(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
2 July 2015 (02.07.2015)

WIPO | PCT

(10) International Publication Number
WO 2015/099745 A1

(51) International Patent Classification:
H04N 21/45 (2011.01) *H04N 21/475* (2011.01)

(21) International Application Number:
PCT/US2013/077874

(22) International Filing Date:
26 December 2013 (26.12.2013)

(25) Filing Language: English

(26) Publication Language: English

(71) Applicant: **THOMSON LICENSING** [FR/FR]; 1-5 rue Jeanne d'Arc, F-92130 Issy Les Moulineaux (FR).

(72) Inventor; and

(71) Applicant : **MOORE, Adam James** [US/US]; 409 S. Cloverdale Avenue, Apt. 201, Los Angeles, California 90036 (US).

(74) Agents: **VILLABON, Jorge Tony** et al.; Thomson Licensing LLC, Two Independence Way, Suite #200, Princeton, New Jersey 08540 (US).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

— *with international search report (Art. 21(3))*

(54) Title: MULTIPLE PROFILE USER INTERFACE

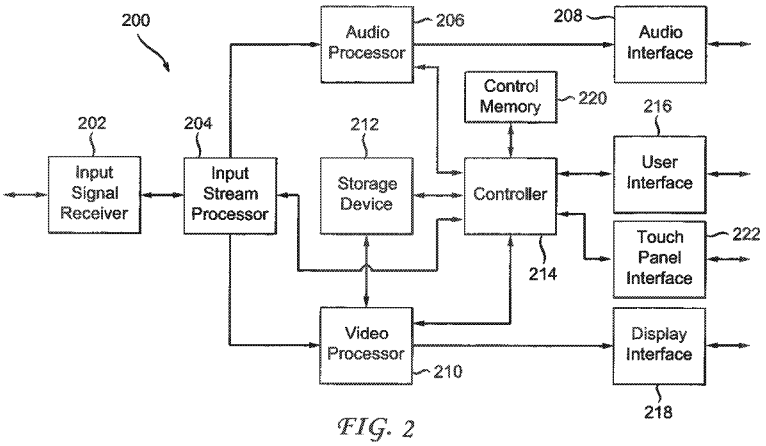


FIG. 2

(57) Abstract: A method and apparatus for generating user profiles used in providing media/content recommendations are provided. The method and apparatus enable a user to create a master profile including user preference data items used in describing media content and a master profile visual indicator representative of the user preference data items within the master profile for association with the master profile. A user is further able to create at least one sub-profile associated with the master profile, the sub-profile including a subset of the user preference data items included in the master profile and a sub-profile profile visual indicator representative of the subset of user preference data items included in the sub-profile for association with the at least one sub-profile. A user interface is generated and selection of at least one of the master profile visual indicator and at least one sub-profile visual indicators is enabled to generate content recommendations.

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MULTIPLE PROFILE USER INTERFACE

TECHNICAL FIELD OF THE INVENTION

The present principles generally relates to digital content systems and method and apparatus for creating multiple profiles for a user of the system, and more particularly, to a system, method and graphic user interface for providing multiple user profiles for accessing media.

BACKGROUND OF THE INVENTION

Home entertainment systems, including television and media centers, are converging with the Internet and providing access to a large number of available sources of content, such as video, movies, TV programs, music, etc. This expansion in the number of available sources necessitates a new strategy for navigating a media interface associated with such systems and making content recommendations and selections.

The large number of possible content sources creates an interface challenge that has not yet been successfully solved in the field of home media entertainment. This challenge involves successfully presenting users with a large number of elements (programs, sources, etc.) without the need to tediously navigate through multiple display pages or hierarchies of content.

Further, most existing search paradigms make an assumption that the user knows what they are looking for when they start. Often times this assumption is based on user-specific information stored in a user profile associated with the device responsible for outputting media content. A drawback associated with conventional user profile information is that the user profile serves as an amalgamation of information describing types of content that the user likes. Thus, when using conventional user profile information to derive content recommendations, the user is presented with many different choices that correspond to all of the interests and likes contained in the user profile. This requires additional navigation by the user to determine what the user actually wants to view at that time.

Additionally, the consumption of media content has increasingly become more social and often times, there are many different users in one location viewing media content. In a multi-user environment where different users have distinct preferences,

it is difficult for a content recommendation engine to generate a set of recommendations that would please all users. Thus, a drawback associated with recommending media content in a multi-user environment is the inability to provide the content recommendation engine with the correct preferences on which to base the search.

SUMMARY OF THE INVENTION

In one embodiment, a method for generating user profiles used in providing media recommendations is provided. The method enables a user to create a master profile including user preference data items used in describing media content and a master profile visual indicator representative of the user preference data items within the master profile for association with the master profile. A user is further able to create at least one sub-profile associated with the master profile, the sub-profile including a subset of the user preference data items included in the master profile and a sub-profile profile visual indicator representative of the subset of user preference data items included in the sub-profile for association with the at least one sub-profile. A user interface including the master profile visual indicator and the at least one sub-profile visual indicators is generated and selection of at least one of the master profile visual indicator and at least one sub-profile visual indicators is enabled to generates recommendations including a plurality media objects using the user preference data items upon selection of one of the master profile and the at least one sub-profile.

In an alternate embodiment, an apparatus that generates user profiles used in providing media recommendations is provided. A controller enables creation of a master profile including user preference data items used in describing media content and a master profile visual indicator representative of the user preference data items within the master profile that is associated with the master profile. The controller further enables creation of at least one sub-profile associated with the master profile, the sub-profile including a subset of the user preference data items included in the master profile, and a sub-profile profile visual indicator representative of the subset of user preference data items included in the sub-profile, the sub-profile visual indicator being associated with the at least one sub-profile. A user interface generator generates a user interface including the master profile visual indicator and the at least one sub-profile visual indicators and enables selection of at least one of the master

profile visual indicator and at least one sub-profile visual indicators, wherein, upon selection of one of the master profile and the at least one sub-profile, the controller generates recommendations including a plurality media objects using the user preference data items included in the selected profiles.

BRIEF DESCRIPTION OF THE DRAWINGS

These, and other aspects, features and advantages of the present principles will be described or become apparent from the following detailed description of the preferred embodiments, which is to be read in connection with the accompanying drawings.

In the drawings, wherein like reference numerals denote similar elements throughout the views:

FIG. 1 depicts a high level block diagram of an exemplary system for delivering video content in accordance with an embodiment of the present principles;

FIG. 2 depicts a high level block diagram of an exemplary receiving device in accordance with an embodiment of the present principles;

FIG. 3A depicts an exemplary tablet and/or second screen device in accordance with an embodiment of the present principles;

FIG. 3B depicts an exemplary remote controller in accordance with an embodiment of the present principles;

FIGS. 4 - 13 illustrate exemplary user interfaces in accordance with embodiments of the present principles;

FIG. 14 depicts a flowchart of a method for creating multiple user profiles in accordance with an embodiment of the present principles; and

FIG. 15 depicts a flowchart for generating user profiles used in determining content recommendations in accordance with an embodiment of the present principles.

It should be understood that the drawing(s) are for purposes of illustrating the concepts of the various described principles and are not necessarily the only possible configuration for illustrating the principles.

DETAILED DESCRIPTION OF THE INVENTION

Embodiments of the present principles advantageously provide a method and apparatus for generating user profiles. Although the present principles will be described primarily within the context of set-top boxes, the specific embodiments of the present principles should not be treated as limiting the scope of the invention. It will be appreciated by those skilled in the art and informed by the teachings of the present principles that the concepts of the present principles can be advantageously applied to any content recording/content receiving devices.

The functions of the various elements shown in the figures can be provided through the use of dedicated hardware as well as hardware capable of executing software in association with appropriate software. When provided by a processor, the functions can be provided by a single dedicated processor, by a single shared processor, or by a plurality of individual processors, some of which can be shared. Moreover, explicit use of the term "processor" or "controller" should not be construed to refer exclusively to hardware capable of executing software, and can implicitly include, without limitation, digital signal processor ("DSP") hardware, read-only memory ("ROM") for storing software, random access memory ("RAM"), and non-volatile storage. Moreover, all statements herein reciting principles, aspects, and embodiments of the invention, as well as specific examples thereof, are intended to encompass both structural and functional equivalents thereof. Additionally, it is intended that such equivalents include both currently known equivalents as well as equivalents developed in the future (i.e., any elements developed that perform the same function, regardless of structure).

Thus, for example, it will be appreciated by those skilled in the art that the block diagrams presented herein represent conceptual views of illustrative system components and/or circuitry embodying the principles of the invention. Similarly, it will be appreciated that any flow charts, flow diagrams, state transition diagrams, pseudocode, and the like represent various processes which may be substantially represented in computer readable media and so executed by a computer or processor, whether or not such computer or processor is explicitly shown.

Furthermore, because some of the constituent system components and methods depicted in the accompanying drawings can be implemented in software, the actual connections between the system components or the process function

blocks may differ depending upon the manner in which the present principles are programmed. Given the teachings herein, one of ordinary skill in the pertinent art will be able to contemplate these and similar implementations or configurations of the present principles.

In the claims hereof, any element expressed as a means for performing a specified function is intended to encompass any way of performing that function including, for example, a) a combination of circuit elements that performs that function or b) software in any form, including, therefore, firmware, microcode or the like, combined with appropriate circuitry for executing that software to perform the function. The principles as defined by such claims resides in the fact that the functionalities provided by the various recited means are combined and brought together in the manner which the claims call for. It is thus regarded that any means that can provide those functionalities are equivalent to those shown herein.

Embodiments of the present principles provide a method and apparatus for enabling a user to generate multiple profiles associated with a master user profile that can be used to seed a content recommendation algorithm that generates a set of recommended content using the information from the generated multiple user profiles. The method and apparatus of the present principles which enable a user to have different profiles enables immediate recommendations giving an alternative to capturing data over time and learning user patterns as was previously necessary.

FIG. 1 depicts a high level block diagram of an exemplary system 100 for delivering video content in accordance with an embodiment of the present principles. In the embodiment of FIG. 1, the content originates from a content source 102, such as a movie studio or production house. The content can be provided in at least one of two forms. A first form of content can comprise a broadcast form of content. The broadcast content is provided to the broadcast affiliate manager 104, which is typically a national broadcast service, such as the American Broadcasting Company (ABC), National Broadcasting Company (NBC), Columbia Broadcasting System (CBS), etc. The broadcast affiliate manager collects and stores the content, and schedules delivery of the content over a delivery network, shown as delivery network 1 (106) in FIG. 1. Delivery network 1 (106) can include satellite link transmission from a national center to one or more regional or local centers. Delivery network 1 (106) can also include local content delivery using local delivery systems such as over the air broadcast, satellite broadcast, or cable broadcast. The locally delivered

content is provided to a receiving device 108 in a user's home, where the content will subsequently be searched by the user. It is to be appreciated that the receiving device 108 can take many forms and can be embodied as a set top box/digital video recorder (DVR), a gateway, a modem, etc. Further, the receiving device 108 can function as an entry point, or gateway, for a home network system that includes additional devices configured as either client or peer devices in the home network.

In embodiments of the present principles, a second form of content is referred to as special content. Special content can include content delivered as premium viewing, pay-per-view, or other content otherwise not provided to the broadcast affiliate manager (e.g., movies, video games or other video elements). In many cases, the special content can include content requested by a user. The special content is delivered to a content manager 110. The content manager 110 can include a service provider, such as an Internet website, affiliated, for instance, with a content provider, broadcast service, or delivery network service. The content manager 110 can also incorporate Internet content into the delivery system. The content manager 110 delivers the content to the user's receiving device 108 over a separate delivery network such as delivery network 2 (112) of FIG. 1. Delivery network 2 (112) can include high-speed broadband Internet type communications systems. It is important to note that the content from the broadcast affiliate manager 104 can also be delivered using all or parts of the delivery network 2 (112) and content from the content manager 110 can be delivered using all or parts of the delivery network 1 (106). In addition, in alternate embodiments of the present principle, a user can also obtain content directly from the Internet via the delivery network 2 (112) without necessarily having the content managed by the content manager 110.

In various embodiments of the present principles, several adaptations for utilizing the separately delivered content are possible. For example, in one possible approach, the special content is provided as an augmentation to the broadcast content, providing alternative displays, purchase and merchandising options, enhancement material, etc. In another embodiment, the special content can completely replace some programming content provided as broadcast content. In another alternative embodiment, the special content can be completely separate from the broadcast content, and can include a media alternative that the user can choose

to consume as opposed to the broadcast content. For instance, in such an embodiment of the present principles, the special content can include a library of movies that are not yet available as broadcast content.

Referring back to FIG. 1, the receiving device 108 can receive different types of content from one or both of the first delivery network 1 and the second delivery network 2. The receiving device 108 processes the content, and provides a separation of the content based on user preferences and commands. In an embodiment of the present principles, the receiving device 108 can include a storage device, such as a hard drive or optical disk drive, for recording and playing back audio and video content. Further details of the operation of the receiving device 108 and features associated with playing back stored content will be described below with regards to FIG. 2. In the embodiment of FIG. 1, the processed content is provided to a display device 114. In various embodiments, the display device 114 can include a conventional 2-D type display or can alternatively include an advanced 3-D display.

In the embodiment of FIG. 1, the receiving device 108 can be interfaced to a second screen such as a touch screen control device 116. The touch screen control device 116 is adapted to provide user control for the receiving device 108 and/or the display device 114. In alternate embodiments, the touch screen device 116 can also be capable of displaying video content. Such video content can include graphic entries, such as user interface entries (described in greater detail below), or can include at least a portion of the video content that is delivered to the display device 114. The touch screen control device 116 is capable of interfacing with the receiving device 108 using any well-known signal transmission system, such as infra-red (IR) or radio frequency (RF) communications and may include standard protocols such as infra-red data association (IRDA) standard, Wi-Fi, Bluetooth and the like, or any other proprietary protocols. Further functionality of the touch screen control device 116 will be described in further detail below.

In the embodiment of Figure 1, the system 100 further includes a back end server 118 and a usage database 120. The back end server 118 includes a personalization engine that analyzes the usage habits of a user and makes recommendations based on those usage habits. The usage database 120 includes storage in which usage habits for a user are stored. In some cases, the usage database 120 can comprise a component of the back end server 118. In the

embodiment of FIG. 1, the back end server 118 (as well as the usage database 120) are integral to the system 100 and are accessed through the delivery network 2 (112). In an alternate embodiment of the present principles, the usage database 120 and backend server 118 can be embodied in the receiving device 108. In a further alternate embodiment, the usage database 120 and back end server 118 can be embodied on a local area network to which the receiving device 108 is in communication.

FIG. 2 depicts a high level block diagram of an exemplary receiving device 200 in accordance with an embodiment of the present principles. In accordance with various embodiments of the present principles, a receiving device 200 can be implemented as a component of a gateway device, modem, set-top box, DVR or other similar content receiving/communications device. A receiving device of the present principles can also be incorporated into other systems including an audio device or a display device. In either case, several components necessary for complete operation of the system are not shown in the interest of conciseness, as they are well known to those skilled in the art. In one exemplary embodiment, the receiving device 200 includes a set top box coupled to a display device (e.g. television).

