

**(10) International Publication Number**  
**WO 03/058534 A1**

**WO 03/058534 A1**

**(57) Abstract:** A method for targeting content (108) to a user (104, 116) based on a user profile (118, 120) and content tags (112, 130, 132). All content (108) is delivered to the user's computer system (104, 116). Each unit of content (110, 134, 136) has a tag (112, 130, 132) uniquely identifying a classification of the content. The receiving computer (104, 116) recognizes and evaluates the tags to match the content with a local user profile (118, 120). The matching content is selected from all the content and displayed. The user profile (118, 120) is a set of data describing the classifications of content that are most appropriate for the user. The profile (118, 120) can be developed based on usage history or demographic information. The user computer system has a tag dictionary that may be updated to correspond to a set of tags utilized by content delivery systems.

## METHOD AND SYSTEM FOR TARGETED CONTENT DISTRIBUTION USING TAGGED DATA STREAMS

5 This application is being filed as a PCT International Patent application in the name of BellSouth Intellectual Property Corporation, a U.S. national corporation, applicant for the designation of all countries except the US, and William R. Matz and Scott R. Swix, both citizens of the U.S., applicants for the designation of the US only.

### 10 FIELD OF THE INVENTION

The present invention generally relates to networked media delivery systems. More particularly, the present invention relates to a method and system for targeting content to specific users.

### 15 BACKGROUND OF THE INVENTION

Computer and television networks have become the predominant communications means by which product vendors communicate information about products to users. Such information may involve advertising, as well as other content such as titles, descriptions, and prices of products such as movies, games, and books for presentation to a user. For example, an on-line mall may provide a list of such content items (e.g., books) that is presented to the user so that the user may select items in the list to purchase. In this case, the book titles, authors, and brief descriptions are the content items. Advertisements relate to another type of content that may be transmitted to users. A server device typically transmits the content to a client device where the content is presented to the user. Examples of server devices are the "head-end" of a cable service provider or a server computer on the Internet. The client device may be a television set-top-box (STB) or a client computer. Regardless of the particular communications environment, a primary goal of product vendors in providing content to users is to reach or target those users who are most likely to purchase the products.

With respect to targeting advertisements, traditional targeting techniques focus on reaching as large an audience as possible; i.e., mass media advertising. This mass media advertising strategy seeks to reach the most number of viewers to increase the odds of contacting the ones most likely to purchase the advertised product or service. Since mass media targeting is expensive, other techniques have been developed in an attempt to not only narrow the audience but also target specific users based on an evaluation of related items. For instance, targeting techniques focus on an analysis of the readers of a particular magazine or viewers of a particular

television (TV) program. Then advertisers choose whether or not to advertise in conjunction with the related item; i.e., the magazine or the TV program. Inherent in these traditional content distribution techniques are the problems of overinclusion (targeting viewers who have no desire to purchase the product or service) and underinclusion (excluding potential consumers). Because these techniques assess consumer interest on the larger scale of program audiences instead of on an individual viewer basis, the techniques will always suffer from the squandered advertising dollars associated with overinclusion and underinclusion.

Additionally, traditional targeting techniques leave consumers inadequately informed about products that they might want to purchase. Because of overinclusion, consumers are inundated with advertisements for unwanted products. Due to the inundation, the consumers may miss advertisements for products they actually might want. Similarly, as a result of underinclusion, consumers are simply not informed about products they might want. Thus, overinclusion and underinclusion result in consumers' wasted time and energy in becoming informed about products they are not interested in.

More recent methods of targeting content to users have typically involved the server device keeping track of what content a client device uses most and transmitting that type of content to the client device. For example, on the Internet, various mechanisms are used to record the viewing habits of a user at a particular client computer. The content of the pages viewed is typically analyzed by a server computer to determine what topics are of interest to the user. The server places content, such as advertisements or links to other web sites, on the pages viewed by the user based on these particular topics of interest. These advertisements or links are often placed around the primary text or image in a web page and are commonly referred to as "banner ads." As another example, in a cable television network using a STB, the STB records content that is viewed by the user. Later, the head-end of the cable service provider polls the STB to determine what topics are of interest to the user of the STB. Based on these topics, the head-end transmits related content; e.g., specific advertisements and the like.

Unfortunately, these methods involve the client device providing the server device with information about the user of the client device. For instance, in the television environment, STBs provide personal user information to the head-end of the cable service provider. Moreover, in order to target the most likely consumer, the server device should be given as much information about the user as possible. Requiring the user's private information to be sent across a network to the server device renders the private information vulnerable to theft and resale to unknown third parties. The moment a user's private information is sent from the client device,

how the information is used is essentially out of the user's control. As a result, in typical advertising systems, in order for the user to receive advertisements appropriate for the user, the user must give up some portion of his/her privacy, which is not acceptable to many users.

5           Additionally, with respect to many server devices, the personal information is gleaned via a two-way data communication method that involves multiple polling events. These polling events consume significant server resources and processing time, as well as bandwidth over the communications network. Consequently, the server interaction with the client in order to provide the user with appropriate  
10   content is inefficient.

          It is with respect to these and other considerations that the present invention has been developed.

#### SUMMARY OF THE INVENTION

15           The present invention relates to a system and method of targeting content, such as advertisements and other content items, to particular types of users without the users divulging any private information over a network server system. The system and method involves a server device that tags content based on predetermined criteria and then sends the tagged content to a client device. The  
20   client device receives the tagged content and uses the tags to filter the content locally based on a predetermined user profile.

          In one embodiment, the invention relates to a method of targeting content to a user based on a user profile and content tags. Content is delivered to the user's client device. Each content item has a tag identifying a classification of the content.  
25   The client device recognizes and evaluates the tags to score each content item based on a local user profile. The content that has a score meeting a predetermined threshold is identified as being appropriate for presentation to the user. Appropriate content may then be selected and presented to the user. Generally, the user profile is a set of tags describing the classifications of content that are most appropriate for the  
30   user. The profile may be developed based on usage history or demographic information. The client device may also have a tag dictionary that may be updated to correspond to a common set of tags utilized by advertisers and/or server devices.

          The invention may be implemented as a computer process, a computing system or as an article of manufacture such as a computer program product. The  
35   computer program product may be a computer storage medium readable by a computer system and encoding a computer program of instructions for executing a computer process. The computer program product may also be a propagated signal

on a carrier readable by a computing system and encoding a computer program of instructions for executing a computer process.

A more complete appreciation of the present invention and its improvements can be obtained by reference to the accompanying drawings, which are briefly summarized below, and to the following detailed description of presently preferred  
5 embodiments of the invention, and to the appended claims.

## BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is an exemplary operating environment implementing an  
10 embodiment of the present invention.

Figure 2 is a computer system suitable for implementing an embodiment of the present invention.

Figure 3 is module diagram illustrating exemplary software, hardware, or firmware modules running in the computer system of Figure 2.

Figure 4 illustrates an exemplary tagged data stream that may be received  
15 and processed by the computer system of Figure 2 and modules of Figure 3.

Figure 5 illustrates an exemplary portion of tagged content that may be used in an embodiment of the present invention.

Figure 6 illustrates another exemplary portion of tagged advertisement  
20 content that may be used in an embodiment of the present invention.

Figure 7 is a flow diagram illustrating operations carried out in a targeted content distribution system in accordance with an embodiment of the present invention.

Figure 8 illustrates an exemplary user interface that may be presented to a  
25 user of a client device in an embodiment of the present invention.

Figure 9 is a flow diagram illustrating exemplary operations that may be employed by a profile generator for maintaining a user profile, such as the profile shown in Figure 4.

Figure 10 is a flow diagram illustrating exemplary operations that may be  
30 implemented by a filtering module, such as the filtering module shown in Figure 4.

Figure 11 is a flow diagram illustrating a particular embodiment of correlating, selecting, and notifying operations, such as those shown in Figure 10.

Figure 12 is a flow diagram illustrating an exemplary process of scoring or correlating tags in accordance with an embodiment of the present invention.

35

## DETAILED DESCRIPTION

The invention is described in detail below with reference to the figures. When referring to the figures, like structures and elements shown throughout are indicated with like reference numerals..

5           Figure 1 illustrates an exemplary operating environment **100** employing an embodiment of the present invention. A server device **102** communicates with one or more client devices, such as client device **104** and/or client device **105**, via a communication network **106**. Server device **102** transmits media content, such as, but not limited to, video, audio, text, or executable programs, over the  
10 communication network **106** to be used by the client devices **104** and/or **105**. Each of the client devices **104** and/or **105** has an output device, such as a computer monitor **114**, or a television screen **116**, for presenting user-appropriate media content to the user.

          The server device **102** has memory **108** that stores media content in the form  
15 of data streams **110**, **134**, and **136**. The server device **102** also stores an associated tag, such as tags **112**, **130**, and **132**, with each data stream **110**, **134**, and **136**, respectively. Each of the tags **112**, **130**, and **132** may be unique from the others and may further be associated with user classifications such as user demographics or usage patterns. The tags are used by client devices **104** and **105** to filter content; i.e.,  
20 to determine which data stream to provide to users at the client devices, such as **104** and **105**. In an embodiment, two or more data streams are transmitted with the tags to the client devices. Client devices determine which of the received data streams are appropriate for the user of the client device **104** by analyzing the tag information. The client devices **104** and **105** have access to a user profile, such as user profile **118**  
25 and **120** that is further used to analyze the tag information to determine which content should be presented.

          In one embodiment, the client device **104** is a computer system. In this embodiment, the communication network **106** may be the Internet communicating Extensible Markup Language (XML) or Hypertext Markup Language (HTML) data  
30 to the client device **104**. In this embodiment the server device **102** is a web server or an e-commerce application server. The user profile **118** comprises tags corresponding to user preferences for content received from the Internet. Upon receipt of a data stream **110** and its associated tag **112**, the desktop computer client **104** evaluates the tag **112** and the user profile **118** to determine which data stream  
35 **110**, **134**, or **136** is most appropriate for the user. In one embodiment, if the tag **112** is highly correlated with or matches a tag in the user profile **118**, the associated data

stream **110** is identified as being appropriate for presentation to the user of the desktop computer client device **104**.

