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(54) METHOD AND SYSTEM FOR PERFORMANCE TRACKING TO MODIFY CONTENT PRESENTED BY A SET-TOP BOX

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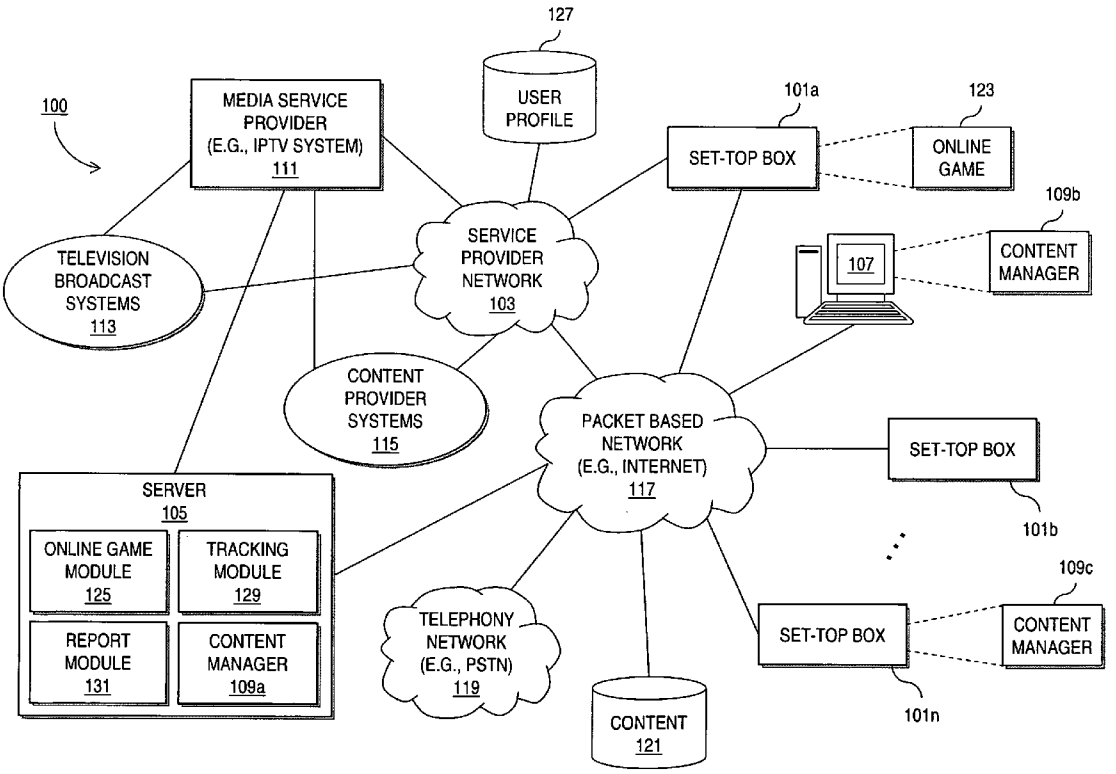
(57) **ABSTRACT**

An approach is provided for presenting, via a set-top box, a game to a user according to a user profile of the first user. Performance of the user is tracked. The performance information is presented to a supervisory user, wherein the set-top box is configured to provide modification of the user profile by the supervisory user based on the performance information.



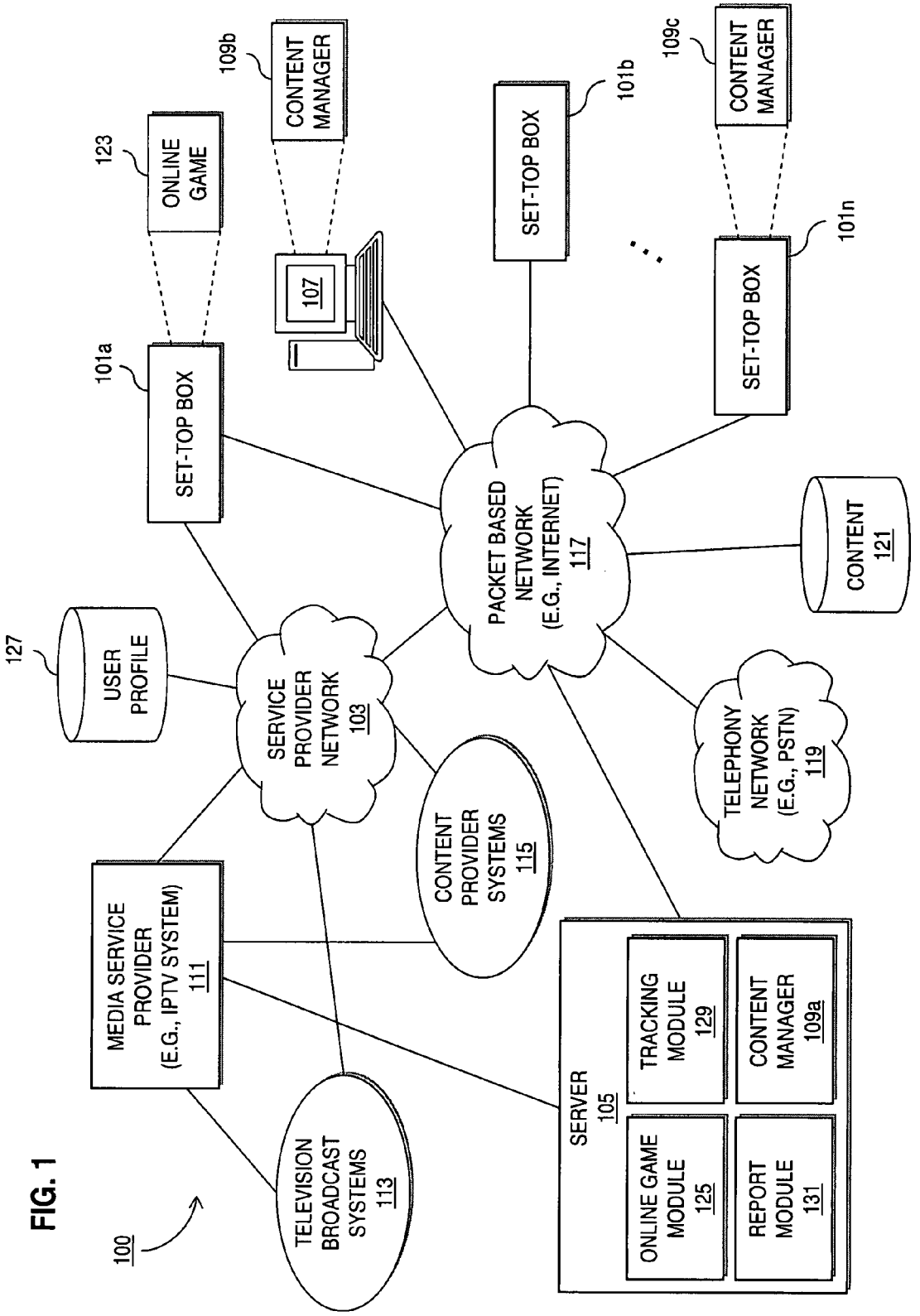

100
MEDIA SERVICE PROVIDER (E.G., IPTV SYSTEM) 111
TELEVISION BROADCAST SYSTEMS 113
SERVICE PROVIDER NETWORK 103
CONTENT PROVIDER SYSTEMS 115
USER PROFILE
127
SET-TOP BOX
101a
ONLINE GAME
123
CONTENT MANAGER
109b
107
PACKET BASED NETWORK (E.G., INTERNET) 117
SET-TOP BOX
101b
CONTENT MANAGER
109c
SET-TOP BOX
101n
CONTENT 121
TELEPHONY NETWORK (E.G., PSTN) 119
SERVER 105
TRACKING MODULE 129
CONTENT MANAGER 109a
ONLINE GAME MODULE 125
REPORT MODULE 131

FIG. 1

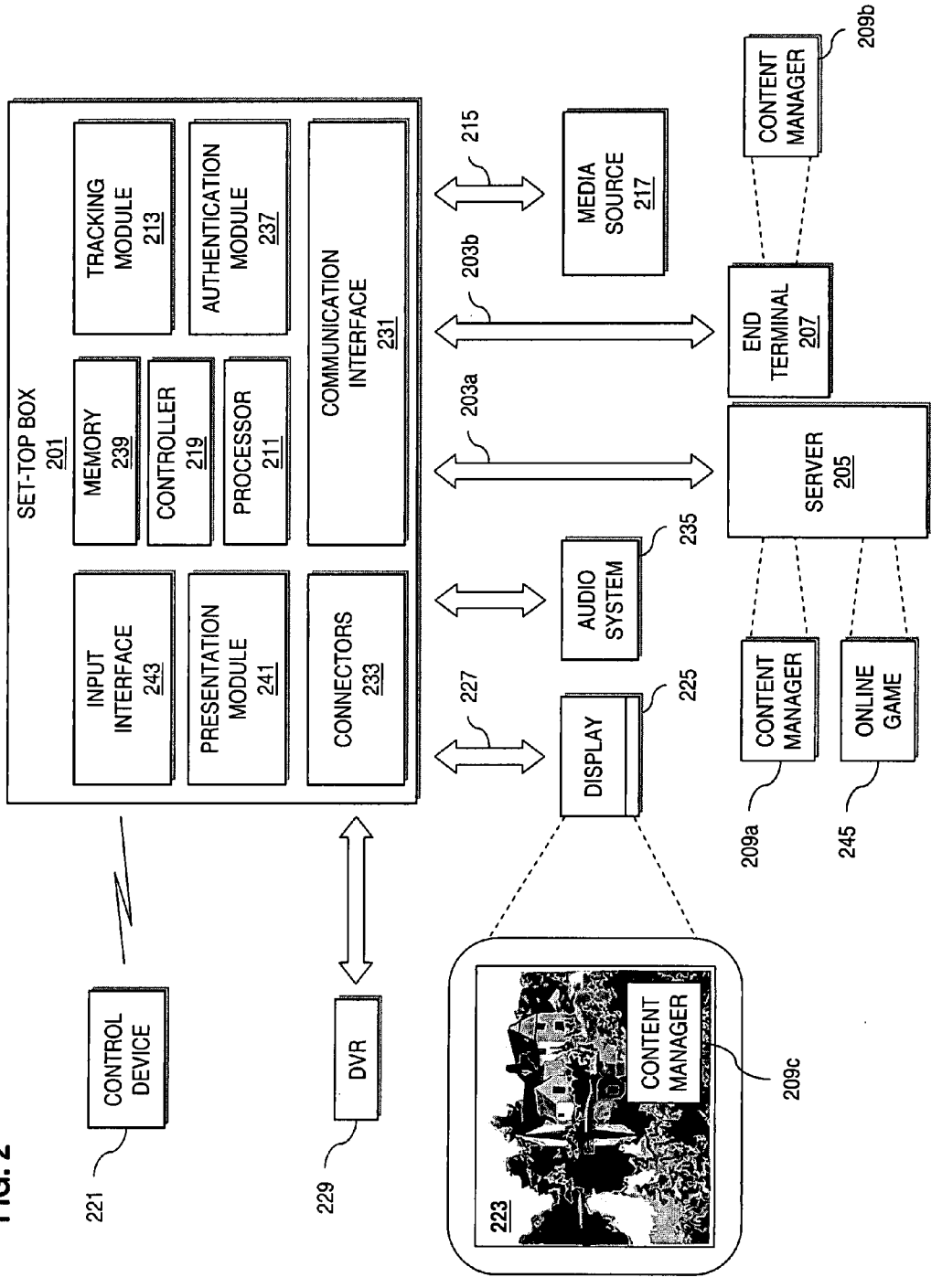

SET-TOP BOX
201
INPUT INTERFACE 243
PRESENTATION MODULE 241
CONNECTORS 233
MEMORY 239
CONTROLLER 219
PROCESSOR 211
TRACKING MODULE 213
AUTHENTICATION MODULE 237
COMMUNICATION INTERFACE 231
CONTROL DEVICE
221
DVR
229
DISPLAY
225
227
AUDIO SYSTEM
235
215
MEDIA SOURCE 217
203b
203a
END TERMINAL 207
SERVER 205
CONTENT MANAGER
209b
CONTENT MANAGER
209a
ONLINE GAME
245
223
CONTENT MANAGER
209c

FIG. 2

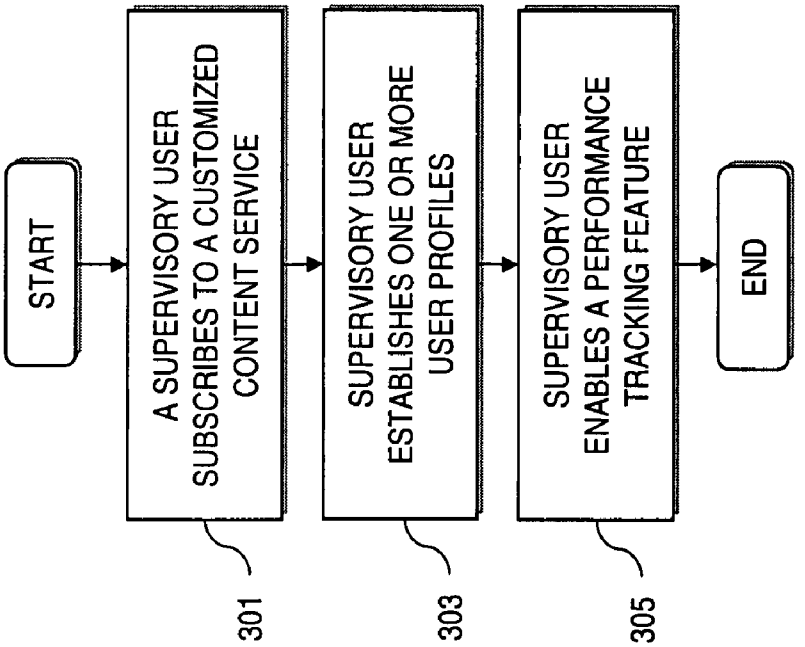
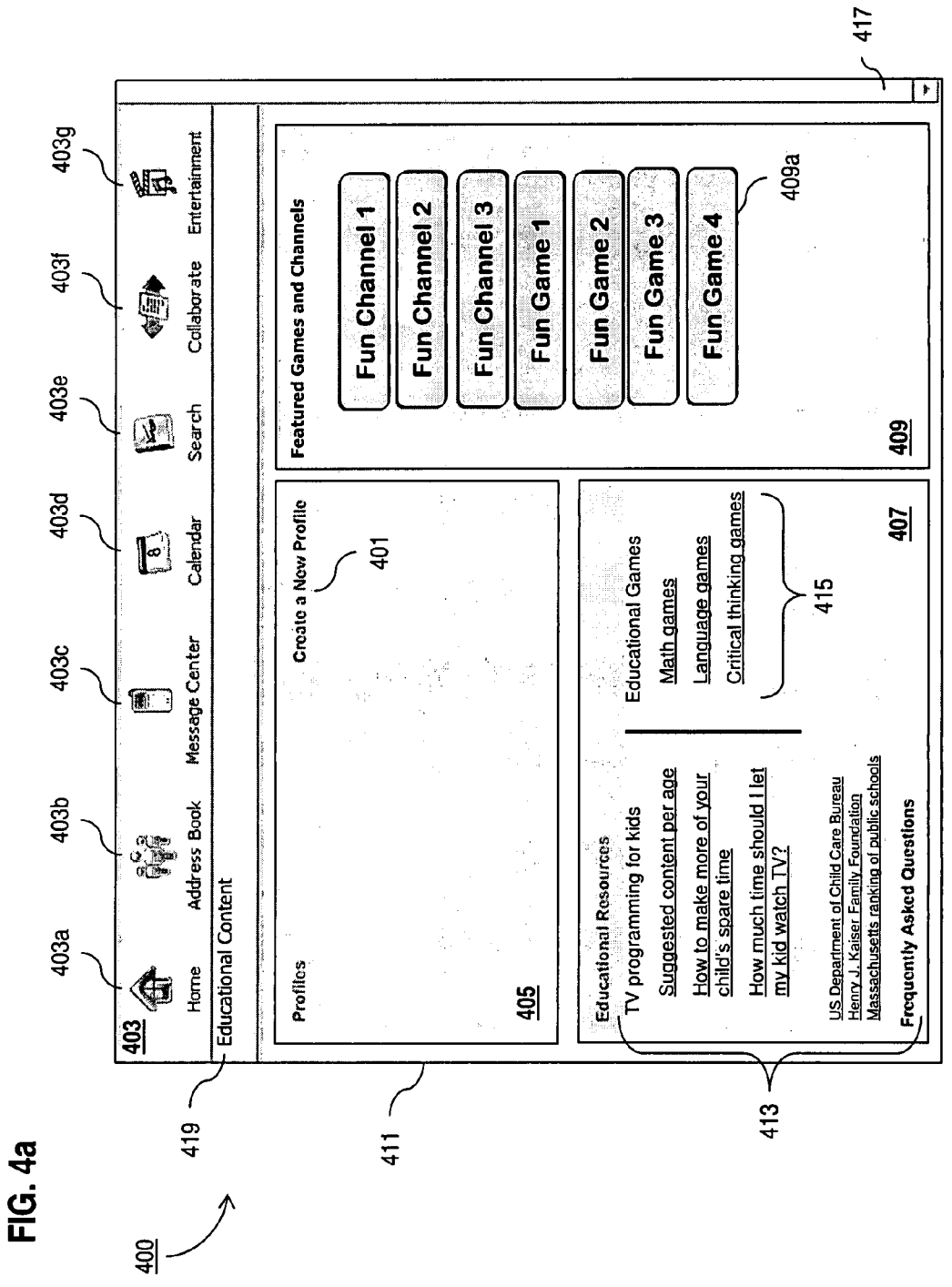

START
A SUPERVISORY USER SUBSCRIBES TO A CUSTOMIZED CONTENT SERVICE
SUPERVISORY USER ESTABLISHES ONE OR MORE USER PROFILES
SUPERVISORY USER ENABLES A PERFORMANCE TRACKING FEATURE
END
301
303
305

FIG. 3

FIG. 4a


400
403
403a
403b
403c
403d
403e
403f
403g
Home
Address Book
Message Center
Calendar
Search
Collaborate
Entertainment
Educational Content
419
Profiles
Create a New Profile
401
405
411
Featured Games and Channels
Fun Channel 1
Fun Channel 2
Fun Channel 3
Fun Game 1
Fun Game 2
Fun Game 3
Fun Game 4
409a
409
Educational Resources
TV programming for kids
Suggested content per age
How to make more of your child's spare time
How much time should I let my kid watch TV?
US Department of Child Care Bureau
Henry J. Kaiser Family Foundation
Massachusetts ranking of public schools
Frequently Asked Questions
413
Educational Games
Math games
Language games
Critical thinking games
415
407
417

