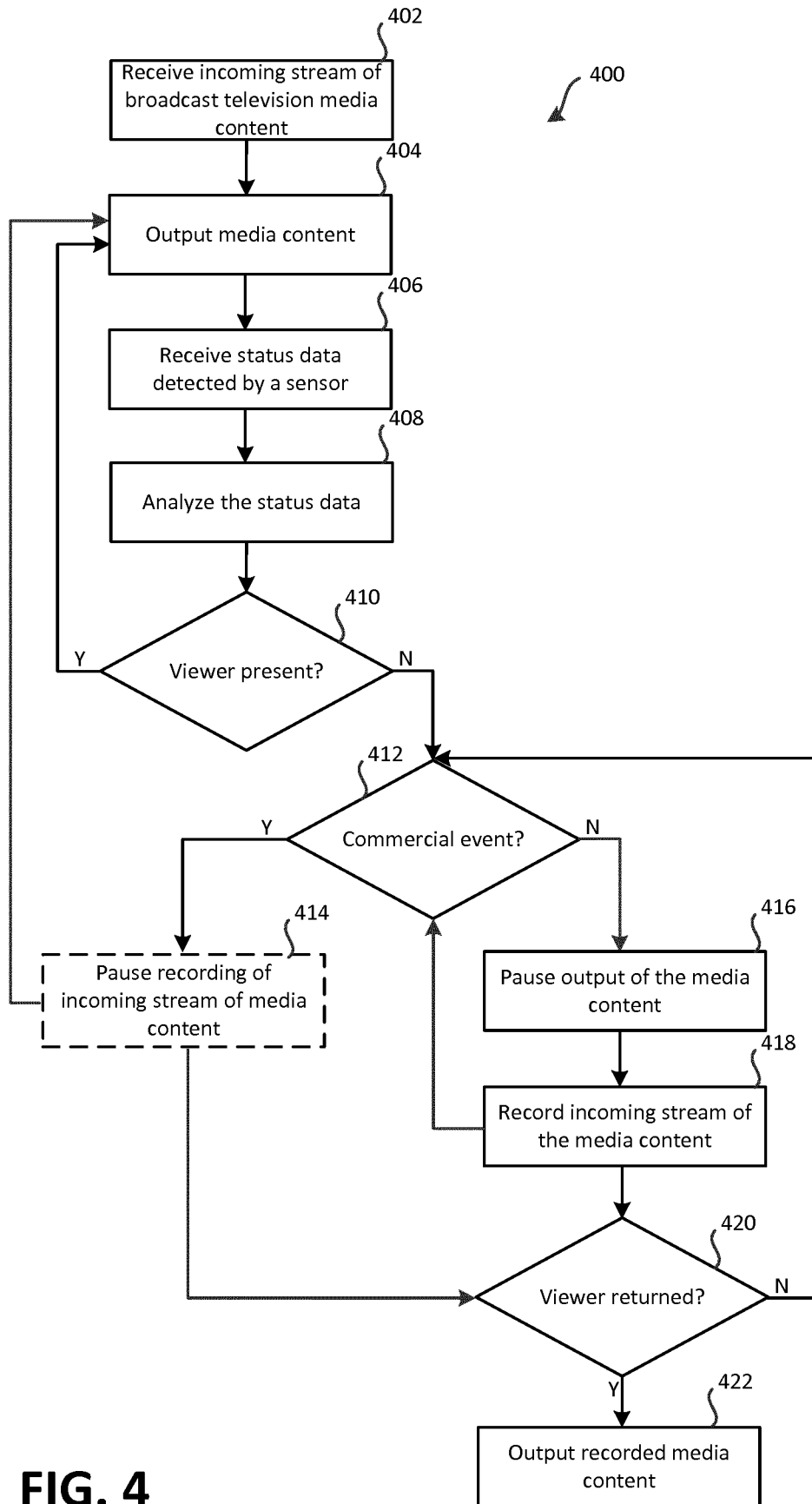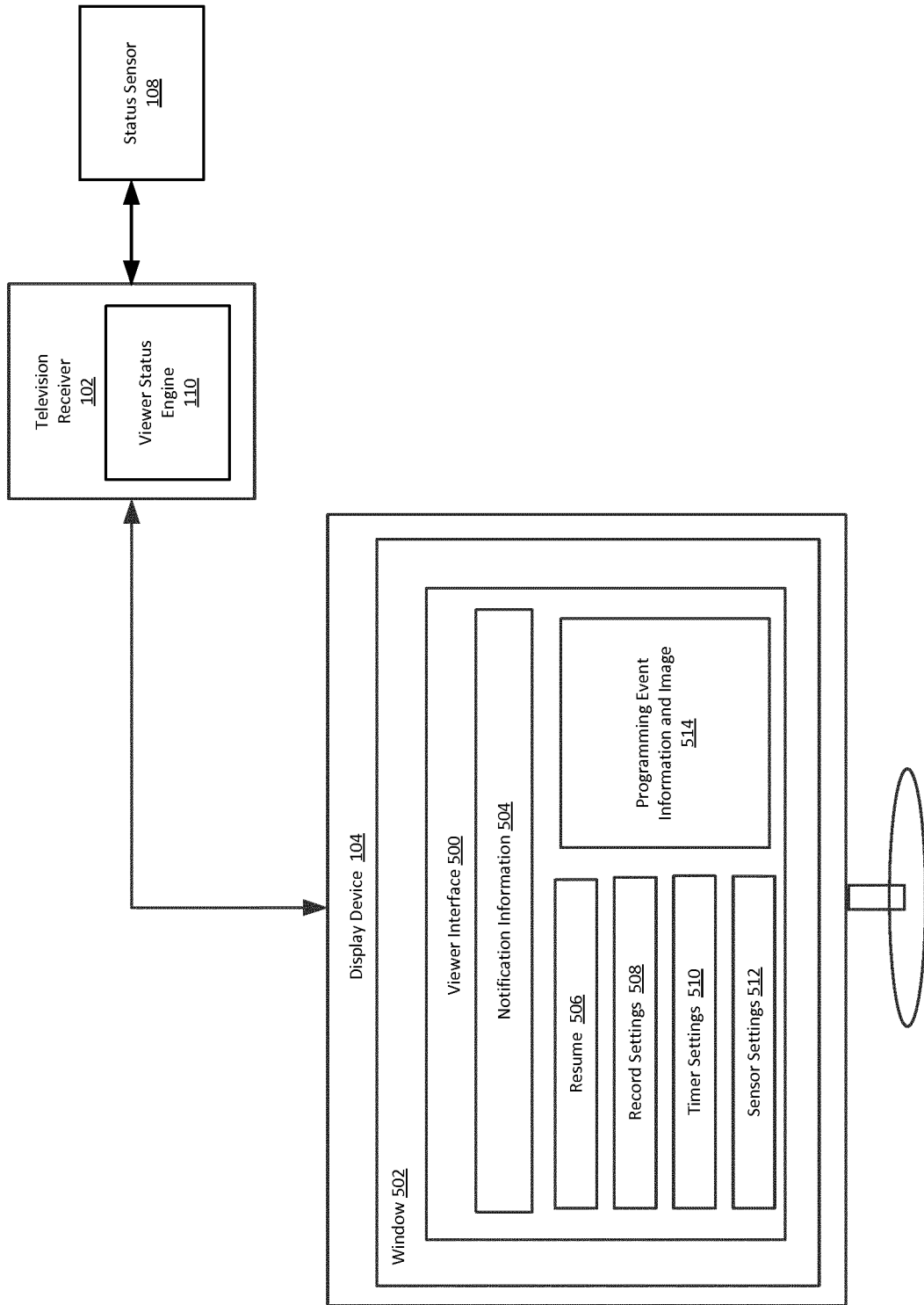