In another embodiment, the client device **105** is a set-top-box (STB). In this embodiment, the communication network **106** may be a satellite television broadcast network and the server **102** may be a head-end of a cable service provider. The cable service provider generally broadcasts programming, advertising, "walled garden" merchandising offers, and other content. As mentioned above, the media content is broadcasted in the form of data streams **110**, **134**, and **136** and associated tags **112**, **130**, and **132** to the STB **105**. The STB **105** evaluates the tags **112**, **130**, and **132** and the STB user profile **120** to determine which of the data streams **110**, **134**, or **136** is most appropriate for the user of the STB **105**. The STB **105** presents to the user the data stream(s) that are appropriate to the user based on the user profile **120**.

While Figure 1 depicts two types of client devices **104**, a personal desktop computer, and **105**, a television set top box (STB), it is to be understood that the client devices **104** and **105** may be any device operable to communicate via the communications network **106**, and operable to receive data streams **110** and tags **112**. By way of example, and not limitation, the client device **104** may be a personal digital assistant (PDA), a laptop computer, or a cellular telephone, among others. By way of further example, and not limitation, the communication network **106** may be wireless network, an Ethernet, a local area network (LAN), a wide area network (WAN), or a television broadcast network, among others.

Figure 2 illustrates an exemplary system for implementing the invention with a computing device **200**. In its most basic configuration, computing device **200** typically includes at least one processing unit **202** and memory **204**. Depending on the exact configuration and type of computing device, memory **204** may be volatile (such as RAM), non-volatile (such as ROM, flash memory, etc.) or some combination of the two. This most basic configuration is illustrated in Figure 2 by dashed line **206**. Additionally, device **200** may also have additional features/functionality. For example, device **200** may also include additional storage (removable and/or non-removable) including, but not limited to, magnetic or optical disks or tape. Such additional storage is illustrated in Figure 2 by removable storage **208** and non-removable storage **210**.

Computer storage media includes volatile and nonvolatile, removable and non-removable media implemented in any method or technology for storage of information such as computer readable instructions, data structures, program modules or other data. The memory **204**, removable storage **208** and non-removable storage **210** are all examples of computer storage media. Computer storage media

includes, but is not limited to, Random Access Memory (RAM), Read Only Memory (ROM), Electrically Erasable Programmable ROM (EEPROM), flash memory or other memory technology, CD-ROM, digital versatile disks (DVD) or other optical storage, magnetic cassettes, magnetic tape magnetic disk storage or other magnetic storage devices, or any other medium which can be used to store the desired information and which can be accessed by device **200**. Any such computer storage media may be part of device **200**.

Device **200** may also contain communications connection(s) **212** that allow the device to communicate with other devices. Communications connection(s) **212** is an example of communication media. Communication media typically embodies computer readable instructions, data structures, program modules or other data in a modulated data signal such as a carrier wave or other transport mechanism and includes any information delivery media. The term "modulated data signal" means a signal that has one or more of its characteristics set or changed in such a manner as to encode information in the signal. By way of example, and not limitation, communication media includes any information delivery media. The term "modulated data signal" means a signal that has one or more of its characteristics set or changed in such a manner as to encode information in the signal. By way of example, and not limitation, communication media includes wired media such as a wired network or direct-wired connection, and wireless media such as acoustic, radio frequency (RF), infrared and other wireless media. The term computer readable media as used herein includes both storage media and communication media.

Device **200** may also have input device(s) **214** such as keyboard, mouse, pen, voice input device, touch input device, remote control unit, etc. Output device(s) **216** such as a display, speakers, printer, etc. may also be included. All these devices are well known in the art and need not be discussed at length here.

In one embodiment, the computing device **200** is the set-top box **105**. In this particular embodiment, the set-top box **105** provides a control interface through which a subscriber makes viewing selections by, e.g., using a remote control unit, a keyboard, or a control panel. In providing this interface, the set-top box **105** performs the following functions: (1) routes traditional broadcast signals to the connected viewing device; (2) converts media content to a selected video format (e.g., NTSC or PAL) and presents the content to the subscriber; (3) for interactive systems, exchanges messages (including display data) with the server device **102** over distribution network **106**; (4) receives messages from a subscriber input device, such as a remote control unit; (5) translates video signals from a network-native format into a format that can be used by the viewing device; (6) inserts



alphanumeric or graphical information (e.g., program guides, menus, etc.) into the video stream to overlay that information on the video image; and (7) provides graphic or audio feedback to the subscriber. Examples of commercially available set-top boxes **105** that satisfy these functions include an SA Explorer 2000 set-top box by Scientific Atlanta, a DCT-5000 set-top box by Motorola/General Instruments, and a Z12C set-top box by Zenith.

Figure **3** is a functional block diagram of a client-server system **300** employing an embodiment of the present invention. As discussed in more detail below, the client-server system **300** provides targeted content to users of the system **300**. The content may include advertising and non-advertising content, including, but not limited to, news, games, programming, books, and sports. A server **302** transmits media content to a client **304**. Media content sent by the server **302** is in a tagged data stream format. Data streams at the server **302** are tagged with tags corresponding to classifications of users. Classifications include, but are not limited to, demographics, such as viewing preferences, age, gender, location, and income. The tags allow the client device **304** to select among all data received by the client device so that the most appropriate content is provided to the user of the client device **304**.

In one embodiment, the server device **302** includes a retrieving module **306**, a receive module **308**, and a send module **310**. The receive module **308** receives requests from the client. An example of a request from the client **304** is a Hypertext Transport Protocol Request for an Internet page in on the server **302**. In the response to the request, the server **302** uses a send module **310** to send multiple, tagged data streams of content to the client **304**. The available tagged content is retrieved from a tagged data memory **307** by the retrieving module **306**. The tagged data memory **307** contains tagged content items. Tagged content items are generally data streams with tags describing predetermined classifications such as demographics categories associated with the data streams. The server device **302** may obtain the tagged content items from content providers (e.g., advertisers) that tag the content based on the type of user targeted by the content providers or the server may tag the items itself. The send module **310** receives the tagged content items from the retrieving module **306** and transmits the tagged content items to the client **304**.

In another embodiment, the server device **302** does not have a receive module **308**, for instance, in some cases, the server device **302** primarily broadcasts content onto a broadcast network (e.g., satellite TV). In this embodiment, an STB **105** connected to the broadcast network receives the broadcasted content, but does not need to send information back to the server device **302**. Thus, as is discussed

below, the send module of the client device **302** is not necessary in the broadcast TV/STB implementation. In this embodiment, the STB **105** simply receives multiple, tagged data streams of content sent by the server device **302** and filters the content locally.

5           The client device **304** includes a receive module **312**, which receives the transmitted tagged data streams from the server device **302**. The receive module **312** performs all tasks associated with receiving data from the server **302**, including detecting incoming data, and synchronizing to receive the data. The receive module **312** sends the tagged data to a storage module **314**, which stores the received tagged  
10   data in a tagged data memory **316**. The storage module **314** may store the tagged data in any arrangement in the tagged data memory **316** that is suitable for the particular implementation. For example, the storage module **314** may group certain types of content together. The storage module **314** may group advertising content together, games content together, movies content together, etc. Preferably, the  
15   tagged data will be organized in the tagged data memory **316** in a way to facilitate quick and efficient access but such organization is not necessary. The storage module **314** may also pass certain content straight through, without storage, to a user input/output module **318**.

          The user input/output module **318** performs tasks associated with conducting  
20   media content to an output device such as a display monitor, speakers, or a printer. The user input/output module **318** also performs tasks associated with receiving input from a user, such as mouse clicks, keyboard entry, or remote control entry. While a user inputs data, the user input/output module **318** detects the user input and may transmit the user input to an analysis module **320** for analysis. The analysis  
25   module **320** evaluates user input to detect patterns in the user input. Based on the detected usage patterns, the analysis module **320** updates a user profile **322**.

          For one embodiment, the analysis module **320** also detects events that prompt output of media content. Events that prompt output of media content are generally referred to as insertion events. The analysis module **320** may receive these  
30   events from the storage module **314** or the user input/output module **320**. An event from the storage module **314** may be an advertisement insertion event, which indicates that an ad should be displayed to the user at a predetermined time. One example of an advertisement insertion event is a cue tone contained within the network TV broadcast, which may be transmitted along with other media content  
35   from the server **302**. In general, insertion events that are received from the server **302** may be referred to as external or predetermined events because they arise externally from the client and indicate a predetermined time for display.

Another type of insertion event that the analysis module **320** may detect is an internal event that arises on the client side. One example of an internal insertion event is a user initiated menu selection from a STB navigator, such as the user requesting a list of available television shows, a list of games that are available to play online or the books available via the online bookstore. Each list of respective items offered may be tagged by the server system and filtered by the client device so as to optimize the presentation order to the user that would present the item with the highest probability of interest. Furthermore, the initial navigator menu presented on the display may be customized automatically by the client device based upon prior user behavior and profile so as to order the list of available activities or actions (e.g., preferences for television program, games, shopping, news, mail, etc), thereby presenting the user with a list best matching their probable activities. Additionally, such prior user behavior can be implemented by the client device to exhibit content in a predetermined sequence (e.g., preferred content type displayed first upon user initiation of the device).

As a specific example, when a user turns on the user's television set and STB, the user immediately is presented with content, advertising, programming, etc which matches the user's profile. The user may then select a list of options of a certain type of media content. For example, the user may select that a list of games be shown from which the user can choose. The analysis module **320** would detect the user's selection of a list of games as an insertion event. A menu of a list of games may then be displayed so the user may select the game that he/she wants to play. The analysis module **320** again will receive an insertion event to insert the selected game into the output module. The analysis module **320**, upon receiving an insertion event, accesses the storage module **314** to identify the most appropriate media content that should be displayed to the user.

The storage module **314** transmits tagged data to the analysis module **320**, which filters the tagged data using tag information stored in the user profile **322**. The analysis module **320** determines which tagged data in the tagged data memory **316** most closely matches tags or tag information in the user profile **322**. The tagged data that most closely matches the information in the profile **322** is transmitted to the user input/output module **318** for presentation to the user. Thus, the content that is presented to the user is the content from the server **302** that most closely matches the user profile **322**, and is thereby the most appropriate for the user's preferences. Advantageously, the selection of the most appropriate media content to present to the user is made without transmitting to the server device **302** any or substantially little private user information. Thus, unlike other systems, the media content can be targeted to a user without the user giving up his or her privacy.