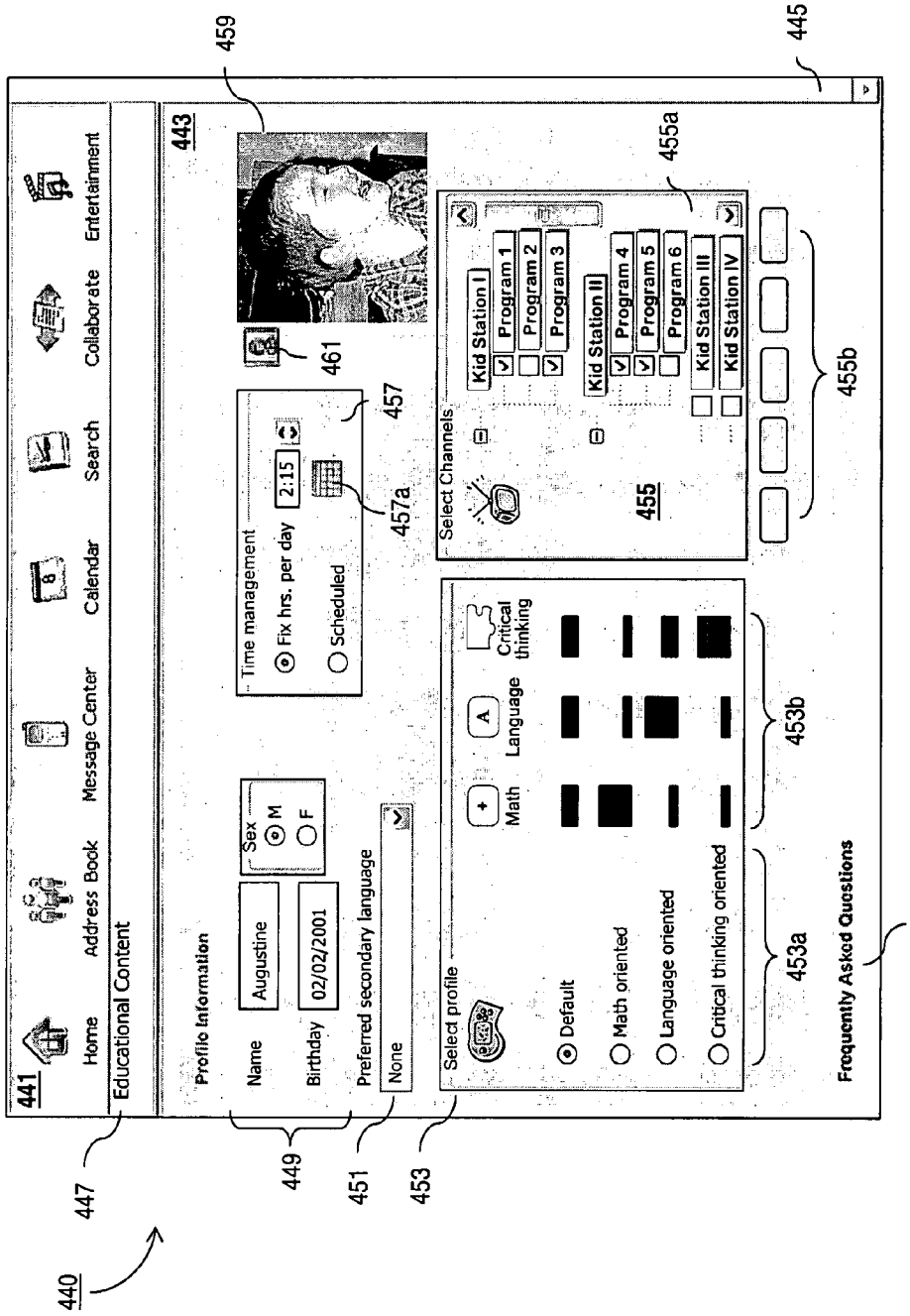

441
Home
Address Book
Message Center
Calendar
Search
Collaborate
Entertainment
Educational Content
443
Profile Information
Name
Augustine
Birthday
02/02/2001
Sex
M
F
Preferred secondary language
None
Time management
Fix hrs. per day
2:15
Scheduled
Select profile
Default
Math oriented
Language oriented
Critical thinking oriented
Math
Language
Critical thinking
Select Channels
Kid Station I
Program 1
Program 2
Program 3
Kid Station II
Program 4
Program 5
Program 6
Kid Station III
Kid Station IV
455
Frequently Asked Questions
459
461
457
457a
455a
455b
445
453a
453b
463
447
449
451
453
440

FIG. 4b

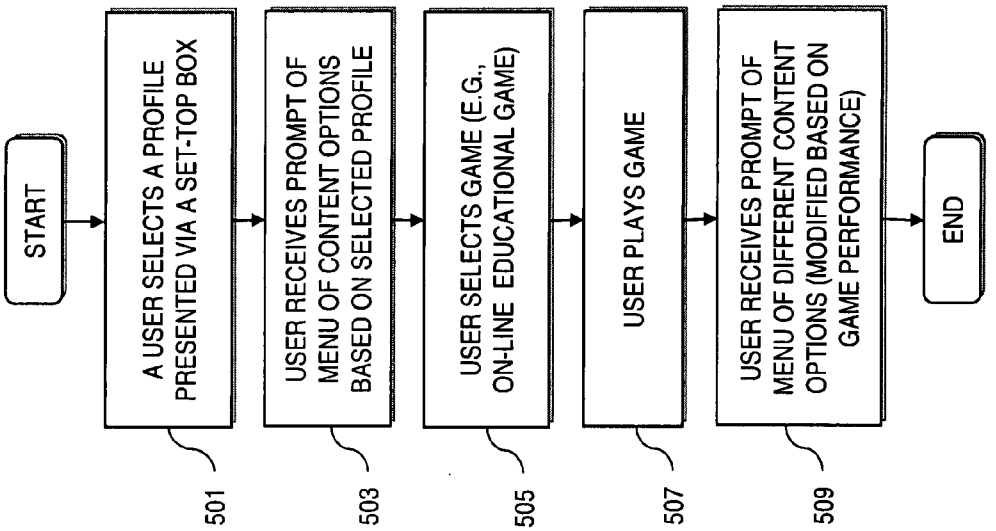

START
A USER SELECTS A PROFILE PRESENTED VIA A SET-TOP BOX
501
USER RECEIVES PROMPT OF MENU OF CONTENT OPTIONS BASED ON SELECTED PROFILE
503
USER SELECTS GAME (E.G., ON-LINE EDUCATIONAL GAME)
505
USER PLAYS GAME
507
USER RECEIVES PROMPT OF MENU OF DIFFERENT CONTENT OPTIONS (MODIFIED BASED ON GAME PERFORMANCE)
509
END

FIG. 5

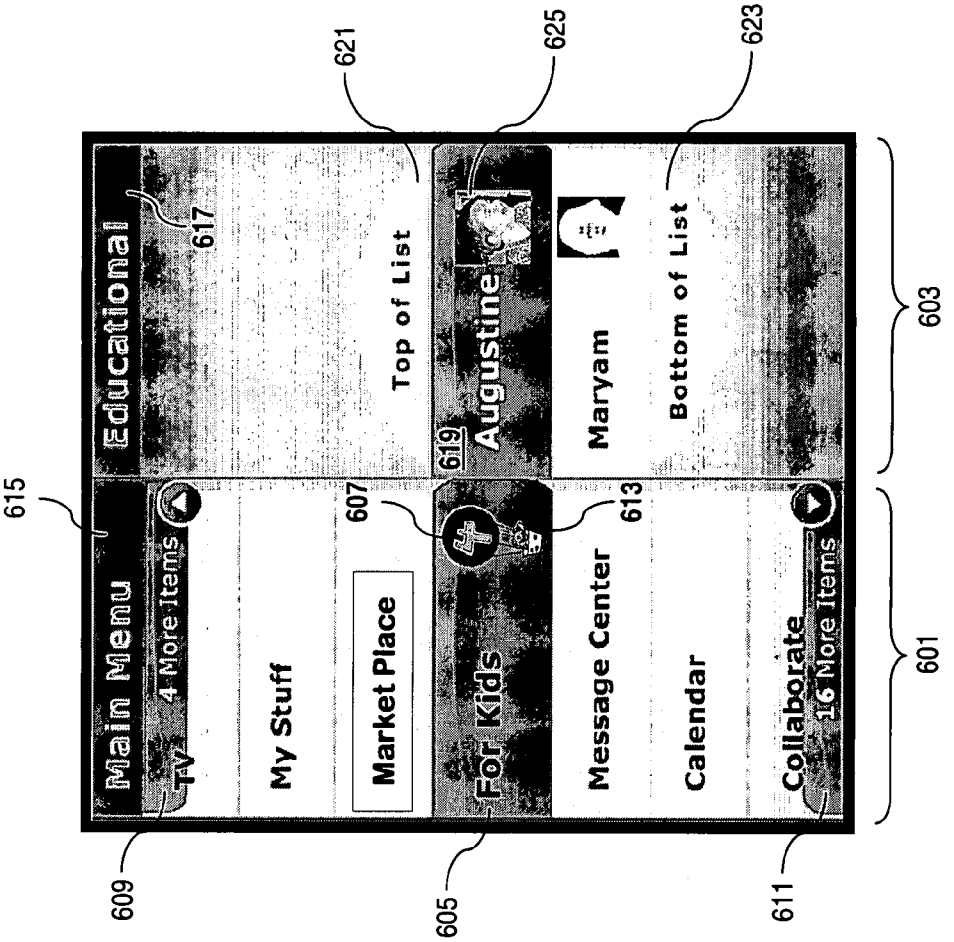

600
615
609
605
611
607
613
621
625
623
617
619
601
603
Main Menu
4 More Items
TV
My Stuff
Market Place
For Kids
Message Center
Calendar
Collaborate
16 More Items
Educational
Top of List
Augustine
Maryam
Bottom of List

FIG. 6a

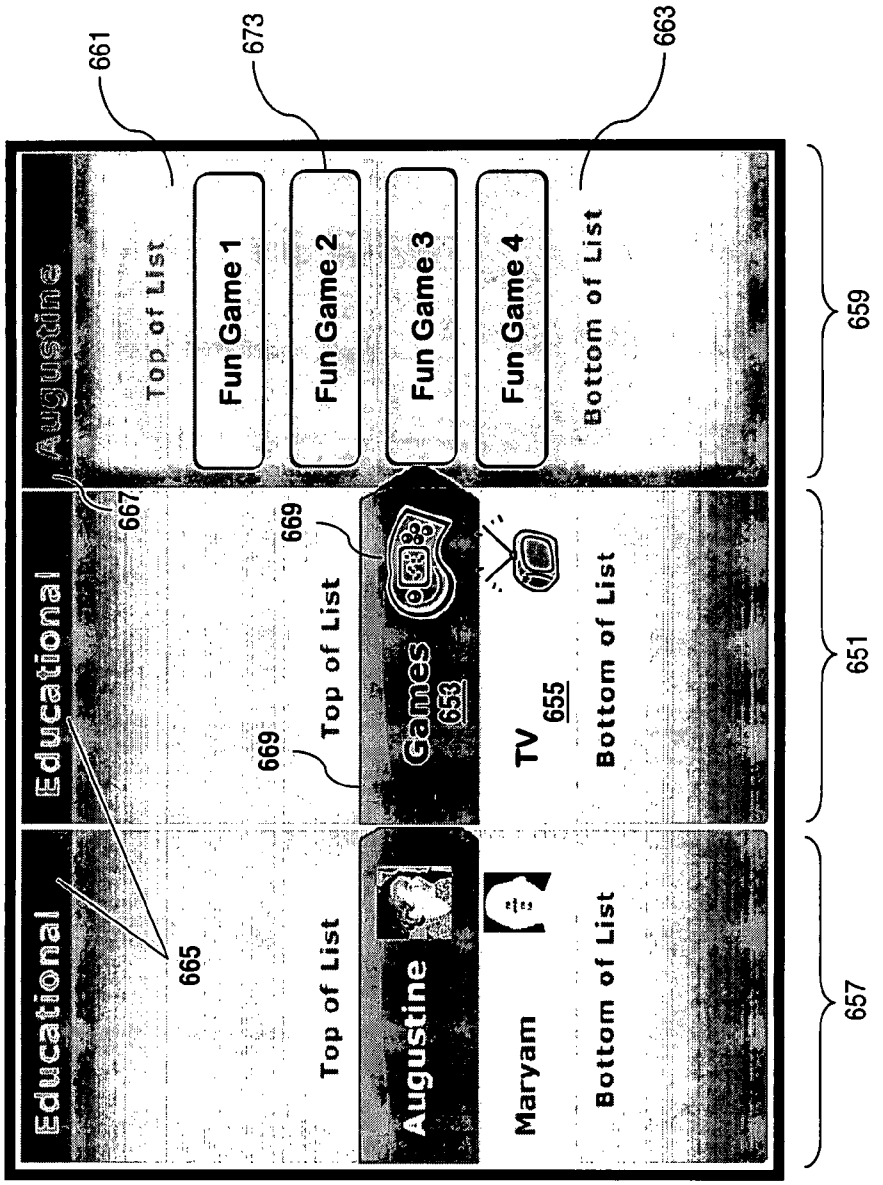

650
661
673
663
667
669
669
665
Educational
Educational
Augustine
Top of List
Fun Game 1
Fun Game 2
Fun Game 3
Fun Game 4
Bottom of List
Top of List
Top of List
Augustine
Games
653
Maryam
TV
655
Bottom of List
Bottom of List
657
651
659

FIG. 6b

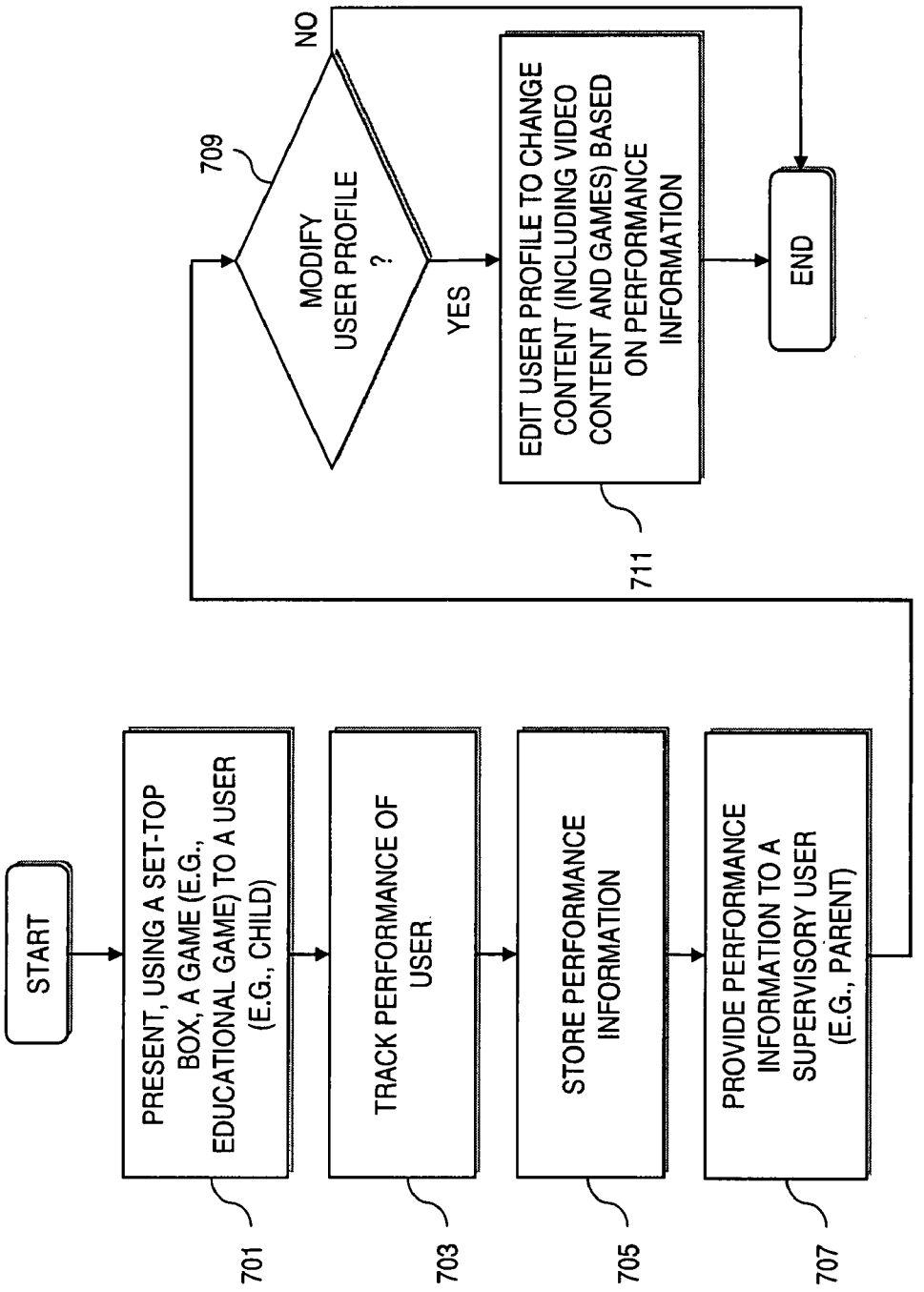

START
PRESENT, USING A SET-TOP BOX, A GAME (E.G., EDUCATIONAL GAME) TO A USER (E.G., CHILD)
TRACK PERFORMANCE OF USER
STORE PERFORMANCE INFORMATION
PROVIDE PERFORMANCE INFORMATION TO A SUPERVISORY USER (E.G., PARENT)
MODIFY USER PROFILE ?
NO
YES
EDIT USER PROFILE TO CHANGE CONTENT (INCLUDING VIDEO CONTENT AND GAMES) BASED ON PERFORMANCE INFORMATION
END
701
703
705
707
709
711

FIG. 7

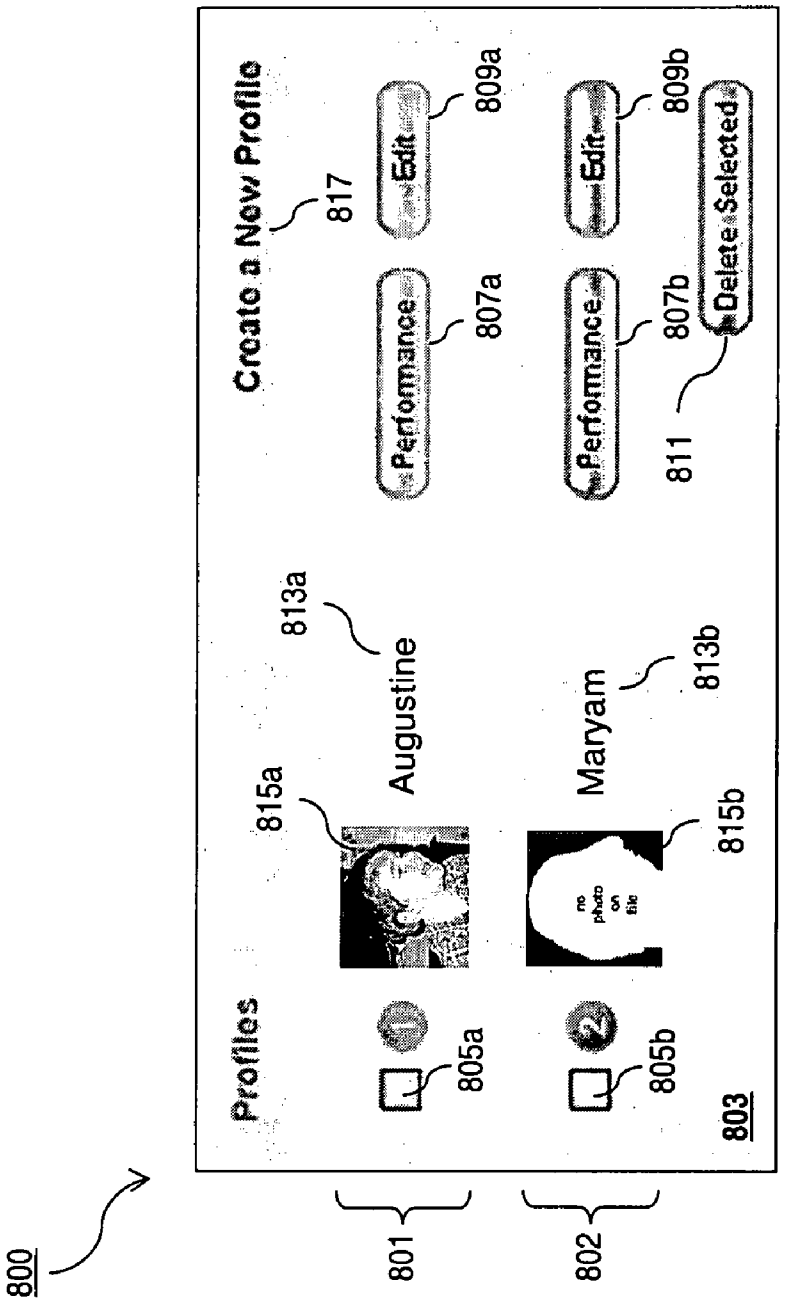

800
Profiles
Create a New Profile
817
815a
813a
Augustine
Performance
807a
Edit
809a
805a
801
815b
813b
Maryam
Performance
807b
Edit
809b
Delete Selected
811
805b
802
803