In the receiving device 200 of FIG. 2, the content is received by an input signal receiver 202. The input signal receiver 202 can include one of several known receiver circuits used for receiving, demodulation, and decoding signals provided over one of the several possible networks including over the air, cable, satellite, Ethernet, fiber and phone line networks. The desired input signal is selected and retrieved by the input signal receiver 202 based on user input provided through a control interface or touch panel interface 222. In one embodiment of the present principles, the touch panel interface 222 can include an interface for a touch screen device. Alternatively, the touch panel interface 222 can also be adapted to interface to a cellular phone, a tablet, a mouse, a high end remote or the like.

In the embodiment of FIG. 2, the decoded output signal is provided to an input stream processor 204. The input stream processor 204 performs signal selection and processing, and includes separation of video content from audio content for the content stream. The audio content is provided to an audio processor 206 for conversion from the received format, such as compressed digital signal, to an analog waveform signal. The analog waveform signal is provided to an audio interface 208

and further to the display device or audio amplifier. Alternatively, the audio interface 208 can provide a digital signal to an audio output device or display device using a High-Definition Multimedia Interface (HDMI) cable or alternate audio interface such as via a Sony/Philips Digital Interconnect Format (SPDIF). In various embodiments, the audio interface can include amplifiers for driving one more sets of speakers. In FIG. 2, the audio processor 206 performs any necessary conversion for the storage of the audio signals.

In the embodiment of FIG. 2, the video output from the input stream processor 204 is provided to a video processor 210. The video signal can include one of several formats. The video processor 210 provides, as necessary, a conversion of the video content, based on the input signal format. The video processor 210 also performs any necessary conversion for the storage of the video signals. For example, a storage device 212 stores audio and video content received at the input. The storage device 212 allows later retrieval and playback of the content under the control of a controller 214 based on commands, e.g., navigation instructions such as fast-forward (FF) and rewind (RW), received from a user interface 216 and/or touch panel interface 222. The storage device 212 can comprise a hard disk drive, one or more large capacity integrated electronic memories, such as static RAM (SRAM), or dynamic RAM (DRAM), or can include an interchangeable optical disk storage system such as a compact disk (CD) drive or digital video disk (DVD) drive.

The converted video signal, from the video processor 210, either originating from the input or from the storage device 212, is provided to the display interface 218. The display interface 218 provides the display signal to a display device, for example, of the type described above. The display interface 218 can include an analog signal interface such as red-green-blue (RGB) or can include a digital interface such as HDMI. It is to be appreciated that the display interface 218 will generate the various screens for presenting the search results for example in a three dimensional grid, two dimensional array, and/or a shelf as will be described in more detail below.

In the embodiment of FIG. 2, the controller 214 is interconnected via a bus to several of the components of the receiving device 200, including the input stream processor 204, audio processor 206, video processor 210, storage device 212, and a user interface 216. The controller 214 manages the conversion process for converting the input stream signal into a signal for storage on the storage device or, alternatively, for display. The controller 214 also manages the retrieval and playback

of stored content. Furthermore, as will be described below, the controller 214 performs searching of content and the creation and adjusting of a grid, array and/or shelf display representing the content, either stored or to be delivered via the delivery networks, described above.

As depicted in FIG. 2, the controller 214 is in communication with a control memory 220 (e.g., volatile or non-volatile memory, including RAM, SRAM, DRAM, ROM, programmable ROM (PROM), flash memory, electronically programmable ROM (EPROM), electronically erasable programmable ROM (EEPROM), etc.) for storing information and instruction code for the controller 214. The control memory 220 stores instructions for the controller 214. The control memory 220 can also store a database of elements such as graphic elements containing content. The database can be stored as a pattern of graphic elements, such as graphic elements containing content, various graphic elements used for generating a displayable user interface for display interface 218, and the like. Alternatively, the memory is able to store the graphic elements in identified or grouped memory locations and use an access or location table to identify the memory locations for the various portions of information related to the graphic elements. Additional details related to the storage of the graphic elements will be described below. In various embodiments of the present principles, the control memory 220 can include several possible embodiments, such as a single memory device or, alternatively, more than one memory circuit communicatively connected or coupled together to form a shared or common memory. Even further, the control memory 220 can be included with other circuitry, such as portions of bus communications circuitry, in a larger circuit.

In alternative embodiments, the controller 214 can be configured to extract metadata, criteria, characteristics or the like from audio and video media by using audio processor 206 and video processor 210, respectively. That is, metadata, criteria, characteristics or the like that are contained in the vertical blanking interval, auxiliary data fields associated with video, or in other areas in the video signal can be harvested by using the video processor 210 with controller 214 to generate metadata that can be used for functions such as generating an electronic program guide having descriptive information about received video, supporting an auxiliary information service, and the like. Similarly, the audio processor 206 working with the controller 214 can be configured to recognize audio watermarks that can exist in an audio

signal. Such audio watermarks can then be used to perform such actions as the recognition of the audio signal, provide security which identifies the source of an audio signal, or some other service. Furthermore, metadata, criteria, characteristics or the like, to support the actions listed above can come from a network source which are processed by the controller 214.

FIGS. 3A and 3B depict two alternative embodiments of input devices, 300a and 300b (hereinafter referred to collectively as input device 300), capable of use in the system 100 described in FIG. 1 and apparatus of FIG. 2. The user input device 300 of FIG.s 3A and 3B enables operation of and interaction with a user interface and process associated therewith. The input device 300 is implemented to initiate and/or select any function available to a user related to the acquisition, consumption, access and/or modification of multimedia content in accordance with the present principles. For example, FIG. 3A depicts an exemplary tablet or touch panel input device 300a (which is comparable to the touch screen device 116 depicted in FIG.1. Alternatively, FIG. 3A can comprise an integrated example of the media device 108 and touch screen device 116 of FIG. 1. The touch panel device 300a is interfaced via the user interface 216 and/or touch panel interface 222 of the receiving device 200 in FIG 2. The touch panel device 300a enables operation of the receiving device or set top box based on hand movements, or gestures, and actions translated through the panel into commands for the set top box or other control device. Such functionality is facilitated by the controller 214 generating a touch screen user interface including at least one user selectable image element enabling initiation of at least one operational command. The touch screen user interface can be pushed to the touch screen device 300a via the user interface 216 and/or the touch panel interface 222. In an alternative embodiment, the touch screen user interface generated by the controller 214 is accessible via a webserver executing on one of the user interface 216 and/or the touch panel interface 222.

In various embodiments of the present principles, the touch panel 300 can function as a navigational tool to navigate the grid display. In alternate embodiments, the touch panel 300a functions as a display device enabling the user to more directly interact with the navigation through the grid display of content. The touch panel device 300a may be included as part of a remote control device 300b containing more conventional control functions such as activator and/or actuator buttons such as

is shown in Figure 3B. The touch panel 300a can also include at least one camera element and/or at least one audio sensing element.

In one embodiment, the touch panel 300a implements a gesture sensing controller or touch screen enabling a number of different types of user interaction. The inputs from the controller are used to define gestures and the gestures, in turn, define specific contextual commands. The configuration of the sensors enable the defining of movement of a user's fingers on a touch screen or alternatively can enable the defining of the movement of the controller itself in either one dimension or two dimensions. Two-dimensional motion, such as a diagonal, and a combination of yaw, pitch and roll can be used to define any three-dimensional motions, such as a swing. Gestures are interpreted in context and are identified by defined movements made by the user. Depending on the complexity of the sensor system, one dimensional motions or gestures may only be allowed. For instance, a simple right or left movement on the sensor can produce a fast forward or rewind function. In addition, multiple sensors could be included and placed at different locations on the touch screen. For instance, a horizontal sensor for left and right movement can be placed in one position and used for volume up/down, while a vertical sensor for up and down movement can be placed in a different position and can be used for channel up/down. In this way, specific gesture mappings can be used. In various embodiments, the touch screen device 300a can recognize alphanumeric input traces which can be automatically converted into alphanumeric text displayable on one of the touch screen device 300a or output via display interface 218 to a primary display device.

Alternatively, the input device 300b can be used to interact with the user interfaces generated by the system and which are output for display by the display interface 218 to a primary display device (e.g. television, monitor, etc). That is, the input device of FIG 3B can be implemented as a conventional remote control having a 12-button alphanumerical key pad 302b and a navigation section 304b including directional navigation buttons and a selector. The input device 300b can alternatively include a set of function buttons 306b that, when selected, initiate a particular system function (e.g. menu, guide, DVR, etc). Additionally, the input device 300b can also include a set of programmable application specific buttons 308b that, when selected, initiate a particularly defined function associated with a particular application

executed by the controller 214. As described above, the input device can include a touch panel 310b that operates in a similar manner as discussed above in FIG. 3A. The depiction of the input device in FIG. 3B is merely exemplary and the input device can include any number and/or arrangement of buttons that enable a user to interact with a user interface process according to embodiments of the present principles. Additionally, it should be noted that users can use either one or both of the input devices depicted and described in FIG.s 3A and 3B simultaneously and/or sequentially to interact with a system of the present principles.

In an alternate embodiment of the present principles, the user input device can include at least one of an audio sensor and a visual sensor. In such an embodiment, the audio sensor senses audible commands issued from a user and translates the audible commands into functions to be executed by the user. The visual sensor senses the user(s) presence and matches user information of the sensed user(s) to stored visual data in, for example, the usage database 120 of FIG. 1. Matching visual data sensed by the visual sensor enables the system to automatically recognize the user(s) presence and retrieves any user profile information associated with that user(s). Additionally, the visual sensor can sense physical movements of at least one user present and translates those movements into control commands for controlling the operation of the system. In such an embodiment, the system can have a set of pre-stored command gestures that, if sensed, enable the controller 214 to execute a particular feature or function. An exemplary type of gesture command can include the user waving their hand in a rightward direction which can initiate a fast forward command or a next screen command. Similarly, a leftward hand wave can initiate a rewind or previous screen command, depending on the context being applied. It should be noted that the preceding description of physical gestures able to be recognized by a system of the present principles is merely exemplary and should not be taken as limiting. Rather, this description is intended to illustrate the general concept of physical gesture control that can be recognized by a system or apparatus of the present principles and persons skilled in the art could readily understand that a controller can be programmed to specifically recognize any physical gesture and allow that gesture to be associated with at least one executable function.

In various embodiments of the present principles, the input device 300 enables the user to interact with a plurality of user interfaces. The user interfaces contain different types of user selectable and/or user fillable image elements. The user

selectable and/or user fillable image elements enable the creation of at least one user profile containing data representing at least one preference related to a media object representing multimedia content that is desirable to the user. As used herein, the term multimedia content refers to a media object that can be acquired or otherwise received and which can be at least one of output for display to a user and stored in a storage device for later viewing. The multimedia content can be received live, in real-time, or can be a pre-recorded. Additionally, the user interfaces displayed enable the creation of at least one sub-profile associated with the created at least one user profile that includes a subset of the at least one preference related to multimedia content.

In the various embodiment of the present principles, the creation and association of at least one sub-profile advantageously provides a more targeted set of seed terms for a content recommendation algorithm used in providing the user with available content according to the entered preferences. Moreover, the user interfaces enable multiple sub-profiles to be used at the same time in order to recommend content to the user. This is particularly advantageous when multiple users are concurrently viewing a single primary display device and wish to consume content that is acceptable to all users present. By selecting and inputting multiple sub-profiles for multiple users, the system advantageously initiates a more targeted search for content that will be found acceptable to all users present. Moreover, the user interfaces provide an explanatory summary associated with the content returned from the search that uses at least one sub-profile thereby indicating to the user why the particular piece of content was deemed, by the content recommendation algorithm, as being acceptable to all users. The user interfaces and process of generating user profiles including at least one sub-profile will now be discussed with reference to FIG.s 4 – 15.

In the following description, it should be understood that all user interfaces including user selectable and/or user-fillable image elements can be generated by a controller of the present principles, such as the controller 214 of FIG. 2, and output to the user via at least one of the use interface 216, the display interface 218 and/or the touch panel interface 222. Additionally, the interaction with the user interfaces generated by the controller 214 can be accomplished via the input device 300a, 300b such that any selection of an image element and/or entry of data into a field within the user interface will be received and processed by the controller 214 resulting in at

least one of (a) updating the currently displayed user interface in response to the data selected or entered by the user; and (b) generating a new user interface in response to the data selected or entered by the user.

FIGS. 4 – 6 represent interactive user interfaces that enable a user to create a master user profile and at least one sub-profile associated with the master user profile. In FIG. 4, the controller 214 generates a login/sign-up user interface 400. The interface 400 of FIG. 4 illustratively includes at least two user selectable image elements that, in response to selection thereof, initiate further system functions. A "new user" image element 402 enables a user to selectively register as a user of the system and create general login credentials including entering a user name and/or selection of a user avatar as well as security credentials (e.g. password and/or Personal Identification Number, PIN). The controller 214 executes instructions for accomplishing the new user registration routine which is necessary for creating the master profile for the particular user as well as sub-profiles for that user. The interface 400 of the embodiment of FIG. 4 further includes a "login" image element 404, that, when selected, causes the controller 214 to execute the login algorithm to enable access to the system. In one embodiment, the user interface in FIG. 4 can be presented automatically to the user upon power up of the receiving device 200. In another embodiment, the user interface in FIG. 4 can be presented in response to a selection of a button and/or inputting a command via the user interface device 300. In such an embodiment, it is not required that the user be logged-in in order to provide content to the user.

In the embodiment of FIG. 4, selection of the login image element 404 causes the controller 214 to generate a credentialing user interface 500 shown in FIG. 5. The credentialing user interface 500 includes User ID field 502, a password field 504a, a confirm password field 504b and a PIN field 506. Users wishing to access their master user profile and related sub-profiles are required to input at least one of User ID data, password data and PIN data in data fields 502, 504a and 504b, and 506, respectively. In one embodiment, entry of user credential data can be accomplished via direct free-form text entry using an input device 300. For example, an image element representing a keyboard can be displayed on one of the input device 300 and/or the primary display device enabling the user to select alphanumeric characters for entry into the fields 502, 504a, 504b and 506. Alternatively, entry of user credential data can be accomplished via voice

command/speech recognition and translated by the controller 214 for entry into the respective fields. In one embodiment, the User ID field 502 can include a drop-down selection image element whereby a candidate set of known User ID data is presented for selection. In the embodiment of FIG. 4, an execution button 508 is also positioned within the credentialing user interface 500 that, in response to selection thereof, communicates the user entered credential data to the controller 214 for processing. Upon validation of the user entered credential data, the controller 214 generates a profile setup user interface 600 as shown in FIG. 6. It should be noted that the described embodiments of FIG. 6 for entering data into various fields in a user interface are equally applicable to the entry of data into any data field that is described hereinafter in any other user interface generated by, for example, the controller 214. Thus, it should be understood that the above discussed embodiments for entering user data into fields can be applied with respect to any user interface display image described in accordance with the present principles.