In one embodiment, the client device **304** has a send module **324** for sending data, such as requests, to the server device **302**. An example of this embodiment is a client computer communicating to a server computer over the Internet, wherein the client computer sends Hypertext Transport Protocol (HTTP) requests to the server computer to browse web pages.

In another embodiment, the client device **304** need not have a send module **324**. As discussed above, an example of this embodiment is a STB **105** receiving content from a broadcast TV network. In this embodiment, the STB **105** does not send requests for data. Rather, the server device **302** (e.g., head-end of a cable service provider) is constantly broadcasting content on a number of channels that the STB **105** can switch to.

With specific reference to an embodiment employing the STB **105**, the STB **105** employs modules such as those depicted in Figure 3 to complete many intelligent functions, including the collection, storage, exchange, and display of data. To satisfy these functions, the STB **105** has a navigator, an operating system, and a memory buffer. The operating system is a computer program that, after being initially loaded into the STB **105** by a bootstrap program, manages the other programs, or applications, running on the STB **105**. The navigator is a software application running on top of the operating system. The navigator is provided by the user I/O module **318** and generates menu screens and accepts viewer menu selections such as movie orders, preview orders, or requests to enter an interactive "walled-garden" environment that may supply news, offer products, etc. Based on these selections, the navigator directs the storage module **314** to deliver the selected program, e.g., the storage module **314** plays the selected movie. In addition, the navigator records viewer selections or event data in memory, such as memory **204**. As is discussed below, the recorded viewer selections or event data may be analyzed by the analysis module **320** to detect usage patterns.

Figure 4 is a more detailed functional block diagram of an analysis module such as the analysis module **320** in accordance with aspects of a particular embodiment of the invention.. The analysis module **320** includes a content insertion engine **402**, a filtering module **404**, and a profile generator **406**. The content insertion engine **402** receives data from the storage module **314** and the user I/O module **318**, and determines whether an insertion event occurs. By way of example, for video advertising, the insertion event may be a network cue-tone. If an insertion event does occur, the content insertion engine **402** transmits an insert command to the filtering module **404** to indicate that media content is to be inserted (i.e., presented to the user). In response to receiving the insert command, the filtering module **404** accesses tagged data from the storage module **314** and tags from the

profile 322 to filter out inappropriate media content stored in the tagged data memory 316. The filtering module 404 determines which data in the tagged data memory 316 is appropriate for presentation to the user based upon the tagged data's level of similarity to the tags in the profile 322. Determining the tagged data's level of similarity may be done by scoring each of the tags stored in the tagged data memory 316. As is discussed below in more detail, scoring the tags in the tagged data memory may involve determining the tags' relative correlation to the tags in the user profile 322. The filtering module 404 transmits a command to the user I/O module 318 to output the appropriate media content. The filtering module 404 may send a message to either the user I/O module 318 to get the appropriate content from the storage module 314. Alternatively, the filtering module 404 may transmit a message to the storage module 314 to instruct the storage module 314 to transmit the appropriate content to the user I/O module 318.

The profile generator 406 receives data from the user i/o module 318 and updates the profile 322 according to inputs from the user. The profile generator 406 dynamically updates the profile 322 based on a history of user inputs so that when the filtering module 404 accesses the profile 322, the filtering module 404 will filter the tagged data memory 316 based on the most recent user preferences indicated by the profile 322. Alternatively profiles are static, and/or predetermined. Alternatively, the information is not organized. The profile generator 406 preferably organizes tags in the profile 322 for fast and efficient access.

The user profile 322 is preferably stored in memory accessible by one or more microprocessors of the client device 304. The memory that stores the user profile 322 can be any memory medium known in the art, including, but not limited to, Personal Computer Memory Card International Association (PCMCIA) memory, Random Access Memory (RAM), Read Only Memory (ROM), Electrically Erasable Programmable ROM (EEPROM), or hard disc drive memory. It should be understood that the user profile 322 need not be stored contiguously in memory and may be separated in a memory medium accessible through a file system that maps memory locations to data. In practice, one or more of the modules shown in Figures 3-4 may be integrated on a single integrated circuit in any combination. Alternatively, they may be separately implemented in software or hardware.

Figure 5 illustrates a portion of tagged content 500 that may be used in an embodiment of the present invention. The portion of tagged content 500 includes tag/content pairs such as pair 504 including a tag, such as tag 506, and associated content, such as content 508. As discussed above, the content may be any type of content, including, but not limited to, advertisements, and content items containing descriptions (e.g., title, author, price, theme, etc) of content such as books, movies,

games, etc. Each tag describes its associated content with predefined information. In one embodiment, the tags **506**, **510**, and **514** have a type identifier **516**, a title identifier **518**, an age identifier **520**, a gender identifier **522**, an income identifier **524**, a location identifier **526**, and a family identifier **528**. The identifiers relate to  
5 **518**, **520**, **522**, **524**, **526** and **528** what type of viewer the content is appropriate for.

For example, the tag **510** indicates that the content **512** associated with the tag **510** is an advertisement about Budweiser® beer. The tag **510** further indicates that the content **512** is targeted for males from the ages 21-55. Additionally, the tag **510** indicates that the viewer who is targeted may be in any income level, at any  
10 location, and have any family characteristics (e.g., kids, married, etc.). The tags **506**, **510**, and **514**, are appended to the content **508**, **512**, and **515**, respectively by the server **302**. The client **304** uses the tags to determine whether the content **508**, **512**, and **515** is appropriate for the user at the client device **304**. The client **304** and server **302** utilize a common tag format.

15 In one embodiment, providers of content to the server device **304** tag the content before making it available to the server **304**. The content providers fill in the identifiers, such as type, title, age, gender, income, location, and family, with the identifying data that the provider determines is the best target audience. In another embodiment, the server device **302** appends the tags to the content. In this  
20 embodiment the server device **302** is operable to determine what identifying information is most appropriate to the content and fill in each of the identifiers accordingly. The server device **302** has a dictionary of identifiers (e.g., type, title, age, gender, etc.) to select from. The tags that the client device **304** uses in the user profile **322** have the identifiers (e.g., type, title, age, gender, etc) selected from a  
25 common set of identifiers. Thus, the client device **304** and the server device **302** utilize a common tag format having common identifiers.

Over time, identifiers may change. For example, another identifier, such as "Education Level", may be added to the tag format. When the tag format changes, the switch to the new tag format at the server device **302** is preferably synchronized  
30 with the switch to the new tag format at the client device **304**. While Figure 5 illustrates exemplary identifiers in an exemplary format, it is to be understood that any identifiers may be used that effectively target users. It is envisioned, for example, that the "type" identifier may have "subtypes." This may occur when the type is "movie." A subtype further classifies the movie into genres such as, but not  
35 limited to, westerns, comedy, horror, drama, action, etc. Another example of subtyping is when the type is "sports." Subtypes of sports may be football, basketball, baseball, hockey, etc. Subtyping further targets users based on narrower classifications because the user profile **322** may be dynamically updated to track a

user's selections of subtypes. Additionally, as is discussed in more detail below, tags may include a weight value associated with each identifier, indicating the relative importance of that identifier to the targeting of the content to users.

Figure 6 illustrates another exemplary portion of tagged advertisement content that may be used in an embodiment of the present invention. Three advertisements **608**, **612**, and **615** are shown with associated tags **606**, **610**, and **614**, respectively. Advertisement **608** is identified by its associated tag **606** to be an advertisement for Clinique® products and is directed to females of a middle income and from ages 21-50. Advertisement **612** is identified by its associated tag **610** as being an advertisement for Budweiser® products and is directed to males of from ages 21-55, of any income, location, or family arrangement. The advertisement **615** is identified by its associated tag **614** as being an advertisement for Blue's Clues® program for children ages 2-7, and a family arrangement with kids.

In embodiments described herein, the logical operations of the client device **304** and the server device **302** may be implemented as a sequence of computer implemented steps or program modules running on a microprocessor, such as, without limitation, a processor in a personal computer or a computer workstation. It will be understood to those skilled in the art that the client device **304** and the server device **302** of the present invention may also be implemented as interconnected machine logic circuits or circuit modules within a computing system. The implementation is a matter of choice dependent on the performance requirements of the computing system implementing the client device **304** and the server device **302**. The operation, structural devices, acts, and/or modules described herein may be implemented in software, in firmware, in special purpose digital logic, and/or any combination thereof without deviating from the spirit and scope of the present invention as recited within the claims attached hereto. Furthermore, the various software routines or software modules described herein may be implemented by any means known in the art. For example, any number of computer programming languages, such as "C", "C++", Pascal, FORTRAN, assembly language, Java, etc., may be used. By way of further example, and not limitation, any scripting language known in the art may be used, such as Korn shell script. Furthermore, various programming approaches such as procedural, object oriented or artificial intelligence techniques may be employed.

The client device **304** and the server device **302** may be implemented as software modules executed by one or more general purpose computers, such as the general purpose computer **200** illustrated in Figure 2. As described in greater detail below, the client device **304** may be employed to receive, store, filter, and present media content, such as movies, games, and/or advertisements. The client device **304**

employs computer-readable media for carrying out the various tasks associated with targeting content to the user of the client device **304**.

Figure 7 is a chart illustrating operations carried out in a targeted content distribution system in accordance with an embodiment of the present invention.

- 5 Initially, a tagging operation **704** tags content items that will be transmitted to the user of the client device **304**. The server device **302** may perform the tagging operation. Alternatively, an advertiser that provides content to the server device **302** may perform the tagging operation **302**. The tagging operation **704** involves associating tags describing relevant classifications with content items. As discussed  
10 with respect to Figure 5, a tag includes identifier information for various classifications, such as demographics. The tagging operation **704** may involve assigning weighting values to tag identifiers, which indicate a relative importance of each identifier. Thus, for example, in the tagging operation **704**, a tag for a beer ad may include age identification information of 21-55, with a relative weight of 1, and  
15 an income identification range of \$30,000 - \$100,000, with a relative weight of .5. In this example, the tag indicates that targeting users in the identified income range is of less importance than targeting users in the identified age range.