FIG. 8

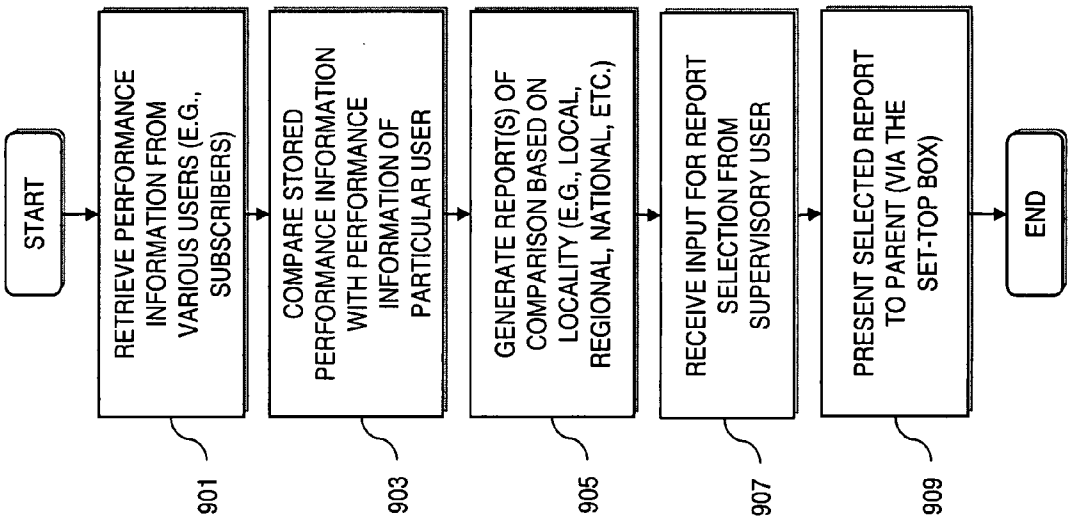
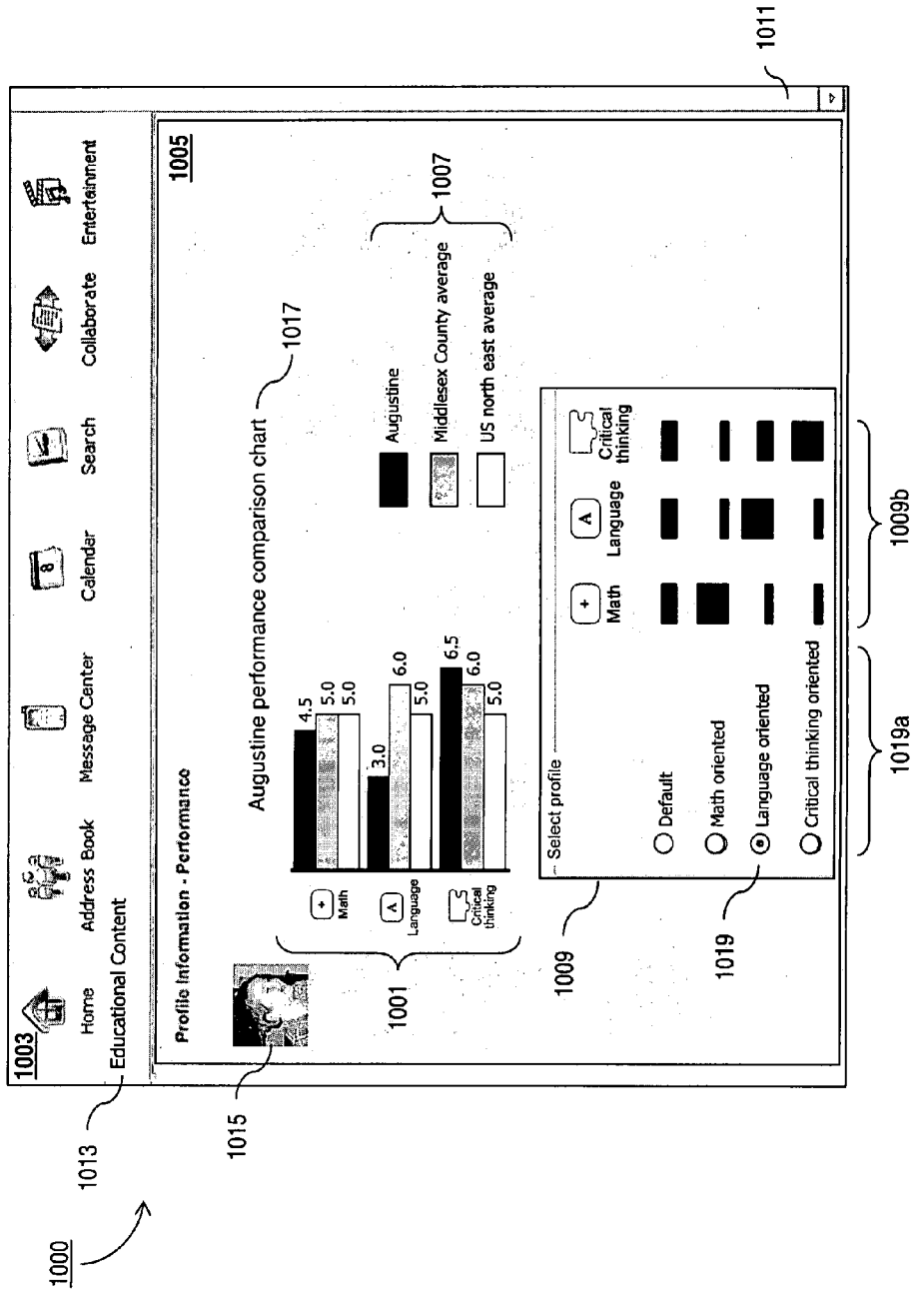

START
RETRIEVE PERFORMANCE INFORMATION FROM VARIOUS USERS (E.G., SUBSCRIBERS)
COMPARE STORED PERFORMANCE INFORMATION WITH PERFORMANCE INFORMATION OF PARTICULAR USER
GENERATE REPORT(S) OF COMPARISON BASED ON LOCALITY (E.G., LOCAL, REGIONAL, NATIONAL, ETC.)
RECEIVE INPUT FOR REPORT SELECTION FROM SUPERVISORY USER
PRESENT SELECTED REPORT TO PARENT (VIA THE SET-TOP BOX)
END
901
903
905
907
909

FIG. 9

FIG. 10


1000
1003
Home
Address Book
Message Center
Calendar
Search
Collaborate
Entertainment
Educational Content
1013
1005
Profile Information - Performance
1015
Augustine performance comparison chart
1017
1001
Math
Language
Critical thinking
4.5
5.0
5.0
3.0
6.0
5.0
6.5
6.0
5.0
Augustine
Middlesex County average
US north east average
1007
1009
Select profile
Default
Math oriented
Language oriented
Critical thinking oriented
1019
1019a
1009b
1011

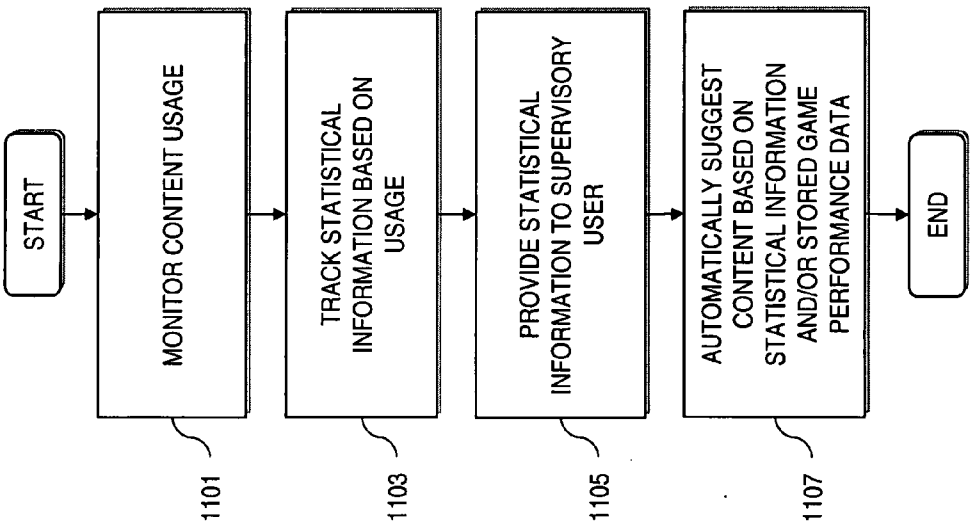

START
MONITOR CONTENT USAGE
TRACK STATISTICAL INFORMATION BASED ON USAGE
PROVIDE STATISTICAL INFORMATION TO SUPERVISORY USER
AUTOMATICALLY SUGGEST CONTENT BASED ON STATISTICAL INFORMATION AND/OR STORED GAME PERFORMANCE DATA
END
1101
1103
1105
1107

FIG. 11

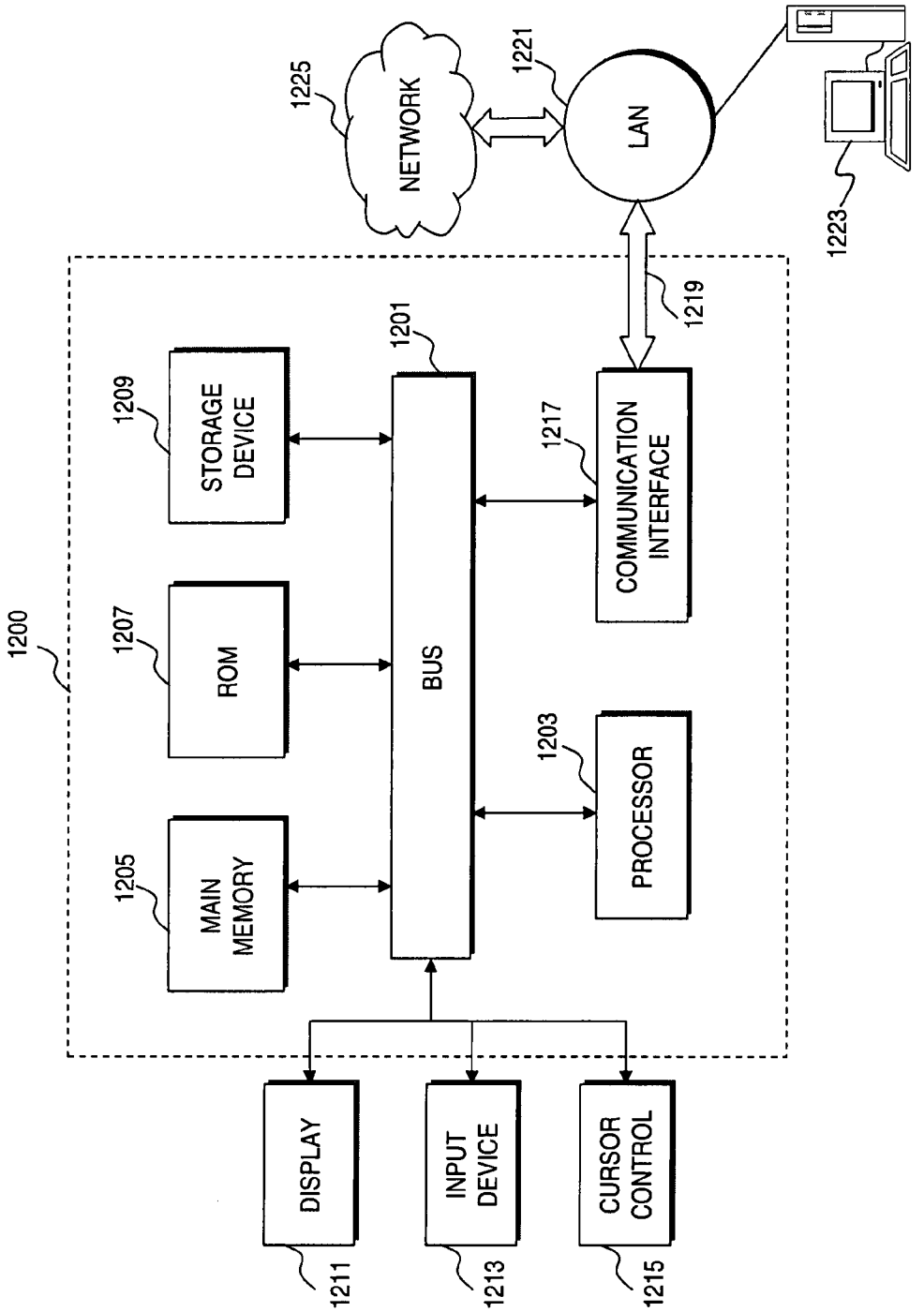

1225
NETWORK
1221
LAN
1223
1219
1200
1201
BUS
1209
STORAGE DEVICE
1207
ROM
1205
MAIN MEMORY
1217
COMMUNICATION INTERFACE
1203
PROCESSOR
DISPLAY
1211
INPUT DEVICE
1213
CURSOR CONTROL
1215

FIG. 12

METHOD AND SYSTEM FOR PERFORMANCE TRACKING TO MODIFY CONTENT PRESENTED BY A SET-TOP BOX

BACKGROUND INFORMATION

[0001] With the advent of computers, interactive electronic communications, and the Internet, as well as advances in the digital realm of consumer information, has come a reinvention of conventional entertainment and communication services to enhance programming, recording, gaming, and viewing of multimedia, such as broadcast television programs. Traditionally, broadcast media, being based on pre-computer age technology, developed on its own path, without any regard to other media systems. However, with readily available, cost-effective broadband services, bandwidth intensive applications, such as video streaming and online gaming, have become viable alternatives to legacy broadcast systems.

[0002] It is recognized that modern lifestyles have become so reliant on digital interfaces that media devices, such as set-top boxes (STB), are developing into important iconographies of media content accessibility. As such, an increasing number of individuals are utilizing STBs to achieve the advantages of ubiquitous access to information and entertainment. Advances in technology, services, and affordability; however, can be better applied to foster the enrichment of society. For example, the household media environment plays a significant role in the socialization of youngsters. From the kind of media available, to the extent with which young people are exposed, media plays an inexorable role in what adolescents know, believe, and value. Thus, to a large extent, media dictates how young people learn, interact, and behave.

[0003] Therefore, there is a need for an approach that seamlessly provides flexible, efficient techniques to track developmental progression to modify available content.

BRIEF DESCRIPTION OF THE DRAWINGS

[0004] FIG. **1** is a diagram of a system capable of performance tracking to modify content for a set-top box, according to an exemplary embodiment;

[0005] FIG. **2** is a diagram of a set-top box configured to provide modified content, according to an exemplary embodiment;

[0006] FIG. **3** is a flowchart of a process for establishing a modifiable user profile, according to an exemplary embodiment

[0007] FIGS. **4***a* and **4***b* are diagrams of user interfaces utilized in the process of FIG. **3**, according to exemplary embodiments;

[0008] FIG. **5** is a flowchart of a process for "dynamic" content modification, according to an exemplary embodiment;

[0009] FIGS. **6***a* and **6***b* are diagrams of user interfaces utilized in the process of FIG. **5**, according to exemplary embodiments;

[0010] FIG. **7** is a flowchart of a process for "ad hoc" content modification, according to an exemplary embodiment;

[0011] FIG. **8** is a diagram of a user interface utilized in the process of FIG. **7**, according to an exemplary embodiment;

[0012] FIG. **9** is flowchart of a process for generating and presenting a performance report, according to an exemplary embodiment;

[0013] FIG. **10** is a diagram of a user interface utilized in the process of FIG. **9**, according to an exemplary embodiment;

[0014] FIG. **11** is a flowchart of a process for dynamic content modification suggestions, according to an exemplary embodiment; and

[0015] FIG. **12** is a diagram of a computer system that can be used to implement various exemplary embodiments.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0016] A preferred apparatus, method, and software for performance tracking to modify content for a set-top box are described. In the following description, for the purposes of explanation, numerous specific details are set forth in order to provide a thorough understanding of the preferred embodiments of the invention. It is apparent, however, that the preferred embodiments may be practiced without these specific details or with an equivalent arrangement. In other instances, well-known structures and devices are shown in block diagram form in order to avoid unnecessarily obscuring the preferred embodiments of the invention.

[0017] Although various exemplary embodiments are described with respect to a set-top box (STB), it is contemplated that these embodiments have applicability to any device capable of processing audio-video (AV) signals for presentation to a user, such as a home communication terminal (HCT), a digital home communication terminal (DHCT), a stand-alone personal video recorder (PVR), a television set, a digital video disc (DVD) player, a video-enabled phone, an AV-enabled personal digital assistant (PDA), and/or a personal computer (PC), as well as other like technologies and customer premises equipment (CPE).

[0018] FIG. **1** is a diagram of a system capable of tracking game performance to modify content for a set-top box, according to an exemplary embodiment. For the purposes of illustration, a system **100** for configuring a media-based device (e.g., STB **101***a*) to modify a menu of customized content options (e.g., audio, video, gaming, and/or photographic media instances) presented to a user based on game performance information is described with respect to a service provider network **103**. As used herein, the terms media-based device, STB, and user equipment are interchangeable. It is recognized that service providers need to be mindful of consumer demand for cyclical feedback techniques that enable progressive adaptation to the multimedia entertainment and programming accessible via a media-based device. As such, a system **100** introduces a game performance monitoring service for one or more STBs **101***a*-**101***n*, thereby affording substantial convenience and flexibility in modifying available content by consumers. In other words, the game performance monitoring service of system **100**, according to certain embodiments, stems from the recognition that guardians can benefit from more flexible methods to redefine the content available to dependents. However, little attention has been afforded to extending and enhancing content modifying features based on game performance information within the entertainment arena, as well as among other communication mediums. Thus, it is apparent that improvements are needed to increase the value of each media experience.

[0019] Service provider network **103** includes a server **105** that implements a game performance monitoring and/or content modifying service, whereby supervisory users can monitor game performance of other users to selectively modify content that is available to those users. Namely, the game

performance monitoring and content modifying service provides guardians developmental feedback about their dependents, thereby enhancing conventional control features over the media (e.g., broadcast content, digital video recorder (DVR) content, on-demand content, on-demand games, and/or other suitable media, as well as locally stored instances of the same) available to their dependents via a media-based device (e.g., STB **101***a*). In this manner, a subscriber (e.g., a parent) of the game performance monitoring and content modifying service may modify the content that is available to one or more dependent users (e.g., a child) and schedule access to that content, via one or more user profiles, so as to progressively enhance the edifying nature of the dependent users' media experience. It is contemplated that system **100** may embody many forms and include multiple and/or alternative components and facilities.

[0020] It is observed that television remains the prevalent global medium for entertainment and information as individuals spend a great deal of time tuning into televised media. As such, television services provided over a dedicated network, such as an IPTV (internet protocol television) network, cable network, or satellite network, extend to subscribers an overwhelming choice of multimedia entertainment and programming options. For example, IPTV service providers offer consumers various AV services ranging from multichannel AV programming that mimics traditional broadcast media, to true "on-demand" programming. These services are further supplemented with interactive AV applications that enable robust programming information, selection and navigation functionality, as well as integrated digital AV recording, and other data services to enhance the AV experience. Moreover, the increasing "richness" of network resources also enables IPTV service providers to extend interactive learning and video game applications to subscribers. As such, television is no longer a passive medium; it is an interactive entertainment encounter capable of endless configuration and personalization.

[0021] Given the breadth of content available, parents are confronted with the onerous task of managing (and redefining) the programming and content available to their children. While a wealth of educational and cultural material exists, so too does a large body of objectionable content. Moreover, few parents are able to maintain continuous supervision over their children's developmental needs, much less constantly discover suitable content to meet those needs.

[0022] As such, the consumer segment is driven, at least in part, by a demand for performance monitoring and content modifying services extended through easily manipulated, intuitive interfaces. Thus, as previously mentioned, various embodiments of system **100** provide consumers convenient access to game performance monitoring and content modifying features so as to maximize a dependent's exposure to a progressively enhanced body of edifying media, while at the same time, limiting (if not eliminating) their exposure to inappropriate material.

[0023] As seen in FIG. **1**, service provider network **103** integrates the television medium with that of the telecommunications, computing, and media environments, thereby broadening the scope of devices and sources available to individuals for obtaining and controlling access to content, as well as progressively modifying media availability. In this manner, system **100** relieves guardians from the daunting task of having to constantly police their dependents' multimedia environment, by enabling users, via user equipment, such as STBs **101***a*-**101***n* and/or one or more end terminals **107**, to establish and adaptively modify one or more user profiles that specify content available to one or more secondary users. Further, system **100** alleviates the burden and expense upon network operators of providing parallel avenues to content, as well as controls for managing that media. Although the user equipment is described with respect to an STB, it is contemplated that various embodiments have applicability to any device capable of processing audio and/or video streams.

[0024] In a typical scenario, an individual (e.g., a subscriber of the game performance and content modifying service) may, via a client-user interface (such as a web-based application **109***a* implemented on server **105**, a computing application **109***b* executed on, for instance, a PC, or a media-based application **109***c* operating on, for example, STB **101***n*), receive game performance information of a dependent user and/or modify an associated user profile based on that information, wherein the user profile specifies content that is available to the dependent user via a media-based device. Namely, subscribers are presented with an integrated presentation that includes developmental reports and customizable parameters governing content originating from a media service provider (MSP) **111** or a third-party source, and made available at STBs **101***a*-**101***n*. In other words, guardians (e.g., a parent) may selectively modify the content available to one or more dependent users (e.g., a child), as well as schedule access to that media (in, for example, an a la carte fashion), based on game performance information of the dependent users and/or one or more content modifying policies. As such, parents no longer have to constantly monitor their children's development, but instead may focus on selecting (or creating) appropriate content modifying techniques that will progressively enhance the children's learning experience.