In FIG. 6, the profile setup user interface 600 enables a user to create a master profile for the particular user whose information was entered via the credentialing user interface 500 in FIG. 5. In the embodiment of FIG. 6, the profile setup user interface 600 includes a visual indicator region 602 that selectively displays a visual indicator associated with the user profile. In the embodiment of FIG. 6, the region 602 is blank as there are no profiles set up for the particular user yet. Thus, the profile setup user interface 600 represents the state of the system in which no profiles have yet been created. In one embodiment of the present principles, to begin the profile creation process, a user selects the profile creation image element 604. In response to selection of the profile creation image element 604, the controller 214 initiates a process for enabling the user to create at least one of a master profile and at least one sub-profile associated with the master profile.

In the embodiment of FIG. 6, the profile creation user interface 600 is used to create a master profile for the one or more users. For example, in the case where the receiving device comprises a set-top box in a family home, each member of the family is able to generate a master profile of their own. A master profile can include at least one type of multimedia characteristic data. The multimedia characteristic data represents at least one characteristic that can be used to describe at least one aspect of multimedia content. This includes, but is not limited to, any of (a) genre; (b) actor name; (c) plot data; (d) rating data; and (e) release data. The multimedia

characteristic data described herein is intended to illustrate the type of information that can be included as multimedia characteristic data. It should be noted that any type of data describing any aspect of multimedia content that can be used to characterize and recognize data can be used in accordance with various embodiments of the present principles. For example, in one embodiment, the multimedia characteristic data can include any type of data associated with multimedia content that is transmitted and listed in an electronic program guide. In an alternate embodiment, the multimedia characteristic data can include any type of data associated with multimedia content purchased by a user. In a further embodiment, the multimedia characteristic data can include description information associated with multimedia content located on an external website or information repository that is selectively accessible via a communication network (e.g. the Internet Movie Database – www.IMDB.com). The master profile for each user can include a complete description of a portion or all multimedia characteristic data representing all types of multimedia content consumed by the user. In alternate embodiments, the master profile for each user can represent only a subset of the multimedia characteristic data.

In accordance with embodiments of the present principles, at least one sub-profile can be created under each master profile. Sub-profiles provide a more targeted description of a subset of multimedia content consumed by a particular user. In various embodiments, each sub-profile has a predetermined number of multimedia characteristics associated therewith. The predetermined number of multimedia characteristics can include any type of multimedia characteristic data. In one embodiment, each sub-profile includes up to three multimedia characteristic data selections to be included therein. These selections can include genre data describing a genre of multimedia content enjoyed by the user as well as actor data including a name of an actor/actress that the user enjoys watching. This composition of multimedia characteristic data described herein is for purposes of example only and any type of multimedia characteristic can be included in respective sub-profile data.

In an alternate embodiment, the sub-profile can require at least one of the multimedia characteristic data associated with the sub-profile to include a particular type of multimedia characteristic such as genre data. In yet another embodiment, a sub-profile can include multimedia characteristic data that is not included in the set of

multimedia characteristic data associated with the master profile thereby providing the master profile user with an additional level of privacy.

As will be discussed in further detail below, for each master profile and sub-profile associated with each master profile, a user interface according to the present principles advantageously enables a user to associate a unique visual indicator therewith. As such, a user can have a first visual indicator associated with their master profile and second, third and fourth visual indicators associated with respective first, second and third sub-profiles. The visual indicator can be any type of visual indicator and can, in one embodiment, include a picture. The picture can represent the user themselves or alternatively can be representative of the type of multimedia characteristic data associated with one of the master profile and/or respective sub-profile. The visual indicator can be selected from a repository of visual indicators or alternatively, can be created, in some instances, automatically by the controller 214 in response to entry of particular multimedia characteristic data. In such an embodiment, each type of multimedia characteristic data can be associated with a unique visual indicator and the controller 214 can create a composite visual indicator by combining the unique visual indicators associated with the respectively entered multimedia characteristic data. For example, in one embodiment the unique visual indicator can include a background having a first visual appearance (e.g. a first color) whereby the background can be modified to include visual appearances different from one another and the first visual appearance (e.g. different colors) corresponding to the multimedia characteristic data included in the profile or sub-profile. Once the master profile or sub-profile is completed, the controller 214 can compare the entered multimedia characteristic data and retrieve the unique colors associated with those characteristics to generate a composite visual indicator including all unique colors.

In an alternate embodiment, instead of the unique visual indicator being color-coded, the unique visual indicator can include a visual representation of that multimedia characteristic. For example, if a multimedia characteristic entered by the user represents a particular actor, a portion of the composite visual indicator can include a picture of that actor whereby the picture is one provided by the user, retrieved from a repository of pictures, and/or acquired from an external source of pictures (e.g. via the internet).

Referring back to FIG. 6, when a user selects the profile creation image element 604, the controller 214 initiates the profile creation process. It should be understood that the profile creation process of the present principles and its corresponding interfaces can be similar whether the profile being created is a master profile or a sub-profile to be associated with a particular master profile.

Referring to FIG. 7, the controller 214 generates an add profile image user interface 700. The add profile user interface 700 includes a profile-specific visual indicator 701 displayed therein. The visual indicator 701 can be selected by the user from a candidate set of visual indicators or, alternatively, can be uploaded by the user. In an alternate embodiment, the user's social media pages and/or internet storage can be queried to acquire data for constructing a visual indicator. The user interface 700 of the embodiment of FIG. 7 illustratively includes a nickname field 702, a contact information field 704, at least one user-specific characteristic field 706, 708 and a PIN field 712. For each profile created, the user can selectively enter data representing a nickname (or alias) in nickname data field 702. This nickname will be displayed throughout various other user interfaces and enables the user to be quickly reminded as to the nature of the particular profile (either master or sub-profile). In addition, a user can selectively enter and associate contact information with the particular profile being created using the contact information field 704. Contact information can include at least one of (a) an email address; (b) a phone number; (c) a screen name; and (d) a social media account. Such information is presented for purposes of example only and any type of information enabling the contact of a user. In one embodiment, the contact information associated with all profiles is the same. In alternate embodiments, the contact information of at least one sub-profile is different from the contact information associated with at least one other sub-profile or the master profile.

The at least one user specific characteristic field 706, 708 enables the user to enter information that describes the user themselves and which can be used as an input to the content recommendation process (e.g., algorithm) of the present principles. The user specific characteristic data can describe at least one of (a) an attribute of the user; and (b) a geographical location of the user. The attribute of the user can include information describing at least one of (a) age; (b) demographic information; and (c) economic information. In one embodiment, as shown in FIG. 7,

the first user characteristic data field 706 illustratively enables the user to input age information and the second user characteristic data field 708 enables the user to select geographic/time zone information. The data input in fields 706, 708 can be used as inputs to a content recommendation process of the present principles in conjunction with multimedia characteristic data to generate targeted content recommendations based on the particular profile (or sub-profile).

In various embodiments, the user can also enter profile-specific PIN information using PIN data field 710. This advantageously provides additional security associated with the particular profile preventing an unauthorized user from selecting and/or otherwise using the particular profile (or sub-profile) as part of the content recommendation process. In alternate embodiments, another security feature associated with the profile creation user interface 700 relates to the ability to make purchases of content that are available at a given time. For example, as the result of an embodiment of a content recommendation process/algorithm of the present principles using particular sub-profile data, an item of content that can be viewed if purchased can be offered/displayed. In various embodiments of the present principles, such functionality can be enabled, prohibited and/or limited in some manner. In one embodiment, to select between enabling or prohibiting such functionality, a user can selectively toggle image element 712 between an “on” and “off” position. Additionally, to set a limit for the purchasing functionality, once image element 712 is toggled to “on”, a user can selectively define the type of purchases available to a particular user as well as an amount of money able to be spent on these purchases during a particular time period (e.g. per month, per week, etc). Such feature is particularly advantageous when the profile being created is associated with a minor child thereby preventing the child from inadvertently incurring costs not authorized by the parent/guardian of the minor child.

FIG. 8 depicts an embodiment of a navigation user interface 800 that is presented to a user who has either logged into the system via the login interface as depicted in FIG. 4 or just created their profile using the profile creation user interface depicted in FIG. 7. The navigation user interface 800 of FIG. 8 illustratively includes a navigation bar 802 including a plurality of user selectable image elements that, when selected, initiate execution of certain functions. The navigation bar 802 includes at least one of (a) a back image element 804; (b) a home image element 806; (c) an account image element 808; (d) a media content image element 810; and

(e) a search image element 812. In the embodiment of FIG. 8, selection of the back image element 804 facilitates navigation between various user interfaces and allows a user to return to an immediately preceding user interface. Selection of the home image element 806 enables the user to return to a home screen. The media content image element 810 results in generation of a user interface including a listing of multimedia content that is selectable for viewing by the user. In one embodiment, this content list can include multimedia content that was recommended in accordance with embodiments of the present principles. In an alternate embodiment, the content list can reflect a listing of multimedia content that form a user's content library and can include audio and audiovisual data. The search image element 812 initiates a search process enabling the user to search for a particular piece of content that is currently available for viewing by the user.

The navigation bar 802 of FIG. 8 also includes an account image element 808. Selection of the account image element 808 enables the user to modify settings and parameters associated with the user's account. In one embodiment, as shown herein, the account image element corresponds to the unique visual indicator selected by the user that is associated with the master profile of the user. Selection of the account image element 808 causes the controller to generate a further menu user interface 815 including a plurality of further user selectable image elements. The menu user interface 815 includes a change profile image element 820 that enables the user to switch profiles from a current user profile to a different, stored user profile.

In one embodiment, selection of the change profile image element 820 enables the users to switch between different master profiles currently used by the system. In an alternate embodiment, the change profile image element 820 enables the user to select and/or change the current master user profile with different sub-profiles associated with the current master user profile. The menu user interface 815 also includes a setting image element 830 that, upon selection thereof, enables the user to modify at least one setting associated with the current master profile. In one embodiment in which the currently active profile is a sub-profile associated with the master profile, selection of the setting image element 830 enables modification of at least one setting associated with that sub-profile. Upon selection of the setting image element 830, a settings modification user interface 900 as shown in FIGS. 9A and/or 9B is generated and caused to be displayed to the user.

The settings modification user interface 900 of FIG. 9A enables the user to modify a plurality of different settings associated with the master user profile. In a first region 902, information describing the master user profile is provided. This information includes the unique visual indicator associated with the master user profile. In this first region, the user can select the edit image element 904 and selectively modify the unique visual indicator that is to be associated with the master user profile. In a second region 906 of the settings modification user interface 900, the user is able to selectively input and/or modify at least one user preference. The at least one user preference can include any one of at least (a) multimedia characteristic data; and (b) user specific characteristic data. The at least one user preferences input by selecting an image element 908 within the second region advantageously associates the at least one user preference with the master profile and enables the at least one user preference to be used by a content recommendation process to suggest content that the user may want to view. In an alternate embodiment, the at least one user preference can be used by the content recommendation algorithm to suggest content that the user may wish to acquire, for example, via online purchase.

In one embodiment of the present principles, the at least one user preference entered by selecting the image element 908 represents two different types of multimedia characteristics. For example, the two different types of multimedia characteristics can include (a) a user's preferred genre; and (b) a user's preferred actors. It should be understood that such user preferences are merely exemplary and any type and number of types of information describing multimedia content can be input by selecting image element 908.

Selecting the image element 908 enables the user to selectively input a predetermined number of data items for each type of multimedia characteristic. The selection of image element 908 enables creation of a user preference table including user preference data that can be used by the system as seed terms for a content recommendation process/algorithm. An exemplary user preference table is shown below in Table 1.

Multimedia Characteristic 1 (genre)	Multimedia Characteristic 2 (Actor)
Horror	Gary Oldman
Comedy	Robert DiNiro
Foreign	Alec Baldwin
Family	Mike Myers
Drama	Johnny Depp

Table 1: User Preference table

As can be seen in Table 1, in one embodiment, a user can selectively input up to five data items for each of two multimedia characteristics (genre and actor). The data items in Table 1 can be used as seed terms for a content recommendation process/algorithm that, when executed, provides recommendations for multimedia content based, at least in part, on the data items in the user preference table. While Table 1 is shown as including two different multimedia characteristics and allows for entry of up to five data items for each characteristic, it should be appreciated that this is not intended to be limited to this format. Rather, one skilled in the art would understand that a user preference table including any number of multimedia characteristics and any number of data items for each characteristic can be implemented and used in accordance with the present principles. Moreover, one skilled in the art understands that the user preference table can include any other characteristic that can be used in classifying or otherwise identifying multimedia content that the user finds desirable.

The embodiment of FIG. 9 further includes third, fourth, fifth and sixth regions 910, 920, 930 and 940, respectively. User selectable image elements in these regions enable the user to selectively define and/or modify other settings associated with the active master profile. For example, the third region 910 enables the user to input and/or modify purchasing information such as credit card information that can be used to purchase available multimedia content from one of a content provider (e.g. cable provider) and a third party (e-commerce website, e.g. AMAZON®). The fourth region 920 can include a rating image element that initiates execution of a rating process that enables the user to specify rating information for particular multimedia content that the user has consumed. The fifth region 930 includes the PIN image element enabling the user to specify and/or modify PIN information to be associated

with the master profile. The sixth region 940 includes a password image element that enables the user to selectively change their account password.

It should be noted that in FIG. 9, the number of regions in the setting modification image element 900 is illustrative and for purposes of example only and can be increased or decreased to include any number of regions for modifying any number of account settings according to the needs and specifications of a system of the present principles.

Referring back to FIG. 9, when a user selects the edit image element 904, the controller 214 generates the edit image user interface 1000 shown in FIG. 10. The edit image user interface 1000 displays the visual indicator 1002 currently associated with the master profile. The visual indicator can be selected by the user and is representative of at least some of the user preferences entered by the user. The visual indicator 1002 is a user selectable image element by which a user can select a visual indicator 1002 to change/replace the visual indicator 1002 associated with the master profile. For example, depending on the user preferences entered via the second region 906 in FIG. 9, a user can determine that a previously selected visual indicator is not representative enough of the preference data and desires to change the visual indicator to be more representative of the user preference data entered by the user. For example, as shown, the visual indicator is a “zombie” and corresponds to the user preference data items listed in Table 1 above.

FIG. 9B is an alternate embodiment of the setting modification user interface of FIG. 9A. Much of this user interface 900b is similar to that described above in FIG. 9A and thus need not be further described. The alternate settings modification user interface 900b includes the first region 902b that includes the edit image element 904b. In addition to being able to edit the unique profile visual indicator, selection of the edit image element 904b enables the user to selectively define at least one user-specific characteristic for the profile. For example, the user may selectively define ratings restriction data for each profile (and/or sub-profile) based on the age of the particular user. The defined user-specific characteristic data is shown in field 903. In the depicted embodiment, the profile is restricted to multimedia content having a rating of PG or lower. That is, in this embodiment, the user interface 900b is one that is associated with a child, hence the PG rating restriction. Thus, when selecting image element 908b enabling the user to specify user preference data associated

with this profile, the user can create a user preference table such as the table shown in Table 2, which follows.