- After the content items are tagged, an establishing operation **708** establishes a communication connection between a client device **304** and a server device **302**.  
20 Establishing a communication connection may be carried out using any means known in the art. By way of example, and not limitation, in an Internet environment a client computer typically send a request (e.g., a Hypertext Transport Protocol request) to a server computer to request a particular web page identified by a Universal Resource Locator (URL). As a further example, a connection may be  
25 established in a cable television environment by a set-top-box switching to a channel or transport frequency. Many other methods of establishing a communication connection are known in the art and will fall within the scope of the establishing operation **708**.

- The server device **302** then sends data to the client device **304** in a sending  
30 operation **712**. The data includes more than one of the tagged content items that were tagged in the tagging operation **704**. The server may send content items using any transmission protocol known in the art, including, but not limited to, a proprietary protocol. Sending the tagged content may include encoding the tagged content items, packetizing and/or formatting the encoded tagged content items, and  
35 modulating a carrier frequency with the packetized data. In the sending operation **712**, the server may also append a unique client device identifier to the tagged content data such that a particular client device **304** is associated with the tagged content items. In a computer Internet environment, the client computer typically has



a unique Internet Protocol (IP) address. In a cable television environment, each STB has a unique identifier. In general, each client device 304 may be uniquely identified on the network so that the server device 302 may send tagged content items directly to each client device in the sending operation 712.

5       As discussed above, the tagged content items that are sent in the sending operation 712 may be any content, including advertising. The server device 302 may send the content items in any order applicable to the implementation. For example, in one implementation it may be most efficient for the server device 302 to send all advertisements in a group; i.e., sequentially, and then all video content items sequentially, followed by all book content items sequentially, and so on.

10       In a receiving operation 716, the client device 304 receives the tagged content items that were sent in the sending operation 712. Generally, the client device 304 is detecting data on the communication network 106. In the receiving operation 716, the client device 304 detects tagged content items that are directed at  
15       the client device 304, demodulate, and decode packetized or formatted tagged content items. Depending on the particular implementation, the receiving operation 716 may involve synchronizing to a data signal from the server device 302. After the client device 304 receives the tagged content items in the receiving operation 716, the client device 304 may present one or more of the tagged content items to  
20       the user. The client device 304 may also cache the tagged content items in a caching operation 720.

      In the caching operation 720, the tagged content items are stored in memory that is accessible by the client device 304 for possible later presentation to the user. The tagged content items may be logically stored in memory in any arrangement in  
25       the caching operation 720. For instance, the caching operation 720 may involve logically storing the tagged content items contiguously in memory as they are received. Alternatively, the caching operation 720 may logically group certain types of content (e.g., video content) together in memory. However the content items are arranged logically in memory, it is to be understood that the physical locations in the  
30       memory may not follow the logical arrangement.

      During operation, the client device 304 may recognize an indication to insert one or more content items from the cache in a recognizing operation 724. Inserting a content item generally refers to presenting the content item to the user. The manner in which the content item is presented to the user is generally related either  
35       spatially (e.g., on a display monitor) or temporally (e.g., synchronized in time) to other content that is sent to the client device 304. In the recognizing operation 714, in a STB/TV environment, the client device 304 may receive a cue tone from the head-end, which indicates that an advertisement is to be displayed at a designated

time. Also in the STB/TV environment, the client device **304** may receive input from the user to display a menu of content items (e.g., games). In this case, the input from the user is an indication to insert one or more content items (e.g., game content items) in a menu to the user.

5       After the client device **304** recognizes an indication to insert content, the client device **304** performs a selecting operation **728**. In the selecting operation **728**, the client device **304** evaluates the tags that were stored in the caching operation **720** based on a user profile (e.g., user profile **322**), to determine whether one or more of the stored content items is appropriate for presentation to the user. Any method of  
10       evaluation may be employed by the client device **304** in the selecting operation **728** to select one or more appropriate content items. In one embodiment, if none of the stored content items are determined to be appropriate in the selecting operation **728**, a default content item may be presented. An exemplary method of evaluation is discussed in detail below in reference to Figures **10-12**. In a presenting operation  
15       **732**, the client device **304** presents to the user the one or more content items that were identified as appropriate in the selecting operation **728**.

Figure **8** illustrates an exemplary user interface **800** that may be presented to a user of a client device **304** in an embodiment of the present invention. The user interface **800** includes two menus presented to the user allowing the user to make  
20       selections. A content type menu **804** presents the user with four types of content from which to choose: movie content **806**, games content **808**, books content **810**, and children's programming content **812**. The user may select any of the items listed in the content type menu **804** to obtain a list of content items of the selected content type. As illustrated, the user chooses **816** the games content **808**. When the user  
25       chooses **816** the games content **808**, a games menu **818** is displayed with a list of five available and appropriate games: "Warlords" **820**, "BattleZone" **822**, "BMX Rally" **824**, "Indy Racer" **826**, and "Madden NFL" **828**. The user may then select one of the games listed on the games menu **818** to get more information about a particular game. Most relevant to the present invention is the process that occurs  
30       when the user chooses, at choose operation, **816** one of the games content item **808**.

When the user chooses **816** the games content item **808**, a content insertion event arises from the user I/O module **318**. The user I/O module **318** sends a message to the content insertion module **402** (Figure 4) indicating that a list of appropriate games is to be presented to the user. Additionally, the list of games will  
35       preferably be sorted in order of user preference. The content insertion engine **402** responds by sending a message to the filtering module **404** notifying the filtering module **404** to filter games content items and provide the most appropriate or preferred game. In one embodiment, the content insertion engine **402** employs the

filtering module **404** five times to obtain the five most appropriate game content items available in the tagged data memory **316**. The content insertion engine **402** then sends the list of five game content items to the user I/O module **318** for presentation to the user on the games content menu **818**.

5           Generally, prior to filtering content in response to insertion events, a user profile **322** is established for targeting purposes. Figure **9** describes one exemplary process for establishing the user profile **322**. However, it is to be understood that in other embodiments, content may be targeted to all users, or all users in a particular category. This is particularly relevant to broadcast TV in which the head-end of the  
10       cable service provider may send content to everyone within a particular zip code. Thus, regardless of the user profile **322**, everyone in the zip code would be targeted.

          Figure **9** is a flow diagram **900** illustrating exemplary steps or operations that may be employed by the profile generator **406** for generating and updating the profile **322** to correspond to user preferences. In the embodiment, the user upon  
15       initial power-up may be prompted to fill out a survey to provide information about the user to the client device **304**. In a querying operation **902**, it is determined whether a survey mode has been entered. The survey mode may be entered any number of ways, including a determination that a survey has not yet been filled out, or the user manually selecting a survey mode. If it is determined in the querying  
20       operation **902** that the survey mode has been entered, an administering operation **904** administers a survey to the user. During the administering operation **904**, the user enters demographic or other data that correspond to the user and his/her preferences for content. Importantly, the data entered by the user in the survey is not released from the client device **304**. Rather, the client device **304** uses the survey data to  
25       maintain the user profile **322** to provide future content to the user.

          Using the demographic data entered during the administering operation **904**, a building operation **906** generates tags corresponding to the user's selections in the administering operation **904**. As discussed above, the tags have identifier information. The identifier information generated in the building operation **906**  
30       associates the user's survey data with categories of common identifiers discussed in Figure **5**. An updating operation **908**, updates the profile **322** with tags that were generated in the building operation **906**.

          If it is determined that the survey mode has not been entered in the querying operation **902**, flow branches NO to query operation **910**, which determines whether  
35       a manual tag input mode has been entered. Querying operation **910**, determines whether the user has selected an option for manually entering specific tags associated with media content that the user prefers (or does not prefer) to be presented. If it is determined in the querying operation **910** that a manual tag input

mode has been entered, flow branches YES to presenting operation 912 which presents tag options to the user that the user may select. The presenting operation 912 may present tags that have been previously compiled based on tags received from the server device 302, or the presenting operation 912 may access a directory of tags that is periodically updated in the client device 304. After the presenting operation presents tag options to the user, the updating operation 908 updates the user profile 322 with the tags selected by the user in the presenting operation 912.

If, in the querying operation 910, it is determined that the manual tag input mode has not been entered, flow branches NO to detect operation 914 which begins to detect user selections. The detecting operation 914 may detect any selections, such as, but not limited to, mouse clicks, keyboard entry, or remote control data entry. The detecting operation 914 may record the user selections along with other related information such as time of entry, or duration of viewing particular content. For example, in a set-top box implementation, the detecting operation 914 may detect a user selecting a Home Box Office® (HBO®) movie "Band of Brothers"®. The detecting operation 914 records when the user begins watching "Band of Brothers"® as well as when the user changes the channel to another channel, such as a football game on CBS®. The collection, over time, of viewing patterns and preferences builds a user profile indicating the relative interest in different genres of content programming, such as sports, movies, dramas, education, children, etc. Multiple levels of detail (e.g., subtypes) can be derived, such as specific types of sports.

After the detecting operation 914 detects a user selection, a storing operation stores a tag associated with the user selection. As discussed, all media content, including programming, from the server device 302 includes a tag descriptive of the type of content. The tag may be stored for analysis, such as determining a pattern in the user's selections. The user profile 322 is then updated in an updating operation 918. The updating operation 918 involves storing the tags of most viewed content in the user profile 322, preferably in such a way that the tags are quickly accessible. After the user profile 322 is updated by the updating operation 918, operation loops back to the detecting operation 914 wherein subsequent user selections are detected. The detecting operation 914, the storing operation 916, and the updating operation 918 may be iterated indefinitely until the user turns off the client device 304.

Figure 10 is a flow diagram 1000 illustrating exemplary steps or operations that may be implemented by the filtering module 404 to filter out media content received from the server device 302 that is less preferred by the user. A receiving operation 1002 receives a command to insert media content from the content insertion engine 402. A correlating operation 1004 then correlates tags in the user

profile 322 with tags from the storage module 314 to determine which tagged data from the storage module is most preferred by the user. In the correlating operation 1004 it is determined whether tags in the storage module 314 are similar to tags in the user profile 322. In one embodiment, the correlating operation 1004 may  
5 determine a level of correlation or matching for each data stream in the storage module 314. For example, the correlating operation 1004 may determine that two tags sufficiently match if at least three identifiers in the tags are the same, even if some other identifiers are different between the tags. If the level of matching is above a predetermined threshold, the data stream may be presented to the user.