[0025] A content managing application (hereinafter "content manager"), such as content manager **109***a*, permits supervisory users to easily, effectively, and intuitively modify one or more user profiles based on performance information, wherein the user profiles govern the presentation of personalized menus for customizing content (e.g., audio, video, gaming, and/or photographic media) to make available to the users from content sources, including media service provider (MSP) **111**, television broadcast systems **113**, third party content provider systems **115**, as well as content accessible over one or more data networks (e.g., service provider network **103**, packet-based network **117**, and/or telephony network **119**), such as content within content repository **121**. Moreover, a separate identity for each communication device (e.g., STBs **101***a*-**101***n* and/or one or more end terminals **107**) associated with a subscriber's account may be established to further personalize the content received by users comprising the account. Accordingly, the content managers **109***a*-**109***c* may also enable subscribers to specify scheduling information for access to newly modified content.

[0026] In certain embodiments, one or more content managers **109***a*-**109***c* may enable subscribers to review game performance information of a first user in a convenient, graphically formatted report and/or modify a user profile of the first user based on that report. More specifically, the game performance report can include feedback information concerning the first user's performance in an educational game, wherein the feedback affords subscribers immediate perspective into the first user's aptitudes (e.g., abilities, skills, strengths, talents, etc.), interests (amusements, hobbies, occupations, obsessions, etc.), and/or weaknesses (inabilities, deficiencies,

handicaps, shortcomings, etc.). In this manner, the content mangers **209***a*-**209***c* provide content modification capabilities for the subscribers to modify (either automatically or manually) available content to the first user based on their game performance; thus, progressively maximizing the educational value of the first user's multimedia experience.

[0027] Alternatively (or additionally), the subscribers can retrieve performance information of other users associated with other STBs to compare the performance information of the first user against the performance information of the other users. That is, subscribers can review (in a convenient report) the first user's relative development compared to, for instance, the first user's peers. In certain embodiments, the comparison report can concern select users within a specified geographic region, or of like age/maturity, or having a similar socio-economic status, or behavioral characteristic, as well other suitable categories corresponding to information stored within the users' profiles. As such, embodiments of service provider network **103** may also enable individuals utilizing STBs **101***a*-**101***n* (and/or end terminal(s) **107**) to interact with one another, through personalized communications channels, to further facilitate the processes described herein.

[0028] Content can include any AV media (e.g., gaming applications, broadcast television programs, video-on-demand (VOD) programs, audio-on-demand (AOD) programs, pay-per-view programs, IPTV feeds, DVD related content, etc.), pre-recorded media content (e.g., DVR content), data communication services content (e.g., commercials, advertisements, videos, movies, songs, images, sounds, etc.), Internet services content (streamed audio, video, or pictographic media), and/or any other equivalent media form, such as locally stored content instances of the aforementioned media. In this manner, an MSP **111** may provide (in addition to their own media content) content obtained from sources, such as one or more television broadcast systems **113**, one or more third-party content provider systems **115**, content residing in a repository **121**, accessible via server **105**, or otherwise available via one or more packet-based networks **117** and/or telephony networks **119**, as well as any other suitable avenue or source

[0029] In particular embodiments, MSP **111** may comprise an IPTV system configured to support the transmission of television video programs from the broadcast systems **113** as well as other content, such as media content from the various third-party sources (e.g., components **101***a*-**101***n*, **107**, **115**, **121**) utilizing internet protocol (IP). That is, the IPTV system **111** may deliver signals and/or streams, including content, control commands, and/or user profile information, in the form of IP packets. Further, the transmission network (e.g., service provider network **103**) may optionally support end-to-end data encryption in conjunction with the streaming and content management services, as will be explained in more detail below.

[0030] In this manner, the use of IP permits television services to be integrated with broadband Internet and gaming services, and thus, share common connections to a user site. Also, IP packets can be more readily manipulated, and therefore, provide users with greater flexibility in terms of control, modification, and personalization, as well as offer superior methods for increasing the availability of content from disparate sources. Delivery of AV content, control commands, and/or user profile information, by way of example, may be through a multicast from the IPTV system **111** to the STBs **101***a*-**101***n*. Any individual STB may tune to a particular source by simply joining a multicast (or unicast) of the media content, control command, or user profile information, utilizing an IP group membership protocol (IGMP). For instance, the IGMP v2 protocol may be employed for joining STBs to new multicast (or unicast) groups. Such a manner of delivery avoids the need for expensive tuners to view media content, such as television broadcasts; however, other delivery methods, such as cable, may still be utilized. Further, this delivery method also enables varied levels of control, i.e., control over single STBs or broadcast control affecting multiple STBs. It is noted that conventional delivery methods may also be implemented and combined with the advanced methods of system **100**. Further, the content (and subsequently the control commands and user profile information) may be provided to various IP-enabled devices, such as various computing, telephony, and mobile apparatuses delineated below.

[0031] An STB (e.g., STB **101***a*) may integrate all the functions of an IPTV system, as well as combine the content management and control functions of the various online or off-line environments, in a manner that seamlessly toggles among the various system **100** resources. It is contemplated that the performance monitoring and content modifying service may be extended to users with a presence on the Internet. In alternative embodiments, the services of system **100** may be extended to users having an end terminal (not illustrated), such as a plain old telephone service (POTS) device, connected to telephony network **119**.

[0032] Accordingly, MSP **111** can provide content that is retrieved over a data network, as well as provide conventional media streams. For instance, MSP **111** provides STBs **101***a*-**101***n* access to content traditionally limited to host sites, such as end user originated content uploaded to audio, video, and/or pictographic sharing sites. The content may also be shared between STBs **101***a*-**101***n*, as well as between STBs **101***a*-**101***n* and end terminal(s) **107**. It is generally noted that media content can be any type of information provided from any source having connectivity to system **100**.

[0033] In this manner, system **100** provides online games **123**, including educational games and other interactive learning applications, to STBs **101***a*-**101***n* via an online game module **125** of sever **105**. According to one embodiment, server **105** includes one or more processors (not shown) and memory (not shown) that are accessible to online game module **125** for executing game applications in response to a request for an available game from a STB (e.g., STB **101***a*). Online games **123** may be stored at server **105** via the memory or at a repository (not illustrated) connected thereto, as well as received from MSP **111**, content provider systems **115**, or one or more content repositories **121** (or databases) available via one or more data networks (e.g., networks **103**, **117**, and/or **119**). In the illustrated embodiment, online game **123** can be selected by a user from a plurality of game applications that are made available via a menu of customized content options presented to the user by an STB (e.g., STBs **101***a*-**101***n*) based on previous game performance of that user. Online game module **125** may query a user profile repository **127** via one or more data networks (e.g., packet-based network **117** and/or service provider network **103**) and/or MSP **111** for user profile information associated with the requesting user, wherein the user profile information includes modifications to available content (and/or scheduling information for content availability) generated based on previous game performance information, such as scores or levels of play that each user has attained. In other embodiments, online game module **125** can

provide previous game information to STBs **101***a*-**101***n* to allow users to continue previously saved (and/or uncompleted) games based on information stored within a respective user profile. Accordingly, online game module **125** can provide users with online games **123** progressively tailored to the gaming user's performance and/or development. Customized menus are described in more detail with respect to FIGS. **6***a* and **6***b*.

[0034] According to one embodiment, online games **123** can be executed via various components of system **100**. For instance, server **105** can execute one or more game applications and may transmit game data to respective STBs **101***a*-**101***n* for display. In turn, STBs **101***a*-**101***n* can receive commands from users via an input interface (not illustrated), wherein STBs **101***a*-**101***n*, via a communications interface (not illustrated), can transmit these commands to server **105** to effectuate modifications to the display of the one or more online games **123**. Accordingly, an online game **123** requested by a user can be operated entirely on server **105**, via online game module **125**, wherein online game module **125** processes and executes commands received from STBs **101***a*-**101***n* and transmits data corresponding to updated or new displays to the respective devices, such that communication between the respective components is directly effectuated over packet-based network **117**. In this embodiment, STBs **101***a*-**101***n* can operate essentially like a terminal that receives AV content from server **105** for display.

[0035] In another embodiment, server **105** can execute one or more game applications and may transmit game data to respective STBs **101***a*-**101***n* via MSP **111**. To effectuate modifications to the display of the one or more online games **123**, STBs **101***a*-**101***n* can receive commands from users and can transmit these commands either directly to server **105** over packet-based network **117** or indirectly via MSP **111**, i.e., over one or more networks (e.g., service provider network **103** and/or packet-based network **117**). Accordingly, an online game **123** requested by a user can be operated entirely on server **105**, via online game module **125**, wherein online game module **125** processes and executes commands received from either MSP **111** or STBs **101***a*-**101***n* and transmits data corresponding to updated or new displays to STBs **101***a*-**101***n* either directly or indirectly via MSP **111**. In this embodiment, STBs **101***a*-**101***n* may still operate essentially like a terminal; however, AV content may be received from MSP **111** and/or server **105**.

[0036] In alternative embodiments, online games **123** may be operated entirely on STBs **101***a*-**101***n*, wherein available games requested by a user can be downloaded to STBs **101***a*-**101***n*, or otherwise made available, such as by an optical disc. In this embodiment, STBs **101***a*-**101***n* only communicate game performance data to server **105**, in conjunction with, or independently of, the online game **123**. Transmission may occur directly between server **105** and STBs **101***a*-**101***n* over, for instance, packet-based network **105**, or indirectly via MSP **111**. In other embodiments, the operation of online game **123** can be distributed between online game module **125**, MSP **111**, STBs **101***a*-**101***n*, and/or end terminals **107**, as well as any other suitable system **100** component, such as a third party content provider system **115**.

[0037] Accordingly, server **105** can include a tracking module **129** configured to communicate with online game module **125** to track performance, associated with playing the online game **123**, of the users at one or more media-based devices (e.g., STBs **101***a*-**101***n* and/or end terminal(s) **107**). Tracking module **129** may obtain the game performance information from online game module **125** in real-time (i.e., as the game is being played) or periodically (i.e., based on a predetermined time interval). Thus, tracking module **129** may acquire game performance information continuously, intermittently, or in an "on demand" fashion. In turn, the game performance information may be stored in a memory of server **105** or a repository (not illustrated) coupled thereto or associated therewith. Alternatively, the game performance information may be transmitted to MSP **111**, user profile repository **127**, or any other suitable memory and/or repository, such as a memory of one or more STBs **101***a*-**101***n*, for storage. As such, game performance information may be tracked and stored over a given period of time, such that the information may accessible to one or more supervisory users to facilitate a determination as to whether available content to a dependent user requires modification. In other embodiments, tracking module **129** may be utilized to generate statistical information based on general usage of content by dependent users.

[0038] Game performance information may include data, such as basic statistical information (e.g., scores, levels, correct/wrong answers, time played, decisions made, etc.), as well as analyzed information gleaned from those statistical parameters (e.g., parallel processing capabilities, mental adroitness, visual intelligence, coordination, problem solving capabilities, maturity, sociability, strategies, psychological awareness, competitive nature, literacy, relative knowledge of a given subject matter, interests, aptitudes, weaknesses, etc.). As such, server **105** can include a report module **131** for gathering tracked game performance information on a dependent user to present that information to a supervisory user. This presentation may comprise written text and/or a graphical display illustrating the dependent user's development. Report module **131** may gather performance information of other dependent users and compare that information across two or more individuals, so as to generate a report communicating the relative development of each dependent user. These comparisons may be further segregated across select geographic regions, specific age groups, socio-economic statuses, behavioral characteristics, as well other suitable categories corresponding to user profile information within user profile repository **127**.

[0039] Further, report module **131** is configured to generate and transmit reports to supervisory users via one or more media-based devices (e.g., STBs **101***a*-**101***n* or end terminal (s) **107** capable of audio and/or video display) utilizing one or more content managers **109***a*-**109***c*. In one embodiment, reports are generated based on a policy or configuration of a user profile stored at user profile repository **127** or other memory, such as a memory of STBs **101***a*-**101***n*, end terminal (s) **107**, etc. Similarly, reports may be generated "on-demand" when requested by a supervisory or other authorized user. As such, report module **131** may communicate (or otherwise deliver) reports to authorized users via STB (e.g., STBs **101***a*-**101***n*) or one or more end terminal(s) **107**, such as those computing, telephony, and mobile apparatuses described below. Further, delivery may include conventional techniques, such as by postal mail, fax, e-mail, etc. Thus, these reports can help supervisory users determine whether to modify the media (e.g., broadcast content, digital video recorder (DVR) content, on-demand content, on-demand games, and/or other suitable media, as well as locally stored instances of the same) available to one or more dependent

users, so as to maximize the dependent users' motor development, intellectual development, affective development, and/or social development.

[0040] Accordingly, one or more content managers **109***a*-**109***c* may be implemented on (or accessed by) one or more end-terminals **107** and/or STBs **101***a*-**101***n* to effectuate the content modification procedures based on game performance information, as described herein.

[0041] With continued reference to FIG. **1**, content managers **109***b* and **109***c* may be executed, for example, as a user interface capable of local implementation on an STB (e.g., STB **101***a*-**101***n*) or on an end terminal **107**, such as a computing device, telephony device, mobile device, or other like mechanism. Thus, exemplary embodiments of content managers **109***b* and **109***c* may be provided through navigation shell applications, e.g., menu applications having options corresponding to different functions, as well as various content instances and/or multimedia experiences. Computing devices may include desktop computers, notebook computers, servers, terminal workstations, gaming systems, customized hardware, or other equivalent apparatus. Telephony devices may comprise plain-old-telephones, wireless telephones, cellular telephones, satellite telephones, voice over internet protocol telephones, and the like. Mobile devices may include personal digital assistants (PDA), pocket personal computers, smart phones, tablets, handsets, portable gaming systems, and customized hardware, as well as other mobile technologies capable transmitting data and/or processing audio/video signals. Moreover, STBs **101***a*-**101***n* may be used alone or in combination with one or more end terminal(s) **107** to implement various exemplary embodiments.

[0042] The STBs **101***a*-**101***n* and/or end terminal(s) **107** can communicate using packet-based network **117** or telephony network **119**. These systems can include: a public data network (e.g., the Internet), various intranets, local area networks (LAN), wide area networks (WAN), the public switched telephony network (PSTN), integrated services digital networks (ISDN), other private packet switched networks or telephony networks, as well as any additional equivalent system or combination thereof. These networks may employ various access technologies including cable networks, satellite networks, subscriber television networks, digital subscriber line (DSL) networks, optical fiber networks, hybrid fiber-coax networks, worldwide interoperability for microwave access (WiMAX) networks, wireless fidelity (WiFi) networks, other wireless networks (e.g., 3G wireless broadband networks, mobile television networks, radio networks, etc.), terrestrial broadcasting networks, provider specific networks (e.g., a Verizon® FiOS® network, a TiVo® network, etc), and the like. Such networks may also utilize any suitable protocol supportive of data communications, e.g., transmission control protocols (TCP), internet protocols (IP), user datagram protocols (UDP), hypertext markup languages (HTML), dynamic HTML (DHTML), file transfer protocols (FTP), telnet, hypertext transfer protocols (HTTP), asynchronous transfer mode (ATM), wireless application protocols (WAP), socket connections (e.g., secure sockets layer (SSL)), Ethernet, frame relay, and the like, to connect STBs **101***a*-**101***n* to various sources of media content and devices capable of remotely managing STBs **101***a*-**101***n*.

[0043] By way of example, STB **101***a*-**101***n*, as well as terminal(s) **107**, can remotely access, via a communication interface (not illustrated), server **105** which can be configured to execute multiple instances of a content manager application **109***a* utilizing, for instance, one or more processors (not illustrated). That is, remote application **109***a* may be provided in a distributed fashion using, for instance, client-server architectures, such as implemented by enterprise application service providers (ASP). It is noted that ASP models (and other like architectures) offer system scalability in terms of administrative scalability, geographic scalability, and/or load scalability. Thus, distributed environments are attractive modes for disseminating system **100** functionality to a broad spectrum of users and devices

[0044] For example, server **105** can be an "online" system capable of communicating with one or more third-party web servers (not illustrated), content repositories (e.g., repository **121**), or equivalent facilities, to provide users various avenues to draw content from, as well as establish and/or modify one or more user profiles to control and progressively adapt the content made available to particular users via, for example, STBs **101***a*-**101***n*. More specifically, one or more servers **105** may include one or more processors configured to receive user input concerning one or more user profiles from one or more end terminals **107** (and/or STBs) for modifying (or otherwise controlling) content made available to one or more users at one or more STBs **101***a*-**101***n* (and/or end terminal(s) **107**), wherein the server(s), via the processor(s), are capable of configuring the user profile(s) according to the user input. In particular embodiments, this configuration can be performed in real-time, wherein the user input is transmitted to STBs **101***a*-**101***n* to directly affect configuration data (e.g., modify user profile information) stored in a memory (not illustrated) of the respective media-based devices **101***a*-**101***n*. Additionally (or alternatively), server(s) **105** can access a shared memory, wherein STBs **101***a*-**101***n* obtain sufficient configuration data (including modifications to one or more user profiles based on game performance information) from the shared memory, either in real-time or on a periodic basis.

[0045] As such, exemplary embodiments of content manager **109***a* may, for instance, comprise hypertext markup language (HTML) user interfaces or JAVA™ applets stored on server **105** and accessed via world-wide-web pages. Further, by enabling access and control of STBs **101***a*-**101***n* over one or more data networks (e.g., network **103**, **117**, and/or **119**) using a "web paradigm," server **105** provides users with a convenient and efficient manner for modifying user profiles and associated content made available to the media-based devices **101***a*-**101***n*, based on game performance information of particular users. Further, remote applications **109***a*-**109***c* may port local user interfaces typically utilized on standalone STBs to enable user input in a context consumers are increasing becoming familiar with due to the growing popularity of the Internet. These interfaces are particularly useful in extending system **100** functionality to devices having limited resources (e.g., PDAs, handsets, thin-clients, etc.), as well as providing scalable solutions to varied devices without necessitating intensive high-end costs associated with independent design, tooling, and manufacturing. In alternative embodiments, server **105** is collocated with and/or integrated into MSP **111**. In other embodiments, the various modules of server **105** may be implemented as one or more standalone systems. It is also contemplated that the various modules and/or functions of server **105** may be distributed to one or more of the facilities of system **100**. As such, multiple users, interfaces, and instances of content manager **109***a*, online game module **125**, tracking module **129**, and/or report module **131** can be simultaneously realized through system **100**.

[0046] In one embodiment, STBs **101***a*-**101***n*, end terminal(s) **107**, and/or content managers **109***a*-**109***c* may periodically establish a connection with one or more networks (e.g., networks **103**, **117**, and/or **119**) and one or more repositories (e.g., repository **121**) to "push" and "pull" content, user profile information, and/or control commands (e.g., user profile modification signals), such as in a "batched" processing mode. That is, a user interface of STBs **101***a*-**101***n* may be virtualized over a networked connection. In another embodiment, these components may initiate peer-to-peer communications such that control input and configuration updates (e.g., user profile modifications) governing the user profile information are executed "on-the-fly," i.e., in real-time, thus, enabling substantially instantaneous results.

[0047] In the example of FIG. **1**, STBs **101***a*-**101***n* may be located at one or more user premises, and geospatially associated with one or more regions. Further, the STBs **101***a*-**101***n* may be logically associated into one or more workgroups, wherein a user may modify one or more user profiles to execute on a plurality of STBs **101***a*-**101***n* arranged into the workgroups in one or more configuration sessions, utilizing one or more end terminals **107** or STBs (e.g., STB **101***a*).

[0048] For example, a learning institution (such as a secondary school) can distribute a plurality of STBs (e.g., STBs **101***a* and **101***b*) throughout various classrooms for extending customized content to an attending student body. An administrator (e.g., a principal) may establish one or more user profiles, via an end terminal **107** (e.g., a PC in the principal's office) or at an associated STB (e.g., STB **101***n*) executing a content manager (e.g., content managers **109***a*-**109***c*), so as to select and disseminate appropriate educational content instances (e.g., broadcast media, DVR media, on-demand media, or educational games, as well as locally stored instances of the same) to the students in particular classrooms, concerning various subject matter (e.g., science, math, social studies, physical wellbeing, etc.). Further, students maybe issued (or personally own) an STB at their home, e.g., STB **101***n*. As such, an authorized administrator can logically join STBs **101***a*-**101***n* to a workgroup, wherein the plurality of STBs **101***a*-**101***n* may be configured to present the customized educational content to an entire student body, wherein particular user profiles may match customized educational content to the aptitudes, interests, and/or weaknesses of each student, and provide access to this content on a scheduled basis, i.e., as the students progress from period-to-period, namely from one subject to another. In other words, even if certain students were unable to attend school on particular days, every pupil could simply access their associated user profile via a media-based device (e.g., STB **101***a*-**101***n* and/or one or more end terminal(s) **107**) and follow a scheduled curriculum of customized content tailored to each individual student. As such, no student would be deprived of a learning opportunity. In this manner, the students may also be given authorization to access their profile to review the material later, via STBs **101***a*-**101***n* or an end terminal **107** capable of processing audio and/or video signals, access additional content (e.g., interactive educational games) to build upon or reinforce previous lessons.