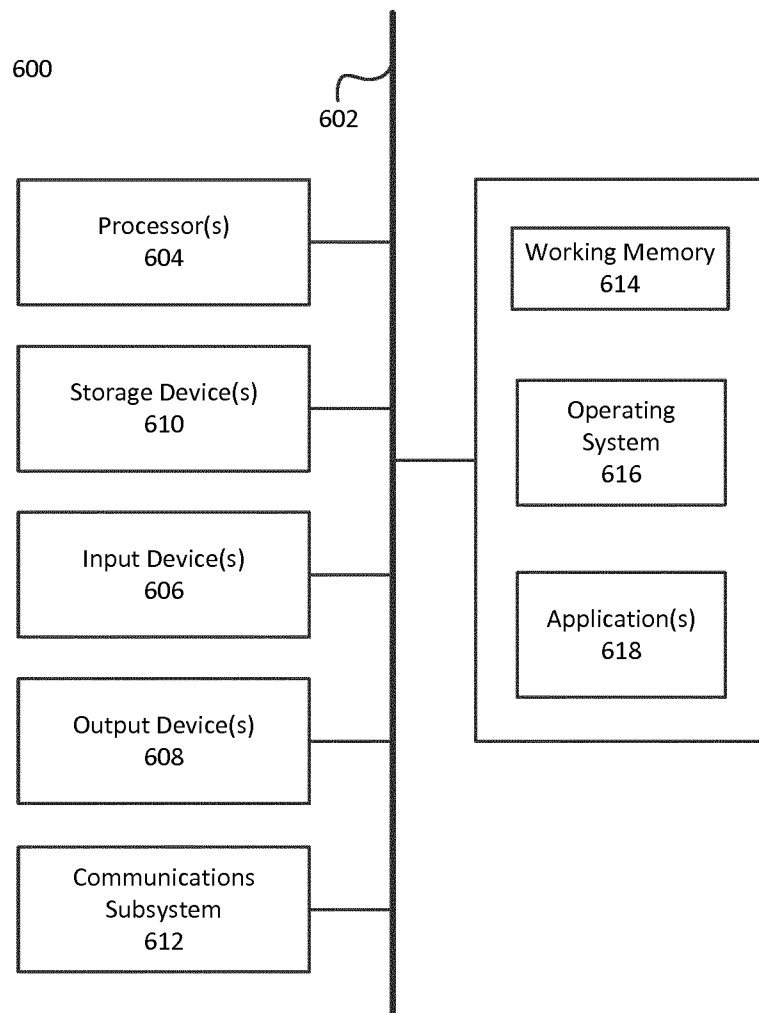
FIG. 1