Multimedia Characteristic 1 (genre)	Multimedia Characteristic 2 (Actor/Character)
Animation	Jack Sparrow
Adventure	Shrek
Comedy	Anikan Skywalker
Disney	Johnny Depp
Sci-Fi	Batman

Table 2: User Preference table

Thus in the embodiment described above, in addition to the content recommendation process of the present principles using the data items in Table 2 to recommend content, the process also considers the user-specific characteristic data associated with ratings restrictions when making content recommendations.

Referring back to the embodiment of FIG. 10, the edit image user interface 1000 includes nickname data field 1004 and contact information data field 1006. These fields enable the user to modify the nickname associated with the master profile and any contact information associated with the master profile.

In accordance with various embodiments of the present principles, the sub-profiles created by the user and associated with the master user profile are further advantageously identified with unique sub-profile visual indicators that correspond to the user preference data associated with that sub-profile. An exemplary sub-profile selection user interface 1100 is shown in FIG. 11. The embodiment of FIG. 11 provides a plurality of exemplary sub-profiles 1102a – 1102h, each sub-profile including a predetermined number of user preference data items 1104a – 1104h associated therewith and being identified by a unique sub-profile visual indicator 1106a – 1106h. Hereinafter, the sub-profile will be generically referred to using reference numeral 1102, the data items for the sub-profile will be generically referred to using reference numeral 1104 and the unique sub-profile visual indicators will be generically referred to using reference numeral 1106. In such embodiments, each sub-profile 1102 illustratively includes up to three (3) user preference data items. The user preference data items are selected from one of multimedia characteristic data

and user-specific characteristic data. While in FIG. 11 each sub-profile is depicted as having three user preference data items, it should be understood that sub-profiles of the present principles can include any number of user preference data items associated therewith. The unique sub-profile visual indicators 1106 is representative of the user preference data items listed in the sub-profile 1102 and can be selectively chosen by the user. In an alternate embodiment, a particular sub-profile visual indicator 1106 can be automatically suggested to the user based on the user preference data items associated with the particular sub-profile. The user can then change and/or otherwise modify the sub-profile visual indicator 1106 accordingly.

In accordance with the various embodiments of the present invention, a user can selectively determine which user preference data items are associated with each sub-profile. This can be accomplished by interacting with the data items in user interface 1100. Thus, the user can manually enter particular user preference data items and/or select a user preference data item from a candidate list of user preference data items via a drop down menu. In an alternate embodiment, in response to the master user seeking to create at least one sub-profile 1102, the controller 214 automatically generates a suggested set of sub-profiles using the user preference data items entered and associated with the master user profile. In such an embodiment, the controller 214 also automatically chooses a sample sub-profile visual indicator 1106 to be associated with each of the sample sub-profiles generated. The user can then selectively edit each sample sub-profile by adding to or changing certain user preference data items in the respective sub-profile. The user can also selectively modify the sub-profile visual indicator as desired.

An embodiment of the creation of sub-profiles using the images and data items set forth in the above discussed figures can be described as follows. The user of the master profile is identified using a “zombie” as the unique master profile indicator can use the additional profile user interface 1100 to create sub-profiles which can have different genres assigned to them using a user interface similar to the one shown above in FIGS. 9A and/or 9B. Hence, even though a user can have a main profile, the user can assign sub-profiles where each profile can have an associated number of user preferences (e.g. genres, actors, etc.) and a unique sub-profile indicator associated with each sub-profile. For example, a user has associated the picture of a “cowgirl” to the genres of “Action/Adventure”, “Western”, and “Family-oriented adventure” while the picture for the “football player” has the genres “Sports”, “Sports

Drama/Biopic" and "Sports Comedy" corresponding to the "football player" picture. This description represents an embodiment of the user interface in FIG. 11. From the creation of such profiles, a user can quickly select a sub-profile for the generation of recommendations. For example, a user can select the "cowgirl" picture, if the user wants to have content related to westerns recommended while the user can select the "football player" picture if the user wants to see recommendations of sports programming.

In an optional embodiment, the sub-profile visual indicator can include a background portion that can be modified such that it displays an indicator associated with the particular user preference data items in the sub-profile. For example, sports can be "brown", science fiction can be "gray", romance can be "red", and action/adventure can be "blue". The background for each of the profiles can be changed from a white background to a specific color representing a particular genre. The background can also be divided up into different color bands where a picture associated with sports, science fiction, and romance would have a horizontal banding of brown, gray, and red. While a picture with associated genres of science fiction, sports, and action/adventure would be banded with gray, brown, and blue. These colors can help a user quickly distinguish between different sub-profiles.

FIG. 12 depicts an embodiment of a profile user interface 1200 that displays to the user a set of sub-profiles created in accordance with the above described embodiments and which is associated with the master user profile. The profiles user interface 1200 displays respective sub-profiles in their own region with the user interface 1200 and includes description information describing aspects of each sub-profile. The unique sub-profile visual indicators for each sub-profile is clearly displayed to quickly identify to the user the nature of the user preferences associated with each respective sub-profile. Also shown in the profiles user interface 1200 is a description of sub-profiles that have, in addition to multimedia characteristic data, user-specific characteristic data such as rating restrictions associated with each profile. As depicted therein, the sub-profile entitled "Ian" is intended for a child and thus be restricted to viewing multimedia content that has a PG rating or below whereas the sub-profile entitled "Eva" can be restricted to viewing multimedia content having a G rating or below. Thus, in addition to the user preference data items entered via the user interface of FIGS. 9A, 9B and 11, the sub-profiles with these

rating restrictions are considered when presenting recommended content based on the sub-profiles. In FIG. 12, the sub-profile entitled "Mom" does not have any user ratings restrictions thus only the user preference data items entered via FIGS. 9A, 9B and 11 are used to determine recommended content.

Once the user has set up master profiles and at least one sub-profile, the profile data can be used to generate content recommendations via a content recommendation algorithm. An exemplary content recommendation user interface 1200 is shown in FIG. 12. The content recommendation user interface includes a profile selection region 1202 comprising user selectable image element corresponding to all available master profiles and sub-profiles 1204a – 1204d. The user selectable image elements 1204a – 1204d correspond to the unique visual indicators defined by the user and associated with that master profile or sub-profile. Selection of one of the user selectable image elements 1204a – 1204d corresponding to a profile identifies that profile (either master or sub-profile) as the active profile from which content recommendations are to be made. By selecting the image elements corresponding to the visual indicators, the user is quickly notified of the user preference data associated with that profile to more precisely target content to be recommended by the content recommendation algorithm.

In the embodiment of FIG. 12, the content recommendation user interface 1200 also includes a location data field 1206 that enables the user to enter location information for use in recommending content. Location information has an impact on the type of programming available to the user. For example broadcast programming can be available to a user at their home, while such programming would not be available to the user if they were traveling. Other restrictions can exist on programming where digital rights management (DRM) limitations prevent certain programming from being shown at different locations. Location information advantageously identifies a user's geographic location thereby providing information as to which content sources should or should not be searched based on the user preference data items associated with the selected profile. For example, if the location data entered by the user in field 1206 indicates that the user is home, any external storage containing multimedia content on the local area network as well as a hard drive containing pre-recorded multimedia content can be searched for content. However, if the location is indicated as, for example "travelling", the user's local area

network is not search and instead, only internet based content providers can be searched when looking for content to recommend.

In the embodiment of FIG. 12, the content recommendation user interface 1200 also includes a companion data field 1208. The companion data field 1208 enables the user to specify other users also present, thereby improving the targeted search. The companion data field 1208 enables a user to enter at least one other user that is present and the user preferences associated with the at least one other user are considered, along with the user preferences associated with the active profile, when determining content to recommend. Such companion data can be entered free-form or selected from a candidate list of users known. Additionally, the companion data can represent a user from a different system but that is connected to the active user profile, for example via social media connections. For example, if the active user is connected to a friend who has their own user profile, the user preference data associated with the "friend" can be automatically provided along with the active profile user preference data for determining content to recommend.

In the embodiment of FIG. 12, while the interface 1200 provides the ability to identify one companion, it should be understood that any number of companions can be identified prior to initiating the search for recommended content in accordance with the present principles. In one embodiment, the search is initiated when the active user enters PIN information into PIN field 1210 and selects the "done" image element 1212. In one embodiment of the present principles, the PIN information associated with the companion and/or sub-profiles is required to complete the search. In an alternate embodiment, only the PIN information from the master profile is required to complete the search.

In alternate embodiments of the present principles, instead of companion data being entered into field 1208, the active user can selectively input other sub-profile data associated with the master user profile. This advantageously broadens the type of content that will be recommended. This can be accomplished by using the visual cues provided by the visual indicators associated with the sub-profile to notify the user as to the user preference data associated with respective sub-profiles.

FIG. 13 depicts a recommended content user interface. That is, upon completion of a search for content to recommend, a recommended content user interface 1300 is provided. In the embodiment of FIG. 13, to produce the interface

1300, user preference data from "Dad" identified using the "zombie" as the visual indicator and user preference data from "Ian" identified using the "pirate" as the visual indicator as well as the user-specific characteristic (e.g. rating restriction) associated with at least one of "Dad" or "Ian" was used. In an optional embodiment, the recommended content user interface can display the visual indicators associated with the profiles and sub-profiles that were used as the seed terms for a content recommendation process of the present principles. The recommended content user interface 1300 includes the navigation bar 802 that was described above with respect to FIG. 8, which facilitates navigation between various user interfaces. The interface 1300 of FIG. 13 also includes a recommended content region 1302 whereby user-selectable recommended content indicators can be displayed to the users. As depicted in the embodiment of FIG. 13, there are five recommended content indicators. However, this number of recommended content indicators is merely shown for purposes of example only and any number of recommended content image elements can be used. In one embodiment, the recommended content region 1302 is scrollable enabling the user to scroll through the different pieces of recommended content retrieved. In alternate embodiments, recommended content can be provided within the recommended content region in the form of a list or small tiles.

In another optional embodiment, the recommended content user interface 1300 includes a criteria region 1304. The criteria region 1304 includes a subset of user preference data items derived from all of the profiles and sub-profiles used by the content recommendation algorithm to generate the recommended content. The criteria information provides a visual explanation to the users as to why the particular piece of content is recommended by identifying the user preference data item and source of that data item. For example, for "Kung Fu Panda", the selections of "Animation" from Ian, "Gary Oldman" (as an actor) comes from Dad, and "Adventure" from Ian, and that such selections were used for selecting such programming. In such an embodiment, because there were rating restrictions data associated with one of the master profile or sub-profile used to generate recommended content, none of the recommended content provided exceeded the rating level of PG.

FIG. 14 depicts a flowchart of a method for creating multiple user profiles in accordance with an embodiment of the present principles. The method of FIG. 14 begins in step 1402, during which a user logs into a system to access multimedia content. In step 1404, the user selects at least one profile as the active profile. For

example, in one embodiment, the active profile is one of a master profile or a sub-profile associated with a master profile. In step 1406, a determination as to the number of users present is made by selecting at least one companion profile to be used with the active profile selected in step 1404. In one embodiment, a companion profile represents a profile of another user present. In an alternate embodiment, the companion profile represents a sub-profile associated with the active profile. It should be understood that, a single user can be present and select one profile as the active profile and at least one sub-profile as the companion profile to broaden the results of the content recommendation. In step 1408, the active profile and the at least one companion profile are used as seed terms for content recommendation (e.g., a content recommendation algorithm), the result of which is provided in a recommended content user interface in step 1410.

FIG. 15 depicts a flowchart for generating user profiles used in determining content recommendations in accordance with an embodiment of the present principles. The method of FIG. 15 begins in step 1502, during which a master profile including user preference data items used in describing media content is created. In step 1504, a master profile visual indicator representative of the user preference data items within the master profile is created and the master visual indicator is associated with the master profile in step 1506.

In an alternate embodiment, step 1504 can further include providing an image that identifies the data items included in the master profile. In one embodiment, the master visual indicator includes at least one of an image and a background, the background identifying each of the user preference data items included in the master profile and step 1504 can also include generating the background associated with the visual indicator, the background having a first visual appearance; modifying at least a portion of the background to have different visual appearance based on a number of user preference data items associated with the master profile, wherein each user preference data item will be represented by a different visual appearance; and displaying the master profile visual indicator and modified background within the user interface to identify the user preference data items associated with the master profile visual indicator.

In step 1508, at least one sub-profile associated with the master profile is created. The sub-profile including a subset of the user preference data items included in the master profile. In step 1510, a sub-profile profile visual indicator

representative of the subset of user preference data items included in the sub-profile is created and the sub-profile visual indicator is associated with the at least one sub-profile in step 1512. In one embodiment, the user preference data items included with each one of the master profile and the at least one sub-profile include at least one of (a) a multimedia characteristic that describes the media object; and (b) a user specific characteristic that describes the user.

In an alternate embodiment, step 1510 includes providing an image that identifies the subset of user preference data items included in the at least one sub-profile. In one embodiment, the sub-profile visual indicator includes at least one of an image and a background, the background identifying each of the user preference data items included in the sub-profile. As such, step 1510 can include generating a background associated with the sub-profile visual indicator, the background having a first visual appearance; modifying at least a portion of the background to have different visual appearance based on the subset of user preference data items associated with the sub-profile, wherein each user preference data item of the subset will be represented by a different visual appearance; and displaying the sub-profile visual indicator and modified background within the user interface to identify the user preference data items associated with the sub-profile visual indicator.

In yet an alternate embodiment, steps 1508 and 1510 can also include displaying a candidate set of sample sub-profiles including user preference data items obtained from the master user profile, providing a candidate set of visual indicators associated with each sample sub-profile in the set of sample sub-profiles and modifying any of the sample sub-profiles to include different user preference data items. In one optional embodiment, a respective sub-profile visual indicator of a respective sample sub-profile is automatically modified to reflect an updated set of user preference data items in response to modifying the user preference data items included in the respective sample sub-profile.

In step 1514, a user interface including the master profile visual indicator and the at least one sub-profile visual indicators is generated and selection of at least one of the master profile visual indicator and at least one sub-profile visual indicators is enabled in step 1516. Recommendations including a plurality media objects are generated in step 1518. The recommendations are generated using the user preference data items upon selection of one of the master profile and the at least one sub-profile.

In an alternate embodiment, step 1518 can further include selecting one of the master visual indicator and the at least one sub-profile visual indicator in the user interface as an active user profile and selecting at least one of another of the master visual indicator and the at least one sub-profile visual indicator as at least one companion user profile identifying at least one other party present for which content can be recommended. The data items associated with the active user profile and the data items associated with the at least one companion user profile are used to generate recommendations of media objects.