[0049] In one instance, the administrator may, as a homework assignment, select an educational game (e.g., online game **123**) to make available to select students according to information in their user profile, such as low standardized test scores. As those students play online game **123**, via one or more STBs **101***a*-**101***n*, their performance can be tracked, as well as usage statistics generated, and stored to a respective user profile within profile repository **127**. Upon each student successfully completing (or otherwise finishing) online game **123**, the game performance information of each student may be presented to the administrator, via one or more content managers **109***a*-**109***c* as a display report, at for instance end terminal **107** or an STB (e.g., STB **101***n*). The report may include an aggregation of game performance information across each student to convey a relative knowledge level between the students. Further, game performance information of other students, at other institutions, located in other geographical regions (e.g., school districts), may be provided to convey a relative knowledge level of the administrator's students in comparison to geographic averages. Moreover, content managers **109***a*-**109***c* may automatically provide suggested content based on the performance information, content usage statistics, and/or other information within the students' profiles. Accordingly, the administrator via, for example, content manager **109***c*, executed on STB **101***n*, can provide individual and/or group modification to the students' profiles based on the presentation, i.e., on the game performance information. Namely, the modification may be employed to select new content to make available to those students, on a new scheduled basis, so as to adapt the students' learning experience to their relative needs.

[0050] As such, STBs **101***a*-**101***n* may be associated with one or more subscribers, may be located in one or more user premises, and/or may be situated in different physical locations, but nevertheless, may provide access to and modification of one or more user profiles specifying content that is specifically made available to particular dependent users by a supervisory user.

[0051] Thus, STBs **101***a*-**101***n* can be configured to communicate with and receive signals and/or data streams from a MSP **111** (or other transmission facility, such as server **105**, end terminal **107**, etc.) in response to processes of one or more content managers **109***a*-**109***c*. These signals include content, as well as user profile information and control commands (e.g., user profile modification signals) transmitted over a data network (e.g., service provider network **103**, packet-based network **117**, and/or telephony network **119**). By way of example, MSP **111** can include one or more content servers (not illustrated) and/or data repositories (not shown). Alternatively, user profile repository **1277**, content repository **121**, or server **105** may be accessed via one or more service provider networks **103** and/or data networks (e.g., networks **117** and/or **119**). Further, service provider network **103** may include a system administrator (not shown) for operational and management functions to deploy the remote management service using, for instance, an IPTV system. In this manner, STBs **101***a*-**101***n* can utilize any suitable technology to draw, receive, and/or transmit content, user profile information, and control signals (including user profile modification signals) from/to an MSP **111** or other source/sink (e.g., server **105**, end terminal **107**, user profile repository **127**, etc.). A more detailed explanation of an exemplary STB is provided with respect to FIG. **2**.

[0052] In an exemplary embodiment, STBs **101***a*-**101***n* can draw, receive, and/or transmit content, user profile information, and/or control commands (including user profile modification signals) from (or to) multiple sources/sinks, thereby alleviating the burden on any single entity, e.g., MSP **111**, to meet the content, user profile, and control demands of any user, premise, or workgroup. Thus, particular embodiments

enable authenticated third-party television broadcast systems **113**, third-party content provider systems **115**, and servers (e.g., server **105**) to transmit content, user profile information, and/or control commands to STBs **101***a*-**101***n* either apart from, or in conjunction with, MSP **111**. The content, user profile information, and/or the control commands may be distinguished (or otherwise categorized) utilizing metadata included therewith or appended thereto. Metadata can be generally considered data about data; but more specifically, it can be utilized to describe all aspects of, and media content, user profile information, and/or control commands distributed by, system **100**. Namely, metadata can include descriptions about: data aspects (file name, type, administrator, size, location, version, or include timestamps, mode bits, arbitrary attribute-value pairs, etc.), titles, activities/events, individuals and organizations involved, intended audiences (e.g., ethnicities, ages, genders, incomes, educational levels, disabilities, mobilities, as well as other like demographic statistics), geospatial identifications (intended zip codes, school districts, communities, regions, etc.), locations of supplementary information and processes, game performance information, access methods, limitations, timing of activities/events/content availability (e.g., start/end times and dates), as well as motivations, policies and rules. As such, metadata may be utilized by various components of system **100** for control or guiding purposes.

[0053] In certain embodiments, system **100** may structure and encode metadata to describe characteristics of the content-bearing entities to aid in the identification, discovery, assessment, and management of the content by content managers **109***a*-**109***c*. For example, the metadata can be used to optimize compression algorithms or perform other computational tasks by the components of system **100**. The metadata might be utilized to generate and/or transmit user profile information and/or control commands to a plurality of STBs **101***a*-**101***n*. Various other embodiments might use metadata to suggest content sources to a user based on information stored in a user profile, such as game performance information or usage statistics. In other embodiments, metadata can be utilized to describe user profile information (including game performance information) and/or control parameters governing content accessible to secondary users via STBs **101***a*-**101***n* and/or end terminal(s) **107** to facilitate profile modification. A more detailed explanation of user profiles is provided with respect to FIG. **3**.

[0054] In various embodiments, the service provider network **103** may include one or more video, audio, communication, and/or control command processing modules (not shown) for acquiring, generating, presenting, and/or transmitting content feeds, user profile information, and/or control commands (including user profile modification signals) from MSP **111**, the television broadcast systems **113**, the third-party content provider systems **115**, servers **105**, end terminals **107**, or STBs **101***a*-**101***n*, over one or more of the networks **103**, **117**, **119**, to particular users at various STBs **101***a*-**101***n* and/or end terminal(s) **107**. Further, service provider network **101** can optionally support end-to-end data encryption in conjunction with media content streaming and remote access services such that only authorized users are able to experience customized content, establish and/or modify one or more user profiles specifying content available to dependent users, and/or interact with other legitimate users/components of system **100**.

[0055] Accordingly, system **100** may include an authentication module (not shown) configured to perform authentication services and determine whether users are indeed subscribers to the performance tracking and content modification service. An authentication schema may require a user name and password, a key access number, a unique machine identifier (e.g., media access control (MAC) address, globally unique identifier (GUID), serial number), etc., as well as combinations thereof. In this manner, the authenticate module may be in communication with a user profile repository **127**, which stores user credentials and personalized information for use by content managers **109***a*-**109***c*. In particular embodiments, media-based devices **101***a*-**101***n* and/or end terminal(s) **107** are provisioned for system **100** by associating a device identifier of the respective devices with respect subscriber accounts, where the accounts identify each of the media-based devices **101***a*-**101***n* and/or end terminal(s) **107**, as well as dependent user profiles under the control of a supervisory user and their associated profile.

[0056] In exemplary embodiments, a one time only provisioning authentication procedure is executed for each STB **101***a*-**101***n* and/or end terminal(s) **107** by transmitting an associated machine identifier and user credentials to the authentication module. Thus, once a subscriber has authenticated a presence on system **100**, the user may bypass additional authentication procedures for executing later applications (e.g., content streaming instances and/or content manager sessions, including content modification procedures based on game performance information). Data packets, such as cookies, may be utilized for this purpose. Thus, once an STB or content source is authenticated, connections between the STBs **101***a*-**101***n* and the end terminal(s) **107** may be established directly or through server **105** and/or MSP **111**.

[0057] In other embodiments, authentication procedures on a first device (e.g., STB **101***a*) may identify and authenticate a second (e.g., terminal **107**) and/or a third device (STB **101***b*-**101***n*) communicatively coupled to, or associated with, the first device. Further, the authentication module may grant primary users the right to control (e.g., modify) one or more user profiles, STBs **101***a*-**101***n*, and/or end terminal(s) **107** serviced by service provider network **103** by revoking existing sets of digital certificates associated with a profile/STB/end terminal, and issuing new sets of digital certificates mapped to a second profile/STB/end terminal. In this regard, subscribers may start a new content manager session, whereas the previous session may be automatically closed when the "old" or prior certificates associated with the first session are revoked. This enables primary and secondary users to initiate secure sessions at any given end terminal **107** (or STB **101***a*-**101***n*) linked to system **100**, whether or not the end terminal (or STB) belongs to that individual user. It is additionally contemplated that multiple rights sessions may exist concurrently.

[0058] While system **100** is illustrated in FIG. **1**, the components are exemplary in nature, and indeed, additional or alternative components and/or implementations may be utilized.

[0059] FIG. **2** is a diagram of a set-top box configured to provide modified content, according to an exemplary embodiment. STB **201** may comprise any suitable technology to receive user profile information (e.g., signals **203***a* and **203***b*) from a sever **205** and/or an end terminal **207**, as well as from another STB (e.g., STB **101***n*). As such, STB **201** may also generate and/or modify user profile information (and/or

content scheduling information) based on game performance information, content usage statistics, and/or other user profile information for selecting and modifying content to make available to dependent users of STB **201**. Further, STB **201** includes gaming technology, such as processor **211** and tracking module **213**, for executing games and tracking performance associated with playing those games, such as online game **245**.

[0060] STB **201** may execute (or communication with) one or more content managers **209***a*-**209***c* receiving input from a supervisory user for modifying user profile information based on game performance data, so as to present modified menus of customized content options (e.g., audio, video, gaming, and/or photographic media instances) to dependent users, wherein the processes of content managers **209***a*-**209***c* may be performed "on-the-fly," i.e., in real-time, or as the result of a "batched" request, i.e., periodically. Further, STB **201** may also include suitable technology to receive one or more content streams **215** from a media source **217**, such as the IPTV system of FIG. **1**, as well as receive (and transmit) online games (and game performance information) via signals **203***a*. Content stream **215** and signals **203***a* may be received and transmitted in response to command(s) from content manager (s) **209***a*-**209***c* and may include media, such as broadcast content, digital video recorder (DVR) content, on-demand content, on-demand games, and/or other suitable media, as well as locally stored instances of the same.

[0061] Accordingly, STB **201** may comprise computing hardware (such as described with respect to FIG. **12**) and include additional components configured to provide specialized services related to the generation, modification, transmission, reception, and display of user profiles, user profile information, control commands, and/or content (e.g., user profile modification capabilities, conditional access functions, tuning functions, gaming functions, presentation functions, multiple network interfaces, AV signal ports, etc.). Alternatively, the functions and operations of STB **201** may be governed by a controller **219** that interacts with each of the STB components to configure and modify user profiles in response to control commands from content managers **209***a*-**209***c*, as well as provide media content retrieved from media source **217**. Additionally, a user may be afforded greater functionality utilizing a control device **221** to control these services, as will be more fully described below.

[0062] As such, STB **201** may be configured to process data streams (e.g., streams **203***a*, **203***b*, and **215**), including causing a content manager **209***c* and/or one or more components of received content (e.g., video component **223** and/or an audio component) to be presented on (or at) a display **225**. Presentation of the content may be in response to a command received from one or more content managers **209***a*-**209***c* and include: displaying, recording, playing, rewinding, forwarding, toggling, selecting, zooming, or any other processing technique that enables users to select customized content instances from a menu of options and/or experience content, such as playing online game **245**. For instance, STB **201** may provide one or more signals **227** to a display **225** (e.g., television) so that the display **225** may present (e.g., display) content manager **209***c* overlaid on the content (e.g., video **223**) to a user, wherein the content manager **209***c* enables a first user to establish and selectively modify a user profile based on game performance information, content usage statistics, and/or other user profile parameters, wherein the user profile specifies content that is available to the user via STB **201** or end terminal(s) **107**. In certain embodiments, the user profile also specifies scheduling information for access to the specified content. Alternatively, signals **227** may be configured and provided to display **225** in response to a received control command from a content manager **209***a*-**209***c*.

[0063] STB **201** may also interact with a PVR, such as digital video recorder (DVR) **229**, to store received content that can be manipulated by a user at a later point in time. In various embodiments, DVR **229** may be network-based, e.g., included as a part of the service provider network **103**, collocated at a subscriber site having connectivity to STB **201**, and/or integrated into STB **201**. In any case, content managers **209***a*-**209***c* may port content instances provided by DVR **229** into a customized menu of content options available to dependent users based on associated user profiles and scheduling information established and/or modified by a supervisory user. Display **225** may present these menus and associated content provided via STB **201** to a user. In alternative embodiments, STB **201** may be configured to communicate with a number of additional peripheral devices, including: PCs, laptops, PDAs, cellular phones, monitors, mobile devices, handheld devices, as well as any other equivalent technology capable of presenting modified content to a user, such as those computing, telephony, and mobile apparatuses described with respect to FIG. **1**.

[0064] These peripherals may be configured to access user profile information and/or modified content stored and/or processed by STB **201** in response to control commands from content managers **209***a*-**209***c*. For example, a content stream **215** may be received by STB **201** and recorded by DVR **229**, wherein a user at a PC may later access and view the stored content based on a modified menu of content options, scheduling information, and/or any other command of one or more content managers **209***a*-**209***c*. Moreover, the peripheral devices may be configured to implement instances of a content manager (e.g., content manager **209***b*) to control, configure, modify, or otherwise program user profile information and/or available content to users of STB **201**. For instance, a content manager **209***b* executed on end terminal **207** may receive input from a supervisory user modifying user profile information based on game performance information, content usage statistics, or other profile parameter, including modified scheduling information and modified content to make available to dependent users via STB **201**. An associated control command, generated based on the input, may be received at a communication interface **231**, wherein STB **201** retrieves the user profile information (including profile modifications), scheduling information, and associated content for presentation to the user via display **225**. In another embodiment, a communication interface (not illustrated) of end terminal **207** may be configured to retrieve the user profile information, scheduling information, and/or associated content over, for instance, a data network (e.g., packet-based network **117**), wherein STB **201** may receive a data stream **203***b* from end terminal **207** including the retrieved user profile information, scheduling information, and/or associated content to present to a dependent user via display **225**.

[0065] In another embodiment, user input to STB **201** and/or a peripheral device (e.g., end terminal **207**) executing an instance of a content manager (e.g., content manager **209***c* and/or **209***b*) may cause specified content (e.g., online game **245**) to be made available at another STB (e.g., STB **101***a*-**101***n*) or a computing, telephony, or mobile device capable of processing audio and/or video streams. Still further, user

input to a network-based content manager **209***a*, implemented on, for instance, server **205**, may be configured to program, modify, or otherwise control available content and/or multimedia entertainment instances of STB **201**. For instance, a user may access content manager **209***a*, via an end terminal **107**, over one or more data networks (e.g., network **103**, **117**, and/or **119**), to transmit user profile information, including user profile modifications based on game performance information, scheduling information, and information specifying content to make available to particular dependents users, via STB **201**. In this manner, server **205** (or other component of system **100**, such as MSP **111**) may, when suitable, transmit the user profile information and specified content instances (including online game **245**) as a part of stream **203***a* to STB **201** for presentation at display **225**.

[0066] Communication interface **231** may be configured to receive user profile information from server **205**, end terminal **207**, MSP **111**, or another STB (e.g., STB **101***n*). In turn, modified content may be streamed from a media source **217** (e.g., MSP **111**, television broadcast system **113**, content provider system **115**, and/or repository **121**), an end terminal **207**, and/or server **205** and received at communication interface **231**. In particular embodiments, communication interface **231** can be configured to receive an online game (e.g., online game **245**) from, or transmit online game commands to, server **205**, MSP **111**, or other suitable source/sink, such as content repository **121**. In other embodiments, communication interface **231** can be configured to receive and transmit game performance information, including game performance information of other users associated with other STBs, wherein processor **211** is further configured to compare the performance information of two or more users to output a report for presentation via display **225**. As such, communication interface **231** may optionally include single or multiple port interfaces. For example, STB **201** may establish a broadband connection to multiple sources transmitting data to STB **201** via a single port, whereas in alternative embodiments, multiple ports may be assigned to the one or more sources. In still other embodiments, communication interface **231** may receive and/or transmit user profile information (including modified content menu options, and/or modified content scheduling data), as well as associated customized content instances (e.g., online game **245**) to other users with STBs, an MSP **111**, or any other suitable source/sink, such as end terminal **207**.

[0067] According to various embodiments, STB **201** may also include inputs/outputs (e.g., connectors **233**) to display **225** and DVR **229**, as well as an audio system **235**. In particular, audio system **235** may comprise a conventional AV receiver capable of monaural or stereo sound, as well as multichannel surround sound. Audio system **235** may include speakers, ear buds, headphones, or any other suitable component configured for personal or public dissemination. As such, STB **201**, display **225**, DVR **229**, and audio system **235**, for example, may support high resolution audio and/or video streams, such as high definition television (HDTV) or digital theater systems high definition (DTS-HD) audio. Thus, STB **201** may be configured to encapsulate data into a proper format with required credentials before transmitting onto one or more of the networks of FIG. **1**, and de-encapsulate incoming traffic to dispatch data to display **225** and/or audio system **235**.

[0068] In an exemplary embodiment, display **225** and/or audio system **235** may be configured with internet protocol (IP) capability (i.e., include an IP stack, or otherwise made network addressable), such that the functions of STB **201** may be assumed by display **225** and/or audio system **235** and controlled, in part, by content manager command(s). In this manner, an IP ready, HDTV display or DTS-HD audio system may be directly connected to one or more service provider networks **103**, packet-based networks **117**, and/or telephony networks **119**. Although STB **201**, display **225**, DVR **229**, and audio system **235** are shown separately, it is contemplated that these components may be integrated into a single component, or other combination of components.

[0069] An authentication module **237** may be provided at STB **201** to initiate or respond to authentication schemes of, for instance, service provider network **103** or various other content providers, e.g., broadcast television systems **113**, third-party content provider systems **115**, or servers **105**. Authentication module **237** may provide sufficient authentication information, e.g., a user name and password, a key access number, a unique machine identifier (e.g., GUID or MAC address), and the like, as well as combinations thereof, to a corresponding network interface for establishing connectivity. As described earlier, one or more digital certificates may be simultaneously mapped. Moreover, authentication at STB **201** may identify and authenticate a second device (e.g., end terminal **207**) communicatively coupled to, or associated with, STB **201**, or vice versa. Further, authentication information (as well as user profile information, game performance information, content usage statistics, and/or scheduling data) may be stored locally at memory **239**, in a repository (not shown) connected to STB **201**, or at a remote repository, e.g., user profile repository **127**.

[0070] Authentication module **237** may also facilitate the reception of data from single or disparate sources. For instance, STB **201** may receive broadcast video from a first source (e.g., IPTV system **111**), signals from a content manager **209***b* at second source (e.g., server **207**), and a content stream (e.g., online game **245**) from a third source accessible over a data network (e.g., server **205**). As such, display **225** may present the broadcast video and/or online game **245** to a user in response to the signals from content manager **209***b*, wherein STB **201** (in conjunction with one or more content managers **209***a*-**209***c*) can permit supervisory users to modify the content available to dependent users at STB **201** and/or end terminal(s) **207** based on game performance information. This presentation may be experienced separately, concurrently, in a toggled fashion, or with zooming, maximizing, minimizing, or trick capabilities, or equivalent mode. In other exemplary embodiments, authentication module **237** can authenticate a user to allow them to modify scheduling information for access to the modified content at other STBs (e.g., STB **101***a*-**101***n*), as well as transmit and receive game performance information from (or to) one or more other users associated with other STBs, in addition to server **205**.

[0071] A presentation module **241** may be configured to receive data streams **203***a*, **203***b*, and **215**, e.g., AV feeds (including online game **245**) and/or control commands (including content modification signals), and output a result via one or more connectors **233** to display **225** and/or audio system **235**. In this manner, presentation module **241** may also provide a user interface for content manager **209***a* or **209***c* via display **225**. Aural aspects of content managers **209***a* or **209***c* may be presented via audio system **235** and/or display **225**. In certain embodiments, content managers **209***a* or **209***c* may be overlaid on the video content output **223** of display

225 via presentation module 241. In other instances, presentation module 241 can be configured to present game performance information to a supervisory user. Namely, presentation module 241 can format game performance data into a report, including textual displays, graphical illustrations, aural exhibitions, or other suitable reporting element. In any case, however, the data streams 203*a*, 203*b*, and 215 may include user profile information (including scheduling information) received in response to a supervisory user modifying specified content instances based on game performance information, content usage statistics, and/or other user profile parameter(s). As such, presentation module 241 may dynamically update a menu of customized content options based on the modifications, wherein the modifications effect media instances, such as broadcast content, digital video recorder (DVR) content, on-demand content, on-demand games, and/or other suitable media, as well as locally stored instances of the same, available to one or more dependent users.