10 A selecting operation 1006 then selects the media content that most closely matches the user profile 322. If the insertion command received in the receiving operation 1002 is an ad insertion command, the selecting operation 1006 preferably selects one advertisement from the storage module to be presented to the user. If more than one advertisement sufficiently matches a tag in the user profile 322, the  
15 selecting operation 1006 may select an advertisement that has not been presented to the user recently. In a notifying operation 1008 the user I/O module 318 is notified of the media content to be presented to the user that was selected in the selecting operation 1006.

Figure 11 illustrates a detailed embodiment of the correlating, selecting, and  
20 notifying operations 1004, 1006, and 1008. Upon receipt of an insertion event, the analysis module 320 searches the content in the tagged data memory 316 to determine if content is available that is appropriate for the user of the client device 304. In a retrieving operation 1104, the filter module 404 retrieves a tag from the storage module 314. In this particular embodiment, the storage module 314 reads a  
25 tag out of the tagged data memory 316 and keeps track of the order of dispensing tags to the filter module 404. The filter module 404 retrieves a tag out of the user profile 322 in another retrieving operation 1108. In a comparing operation 1110, the filter module 404 compares the tag from the storage module 314 to the tag from the user profile 322 to determine if the two tags meet a predetermined correlation  
30 threshold. Comparing the two tags may be accomplished using any method known in the art and depends on how the tags are encoded in the particular implementation. For example, identifiers in the tags may be encoded as single bits (either on or off). In this example, the comparing operation 1110 may perform a bit-masking operation, which is a computationally efficient way of comparing bits.

35 If it is determined that the two tags retrieved in operations 1104 and 1108 meet the predetermined correlation threshold, the filter module 404 selects the tag retrieved from the storage module 314 in a selecting operation 1114. In the selecting operation 1114, the filter module requests the content associated with the selected

tag from the storage module 314 and delivers the content to the user I/O module 318. However, if the two tags compared in the comparing operation 1110 do not meet the predetermined correlation threshold, the filter module 404 determines whether anymore tags exist in the user profile. In a determining operation 1118, the  
5 filter module 404 reads the user profile 322 to determine if another tag is available for comparison. If so, the filter module 404 retrieves the next tag from the user profile 322 in a retrieving operation 1122. After the next tag is retrieved from the user profile 322, the comparing operation 1110 compares the next user profile tag with the tag retrieved from the storage module 314.

10 If, on the other hand, it is determined that no other tags are in the user profile 322, flow branches NO to determine operation 1126. The determining operation 1126 determines whether another tag exists in the tagged data memory 316 for comparison. In the determining operation 1126, the filter module 404 may request another tag from the storage module 314. If no more tags are in the tagged data  
15 memory 316, the storage module 314 sends back an error message to the filter module 404. If the storage module 314 identifies another tag in tagged data memory 316, the storage module 314 sends the tag to the filter module 404. The filter module 404 thereby retrieves the next tag in a retrieving operation 1130. After the next tag is retrieved from the storage module 314, operation returns to the retrieving  
20 operation 1108 wherein the first tag in the user profile is again retrieved, and the sequence of comparison and retrieval begins again.

If it is determined that no more tags are available in the tagged data memory 316 in the determining operation 1126, or after appropriate content is selected in the selecting operation 1114, the correlating operation 1004 ends. If the correlating  
25 operation 1004 ends without any tags in the tagged data memory 316 meeting the correlation threshold, an error message may be sent to the user I/O module 318. The user I/O module 318 can either display a message that content is not available, or the user I/O module 318 can display predetermined default content.

Figure 12 is a flow diagram illustrating an exemplary operations that may be  
30 employed in the comparing operation 1110 of Figure 11. Input to the operation is a tag from the tagged content memory 316 and a tag from the user profile 322. In general, the operational flow of Figure 12 iterates through identifiers in the tag from the tagged data memory 316 and associated identifiers in the tag from the user profile 322, determining if the identifying data for the tags matches. After all the  
35 identifiers are iterated through, a score is generated that may be used to filter the tag and/or rank the tag in terms of user preference and/or filter the content. In an initializing operation 1202, a weighted average value is set equal to zero. The weighted average value is used to keep track of the score associated with the tag.

In a retrieving operation **1204**, an identifier (e.g., type identifier **516** of Figure **5**) and its identifying data (e.g., "Game") is retrieved from the tag from the tagged data memory **316**. In another retrieving operation **1208**, an associated type identifier and its identifying data are retrieved from the user profile tag. In a  
5 comparing operation **1210** it is determined whether the identifying data for the two associated identifiers match. For example, if the type identifying data is "Game" in both the tags, the identifiers match. When the identifier data matches, a scoring operation **1214** accumulates a running score associated with the tag from the tagged data memory **316**. In one embodiment, the scoring operation **1214** involves  
10 calculating a weighted average of the identifiers. If, in the comparing operation **1210**, the identifier data of the tagged data memory tag does not match that of the user profile tag, and after the scoring operation **1214**, a determining operation **1226** determines if another identifier remains in the tags to be compared.

If another identifier (e.g., title identifier **518** of Figure **5**) remains for  
15 comparison, the retrieving operation **1204** retrieves the identifier and its identifying data from the tagged data memory tag. Processing continues as before to compare the corresponding identifier data of the user profile tag. If no more identifiers remain to be processed in the determining operation **1226**, another determining operation **1230** determines if the score computed in the scoring operation **1214** is  
20 above a predetermined threshold value. If the score is not above the predetermined threshold value, a return no operation **1234** returns an indicator that the tag from the tagged data memory **316** is not sufficiently correlated to the user profile tag. If the score is above the predetermined threshold value, a return yes operation **1238** returns an indication that the tag from the tagged data memory **316** is sufficiently correlated  
25 to the user profile tag. In both the return operations **1234** and **1238**, the score may be returned along with the indicator. The score may be used by the calling module to sort tagged data memory tags according to preference.

The method steps illustrated in Figures. **7-12** may be implemented in firm ware in the disc drive or in a computer connected to a disc drive. Additionally, the  
30 logical operations of the various embodiments of the present invention are implemented (1) as a sequence of computer implemented acts or program modules running on a computing system and/or (2) as interconnected machine logic circuits or circuit modules within the computing system. The implementation is a matter of choice dependent on the performance requirements of the computing system  
35 implementing the invention. Accordingly, the logical operations making up the embodiments of the present invention described herein are referred to variously as operations, structural devices, acts or modules. It will be recognized by one skilled in the art that these operations, structural devices, acts and modules may be

implemented in software, in firmware, in special purpose digital logic, and any combination thereof without deviating from the spirit and scope of the present invention as recited within the claims attached hereto.



## CLAIMS

What is claimed is:

- 5           1. A method of providing targeted media content in a distributed network, the distributed network having a client device and a server device, the method comprising:
- storing a user profile having one or more user profile tags  
                  corresponding to user classifications;
- 10           receiving a plurality of tagged content items, each having a targeting tag;
- evaluating the plurality of tagged content items in view of the user profile; and
- presenting one of the plurality of tagged content items based on the
- 15           evaluation.
2. The method of claim 1 wherein storing further comprises defining a user profile based on usage.
- 20           3. The method of claim 1 wherein storing further comprises defining a user profile based on manual input.
4. The method of claim 1 wherein the method is performed by a television set-top-box and wherein the distribution network is a television broadcast network.
- 25           5. The method of claim 1 wherein the method is performed by a computer device and wherein the distribution network is the Internet.
6. The method of claim 1 wherein the receiving act further comprises storing
- 30           the tagged content.
7. The method of claim 6 wherein storing the tagged content comprises arranging the content in an organized manner.
- 35           8. The method of claim 1 wherein each of the targeting tags comprises a plurality of tag identifiers, the tag identifiers corresponding to user tag identifiers in the user profile tags, and wherein the evaluating act compares corresponding tag

identifiers and user tag identifiers to determine a score for the associated tag information.

- 5                   9. The method of claim 1 further comprising:  
                    recognizing a content insertion event; and  
                    presenting one or more content items in response to recognizing the  
content insertion event.
- 10               10. The method of claim 9 wherein the recognizing act comprises:  
                    receiving an internal content insertion event.
11. The method of claim 9 wherein the recognizing act comprises:  
                    receiving an external content insertion event.
- 15               12. The method of claim 10 wherein the internal content insertion event is a  
user initiated menu selection for content.
13. The method of claim 11 wherein the external content insertion event is  
an advertising insertion event.
- 20               14.     A client device for providing target content comprising:  
                    a user profile having one or more user profile tags associated with  
user preferences;  
                    a tagged content memory storing a plurality of content items, each  
25               having and associated tag associated with a classes of targeted users; and  
                    a filtering module operable to filter out a content item whose  
associated tag is not sufficiently similar to any of the one or more user  
profile tags; and  
                    a user input/output module operable to present content to a user of the  
30               client device and further operable to detect a content selection from the user;
15.     The method of claim 14 further comprising:  
                    a profile generator module in operable communication with the user  
input/output module and the user profile, operable to update the user profile  
35               based on the content selection from the user.
16.     The method of claim 15 further comprising:

a content insertion engine in operable communication with the user input/output module and the filtering module, operable to detect a user initiated insertion event and request from the filtering module an appropriate content item based on the user selection and the user profile.

5

17. The method of claim 16 further comprising:

a receiving module operable to receive tagged content from a communication network;

10 a storage module in operable communication with the receiving module and the filtering module, operable to store the received tagged content and provide the tagged content to the filtering module.

18. A media content distribution network comprising:

a server device providing tagged media content; and

15 a client device in operable communication with the server device, operable to receive all tagged media content and select the tagged media content that most closely matches a user profile.

19. The media content distribution network of claim 18 wherein the client device comprises:

a receiving module operable to receive the tagged media content;

a storage module in operable communication with the receiving module, operable to store the received media content

20. The media content distribution network of claim 19 wherein the client device further comprises:

a filtering module in operable communication with the storage module and the user profile, operable to correlate tags in the storage module with tags in the user profile; and

30 a user input/output module in operable communication with the filtering module, operable to receive a presentation request from the filtering module to present content associated with a tag.