In step 1520, the recommended media objects are displayed in the user interface. In one embodiment, in step 1520, the visual indicators for the master profile and at least one sub-profile used to generate the recommendations are also displayed in the user interface. In an alternate embodiment, step 1520 can further include displaying, in the user interface, the recommended media objects and criteria data from each of the master profile and at least one sub-profile used to generate the respective recommendations. The criteria data can include at least one of the particular user preference data item used in generating the respective recommendation and a source of the particular user preference data item.

Although embodiments which incorporate the teachings of the present principles have been shown and described in detail herein, those skilled in the art can readily devise many other varied embodiments that still incorporate these teachings. Having described embodiments of a system, method and user interface for content search (which are intended to be illustrative and not limiting), it is noted that modifications and variations can be made by persons skilled in the art in light of the above teachings. It is therefore to be understood that changes may be made in the particular embodiments of the principles disclosed which are within the scope of the principles as outlined by the appended claims.

CLAIMS

1. A method for generating user profiles used in providing media recommendations, the method comprising:

creating a master profile including user preference data items used in describing media content;

creating a master profile visual indicator representative of the user preference data items within the master profile;

associating the master profile visual indicator with the master profile;

creating at least one sub-profile associated with the master profile, the sub-profile including a subset of the user preference data items included in the master profile;

creating a sub-profile profile visual indicator representative of the subset of user preference data items included in the sub-profile;

associating the sub-profile visual indicator with the at least one sub-profile;

generating a user interface including the master profile visual indicator and the at least one sub-profile visual indicators;

enabling selection of at least one of the master profile visual indicator and at least one sub-profile visual indicators; and

generating recommendation including a plurality media objects using the user preference data items upon selection of one of the master profile and the at least one sub-profile.

2. The method of claim 1, wherein the data items included with each one of the master profile and the at least one sub-profile include at least one of (a) a multimedia characteristic that describes the media object; and (b) a user specific characteristic that describes the user.

3. The method of claim 1, wherein the activity of creating the master profile visual indicator includes providing an image that identifies the data items included in the master profile.

4. The method of claim 1, wherein the master visual indicator includes at least one of an image and a background, the background identifying each of the user preference data items included in the master profile.

5. The method of claim 4, wherein the activity of creating the master profile visual indicator further comprises

generating the background associated with the visual indicator, the background having a first visual appearance;

modifying at least a portion of the background to have different visual appearance based on a number of user preference data items associated with the master profile, wherein each user preference data item will be represented by a different visual appearance;

displaying the master profile visual indicator and modified background within the user interface to identify the user preference data items associated with the master profile visual indicator.

6. The method of claim 1, wherein the activity of creating the sub-profile visual indicator includes providing an image that identifies the subset of user preference data items included in the at least one sub-profile.

7. The method of claim 6, wherein the sub-profile visual indicator includes at least one of an image and a background, the background identifying each of the user preference data items included in the sub-profile.

8. The method of claim 7, wherein the activity of creating the sub-profile visual indicator further comprises

generating a background associated with the sub-profile visual indicator, the background having a first visual appearance;

modifying at least a portion of the background to have different visual appearance based on the subset of user preference data items associated with the sub-profile, wherein each user preference data item of the subset will be represented by a different visual appearance;

displaying the sub-profile visual indicator and modified background within the user interface to identify the user preference data items associated with the sub-profile visual indicator.

9. The method of claim 1, wherein the activity of generating recommendations further comprises

selecting one of the master visual indicator and the at least one sub-profile visual indicator in the user interface as an active user profile;

selecting at least one of an other of the master visual indicator and the at least one sub-profile visual indicator as at least one companion user profile identifying at least one other party present for which content may be recommended; and

using the data items associated with the active user profile and the data items associated with the at least one companion user profile to generate recommendations of media objects.

10. The method of claim 1, wherein the activity of creating at least one sub-profile further comprises

displaying a candidate set of sample sub-profiles including user preference data items obtained from the master user profile;

providing a candidate set of visual indicators associated with each sample sub-profile in the set of sample sub-profiles;

modifying any of the sample sub-profiles to include different user preference data items.

11. The method of claim 10, further comprising

automatically modifying a respective sub-profile visual indicator of a respective sample sub-profile to reflect an updated set of user preference data items in response to modifying the user preference data items included in the respective sample sub-profile.

12. The method of claim 1, further comprising

displaying, in the user interface, the recommended media objects and the visual indicators for the master profile and at least one sub-profile used to generate the recommendations.

13. The method of claim 1, further comprising

displaying, in the user interface, the recommended media objects and criteria data from each of the master profile and at least one sub-profile used to generate the respective recommendation.

14. The method of claim 13, wherein the criteria data includes at least one of the particular user preference data item used in generating the respective recommendation and a source of the particular user preference data item.

15. An apparatus that generates user profiles used in providing media recommendations:

a controller that

enables creation of a master profile including user preference data items used in describing media content and a master profile visual indicator representative of the user preference data items within the master profile that is associated with the master profile; and

enables creation of at least one sub-profile associated with the master profile, the sub-profile including a subset of the user preference data items included in the master profile, and a sub-profile profile visual indicator representative of the subset of user preference data items included in the sub-profile, the sub-profile visual indicator being associated with the at least one sub-profile;

a user interface generator that generates a user interface including the master profile visual indicator and the at least one sub-profile visual indicators and enables selection of at least one of the master profile visual indicator and at least one sub-profile visual indicators, wherein, upon selection of one of the master profile and the at least one sub-profile, the controller generates recommendations including a plurality media objects using the user preference data items included in the selected profiles.

16. The apparatus of claim 15, wherein the data items included with each one of the master profile and the at least one sub-profile include at least one of (a) a multimedia characteristic that describes the media object; and (b) a user specific characteristic that describes the user.

17. The apparatus of claim 15, wherein the master profile visual indicator includes an image that identifies the user preference data items included in the master profile.

18. The apparatus of claim 15, wherein the master visual indicator includes at least one of an image and a background, the background identifying each of the user preference data items included in the master profile.

19. The apparatus of claim 18, wherein

the controller generates the background associated with the visual indicator, the background having a first visual appearance and modifies at least a portion of the background to have different visual appearance based on a number of user preference data items associated with the master profile, wherein each user preference data item will be represented by a different visual appearance; and

the user interface generator generates the user interface including display of the master profile visual indicator and modified background within the user interface to identify the user preference data items associated with the master profile visual indicator.

20. The apparatus of claim 15, wherein the sub-profile visual indicator includes an image that identifies the subset of user preference data items included in the at least one sub-profile.

21. The apparatus of claim 20, wherein the sub-profile visual indicator includes at least one of an image and a background, the background identifying each of the user preference data items included in the sub-profile.

22. The apparatus of claim 21, wherein

the controller generates a background associated with the sub-profile visual indicator, the background having a first visual appearance and modifies at least a portion of the background to have different visual appearance based on the subset of user preference data items associated with the sub-profile, wherein each user preference data item of the subset will be represented by a different visual appearance; and

the user interface generator generates the user interface including display of sub-profile visual indicator and modified background within the user interface to identify the user preference data items associated with the sub-profile visual indicator.

23. The apparatus of claim 15, wherein the controller generates recommendations by enabling selection from within the user interface of

one of the master visual indicator and the at least one sub-profile visual indicator in the user interface as an active user profile; and

at least one of an other of the master visual indicator and the at least one sub-profile visual indicator as at least one companion user profile identifying at least one other party present for which content may be recommended, wherein the controller uses the data items associated with the active user profile and the data items associated with the at least one companion user profile to generate recommendations of media objects.

24. The apparatus of claim 15, wherein the controller enables creation of the at least one sub-profile by displaying a candidate set of sample sub-profiles including user preference data items obtained from the master user profile, providing a candidate set of visual indicators associated with each sample sub-profile in the set of sample sub-profiles and modifying any of the sample sub-profiles to include different user preference data items.

25. The apparatus of claim 24, wherein the controller automatically modifies a respective sub-profile visual indicator of a respective sample sub-profile to reflect an updated set of user preference data items in response to modifying the user preference data items included in the respective sample sub-profile.

26. The apparatus of claim 15, wherein the user interface generator generates the user interface for displaying the recommended media objects and the visual indicators for the master profile and at least one sub-profile used to generate the recommendations.

27. The apparatus of claim 15, wherein the user interface generator generates the user interface for displaying the recommended media objects and criteria data from each of the master profile and at least one sub-profile used to generate the respective recommendation.

28. The apparatus of claim 27, wherein the criteria data includes at least one of the particular user preference data item used in generating the respective recommendation and a source of the particular user preference data item.

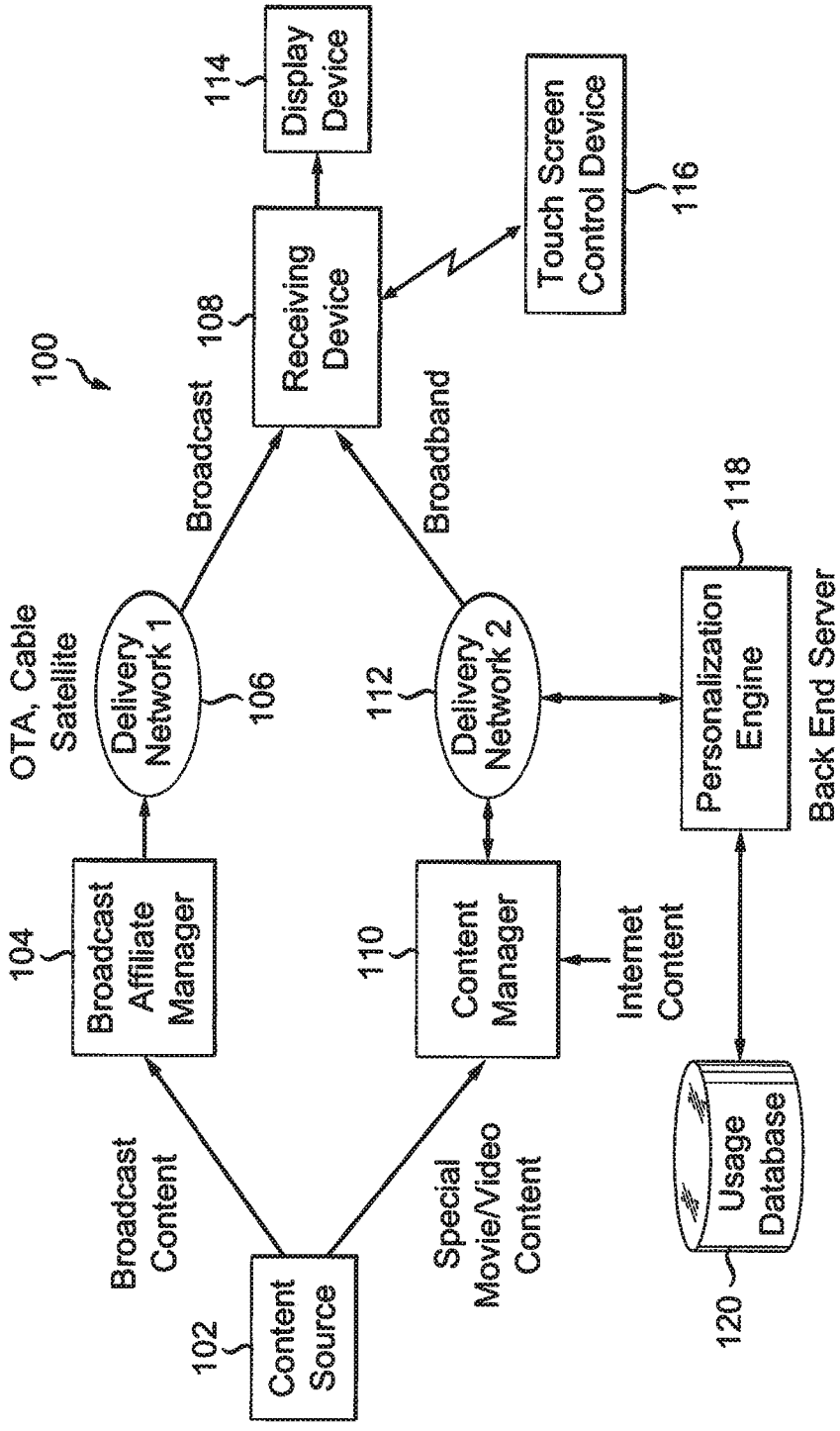

100
Content Source
102
Broadcast Content
Broadcast Affiliate Manager
104
OTA, Cable Satellite
Delivery Network 1
106
Broadcast
Receiving Device
108
Display Device
114
Touch Screen Control Device
116
Broadband
Delivery Network 2
112
Special Movie/Video Content
Content Manager
110
Internet Content
Personalization Engine
118
Back End Server
Usage Database
120

FIG. 1

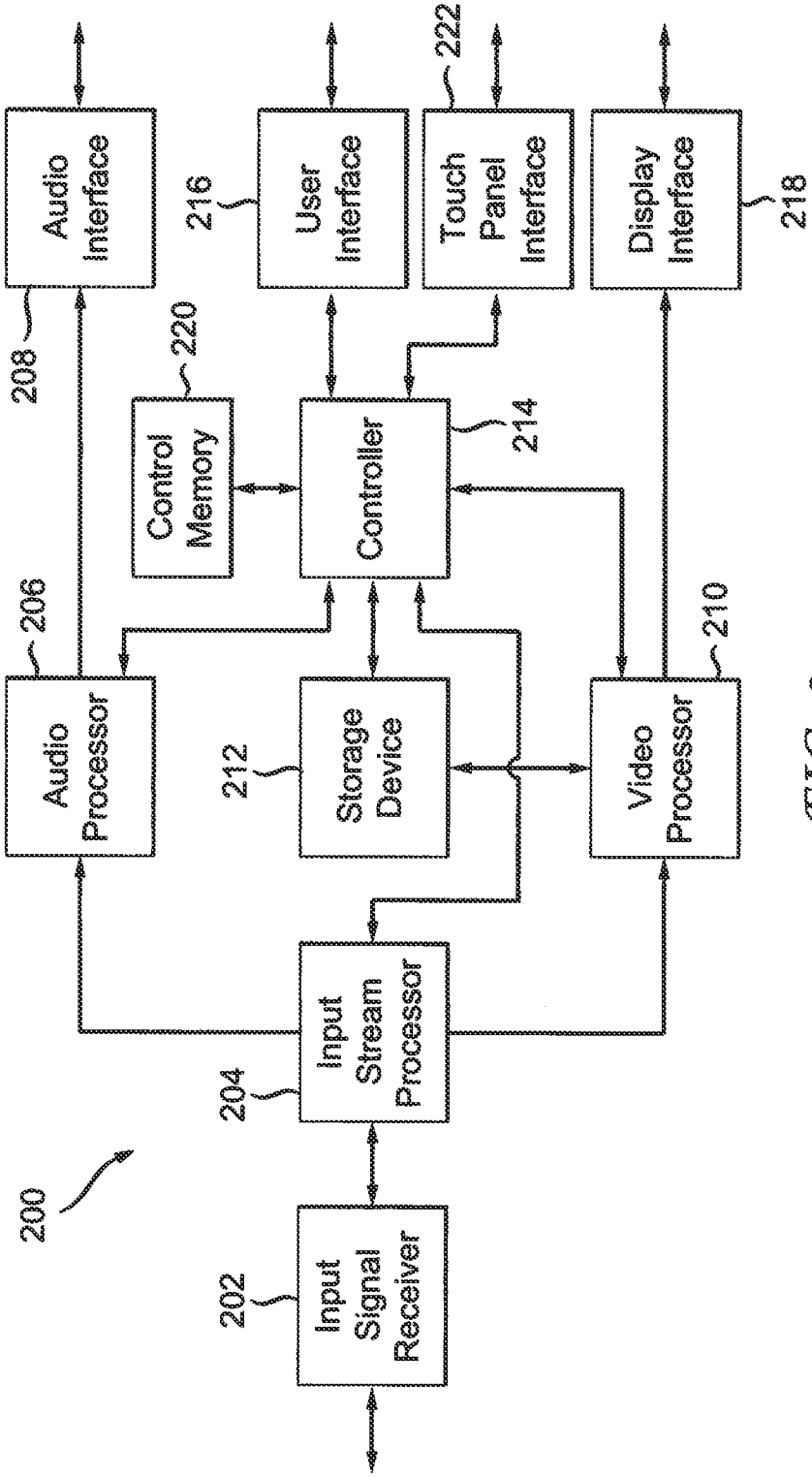

Audio Interface
208
User Interface
216
Touch Panel Interface
222
Display Interface
218
Control Memory
220
Controller
214
Audio Processor
206
Storage Device
212
Video Processor
210
Input Stream Processor
204
Input Signal Receiver
202
200