[0072] Connector(s) 233 may provide various physical interfaces to display 225, audio system 235, and the peripheral apparatuses (e.g., end terminal 207); the physical interfaces including, for example, RJ45, RJ11, high definition multimedia interface (HDMI), optical, coax, FireWire, wireless, and universal serial bus (USB), or any other suitable connector. The presentation module 241 may also interact with a control device 221 for configuring (i.e., modifying) user profiles, as well as determining particular content instances that a user desires to experience. In an exemplary embodiment, the control device 221 may comprise a remote control (or other access device having control capability, such as a joystick, video game controller, or an end terminal 207, e.g., a PC, wireless device, mobile phone, etc.) that provides a user with the ability to readily manipulate and dynamically modify parameters affecting user profile information and/or a multimedia experience (e.g., playing online game 245). Such parameters can include STB 201 configuration data, such as parental controls, available channel information, favorite channels, program recording settings, viewing history, or loaded software, as well as other suitable parameters.

[0073] In particular embodiments, configuration data may also include channel fixing options, show/hide/label channel functions, making captions or info banners available, label inputs (such as connector(s) 233) options, application graphics settings (e.g., color schemes, icons, etc.), video game settings, high altitude settings, power saving modes, device password options, country/language options, display settings (e.g., AV parameters), control functions (e.g., channel up/down. input, mute, pause, picture-in-picture, play, power on/off, rewind, fast-forward, record, stop, volume up/down), parental locks, application settings (e.g., memory sticks, i.links, clocks/timers, diagnostics, cable card), change operating system functions, or install software, as well as provide troubleshooting frequently asked questions, get device manuals, or receive safety tips, etc. It is generally noted that configuration data can be any option/feature available at STB 201, DVR 229, or peripheral device (e.g., display 225, audio system 235, control device 221, etc.) having connectivity to (or association with) STB 201.

[0074] In this manner, control device 221 and/or end terminal 207 may include (not shown) a cursor controller, trackball, touch screen, touch pad, keyboard, joystick, and/or a key pad for activating content managers 209*a*-209*c*, navigating through broadcast channels and/or content, as well as modifying user profiles, playing video games, and performing other processes as described herein. For instance, control device 221 or end terminal 207 may be utilized to maximize a content manager, navigate through displayable interfaces permitting users to modify user profile information, locate/specify/retrieve content made available based on a user profile specified by a supervisory user, adjust STB 201 configuration data, or toggle through available broadcast channels and/or content. Control device 221 or end terminal 207 may also include functional actuators (e.g., buttons, keys, icons, etc.), such as power on/of, play, pause, stop, fast-forward, reverse, volume up/down, channel up/down, menu, ok/enter, record, info, my content, search, edit, or exit, as well as any other suitable control trigger, such as alphanumeric buttons, shift, control, back, symbols, and the like. Other functional actuators may also include levers, knobs, pedals, switches, steering wheels, etc., utilized in video game play. In other examples, STB 201 may be configured for voice recognition such that STB 201 may be controlled with spoken utterances. For example, users may modify user profile parameters through one or more content managers via speech acts.

[0075] Further, control device 221 or end terminal 207 may comprise a memory (not illustrated) for storing preferences (or user profile information) affecting the available content, which can be conveyed to STB 201 through an input interface 243 (or communication interface 231). Input interface 243 may support any type of wired and/or wireless link, e.g., infrared, radio frequency (RF), BLUETOOTH, and the like. Input interface 243, communication interface 231, and/or control device 221 may further comprise automatic speech recognition (ASR) and/or text-to-speech (TTS) technology for effectuating voice recognition functionality. Thus, according to certain embodiments, control device 221 and/or end terminal 207 may store user preferences with respect to modified content, such as favorite sources, etc., as well as user profile information, including game performance information associated with particular users and/or scheduling information for making particular content available. Alternatively, user preferences and user profile information may be tracked, recorded, and/or stored in STB 201, via memory 239, or in a network user profile repository 127. Tracking module 213 may be provided for this purpose, as well as monitoring content usage statistics (e.g., date and time spent experiencing particular content instances) and/or game performance information for effecting user profile modifications, scheduling changes, which determine content availability at STB 201 on a per profile basis. The preferences and user profile information may be automatically retrieved and activated by one or more users at any time, or may be actuated in response to user profile information (including scheduling information) received via content managers 209*a*-209*c*. It is noted that control device 221 may be separate from STB 201 or may be integrated within STB 201 (in which case certain input interface hardware and/or software may not be necessary).

[0076] Exemplary embodiments enable supervisory users, via one or more content managers 209*a*-209*c* and control device 221 (or an input interface of one or more end terminals 207), to modify dependent user profiles based on game performance information, wherein the user profiles govern the content that is made available to the dependent users. For instance, a user profile function of a content manager(s) 209*a*-209*c* may be provided or accessed by STB 201/end terminal 207 to enable users to modify a plurality of user profile entry fields utilizing, for instance, control device 221. A user profile may include one or more customized or personalized settings

that affect any aspect of content accessible to dependent users via STB **201**, game performance information, configuration parameters, scheduling information, and/or options of a peripheral device. More specifically, the profile may include: subscription information (account numbers, usernames, passwords, security questions, avatars, selectable images, image files identifying associated users, monikers, etc.), subscriber demographics (age, gender, ethnicity, location of residence, zip code, school district, community, socioeconomic status, religion, marital status, ownerships, languages, mobility, life cycles, etc.), group/organizational affiliations (e.g., political), memberships, interests, buddies, friends, cohorts, system configurations, policies, associated users/devices, etc., as well as any other like personal information.

[0077] In other embodiments, profile information can include phone numbers, email addresses, workgroups, viewing history (e.g., current programming, logged history, etc.), account plan, authorized access to specified content, scheduling information governing access to specified content, billing preferences (e.g., bill receipt options, such as electronic or paper bills, payment methods, such as automatic or manual, etc.), add accounts/users, and parental controls, as well as the game performance information described with respect to FIG. **1**. Additionally, a user profile may include a "whitelist" specifying one or more accessible media content sources/subjects, a "blacklist" specifying one or more media content sources/subjects, as well as other equivalent customized settings, such as color schemes, sound effects, etc. Still further, network settings may be affected such as registering associated STBs, DVRs, end terminals, registering premises (e.g., primary residence, vacation cottage, work, etc.), link to content sources (e.g., audio, video, and/or pictographic sites/systems/repositories, etc.), as well as other equivalent parameters, such as available broadcast content, DVR content, on-demand content, on-demand games, or locally stored instances of the same.

[0078] In other embodiments, the user profile may be established, reviewed, and/or modified using the additional access devices described earlier, e.g., end terminal **207**, such as a PC, implementing or accessing one or more content managers **209***a*-**209***c*. As such, user profile information and configuration data may be stored in STB **201**, e.g., in memory **239**, and/or at a user site repository (not illustrated) directly connected to STB **201**. Additionally or alternatively, this information may be stored in a network-based repository (e.g., remote user profile repository **127**), control device **221**, and/or any other accessible storage medium, such as a memory stick, or other database. Similarly, STB **201** (via memory **239**), a user site repository, and/or a network-based repository may store a collection of digital audio, video, game, and/or pictographic content accumulated by a user. This collection may also include a plurality of identifiers (or bookmarks) to specified content made available based on a user profile established via content manager(s) **209***a*-**209***c*, wherein the selection of a particular identifier may cause the content to be retrieved from an associated link (either directly from a third party source (e.g., television broadcast system **113**, content provider system **115**, content repository **121**, etc.) or indirectly from server **105**, MSP **111**, end terminal **107**, another STB **101***a*-**101***n*, etc.).

[0079] Thus, under arrangements of FIGS. **1** and **2**, a supervisory user may modify, via an STB (e.g., STB **101***n*), end terminal **107**, or server **105** application, one or more user profile parameters based on game performance information associated with a dependent user, wherein the user profiles specifies content (including game applications, e.g., an educational game) that is available to the dependent users, as well as scheduling information for access to the content. In an exemplary embodiment, STBs **101***a*-**101***n* enable the dependent users to access and manipulate online games (e.g., online game **245**), wherein their game performance associated with playing the online game may be monitored and tracked by one or more tracking modules (e.g., modules **129** or **213**). Performance reports generated from this game performance information may be utilized by one or more supervisory users to progressively tailor available content to dependent users, so as to promote the development of the dependent users.

[0080] The operation of STB **201** and one or more content managers **209***a*-**209***c*, in conjunction with the components of system **100**, will now be described with respect to modifying a user profile based on game performance information, content usage statistics, and/or other user profile parameters.

[0081] As there may be a relatively large number of configurable user profile parameters, STB **201** may include one or more user interfaces configured to allow subscribers to seamlessly access and modify associated user profile information, via one or more content managers **209***a*-**209***c*. As such, a menu of customized content options (e.g., audio, video, gaming, and/or photographic media instances) may be conveniently modified by a supervisory user, via content managers **209***a*-**209***c*, and presented to a dependent user at, for instance, STB **201**, based on information within one or more user profiles. These modifications may be initialized in response to previously tracked game performance associated with the dependent user and made available to the supervisory user. It is recognized; however, that one or more user interfaces may be implemented at one or more end terminals **207** or accessible via one or more servers **205** or MSPs **111**. Thus, the user interface may be displayed to the user as part of a content manager accessible over a suitable communications link. Namely, web pages may be displayed to the user as part of an online application accessed over an Internet communications link. Exemplary processes and user interfaces of system **100** are described with respect to FIGS. **3**-**11**.

[0082] FIG. **3** is a flowchart of a process for establishing a modifiable user profile, according to an exemplary embodiment. This process is described with respect to exemplary user interfaces of FIGS. **4***a* and **4***b*. In step **301**, a new user subscribes to the game performance monitoring and content modifying service utilizing, for instance, an end terminal **207**, which is capable of processing and transmitting data over a network (e.g., packet-based network **117**). That is, the user may interact with an input interface (described in more detail with respect to FIG. **7**) of end terminal **207** to activate software resident on the device, such as content manager **209***b* executed on end terminal **207** or web-based content manager **209***a* implemented on server **205**. The software may then establish one or more connections to a service provider network **103** through an IP-based connection. Consequently, the user may register as a new subscriber of the content management service, as well as obtain sufficient authentication information for establishing future sessions.

[0083] In certain embodiments, registration procedures may prompt the user to identify all user devices (e.g., STBs **101***a*-**101***n* and/or end terminal(s) **107**) that the user may employ to interact with system **100** features, e.g., content managers **209***a*-**209***c*. The software may automatically search for peripheral devices, e.g. through a pinging or other suitable

procedure, as well as port any peripheral configuration parameters or user interface information into, for instance, user profile repository **127** for access by content managers **209***a*-**209***c*. In other embodiments, the user may identify devices by entering appropriate device information, such as: device type, serial number, registration number, MAC address, GUID, phone number, communications link, etc. In this manner a new subscriber may establish a separate identity for each media-based device **101***a*-**101***n* and/or end terminal (s) **107** associated with the user, which may be utilized to further personalize the content received by dependent users of the subscribing account.

[0084] As such, MSP **111**, server **105**, and or one or more content managers **209***a*-**209***c* may obtain device configuration parameters from a manufacturer or other third-party supplier over, for instance, the packet-based network **117**. Further, when a new device is employed, the software may add the apparatus to the list of user devices associated with the user's account. Registered devices (such as one or more STBs **101***a*-**101***n*) may be logically associated with one another. That is, STBs **101***a*-**101***n* can be grouped into workgroups such that associated subscription accounts, i.e., supervisory user profiles and one or more dependent user profiles, governing the availability of content to the associated users may be established, wherein the user profiles specify content that is available to the associated users and scheduling information for making the content available, as well as game performance information and content usage statistics associated with the users/user profiles.

[0085] Once registered and/or authenticated, the user may establish one or more user profiles, per step **303**. That is, the user via end terminal **207**, executing content manager **209***a* and/or **209***b*, may establish communication with MSP **111** for configuring one or more user profiles, i.e., supervisory profiles and one or more dependent profiles, wherein each user profile embodies user-defined attributes, policies, configuration data, scheduling information, selectable images, premises, and/or workgroups for carrying out functions of system **100**. Thus, when the user authenticates a presence via, for instance, an STB (e.g., STB **201**), the software may provide user-specific interfaces and features based on information stored within the user profile. Moreover, authentication procedures at one device (e.g., end terminal **107**) may authenticate other devices (e.g., STBs **101***a*-**101***n*), as previously described, or vice versa. In other embodiments, users may subscribe to the game performance monitoring and content modification service and/or configure a user profile via STB **201**, utilizing an input interface, such as control device **221** and/or end terminal **207**, via content managers **209***a* and/or **209***c*. It is contemplated that the user profile may be updated manually as well as automatically using predefined rules or scripts. For example, the user profile can be modified based on the user's performance—e.g., if the performance is high, then the profile can note the user is at a higher skill level, while continued poor performance can result in changing the user's skill level to a lower one.

[0086] As seen in FIG. **4***a*, an exemplary user interface **400** for selecting a "CREATE A NEW PROFILE" option **401** is illustrated. An authenticated subscriber (e.g., a parent) may directly input user profile information (e.g., dependent user profiles of, for instance, one or more children), wherein associated profiles govern the content available to one or more dependent users, such as the availability of online game **123**. User interface **400** may be invoked using a number of different methods. For example, the user may select a dedicated "MENU" button on control device **221** or on a peripheral device communicatively coupled thereto (or associated therewith), such as end terminal **207**. It is recognized that any other suitable actuator of these devices may be additionally, or alternatively, used to access the functionality of interface **400**, such as triggering a "GUIDE" icon or other suitable graphical element. Further, interface **400** may be evoked by selecting an option within another interface or application (e.g., when navigating from a public screen to a user-specific screen, i.e., a private screen). As such, an executing device (e.g., STB **201**, server **205**, end terminal **207**, etc.) may require sufficient authentication information (e.g., username, password, MAC address, GUID, etc.) to be input in order to access the functions of interface **400**.

[0087] In the illustrated embodiment, user interface **400** may include one or more interactive panes, such as panes **403**-**409**. In particular embodiments, as will be described in more detail below, the content of respective panes may be dynamically updated to display various information related to actions conducted within other panes, and vice versa. Pane **403** (i.e., a options pane) includes a listing of selectable entries corresponding to one or more features (or options) that may be associated with a subscription service or provided via STB **201** and/or end terminal **207**. For example, entries might include: a home (i.e., main menu) option **403***a*, an address book option **403***b*, a message center option **403***c*, a calendar option **403***d*, a search option **403***e*, a collaborate option **403***f*, and an entertainment option **403***g*, as well as other suitable entries. In certain embodiments, graphical elements may be provided to correspond to one or more of these entries **403***a*-**403***g*, and may be displayed therewith to facilitate interface usability. In other embodiments, pane **403** may include a navigation tree, an expandable table of contents, or FlashMedia presentation of selectable entries. Based on a particular selection within pane **403**, a main window pane **411** may be populated with appropriate input fields, selectable elements (e.g., toggle buttons, check boxes, radio buttons, sliders, list boxes, spinners, drop-down lists, menus, toolbars, ribbons, combo boxes, icons, etc.), output fields (e.g., labels, tooltips, balloon helps status bars, progress bars, infobars, etc.) and additional windows/panes, as well as any other suitable interface widget for inputting (or otherwise perceiving) configurable parameters. Actions within main window **411** may affect selectable parameters within pane **403**.

[0088] As seen, main window **411** includes: pane **405** (i.e., a profile establishing pane), pane **407** (i.e., an educational resources pane), and pane **409** (i.e., a featured games, channels, or other content pane). In this manner, pane **407** comprises, for instance, a plurality of links (or bookmarks) for researching content to make available to one or more secondary users that will edify the users' multimedia experience. An exemplary process for automatically providing these suggested content and research links is described with respect to FIG. **11**. As for now, these links may connect the user to information stored at MSP **111** or another third party source (such as a website) providing educational or other content resource information/suggestions. For example, links **413** may provide users with information, such as suggested content for certain age groups, ways to maximize secondary users "spare" time, or how much time should be allotted to a secondary user for interacting with various multimedia resources available via STB **201**, as well as other suitable information, such as public school rankings, frequently asked questions,

etc. Further, links **415** can be provided to inform supervisory users about certain educational games, such as math games, language games, critical thinking games, as well as other suitable interactive learning applications. As such, supervisory users may consult pane **407** to acquire expert knowledge concerning content to make available to one or more dependent users that will maximize their multimedia learning experience.

[0089] Similarly, pane **409** may be provided to include, for example, featured programming, broadcast channels, on-demand media, on-demand games, DVR content, or locally stored instances of the same, most often made available by other subscribers to the game performance monitoring and content modification service, as well as new availabilities of the same. Thus, supervisory users may consult pane **409** to acquire insight into what other subscribers are making available to dependent users. Additionally (or alternatively), information within pane **409** may be populated based on metadata correlation between user profile information (including game performance information and content usage statistics) and available content (such as educational content, e.g., an educational game) provided by the one or more content sources of system **100**. According to certain embodiments, one or more graphical icons corresponding to featured content may be provided, wherein users may acquire knowledge regarding the particular content instance being suggested by interacting with, e.g., "clicking on," the icons. For instance, selection of graphical icon **409***a* may provide information regarding a particular broadcast channel, including: rating information, plot summaries, lesson plans, interactive capabilities, messages, characters, etc., from which the supervisory user may determine whether such content is suitable or appropriate to make available to one or more dependent users based on, for example, previous game performance information. Again, this information may be provided using metadata correlation.

[0090] Interface **400** also includes a user profile pane **405** for making available the "CREATE A NEW PROFILE" option **401** for configuring a new profile. As seen can be seen in FIG. **8**, existing user profiles can be displayed in pane **405**, wherein selection of an existing profile enables users to receive game performance information, modify one or more profile parameters, and delete profiles, as will be described in more detail according to FIGS. **7** and **8**. In other embodiments, aural descriptions, tooltips, or other effects may be provided when a user navigates, for instance, a cursor over particular fields of panes **403**-**409**. Interface **400** may also be configured to accept verbal commands for entering suitable data into corresponding entry fields or for making selections within the respective panes. While not shown, interface **400** may include fields for targeted advertisements generated based on metadata concerning information within a user profile, or content available at one or more STBs **101***a*-**101***n*, as well as other suitable fields, such as a field for an MSP logo, etc. Moreover, navigational elements/fields, e.g., scrollbar **417**, as well as heading field **419**, may be provided and configured to indicate the existence of additional entries not displayed, but navigably available, as well as facilitate interface usability. Accordingly, users may browse to these entries via, for instance, an input interface of end terminal **207**, e.g., a cursor control, or actuation of a respective control device **221** component.

[0091] When a user interacts with the "CREATE A NEW PROFILE" option **401** of pane **405**, main window **411** of interface **400** is dynamically updated to main window **441**, thus making available interface **440** of FIG. **4***b*. Alternatively, interaction with option **401** may launch a separate profile configuring user interface. In this manner, interface **440** enables supervisory users, via one or more end terminal(s) **207** and/or STB **201**, executing one or more content managers **209***a*-**209***c*, to transmit a signal to an interface, e.g., a communication interface, of service provider network **103**, server **105**, user profile repository **127**, etc., based on the user profile information input to the content managers **209***a*-**209***c*. More specifically, the transmitted signal may be received at an interface of user profile repository **127** directly or indirectly via an interface of, for instance, MSP **111** or server **105**, wherein one or more of these interfaces (via one or more processors) can configure associated user profiles based on the received signal. Such configuration may be executed in real-time, thus having substantially immediate effect on the user's account, and consequently on available content at STBs **101***a*-**101***n*. Alternatively, configuration processes may be executed periodically via established connections with one or more networks (e.g., networks **103**, **117**, or **119**) and one or more repositories (e.g., repository **127**) to "push" and "pull" user profile information, such as in a "batched" processing mode.