21. In a network environment having server device and a client device, a computer program product readable by a computer and having stored thereon a data structure, comprising:

a data stream having content that may be presented to a user; and

a tag associated with the data stream, the tag comprising information related to the predetermined user classifications.

22. A data structure as defined in claim 21 further comprising a plurality of data stream and a plurality of associated tags, wherein at least one tag comprises
- 5 different user classification information from one of the other tags.

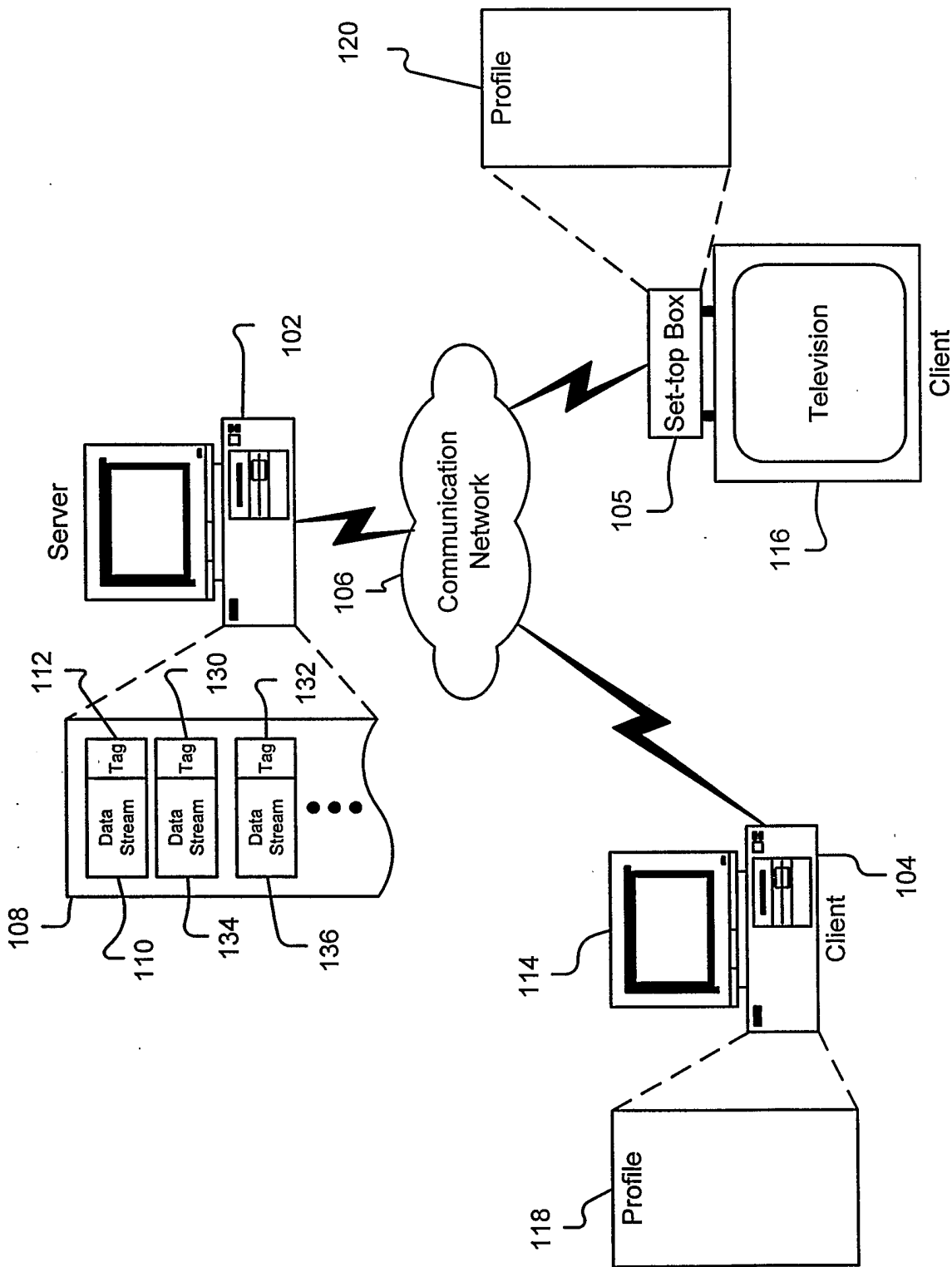


Figure 1

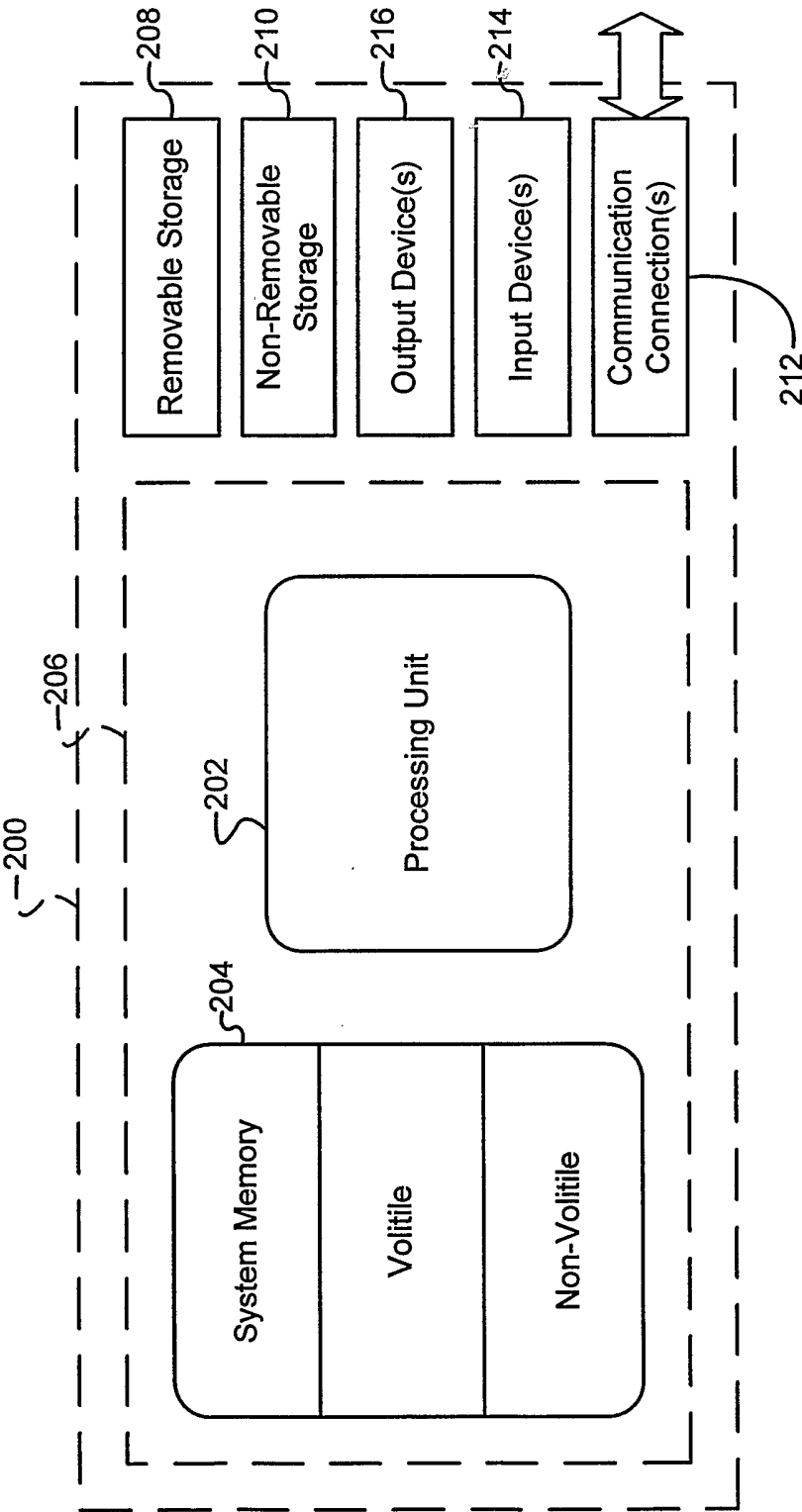
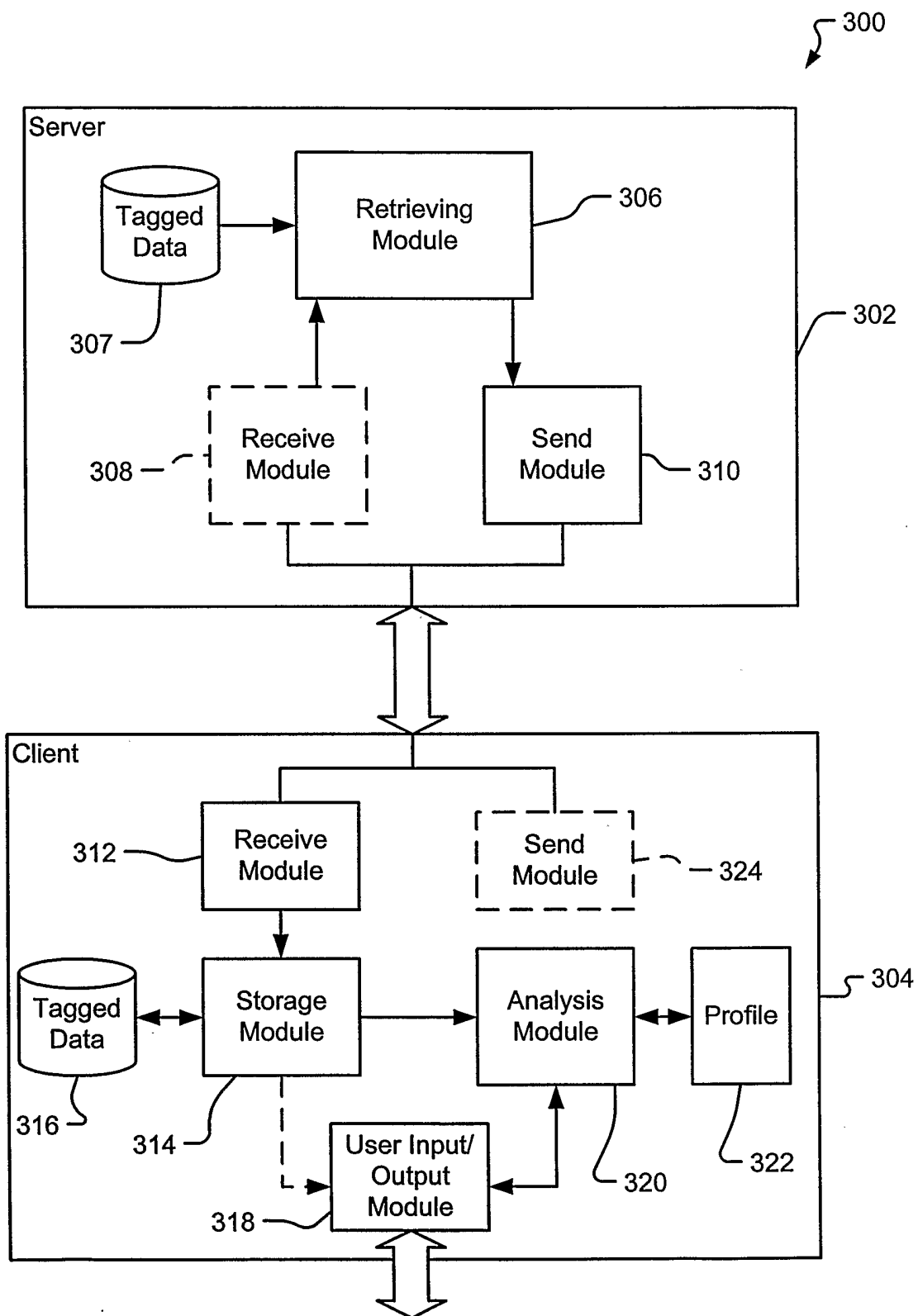