FIG. 2

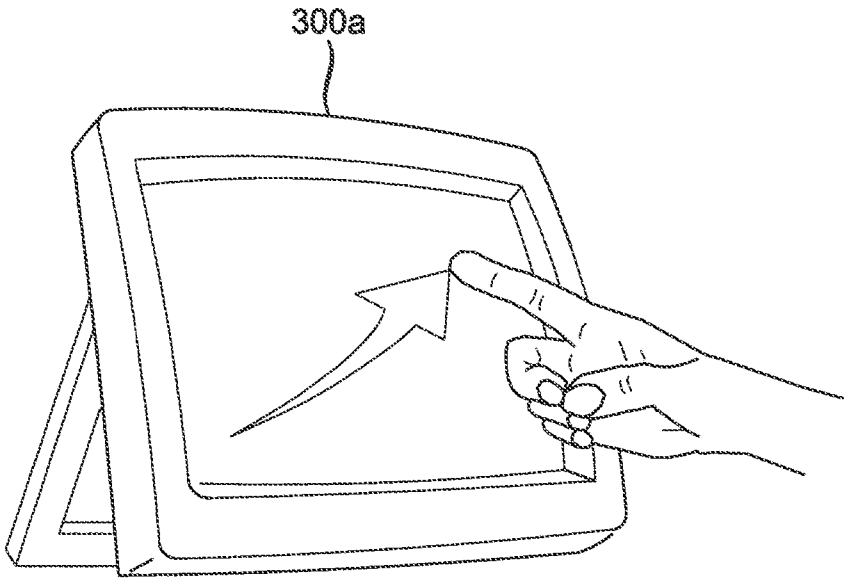


FIG. 3A

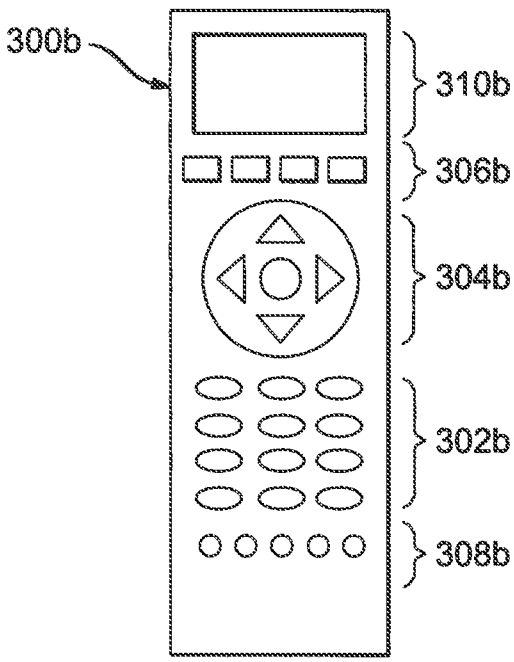


FIG. 3B

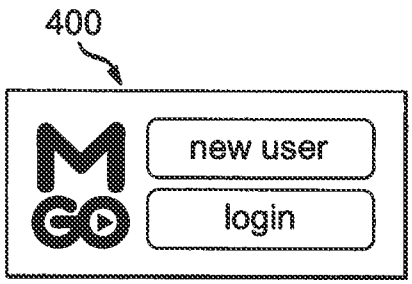

400
new user
login

FIG. 4

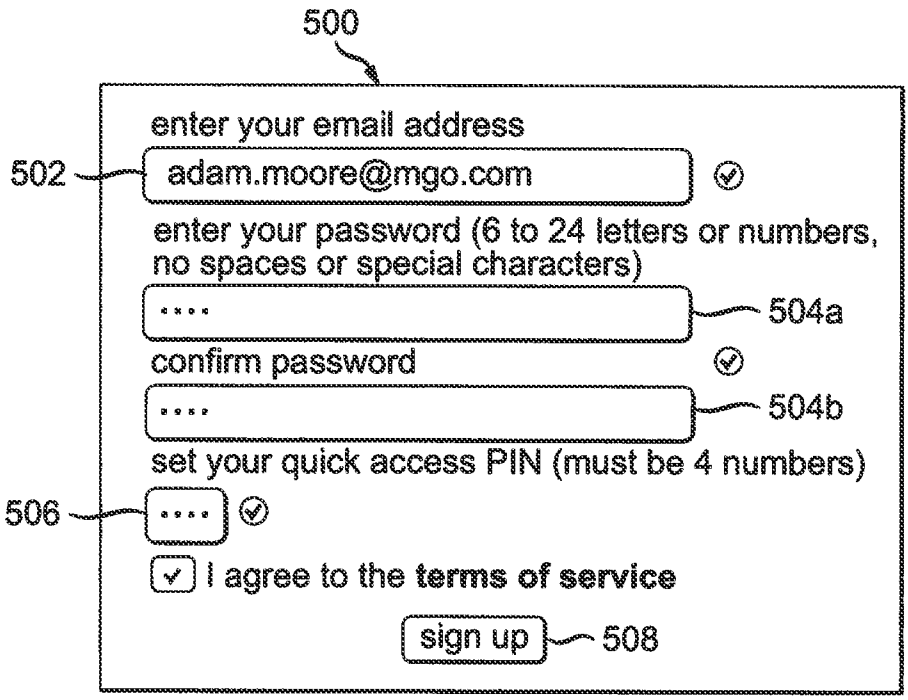

500
enter your email address
502
adam.moore@mgo.com
enter your password (6 to 24 letters or numbers, no spaces or special characters)
504a
confirm password
504b
set your quick access PIN (must be 4 numbers)
506
I agree to the terms of service
sign up
508

FIG. 5

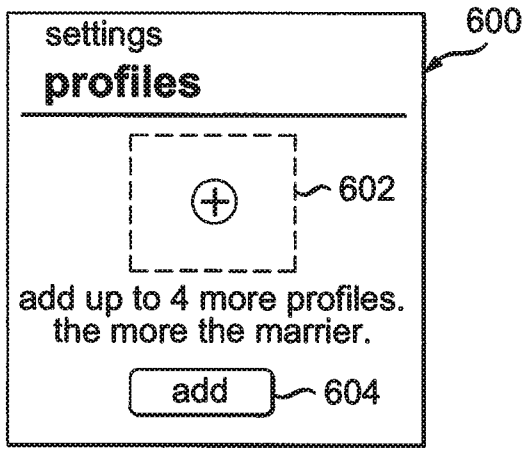

settings
profiles
600
602
add up to 4 more profiles.
the more the marrier.
add
604

FIG. 6

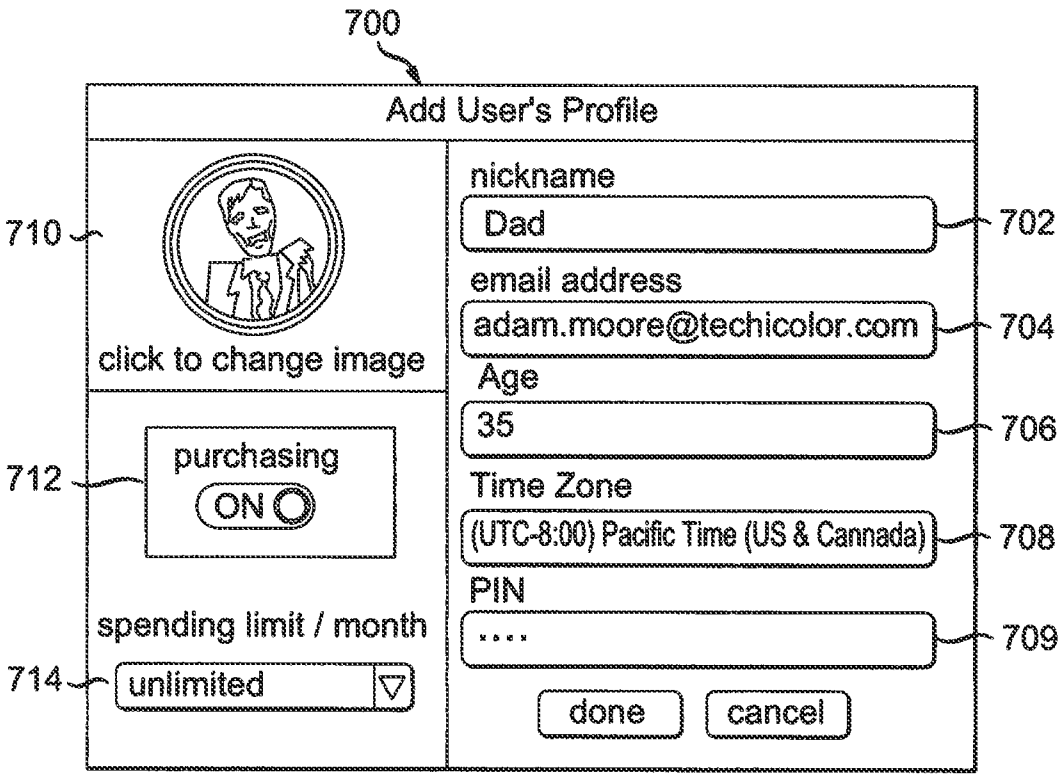

700
Add User's Profile
710
click to change image
712
purchasing
ON
spending limit / month
714
unlimited
nickname
Dad
702
email address
adam.moore@techicolor.com
704
Age
35
706
Time Zone
(UTC-8:00) Pacific Time (US & Cannada)
708
PIN
....
709
done
cancel

FIG. 7

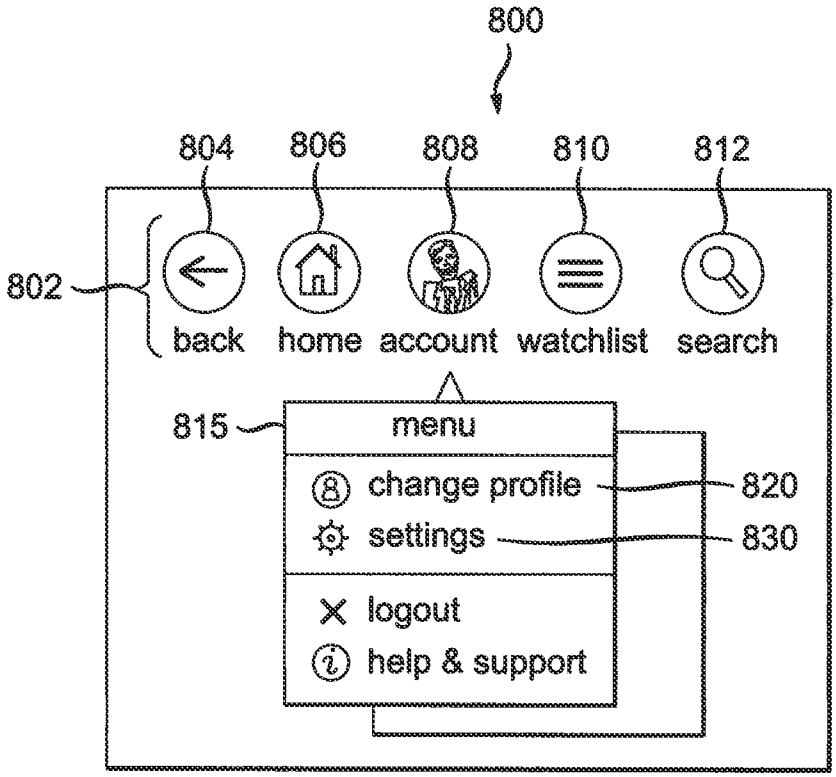

800
804
806
808
810
812
802
back
home
account
watchlist
search
815
menu
change profile
820
settings
830
logout
help & support