[0092] Turning now to FIG. **4***b*, exemplary user interface **440** enables primary users to configure dependent user profiles. Similarly to interface **400**, interface **440** includes one or more interactive panes, such as panes **441** and **443**, that may be dynamically updated to display various information and/or fields related to actions conducted within the respective panes. Pane **443**, i.e., the options pane **403** of FIG. **4***a*, includes the various selectable entries corresponding to one or more features (or options) that may be associated with a subscription service or provided via STB **201** and/or end terminal **207**, and may be accompanied by suitable graphical elements corresponding to the one or more entries. Pane **441** includes appropriate input fields, selectable elements, output fields, and/or windows, as well as other suitable interface widgets for inputting (or otherwise perceiving) configurable user profile parameters, such as those parameters described with respect to FIG. **2**. Actions within panes **441** and **443** may affect selectable parameters within those panes, as well as in the respective other pane. As previously mentioned, aural descriptions, tooltips, or other effects may be provided when a user navigates, for instance, a cursor over particular fields of panes **441** and **443**. Additionally (or alternatively), interface **440** may be configured to accept verbal commands for entering suitable data into entry fields or making selections within the respective panes. Targeted advertisements, content available at one or more STBs **101***a*-**101***n*, as well as other suitable fields, such as a field for an MSP logo, etc may also be included. Further, navigational elements/fields, e.g., scrollbar **445**, as well as heading field **447**, may be provided, as in FIG. **4***a*.

[0093] More specifically, pane **441** (i.e., a profile configuring pane) includes various input fields **449**-**459** for users to input various user profile parameters. Actions within the various fields may dynamically modify the display of information within the interested field and/or the other respective fields. Utilizing one or more input interfaces of end terminal(s) **107**, STB **201**, and/or control device **221**, supervisory users can input into field **449** personal information, such as a name, birthday, and gender of a dependent user. Other entries (not shown) can correspond to the previously delineated profiles parameters described in conjunction with FIG. **2**. A language

field **451** (implemented as, for instance, a drown-down list) enables the supervisory user to select preferred secondary languages of one or more dependent user interfaces, content instances (e.g., an online game **123**), etc., so as to increase the dependent users' familiarity and/or proficiency with multiple languages.

[0094] Field **453** (i.e., a profile policy field) permits users to choose between one or more pre-established profile policies **453***a* designed to distribute (or portion) a dependent user's multimedia experience between various technical categories, such as math oriented development, language oriented development, critical thinking oriented development, as well as other technical fields, such as science, history, social studies, cognitive awareness, memory recognition, etc. One or more selection fields, e.g., radio buttons, check boxes, etc., may be provided for selecting a technical category. In other embodiments, field **453** may include a navigation tree, an expandable table of contents, or a FlashMedia presentation of selectable entries. Moreover, a plurality of graphical displays **453***b* may visually illustrate the distribution between the various technical categories as a function of a particular category. For instance, a default setting may be selectively available, wherein an entertainment experience may be evenly distributed between each of the available technical categories. Thus, a corresponding graphical display may illustrate, for instance, evenly sized bars, wherein the size of a particular bar relates to the relative exposure to various technical categories. In alternative embodiments, relative exposure may be conveyed through percentages, pie charts, sized icons, color codes, etc. Further, a primary user may be permitted to construct their own distribution between various available (or user defined) categories.

[0095] As such, metadata descriptions concerning specified content may be utilized by the content managers **209***a*-**209** to control the availability of certain content instances based on the subject matter of the content with respect to a technical category policy. Additionally, these metadata descriptions may be utilized in conjunction with statistical content usage parameters to control content availability based on the selected technical category policy.

[0096] Interface **440** also includes field **455**, a content specification field, wherein supervisory users can specify content to make available to particular dependent users. As illustrated, field **455** enables the primary user to select, via one or more selection fields (e.g., check boxes, radio buttons, etc.), a plurality of listed broadcast channels to make available. In other embodiments, field **455** may include a navigation tree, an expandable table of contents, or a FlashMedia presentation. In this manner, a local navigation element, e.g., scrollbar **455***a*, can be provided and configured for navigating to additional selectable entries (not shown). Further, a plurality of tabs **455***b* may enable users to toggle content selection modes of field **455** between broadcast content selection, DVR content selection, on-demand media (e.g., audio, pictographic, and/or video content) selection, on-demand game selection, or locally stored instances of the same.

[0097] In conjunction with the various modes of field **455**, a time management field **457** may be provided to control the scheduling availability of the selected content within field **455** based on, for example, absolute time values, times of day, days of the week, weeks of the month, months of the year, etc., as well as any other suitable time management parameter. Selectable fields, e.g., radio buttons, check boxes, etc., are provided to select between these various modes. Further, a schedule builder option **457***a* provides a scheduling widget to schedule content availability as a function of the content and/or of the respective users. A conventional calendar display utilizing scheduling blocks may be provided for this purpose. For instance, the scheduling widget (not shown) enables supervisory users to specify scheduling information by simply interacting within (e.g., clicking on) a particular display period (e.g., day of the week). The user may then choose between various available time slots, or may specify particular scheduling information (e.g., start/end dates, times, etc.). In particular embodiments, scheduling information may be made as a singular instance or as recurring events. Scheduling information may distinguish between applicable profiles, content instances, devices, etc. In other instances, supervisory users may limit dependent users to only those content instances specifically scheduled.

[0098] Utilizing an upload option **459**, the primary user can upload an image file to be presented as a selectable icon, as described in more detail with respect to FIGS. **6***a* and **6***b*. In any instance, however, the selectable image may include an image file identifying the user (e.g., a headshot, avatar, or other visual artifact), such that the image file can be shown to dependent users to assist with the selection of the users' particular user profile. User interaction with the upload image option **459** enables a user to browse a memory (e.g., memory **239** of STB **201**, user profile repository **127**, content repository **121**, or other accessible memory, e.g., a memory of one or more end terminals **207**, a database of MSP **111** or other third party source, etc.) and choose an image file to associate with a particular user profile, and in some embodiments, store therein. Conventional uploading techniques may be utilized for this purpose. Accordingly, an image field **461** may be provided to convey a "successful" association (i.e., upload), as well as demonstrate what the selectable image will "look like." In certain embodiments, interface **440** also includes a frequently asked questions feature **463** to aid user decisions and/or inputs.

[0099] After generating a user profile, MSP **111** may store a list of subscribers to the service, as well as a list of subscriber STB identifiers, authentication information, and user-defined profiles (including user-specific policies, subscription service options, and/or configuration data) for one or more STBs **101***a*-**101***n* and associated peripheral devices (e.g., display **225**, audio system **235**, etc.). Additionally (or alternatively), users may directly interact with user profile repository **127**. Further, user profile information may be stored within respective user equipment (e.g., STBs **101***a*-**101***n*) via a memory **239** or other repository (e.g., a locally accessible database coupled to STB **201**, or a content repository accessible over a data network, such as repository **121**).

[0100] Referring back to FIG. **3**, after the supervisory user configures at least one user profile, per step **305**, the user may enable the game performance tracking and content modifying services of system **100**. Furthermore, based on information stored within these user profiles, STBs **101***a*-**101***n* may present a menu of customized content options (e.g., audio, video, gaming, and/or photographic media instances) from which authenticated dependent users may select from and interact with.

[0101] According to certain embodiments, the menu of customized content options may be automatically modified by an STB based on dependent user game performance, content usage, and/or other information stored within a respective user profile, such as a profile policy. FIG. **5** is a flowchart

of a process for "dynamic" content modification, according to an exemplary embodiment. Exemplary user interfaces effectuating this process are shown in FIGS. **6***a* and **6***b*.

[0102] In step **501**, an authenticated dependent user may access the functions of STB **201** via, for instance, control device **221**. Namely, the user may access a main menu interface **600** of FIG. **6***a*, by for example, actuating a dedicated "MENU" button on control device **221** or a peripheral device (e.g., PC **221**, a mobile handset, etc.). It is recognized that any other suitable actuator of these devices may be additionally, or alternatively, used to access the functionality of main menu **600**, such as by triggering a "GUIDE" icon. Further, main menu **600** may be evoked by selecting an option within another interface or application (e.g., when navigating from a public screen to a user-specific screen, i.e., a private screen). As such, an executing device (e.g., STB **201**, PC **221**, etc.) may require sufficient authentication information (e.g., username and password, etc.) to be input in order to access the functions of main menu **600**.

[0103] As seen in FIG. **6***a*, an exemplary user interface **600** of STB **201** for providing a main menu is illustrated and may include one or more interactive viewing panes, such as panes **601** and **603**. The display of pane **603** may be dynamically updated to present various information related to user interaction within pane **601**, and vice versa. Pane **601** includes a listing of selectable entries corresponding to one or more features (or options) that may be provided via STB **201**. For example, entries might include: program guide listings, DVR options, marketplace (shopping) options, messaging and communications features, searching options, calendar features, settings, help features, collaboration features, and the like, as well as a "FOR KIDS" option **605**. In certain embodiments, graphical elements (e.g., element **607**) may be provided to correspond to one or more of the entries, and may be displayed therewith. Header **609** and footer **611** fields may be provided and configured to indicate the existence of additional entries not displayed, but navigably available. Users may browse through these entries via, for instance, suitable components of control device **221**, e.g., navigational up/down arrows. A fixed focus state (e.g., border/box **613**) and/or distinctive magnification features, e.g., color, brightness, bolding, font type, text size, etc., can be used to convey a "currently" navigated position. In this manner, when a user navigates to a desired entry, actuation of, for instance, an "OK" button on control device **221** may launch corresponding features and/or applications of the particular entry. In some embodiments, a displayed interactive "OK" option (not shown) may be utilized. Moreover, main menu **600** may include tooltips (not illustrated) when a user navigates to a particular entry. In other embodiments, aural descriptions of the entry navigated to and methods of interaction may be provided.

[0104] In other embodiments, main menu **600** may provide navigation fields **615** and **617** to facilitate usability. For example, field **615** may provide the name of the function/option being accessed, e.g., "MAIN MENU." In this manner, when a user accesses a new function/option, field **615** can be automatically updated, as is apparent in, for example, fields **661** of FIG. **6***b*. Field **617** may be utilized to indicate sub-functions/sub-options accessed, e.g., "EDUCTIONAL" content functions. Thus, a dependent user can select their user profile via pane **603** by navigating to and selecting entry **605** and then, for instance, entry **619** of main menu **600**. Dependent user will be able to distinguish between various user profiles via appropriate indicia, such as a username, selectable image **621**, or other personalized information, such as those parameters stored within the users' respective user profiles. Secondary header **623** and footer **625** fields may be provided and configured to indicate the existence of additional user profiles not displayed, but navigably available. In the depicted embodiment, header **623** and footer **625** fields respectively display "TOP OF LIST" and "BOTTOM OF LIST," thus demonstrating the existence of a set of selectable profiles limited to those displayed. It is contemplated that any number of profiles may exist. Thus, users may browse through these entries via, for instance, control device **221**, and select their associated profile via, for instance, selectable image **621**. In some embodiments, additional authentication procedures may be required to access one or more of the dependent user profiles, so as to keep over inquisitive users from accessing content not appropriate or unintended for them; however, suitable for another user.

[0105] Upon selection of, for example, profile **619**, i.e., "AUGUSTINE'S" profile, interface **600** will be dynamically updated to interface **650** of FIG. **6***b*. In step **503**, the dependent user receives a prompt of menu options corresponding to customized content instances (e.g., audio, video, gaming, and/or photographic media instances) made available based on the user's profile, such as those instances of menu **651**, e.g., "GAMES" **653** and "TV" **655**, illustrated in FIG. **6***b*. More specifically, interface **650** may comprise panes of a content manger, such as content manager **209***c*. As previously described with respect to earlier interfaces, panes **651**, **657**, and **659** include displays that may be dynamically altered in response to user interaction. Further, header and footer fields (e.g., header **661** and footer **663**) may be provided to facilitate micro-navigation with each of the panes **651**, **657**, and **659**. Fields **665** and **667** may be provided to facilitate macro-navigation between interfaces **600** and **650**. In the depicted embodiment, fields **665** provide the name of the function/option being accessed, e.g., "EDUCATIONAL" material. Meanwhile, field **667** indicates the user profile of the current session, e.g., "AUGUSTINE."

[0106] In the illustrated embodiment, pane **651** includes a list of navigably available content categories, e.g., broadcast programming, DVR content, on-demand media, on-demand, games, or locally stored instances of the same. In certain embodiments, graphical elements (e.g., element **669**) may be provided to correspond to one or more of the entries, and may be displayed therewith. Accordingly, users may browse through these entries via suitable method (e.g., using control device **221**). A fixed focus state (e.g., border/box **669**) and/or distinctive magnification features may be used to convey a "currently" navigated position. Thus, when a user navigates to a desired entry, the display of pane **659** may toggle between corresponding content instances made available by STB **201** based on information within the user's profile. Selection of, for example, a "GAMES" content category **653** within pane **651** causes pane **659** to display various specified games instances, such as online game **123**, e.g., the "BARNIE" game **673**.

[0107] At step **505**, a dependent user selects a game content instance, e.g., an online educational game, such as game **673**. Upon selection, STB **201** issues a request to either MSP **111** or server **105** for game **673**. MSP **111** and/or server **105** may query user profile repository **127** and, in particular, the dependent user's profile to ensure game **673** is permissible for the dependent user. Assuming game **673** is permissible, the

online game may be executed and played, in step **507**, by the user in a variety of ways. For example, game **673** may be executed on server **105** and/or MSP **111**, such that game commands issued by the player to STB **201**, via, for instance, control device **221**, are transmitted to, received by, and executed at server **105** and/or MSP **111**. In this embodiment, STB **201** substantially operates as a terminal receiving video content from server **105** and/or MSP **111** for presentation at display **221**. Accordingly, online game module **125** may execute game **673**, while tracking module **129** tracks the game performance of the player and stores the game performance information in a suitable location, e.g., user profile repository **127** and/or memory **239** of STB **201**, as well as any other equivalent location. Alternatively, a copy or version of game **673** can be downloaded to STB **201**, such that the operation of the game and the execution of the game commands received at STB **201**, via control device **221**, from the player, occur at STB **201** via processor **211**. In this embodiment, gaming data is calculated by processor **211** and tracked either locally via tracking module **213** or by the network-based tracking module **129**. As such, game performance information may be stored at a suitable location, such as memory **239**, user profile repository **127**, etc. In other embodiments, the execution of game **673** and/or the processing of game control commands may be distributed between system **100** components, such as STB **201**, end terminal **207**, server **205**, MSP **111**, etc. For example, server **105** may transmit a single level of game **673** to STB **201**, wherein game execution and commands received from, for instance, control device **221** may be executed at STB **201** via processor **211**. Once the player completes the level, another level may be executed on, for instance, sever **105** via online game module **125**. As such, one or more tracking modules **129** and/or **213** may be used to track game performance information, but, nevertheless, the game performance information can be stored to a centralized location, such as user profile repository **127** or memory **235**.

[0108] Upon completion of game **673**, the expiration of a scheduled time period, or the dependent user simply surrendering, as well as other equivalent processes, STB **201** may dynamically provide modification to the player's user profile based on the player's game performance information, content usage statistics, and/or user profile information (such as scheduling information, profile policy, etc.). Thus, when the user accesses, for instance, interface **650**, the user receives a prompt of customized menu options modified based on the modified user profile (step **509**). For example, if the user scored very well in game **673**, it may be replaced by a new, more challenging game. As another example, if the dependent user exhausted all of their scheduled content usage time, interface **650** may provide a corresponding message, such as "ALLOTTED TIME EXPIRED," or other like message.

[0109] According to another embodiment, the menu of customized content options may be manually modified by a supervisory user based on dependent user game performance, content usage, and/or other information stored within a respective user profile, such as a profile policy. FIG. **7** is a flowchart of a process for "ad hoc" content modification, according to an exemplary embodiment. FIG. **8** is an exemplary diagram of a user interface configured for this purpose.

[0110] In step **701**, an authenticated dependent user (e.g., a child) is presented with a game (e.g., a download version of online game **123**, such as an educational game) via, for instance, display **225** receiving formatted signals from presentation module **241** of STB **201**. As such, the child may manipulate control device **221** sending game commands to processor **211**, via input interface **243**, for execution, wherein updated or new displays of game **123** are presented via display **225** by way of presentation module **241**. According to other embodiments, the child can utilize an input interface of end terminal **207** to communicate game commands to processor **211**, wherein signals **203***b* are transmitted between STB **201** and end terminal **207** via communications interface **231**. In the alternative, the commands may be convey to STB **201** through a voice application using an appropriate voice station (not shown). In certain embodiments, aural aspects of game **123** may be presented via display **225** and/or audio system **235**. Next, tracking module **213** tracks the game performance of the user, per step **703**.

[0111] Tracking module **213** may obtain the game performance information from processor **211** in real-time (i.e., as the game is being played) or periodically (i.e., based on a predetermined time interval). As such, game performance information may be acquired by tracking module **129** continuously, intermittently, or in an "on demand" fashion. In other embodiments, tacking module **129** may be employed for this purpose, wherein game performance information is transmitted to server **105** either directly over packet-based network **117** or indirectly via MSP **111** over one or more data networks (e.g., network **117** and/or **103**). In step **705**, the game performance information may be stored in a memory **239**, a repository (not shown) coupled to STB **201**, user profile repository **127**, or other suitable location, such as in a memory (not shown) of server **105** or a database (not illustrated) of server **105**. In this manner, game performance information may be tracked and stored over a given period of time, such that the information may accessible to one or more supervisory users to facilitate a determination as to whether available content to a dependent user requires modification. In other embodiments, tracking modules **129** and/or **213** may be utilized to generate statistical information based on general usage of content by the child, such as the amount of time playing game **123** and, for instance, watching broadcast programming.

[0112] Per step **707**, STB **201** can provide game performance information to a supervisory user, via for instance one or more content manager instances **209***a*-**209***c*. For example, an authenticated supervisory user may access content manager **209***c* of STB **201**, wherein a user interface of content manager **209***c* may be presented to the supervisory user at display **225** overlaid on video component **223** of a content instance transmitted from media source **217**, such as a VOD documentary on lake houses. Presentation module **241** may format the game performance information and/or content usage statistics into a report, such as a simplified graphical representation, for presentation within content manager **209***c*. Alternatively, network-based report module **131** of server **105** may be utilized for the report generation purposes. An exemplary report is described in more detail in conjunction with FIGS. **9** and **10**.

[0113] Upon receiving the game performance information and/or content usage statistics, the supervisory user may determine, as in step **709**, whether to modify the dependent user's profile based on the received information. If no modification is necessary the process ends, otherwise the supervisory user, via one or more content managers **209***a*-**209***c*, may edit the dependent user's profile to change the available content (including video content and games) to the dependent

user based on the presented information, as in step **711**. In this regard, the supervisory user may access user interface **800** of FIG. **8**, to acquire the game performance information, as well as edit the dependent user's profile.

[0114] As seen in FIG. **8**, an exemplary user interface **800** for obtaining game performance information and/or editing a dependent user's profile is illustrated. User interface **800** includes interactive pane **803**, i.e., pane **405** of interface **400** (of FIG. **4***a*) dynamically updated to present the existence of two established user profiles **801** and **802**. As such, interface **800** is invoked as an instance of pane **405** of user interface **400**, and therefore is accessed utilizing those methods previously described with respect to FIG. **4***a*. Utilizing one or more input interfaces of end terminal(s) **107**, STB **201**, and/or control device **221**, supervisory users can interact with one or more selection fields (e.g., fields **805-811**) for selecting user profiles (e.g., check boxes **805***a* and **805***b*), for obtaining performance information of users (e.g., icons **807***a* and **807***b*), for editing particular user profiles (e.g., icons **809***a* and **809***b*), and/or for deleting selected user profiles (e.g., icon **811**). Further, supervisory users may distinguish between user profiles via usernames **813***a* and **813***b*, as well as graphic elements **815***a* and **815***b*. While only two previously established user profiles are illustrated, it is contemplated that any number of profiles may exist and be accessed through pane **803**. In this regard, a navigational element (not illustrated) may be provided (such as a scrollbar) to facilitate selection of user profiles navigably available, but not displayed. In other embodiments, pane **803** may include a navigation tree, an expandable table of contents, or a FlashMedia presentation of selectable entries. Additionally (or alternatively), interface **800** may be configured to accept verbal commands to effectuate interaction with pane **803**.