Figure 2

**Figure 3**

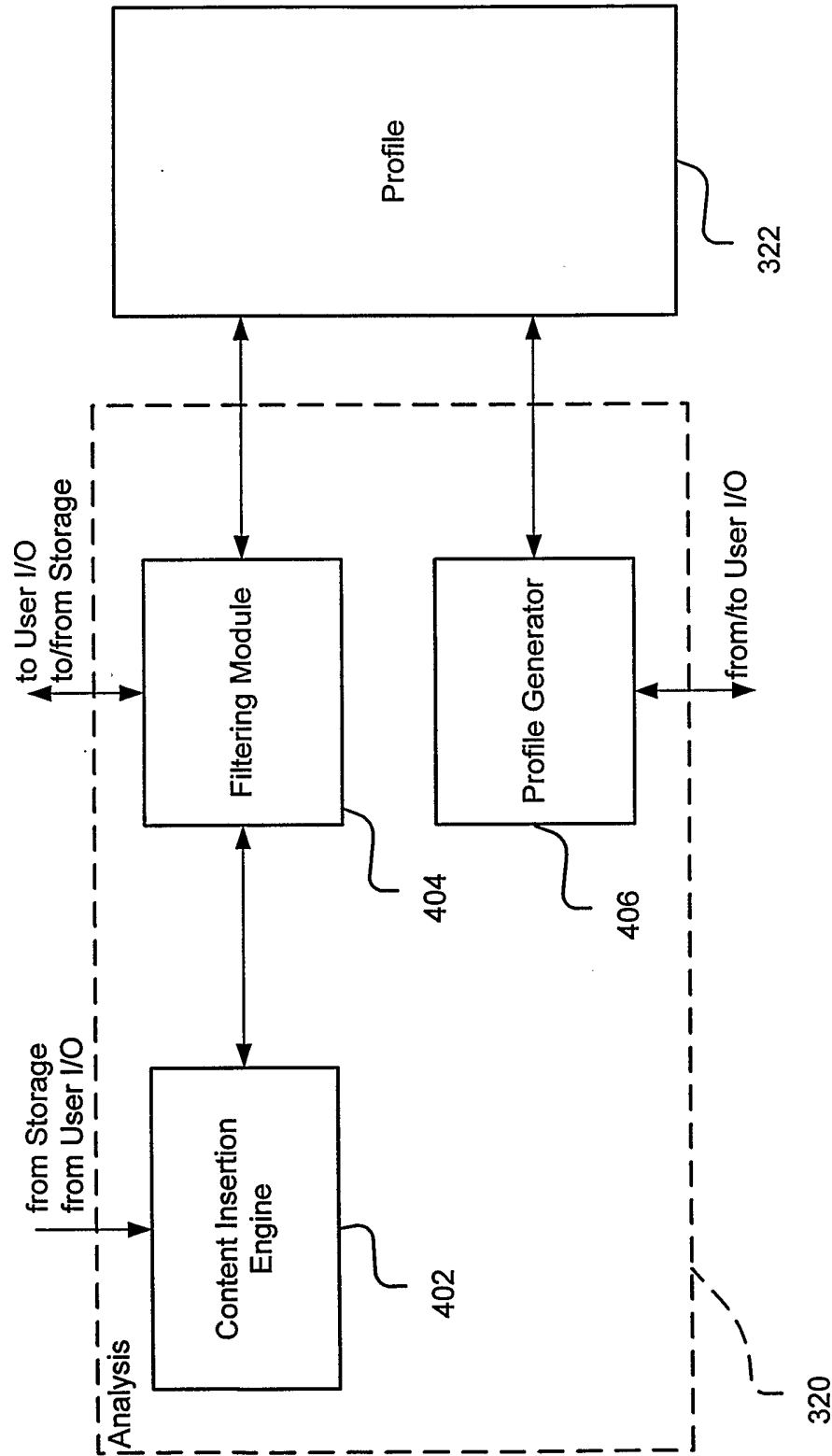


Figure 4



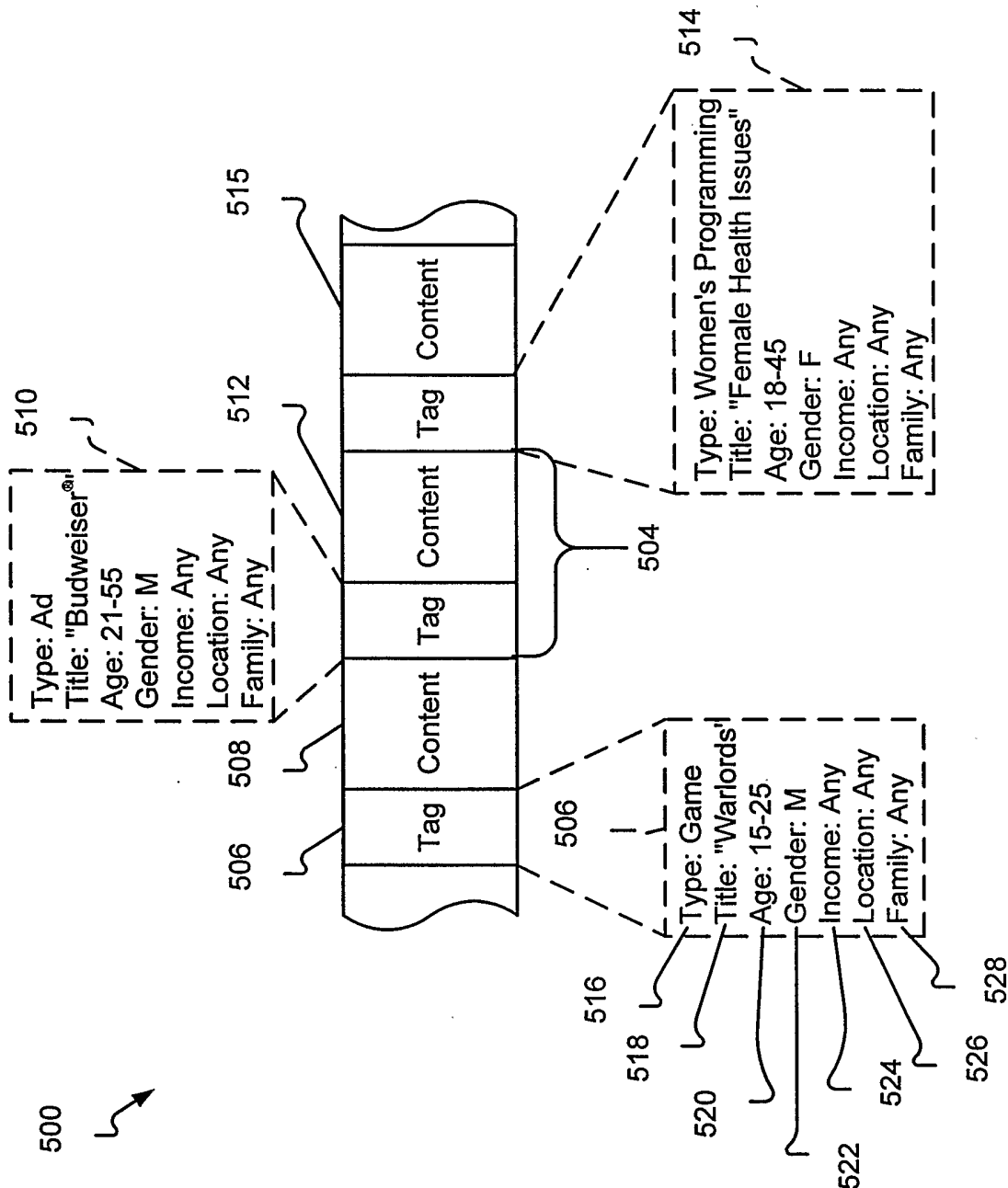


Figure 5