FIG. 8

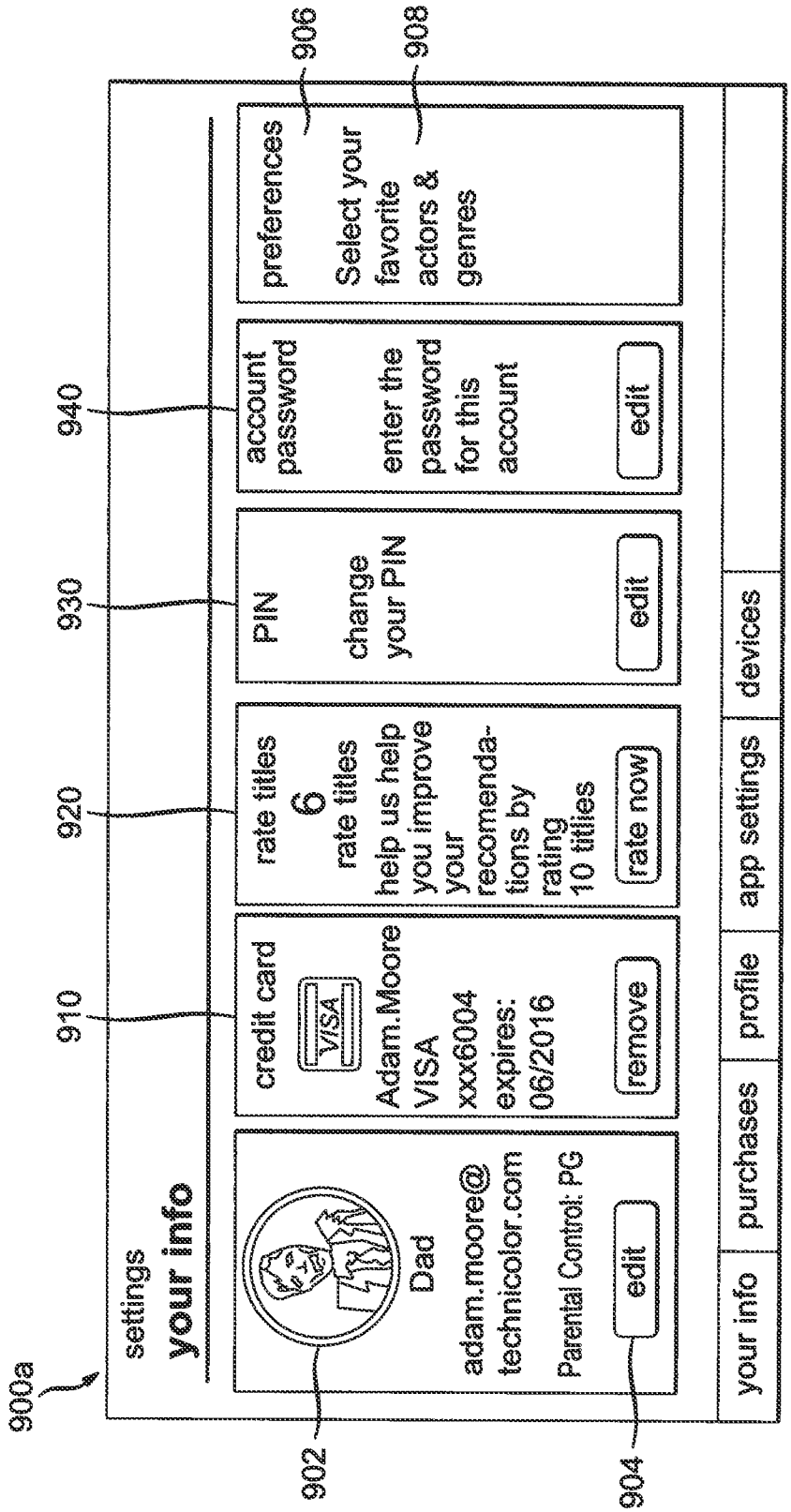

900a
settings
your info
your info
purchases
profile
app settings
devices
902
Dad
adam.moore@
technicolor.com
Parental Control: PG
edit
904
910
credit card
VISA
Adam.Moore
VISA
xxx6004
expires:
06/2016
remove
920
rate titles
6
rate titles
help us help
you improve
your
recomenda-
tions by
rating
10 titlies
rate now
930
PIN
change
your PIN
edit
940
account
password
enter the
password
for this
account
edit
906
preferences
908
Select your
favorite
actors &
genres

FIG. 9A

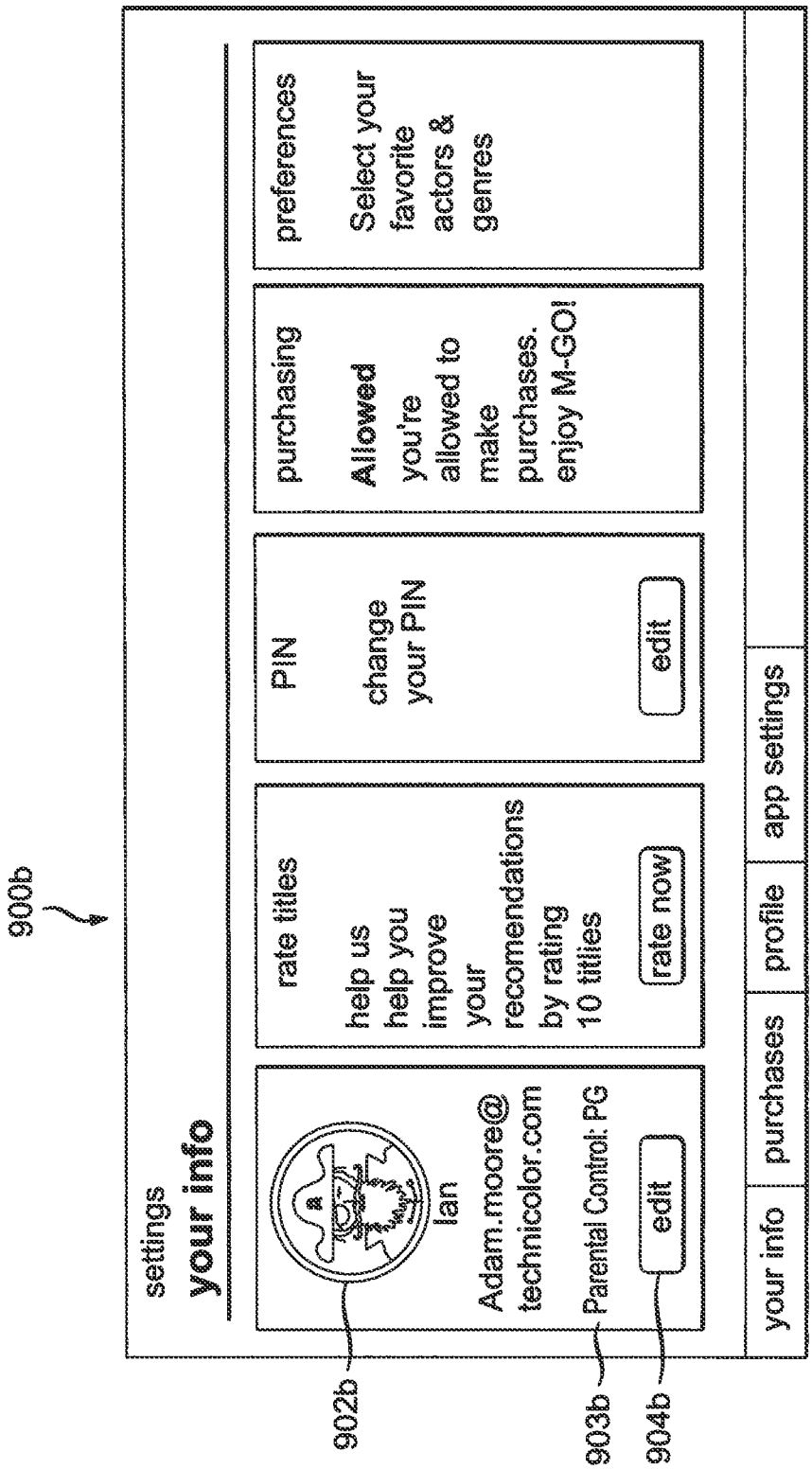

900b
settings
your info
rate titles
help us help you improve your recommendations by rating 10 titles
rate now
PIN
change your PIN
edit
purchasing
Allowed
you're allowed to make purchases. enjoy M-GO!
preferences
Select your favorite actors & genres
Adam.moore@technicolor.com
Parental Control: PG
edit
902b
903b
904b
your info
purchases
profile
app settings

FIG. 9B

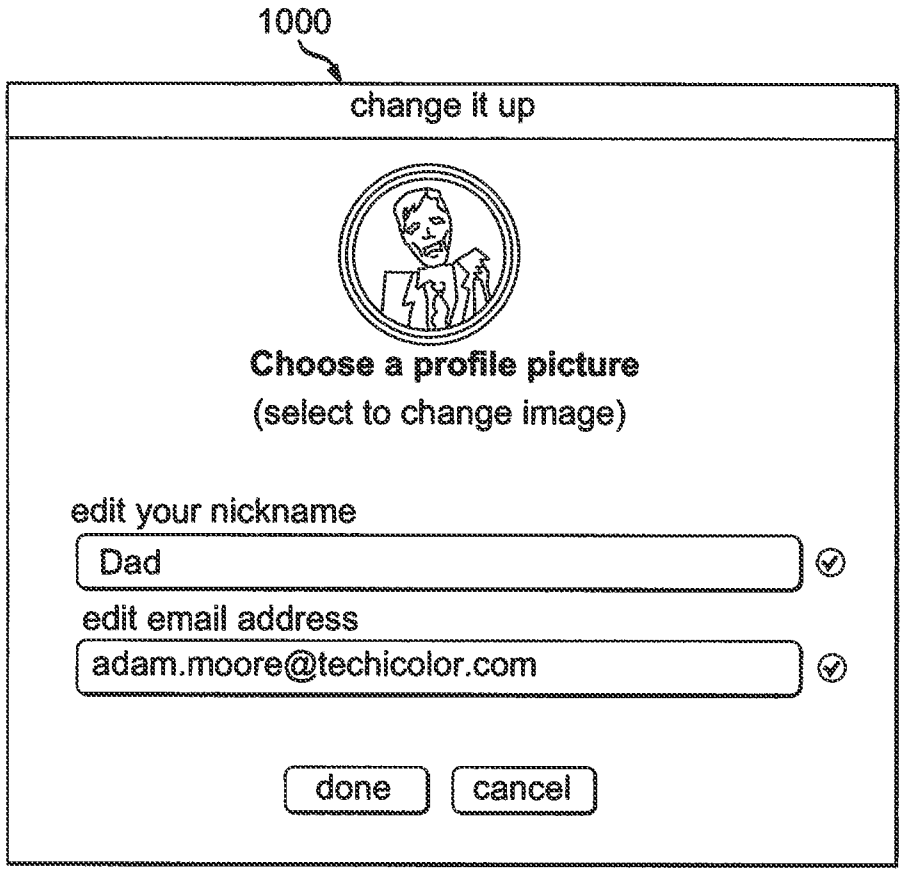

1000
change it up
Choose a profile picture
(select to change image)
edit your nickname
Dad
edit email address
adam.moore@techicolor.com
done
cancel

FIG. 10

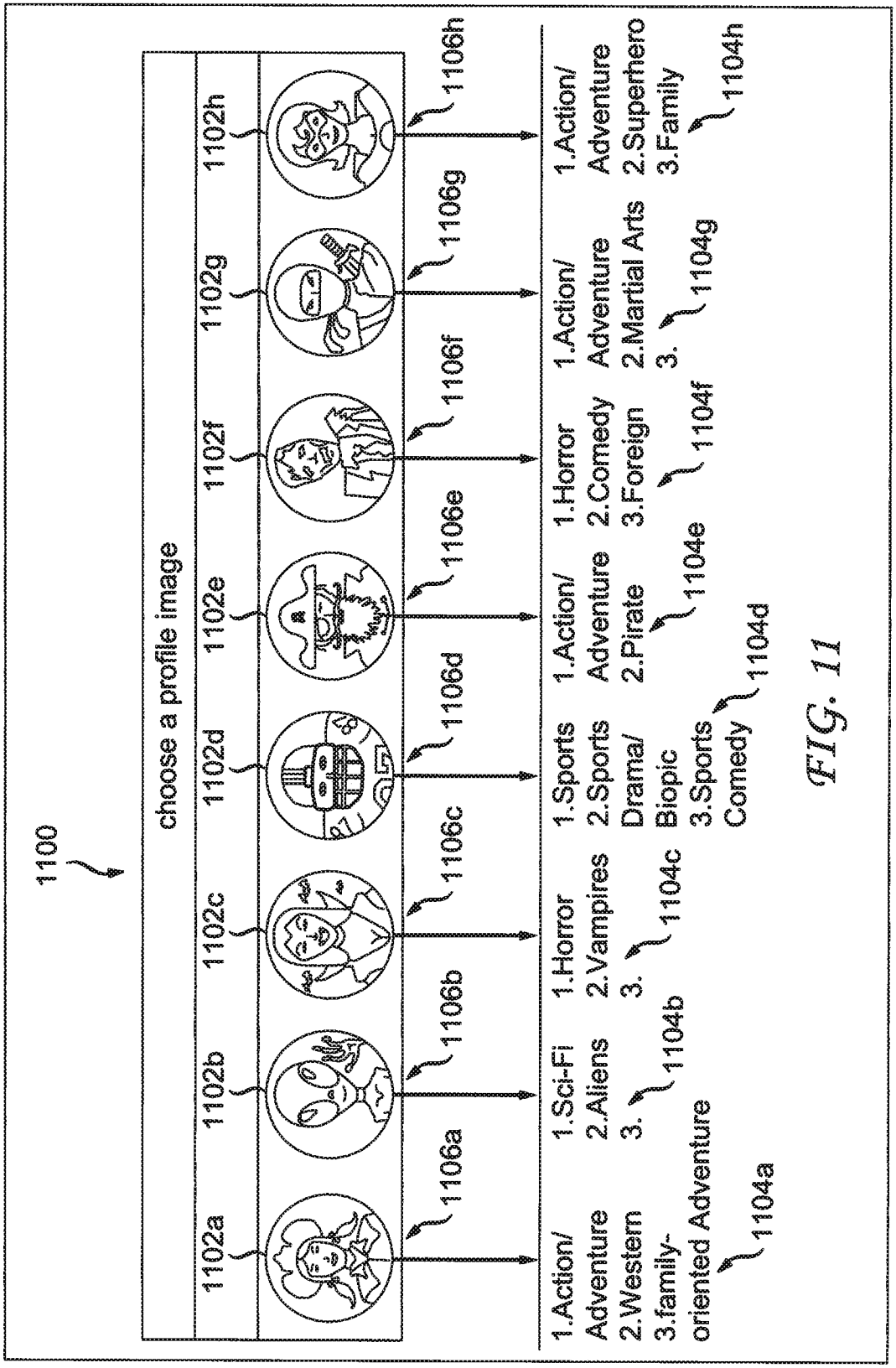

1100
choose a profile image
1102a
1102b
1102c
1102d
1102e
1102f
1102g
1102h
1106a
1106b
1106c
1106d
1106e
1106f
1106g
1106h
1.Action/ Adventure
2.Western
3.family-oriented Adventure
1104a
1.Sci-Fi
2.Aliens
3.
1104b
1.Horror
2.Vampires
3.
1104c
1.Sports
2.Sports Drama/ Biopic
3.Sports Comedy
1104d
1.Action/ Adventure
2.Pirate
1104e
1.Horror
2.Comedy
3.Foreign
1104f
1.Action/ Adventure
2.Martial Arts
3.
1104g
1.Action/ Adventure
2.Superhero
3.Family
1104h