[0115] In the illustrated embodiment, graphic element **815***a* is implemented as a headshot, while graphic element **815***b* is a generic depiction utilized when no selectable image has been uploaded via interface **440** (of FIG. **4***b*) during the profile configuration stage. According to exemplary embodiments, selection of icons **807***a* or **807***b* may dynamically modify interface **400** (including interface **800**) to, for instance, user interface **1000** (of FIG. **10**) having a performance report **1001** therein. Performance report **1001**, as well as interface **1000**, will be described in more detail with respect to FIGS. **9** and **10**. In other embodiments, interaction with icons **809***a*-**809***b* may dynamically modify interface **400** (including interface **800**) to, for instance, interface **440**, wherein a supervisory user may modify user profile parameters previously established, so as to maximize the dependent users' development based on game performance formation, content usage statistics, and/or other suitable information within an associated user profile, such as a profile policy.

[0116] As previously mentioned, supervisory users may obtain performance reports to facilitate their decision making process as to whether modification to a dependent users' profile is necessary to enhance their learning experience. In particular embodiments, the supervisory may retrieve performance information of other users associated with other STBs, wherein a report can be generated comparing the relative performance information of two or more of users.

[0117] FIG. **9** is flowchart of a process for generating and presenting a performance report, according to an exemplary embodiment. FIG. **10** is a diagram of an exemplary user interface utilized in this process. In step **901**, STB **201** (via communication interface **231**) and/or report module **131** of server **105** may retrieve game performance information concerning various users (e.g., dependent subscribers to the game performance monitoring and content modification service) based on a command input by a supervisory user to, for instance, one or more content managers **209***a*-**209***c* implemented on (or accessed by) one or more media-based devices **101***a*-**101***n* and/or end terminal(s) **107**. The various users' game performance information may be extracted from system **100** components, such as: user profile repository **127**, various memories **239** of the users' respective STBs **101***a*-**101***n*, or any other suitable location storing this information, such as a memory of server **105**. At step **903**, STB **201** via, for instance, processor **211**, or report module **131** of server **105** may compare the retrieved performance information of the various users with the performance information of a particular dependent user of interest to the requesting supervisory user. These comparisons can be conducted across select geographic regions, specific age groups, socio-economic statuses, behavioral characteristics, as well any other suitable category corresponding to one or more parameters stored within a user profile.

[0118] Per step **905**, processor **211** and/or report module **131** may generate one or more report(s) including comparisons based on, for instance, a locality (e.g., local region comparisons, regional average comparisons, national average comparisons, etc.). At step **907**, the supervisory user may particularly specify a delivery method (e.g., as a STB display, sent as a fax, etc.) and/or a reporting mode (e.g., textual analysis, pie graph, bar chart, plot, etc.) via one or more content managers **209***a*-**209***c*, wherein the one or more content managers **209***a*-**209***c* instruct processor **211** and/or report module **131** to effectuate the specified delivery method and/or reporting mode. For instance, if report module **131** generated the comparison report and the supervisory user made a delivery request for presentation via STB **201**, report module **131** may transmit corresponding signals to STB **201** for display at, for instance, display **225**. Thus, the supervisory user (e.g., a parent of the dependent user) can be presented with the selected report via, for instance, STB **201**, as per step **909**. Namely, display **225** may present output signals **227** formatted by presentation module **241** in response to instructions from either processor **211**, controller **219**, report module **131**, and/or content managers **209***a*-**209***c*, as well as any other suitable system **100** component, such as MSP **111**. In turn, the supervisory user may utilize this report to selectively modify the dependent user's user profile, thereby changing the content availability to that dependent user based on the performance information.

[0119] As seen in FIG. **10**, an exemplary user interface **1000** for presenting game performance information to a supervisory user, formatted as a graphical report, is illustrated. An authenticated subscriber (e.g., a parent) may directly review game performance information and/or edit user profile information, such as a profile policy, based on the displayed report. User interface **1000** may be invoked using a number of different methods. For example, the user may select a dedicated "MENU" button on control device **221** or on a peripheral device communicatively coupled thereto (or associated therewith), such as end terminal **207**. It is recognized that any other suitable actuator of these devices may be additionally, or alternatively, used to access the functionality of interface **1000**, such as triggering a "GUIDE" icon or other suitable graphical element. Further, interface **1000** may be evoked by selecting an option within another interface or

application, such as interacting with a performance icon **807***a* or **807***b* of interface **800**. In some embodiments, an executing device (e.g., STB **201**, server **205**, end terminal **207**, etc.) may require sufficient authentication information (e.g., username, password, MAC address, GUID, etc.) to be input in order to access the functions of interface **1000**.

[0120] Accordingly, interface **1000** includes one or more interactive panes, such as panes **1003** and **1005** that may be dynamically updated to display various information and/or fields related to actions conducted within the respective panes. Pane **1003**, i.e., the options pane **403** of FIG. **4***a*, includes the various selectable entries corresponding to one or more features (or options) that may be associated with a subscription service or provided via STB **201** and/or end terminal **207**, and may be accompanied by suitable graphical elements corresponding to the one or more entries. Pane **1005** includes performance report **1001**, report legend **1007**, and one or more profile editing fields, such as profile policy field **1009**. In certain embodiments, pane **1005** may also include additional input fields, selectable elements, output fields, and/or windows, as well as any other suitable interface widgets for inputting (or otherwise perceiving) user profile modifications and/or viewing (or generating) a game performance report. Actions within panes **1003** and **1005** may affect selectable parameters within those panes, as well as in the respective other pane. Aural descriptions, tooltips, or other effects may be provided when a user navigates, for instance, a cursor over particular fields of panes **1003** and **1005**. Additionally (or alternatively), interface **1000** may be configured to accept verbal commands for entering suitable data into entry fields or making selections within the respective panes. Targeted advertisements, content modification suggestions, as well as other suitable fields, such as a field for an MSP logo, etc. may also be included. Further, navigational elements/fields, e.g., scrollbar **1011**, as well as heading field **1013**, may be provided. Moreover, image **1015** and/or report title **1017** may be displayed via pane **1005** to notify a supervisory user whose report they are accessing.

[0121] In the illustrated embodiment, report **1001** comprises a performance comparison chart including a title **1017** and legend **1007**. The chart makes use of rectangular bars of varying length, sized in proportion to the magnitude or frequency of the value they represent, to compare two or more values. More specifically, the chart compares the relative skill set (e.g., math skills, language skills, and critical thinking skills) of a particular user versus those skills exhibited across multiple geographic regions. A supervisory user may obtain deeper insight into a dependent user's abilities, interests, weaknesses, etc. For instance, report **1001** demonstrates that Augustine is trailing the regional averages in both math and language, however, performing better in critical thinking skills. In other embodiments, report **1001** may comprise textual information, other graphical displays (e.g., pie charts, graphs, plots, etc.), and/or aural components. Legend **1007** is included to identify the intended meaning of certain graphical depictions. For instance, legend **1007** may convey the meaning of particular color codes, cross-hatching, etc., used in report **1001**, thereby promoting visual and conceptual clarity of the display. Based on the game performance information provided, a supervisory user may determine whether user profile modification is necessary to increase the dependent user's development. The one or more profile editing fields (e.g., field **100***p*) are provided for effectuating quick, convenient profile modifications.

[0122] Field **1009** (i.e., a profile policy field) permits users to modify previous policy choices. In this manner, a supervisory user may make a new choice between one or more pre-established profile policies **1009***a* designed to distribute (or portion) a dependent user's multimedia experience between various technical categories, such as math oriented development, language oriented development, critical thinking oriented development, as well as other technical fields, such as science, history, social studies, cognitive awareness, memory recognition, etc. One or more selection fields, e.g., radio buttons, check boxes, etc., may be provided for selecting a technical category. In other embodiments, field **1009** may include a navigation tree, an expandable table of contents, or a FlashMedia presentation of selectable entries. Moreover, a plurality of graphical displays **1009***b* may visually illustrate the distribution between the various technical categories as a function of a particular category. Further, a primary user may be permitted to construct their own distribution between various available (or user defined) categories. Thus, with reference to FIG. **4***b*, in response to Augustine's game performance information shown in report **1001**, a supervisory user modified an associated user profile policy from a default setting (as in FIG. **4***b*) to a language **1019** oriented policy, so as to compensate for Augustine's exhibited weakness in language oriented development. As such, the next time Augustine is presented with a menu of customized content options, the options will be modified according to the adjusted profile policy.

[0123] As previously mentioned, interface **400** of FIG. **4***a* includes panes **407** and **409** comprising, for instance, a plurality of links (or bookmarks) to automatically generated content suggestions. These modification suggestions may be generated in response to game performance information, content usage statistics, or other user profile parameter associated with a dependent user.

[0124] FIG. **11** is a flowchart of a process for dynamic content modification suggestions, according to an exemplary embodiment. In step **1101**, one or more tracking modules **129** and/or **213** may monitor content usage of one or more dependent users. At step **1103**, the one or more tracking modules may track and store statistical information based on the monitored content usage. These stored statistical parameters may be included in one or more report(s), such as report **1001** (of FIG. **10**), and made available to a supervisory user, as per step **1105**. The supervisory user; however, may not always know exactly how to modify a dependent user's content availability, so as to maximize their learning experience. Therefore, content managers **209***a*-**209***c*, via one or more processors of one or more executing platforms (e.g., STBs **101***a*-**101***n*, end terminal(s) **107**, and/or server(s) **105**), may automatically suggest content modifications to a supervisory user based on the tracked statistical information and/or stored game performance data, per step **1107**. This process may be carried out through metadata correlation, wherein metadata descriptions of available system **100** content may be analyzed and compared to information within a dependent user's profile. The content managers **209***a*-**209***c* may, for instance, access (or implement) conventional neural network technology, whereby the neural network can determine what content is most suitable for a dependent user based on associated game performance information, content usage statistics, and other user profile parameters in comparison to the metadata descriptions and previous success with other suggestions made to other users.

[0125] The processes described herein for performance tracking to modify content for a STB may be implemented via software, hardware (e.g., general processor, Digital Signal Processing (DSP) chip, an Application Specific Integrated Circuit (ASIC), Field Programmable Gate Arrays (FPGAs), etc.), firmware or a combination thereof. Such exemplary hardware for performing the described functions is detailed below.

[0126] FIG. **12** illustrates computing hardware (e.g., computer system) **1200** upon which an embodiment according to the invention can be implemented. The computer system **1200** includes a bus **1201** or other communication mechanism for communicating information and a processor **1203** coupled to the bus **1201** for processing information. The computer system **1200** also includes main memory **1205**, such as a random access memory (RAM) or other dynamic storage device, coupled to the bus **1201** for storing information and instructions to be executed by the processor **1203**. Main memory **1205** can also be used for storing temporary variables or other intermediate information during execution of instructions by the processor **1203**. The computer system **1200** may further include a read only memory (ROM) **1207** or other static storage device coupled to the bus **1201** for storing static information and instructions for the processor **1203**. A storage device **1209**, such as a magnetic disk or optical disk, is coupled to the bus **1201** for persistently storing information and instructions.

[0127] The computer system **1200** may be coupled via the bus **1201** to a display **1211**, such as a cathode ray tube (CRT), liquid crystal display, active matrix display, or plasma display, for displaying information to a computer user. An input device **1213**, such as a keyboard including alphanumeric and other keys, is coupled to the bus **1201** for communicating information and command selections to the processor **1203**. Another type of user input device is a cursor control **1215**, such as a mouse, a trackball, or cursor direction keys, for communicating direction information and command selections to the processor **1203** and for controlling cursor movement on the display **1211**.

[0128] According to an embodiment of the invention, the processes described herein are performed by the computer system **1200**, in response to the processor **1203** executing an arrangement of instructions contained in main memory **1205**. Such instructions can be read into main memory **1205** from another computer-readable medium, such as the storage device **1209**. Execution of the arrangement of instructions contained in main memory **1205** causes the processor **1203** to perform the process steps described herein. One or more processors in a multi-processing arrangement may also be employed to execute the instructions contained in main memory **1205**. In alternative embodiments, hard-wired circuitry may be used in place of or in combination with software instructions to implement the embodiment of the invention. Thus, embodiments of the invention are not limited to any specific combination of hardware circuitry and software.

[0129] The computer system **1200** also includes a communication interface **1217** coupled to bus **1201**. The communication interface **1217** provides a two-way data communication coupling to a network link **1219** connected to a local network **1221**. For example, the communication interface **1217** may be a digital subscriber line (DSL) card or modem, an integrated services digital network (ISDN) card, a cable modem, a telephone modem, or any other communication interface to provide a data communication connection to a corresponding type of communication line. As another example, communication interface **1217** may be a local area network (LAN) card (e.g. for Ethernet™ or an Asynchronous Transfer Model (ATM) network) to provide a data communication connection to a compatible LAN. Wireless links can also be implemented. In any such implementation, communication interface **1217** sends and receives electrical, electromagnetic, or optical signals that carry digital data streams representing various types of information. Further, the communication interface **1217** can include peripheral interface devices, such as a Universal Serial Bus (USB) interface, a PCMCIA (Personal Computer Memory Card International Association) interface, etc. Although a single communication interface **1217** is depicted in FIG. **12**, multiple communication interfaces can also be employed.

[0130] The network link **1219** typically provides data communication through one or more networks to other data devices. For example, the network link **1219** may provide a connection through local network **1221** to a host computer **1223**, which has connectivity to a network **1225** (e.g. a wide area network (WAN) or the global packet data communication network now commonly referred to as the "Internet") or to data equipment operated by a service provider. The local network **1221** and the network **1225** both use electrical, electromagnetic, or optical signals to convey information and instructions. The signals through the various networks and the signals on the network link **1219** and through the communication interface **1217**, which communicate digital data with the computer system **1200**, are exemplary forms of carrier waves bearing the information and instructions.

[0131] The computer system **1200** can send messages and receive data, including program code, through the network (s), the network link **1219**, and the communication interface **1217**. In the Internet example, a server (not shown) might transmit requested code belonging to an application program for implementing an embodiment of the invention through the network **1225**, the local network **1221** and the communication interface **1217**. The processor **1203** may execute the transmitted code while being received and/or store the code in the storage device **1209**, or other non-volatile storage for later execution. In this manner, the computer system **1200** may obtain application code in the form of a carrier wave.

[0132] The term "computer-readable medium" as used herein refers to any medium that participates in providing instructions to the processor **1203** for execution. Such a medium may take many forms, including but not limited to non-volatile media, volatile media, and transmission media. Non-volatile media include, for example, optical or magnetic disks, such as the storage device **1209**. Volatile media include dynamic memory, such as main memory **1205**. Transmission media include coaxial cables, copper wire and fiber optics, including the wires that comprise the bus **1201**. Transmission media can also take the form of acoustic, optical, or electromagnetic waves, such as those generated during radio frequency (RF) and infrared (IR) data communications. Common forms of computer-readable media include, for example, a floppy disk, a flexible disk, hard disk, magnetic tape, any other magnetic medium, a CD-ROM, CDRW, DVD, any other optical medium, punch cards, paper tape, optical mark sheets, any other physical medium with patterns of holes or other optically recognizable indicia, a RAM, a PROM, and EPROM, a FLASH-EPROM, any other memory chip or cartridge, a carrier wave, or any other medium from which a computer can read.

[0133] Various forms of computer-readable media may be involved in providing instructions to a processor for execution. For example, the instructions for carrying out at least part of the embodiments of the invention may initially be borne on a magnetic disk of a remote computer. In such a scenario, the remote computer loads the instructions into main memory and sends the instructions over a telephone line using a modem. A modem of a local computer system receives the data on the telephone line and uses an infrared transmitter to convert the data to an infrared signal and transmit the infrared signal to a portable computing device, such as a personal digital assistant (PDA) or a laptop. An infrared detector on the portable computing device receives the information and instructions borne by the infrared signal and places the data on a bus. The bus conveys the data to main memory, from which a processor retrieves and executes the instructions. The instructions received by main memory can optionally be stored on storage device either before or after execution by processor.

[0134] While the preferred embodiments have been described herein, alterations thereto, and other embodiments and implementations of the invention as set forth in the attached claims are possible. Accordingly, the scope of the invention is not limited to the description provided herein, but rather covers various modifications and equivalent arrangements.

[0135] The following patent application is incorporated herein by reference in its entirety: co-pending U.S. patent application (Attorney Docket No. 20070245) filed xxxxxxx, entitled "Method and System for Providing Content Management for a Set-top Box."

What is claimed is:

1. A method comprising:

selecting an educational game for a dependent user based on a profile of the dependent user, wherein the profile specifies available content and scheduling information associated with the content;

presenting, via a set-top box, an educational game to the dependent user;

tracking performance information relating to playing the educational game by the dependent user;

comparing the tracked performance information with performance information collected from a plurality of other dependent users' performances on the educational game, wherein the dependent users are within a specified geographical region;

notifying a parental user of the comparison; and

receiving, in response to the notification, input from the parental user for modifying the profile of the dependent user.

2. A method according to claim **1**, further comprising:

automatically modifying the profile based on the performance information, wherein the performance information is used to select content including broadcast content, digital video recorder (DVR) content, on-demand video, an on-demand game, or a locally stored game.

3. A set-top box device comprising:

a memory configured to store a profile of a dependent user, wherein the profile specifies available content and scheduling information associated with the content; and

a processor coupled to the memory and configured to select an educational game for a dependent user based on a profile of the dependent user;

a presentation module configured to present an educational game to the dependent user;

a tracking module configured to track performance information relating to playing the educational game by the dependent user, wherein the processor is further configured to compare the tracked performance information with performance information collected from a plurality of other dependent users' performances on the educational game, wherein the dependent users are within a specified geographical region, and a parental user is notified of the comparison; and

an input interface configured to receive, in response to the notification, input from the parental user for modifying the profile of the dependent user.

4. A set-top box device according to claim **3**, wherein the profile is automatically modified based on the performance information, wherein the performance information is used to select content including broadcast content, digital video recorder (DVR) content, on-demand video, an on-demand game, or a locally stored game.

5. A method comprising:

presenting, via a set-top box, a game to a first user according to a user profile of the first user;

tracking performance, associated with playing the game, of the user;

storing the performance information; and

presenting the performance information to a second user, wherein the set-top box is configured to provide modification of the user profile by the second user based on the performance information.

6. A method according to claim **5**, wherein the game includes an educational game.

7. A method according to claim **5**, further comprising:

retrieving performance information of other users associated with other set-top boxes; and

comparing the performance information of the first user with the performance information of the other users to output a report.

8. A method according to claim **5**, wherein the comparison is performed for users within a specified geographical region.

9. A method according to claim **5**, further comprising:

presenting the report via the set-top box to the second user.

10. A method according to claim **5**, wherein the performance information is used to select content including broadcast content, digital video recorder (DVR) content, on-demand video, an on-demand game, or a locally stored game.

11. A method according to claim **10**, further comprising:

generating statistical information based on usage of the content.

12. A method according to claim **10**, further comprising:

automatically providing, via the set-top box, suggested content based on the performance information or the user profile; and

automatically updating the user profile based on the performance information.

13. A method according to claim **10**, wherein the user profile further specifies scheduling information for access to the content.

14. A method according to claim **5**, wherein the second user has a supervisory role over the first user.

15. A set-top box apparatus comprising:

a processor configured to execute a game;

a presentation module configured to present the game to a first user according to a user profile of the first user;

a tracking module configured to track performance, associated with playing the game, of the user; and

a memory configured to store the performance information,

wherein the presentation module is further configured to present the performance information to a second user, and the user profile is selectively modified by the second user based on the performance information.

16. An apparatus according to claim **15**, wherein the game includes an educational game.

17. An apparatus according to claim **15**, further comprising:

a communication interface configured to retrieve performance information of other users associated with other set-top boxes, wherein the processor is further configured to compare the performance information of the first user with the performance information of the other users to output a report.

18. An apparatus according to claim **15**, wherein the comparison is performed for users within a specified geographical region.

19. An apparatus according to claim **15**, wherein the presentation module is further configured to present the report via the set-top box to the second user.

20. An apparatus according to claim **15**, wherein the performance information is used to select content including broadcast content, digital video recorder (DVR) content, on-demand video, an on-demand game, or a locally stored game.

21. An apparatus according to claim **20**, wherein the tracking module is further configured to generate statistical information based on usage of the content.

22. An apparatus according to claim **20**, wherein suggested content is automatically provided based on the performance information or the user profile, and the user profile is automatically updated based on the performance information.

23. An apparatus according to claim **20**, wherein the user profile further specifies scheduling information for access to the content.

24. An apparatus according to claim **15**, wherein the second user has a supervisory role over the first user.

25. A system comprising:

a database configured to store content including a game; and

a video processor configured to transmit video content to a set-top box over a transmission facility,

wherein the set-top box is configured to present the game to a first user according to a user profile of the first user, to track performance, associated with playing the game, of the user, to store the performance information, and to present the performance information to a second user,

wherein the set-top box is further configured to provide modification of the user profile by the second user based on the performance information.

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