FIG. 2

FIG. 3

FIG. 4

FIG. 5

600

602

Processor(s)
604

Storage Device(s)
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Input Device(s)
606

Output Device(s)
608

Communications
Subsystem
612

Working Memory
614

Operating
System
616

Application(s)
618

FIG. 6

INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

INV. H04N21/41   H04N21/433   H04N21/442   H04N21/454   H04N21/432
ADD.

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

H04N

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

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

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2008/010118 A1 (KONINKL PHILIPS ELECTRONICS NV [NL]; FONSECA PEDRO [BE]; PETERS MARC A) 24 January 2008 (2008-01-24) abstract page 1, lines 10-13 page 3, lines 21-24 page 8, lines 10-24 page 9, lines 18-25 page 12, line 6 - page 13, line 9 figure 5 -----	1-8, 12-20
X	US 2003/097659 A1 (GOLDMAN PHILLIP Y [US]) 22 May 2003 (2003-05-22) abstract paragraphs [0008] - [0009] ----- -/--	1-8, 12-20

[X] Further documents are listed in the continuation of Box C.   [X] See patent family annex.

* Special categories of cited documents :

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

"E" earlier application or patent but published on or after the international filing date

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

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

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

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

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

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

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
12 January 2016	15/04/2016

| Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016 | Authorized officer Troya Chinchilla, A |

Form PCT/ISA/210 (second sheet) (April 2005)

2

INTERNATIONAL SEARCH REPORT

C(Continuation).   DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2002/144259 A1 (GUTTA SRINIVAS [US] ET AL) 3 October 2002 (2002-10-03) the whole document -----	1-8, 12-20
X	GB 2 459 705 A (SONY COMP ENTERTAINMENT INC [JP]) 4 November 2009 (2009-11-04) abstract page 12, line 27 - page 14, line 21 figures 5-8 -----	1-8, 12-20

2

INTERNATIONAL SEARCH REPORT

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

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

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

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

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

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

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

see additional sheet

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

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

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

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

   1-8, 12-20

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

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

☐ No protest accompanied the payment of additional search fees.

Form PCT/ISA/210 (continuation of first sheet (2)) (April 2005)

FURTHER INFORMATION CONTINUED FROM   PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-8, 12-20

    Display of control information by a television receiver.
    ---

2. claims: 9-11

    Use of a television receiver as a domotics controller.

INTERNATIONAL SEARCH REPORT

Information on patent family members

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
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			WO	2009133364 A1	05-11-2009