FIG. 11

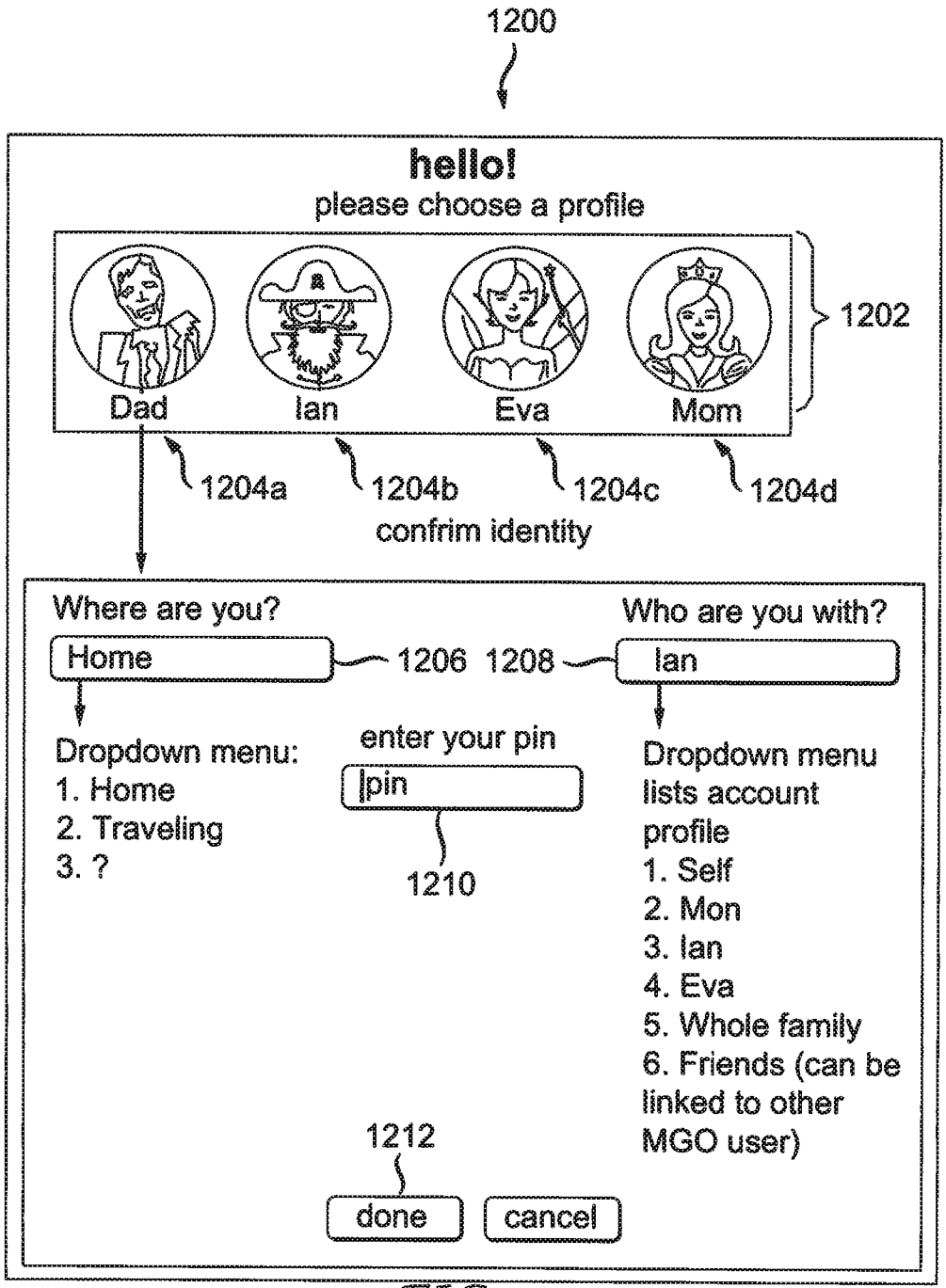

1200
hello!
please choose a profile
Dad
Ian
Eva
Mom
1202
1204a
1204b
1204c
1204d
confrim identity
Where are you?
Who are you with?
Home
1206
1208
Ian
Dropdown menu:
1. Home
2. Traveling
3. ?
enter your pin
pin
1210
Dropdown menu lists account profile
1. Self
2. Mon
3. Ian
4. Eva
5. Whole family
6. Friends (can be linked to other MGO user)
1212
done
cancel

FIG. 12

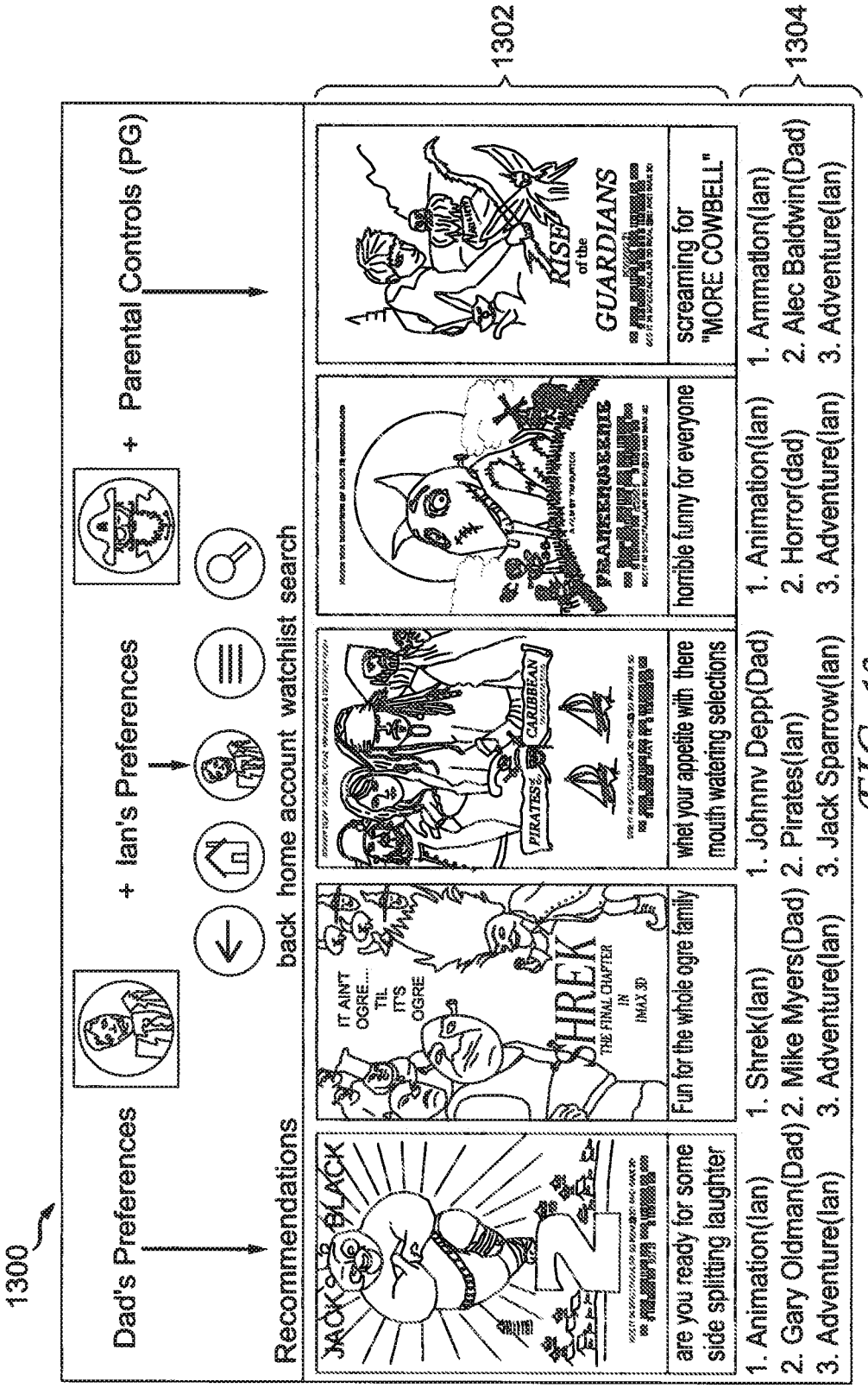

1300
Dad's Preferences
+ Ian's Preferences
+ Parental Controls (PG)
Recommendations
back home account watchlist search
1302
1304
JACK BLACK
IT AIN'T OGRE... TIL IT'S OGRE
SHREK THE FINAL CHAPTER IN IMAX 3D
PIRATES CARIBBEAN
FRANKENWEENIE
KISS of the GUARDIANS
are you ready for some side splitting laughter
Fun for the whole ogre family
whet your appetite with there mouth watering selections
horrible funny for everyone
screaming for "MORE COWBELL"
1. Animation(Ian)
2. Gary Oldman(Dad)
3. Adventure(Ian)
1. Shrek(Ian)
2. Mike Myers(Dad)
3. Adventure(Ian)
1. Johnny Depp(Dad)
2. Pirates(Ian)
3. Jack Sparrow(Ian)
1. Animation(Ian)
2. Horror(dad)
3. Adventure(Ian)
1. Ammation(Ian)
2. Alec Baldwin(Dad)
3. Adventure(Ian)

FIG. 13

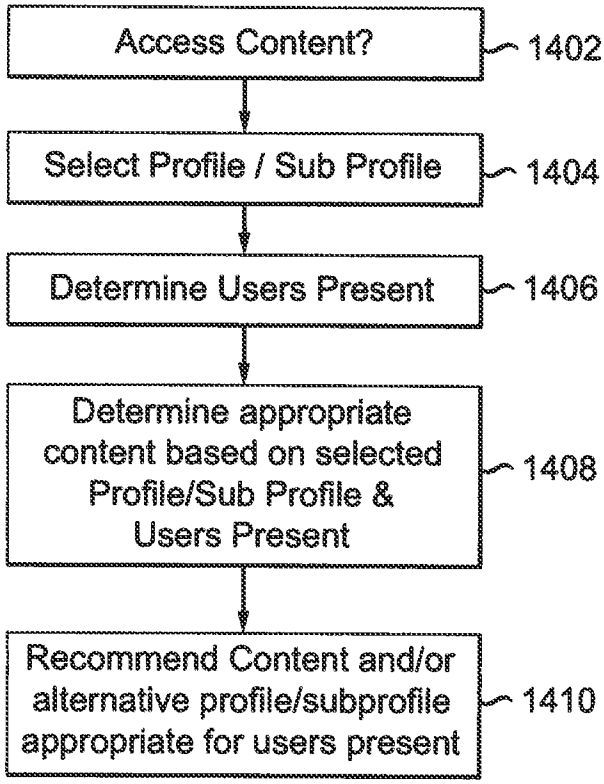

Access Content?
1402
Select Profile / Sub Profile
1404
Determine Users Present
1406
Determine appropriate content based on selected Profile/Sub Profile & Users Present
1408
Recommend Content and/or alternative profile/subprofile appropriate for users present
1410

FIG. 14

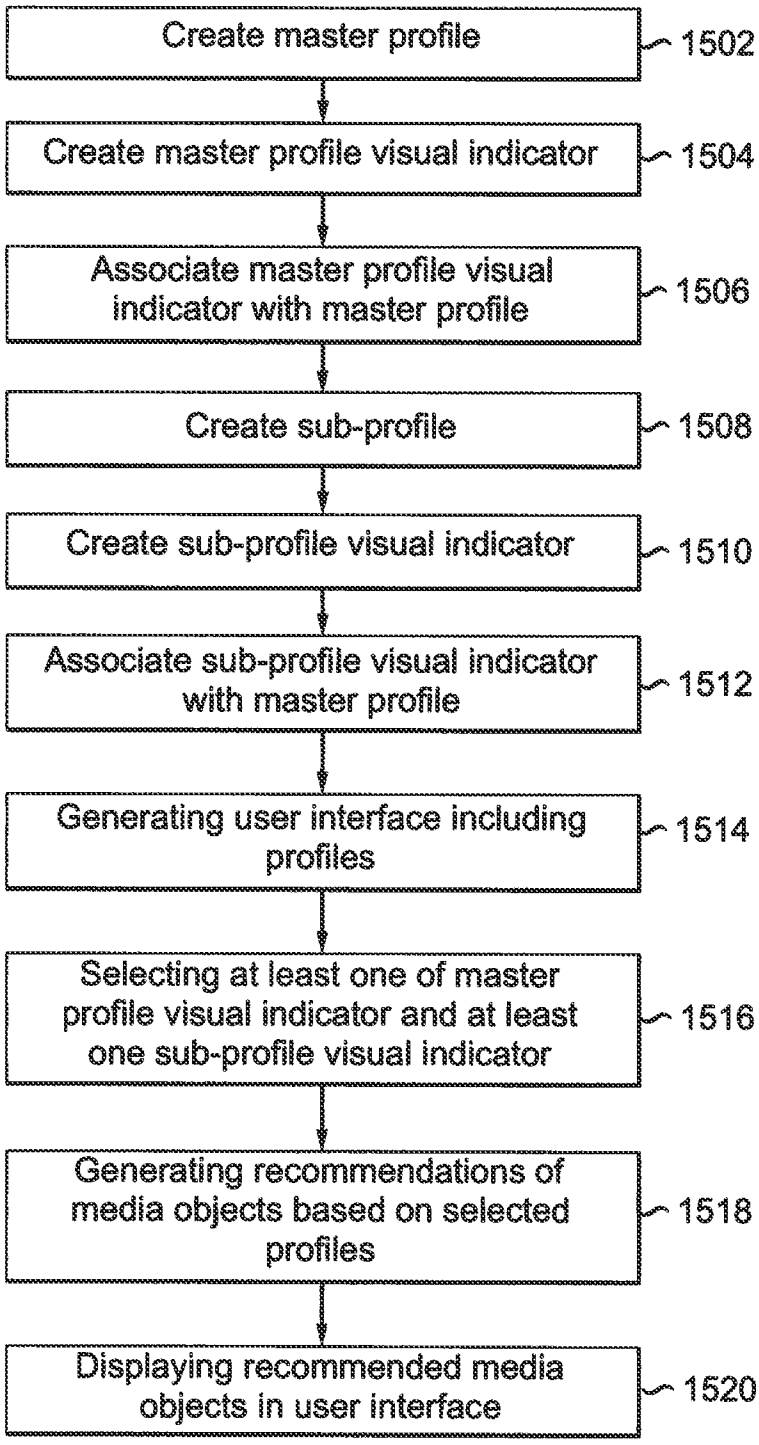

Create master profile
1502
Create master profile visual indicator
1504
Associate master profile visual indicator with master profile
1506
Create sub-profile
1508
Create sub-profile visual indicator
1510
Associate sub-profile visual indicator with master profile
1512
Generating user interface including profiles
1514
Selecting at least one of master profile visual indicator and at least one sub-profile visual indicator
1516
Generating recommendations of media objects based on selected profiles
1518
Displaying recommended media objects in user interface
1520

FIG. 15

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2013/077874

A. CLASSIFICATION OF SUBJECT MATTER
INV. H04N21/45 H04N21/475
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 G06F

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, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2005/160458 A1 (BAUMGARTNER JOSEPH P [US]) 21 July 2005 (2005-07-21) abstract paragraphs [0158] - [0191] figures 1-28	1-28
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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
1 August 2014	11/08/2014

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

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2013/077874

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A	EP 2 244 441 A1 (ALCATEL LUCENT [FR]) 27 October 2010 (2010-10-27) abstract paragraphs [0010] - [0021] figures 1-2	1-28
A	US 2006/020973 A1 (HANNUM SANDRA A [US] ET AL) 26 January 2006 (2006-01-26) abstract paragraph [0008] figures 1-5	1-28
A	US 2009/241159 A1 (CAMPAGNA THERESA [US] ET AL) 24 September 2009 (2009-09-24) abstract paragraphs [0013] - [0068] figures 1-12	1-28

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