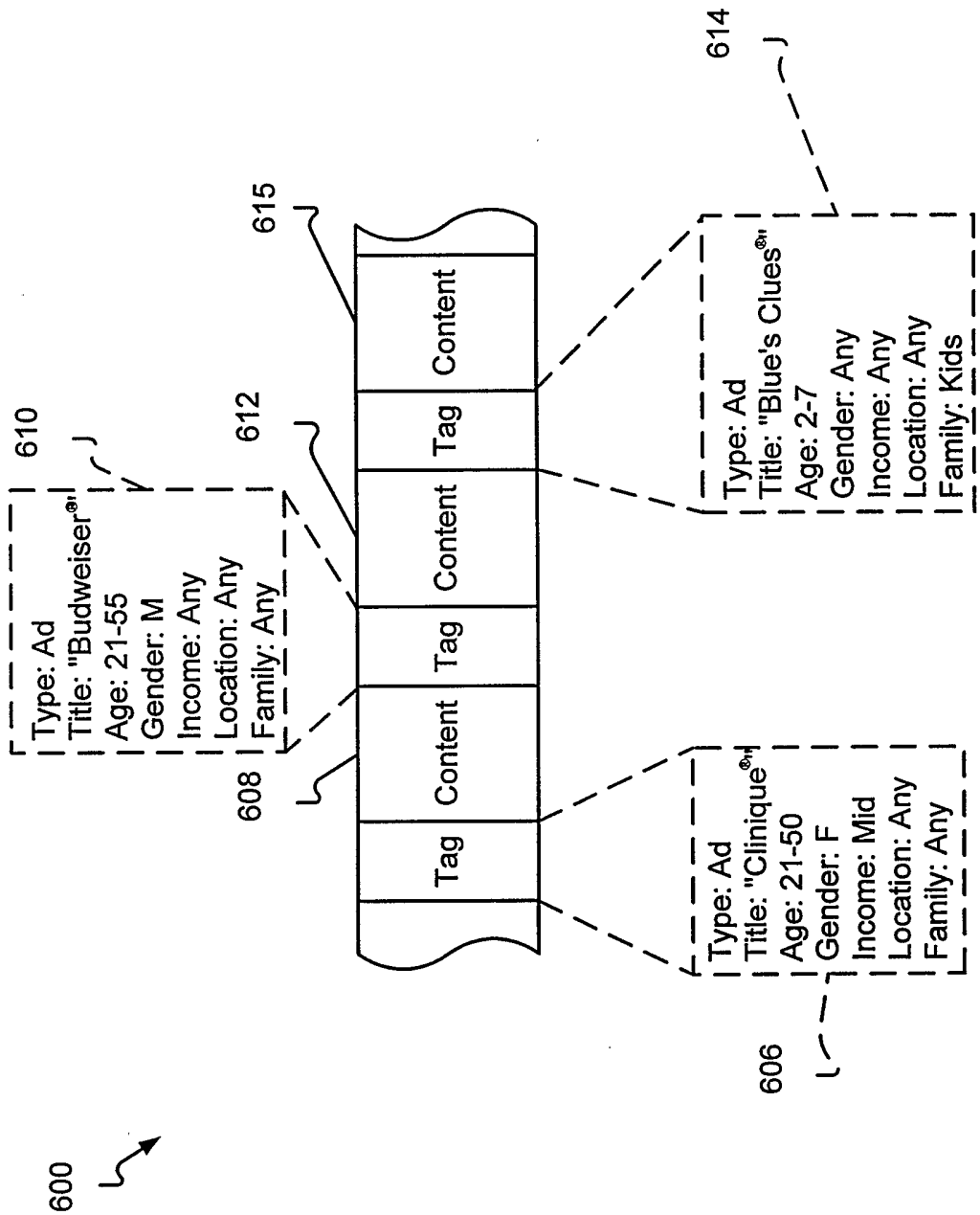
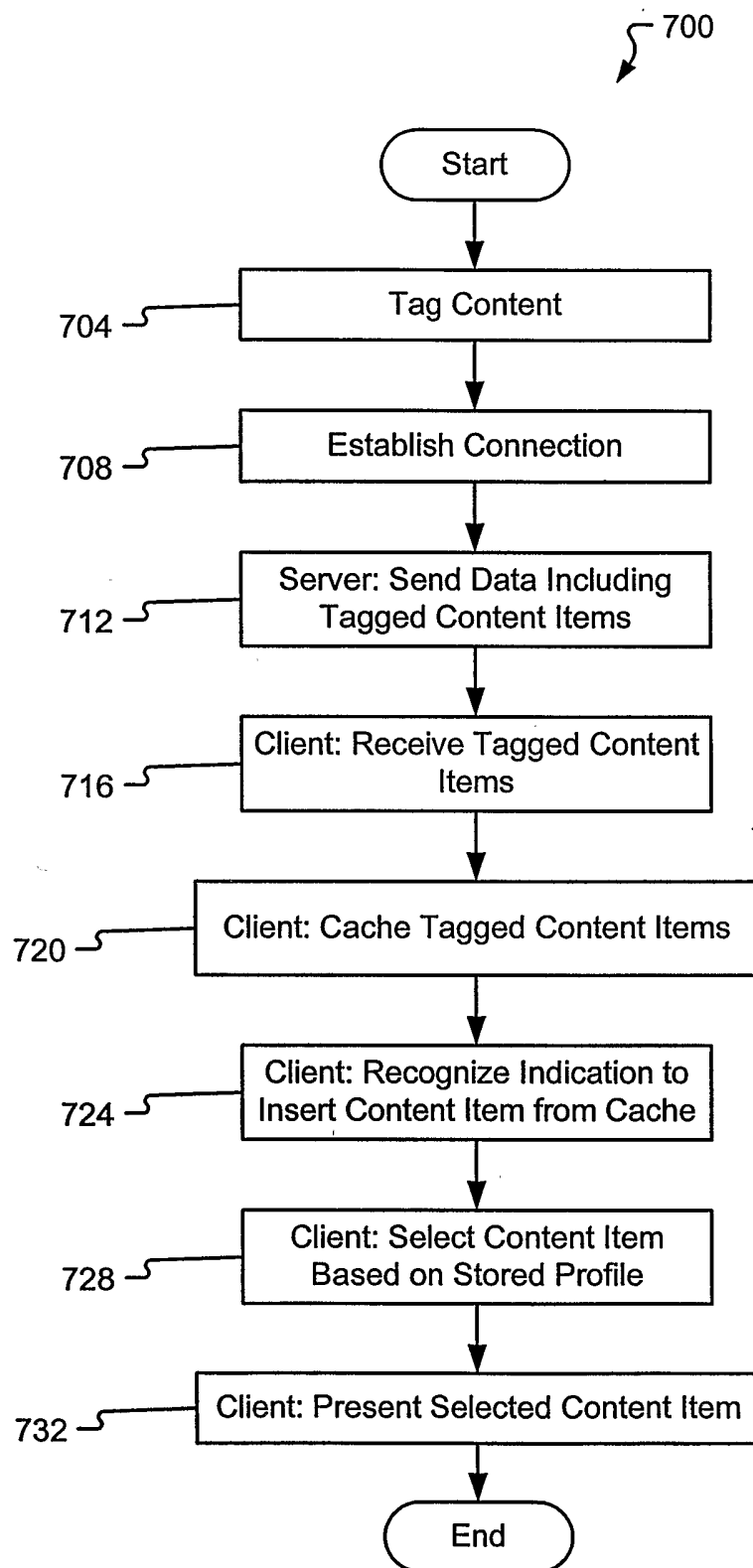


Figure 6

**Figure 7**

800 ↗

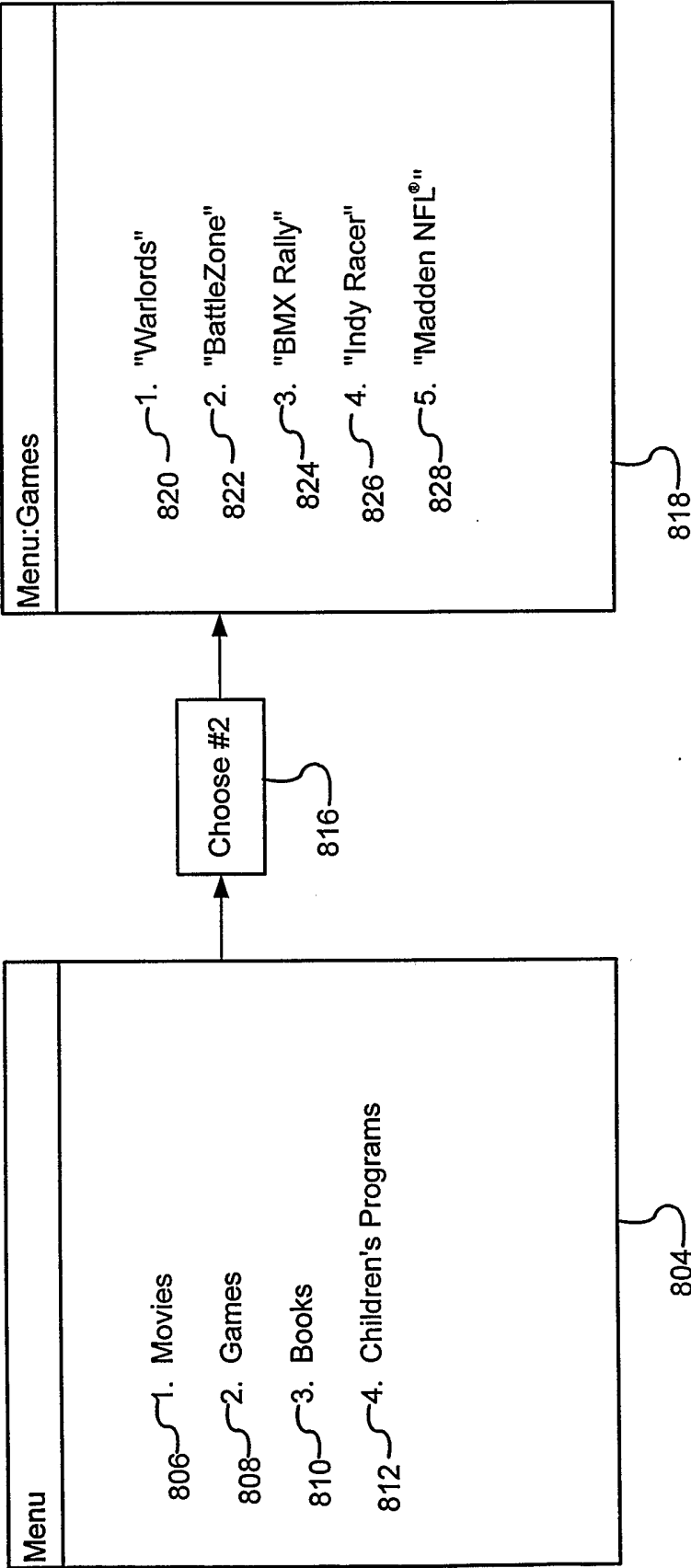
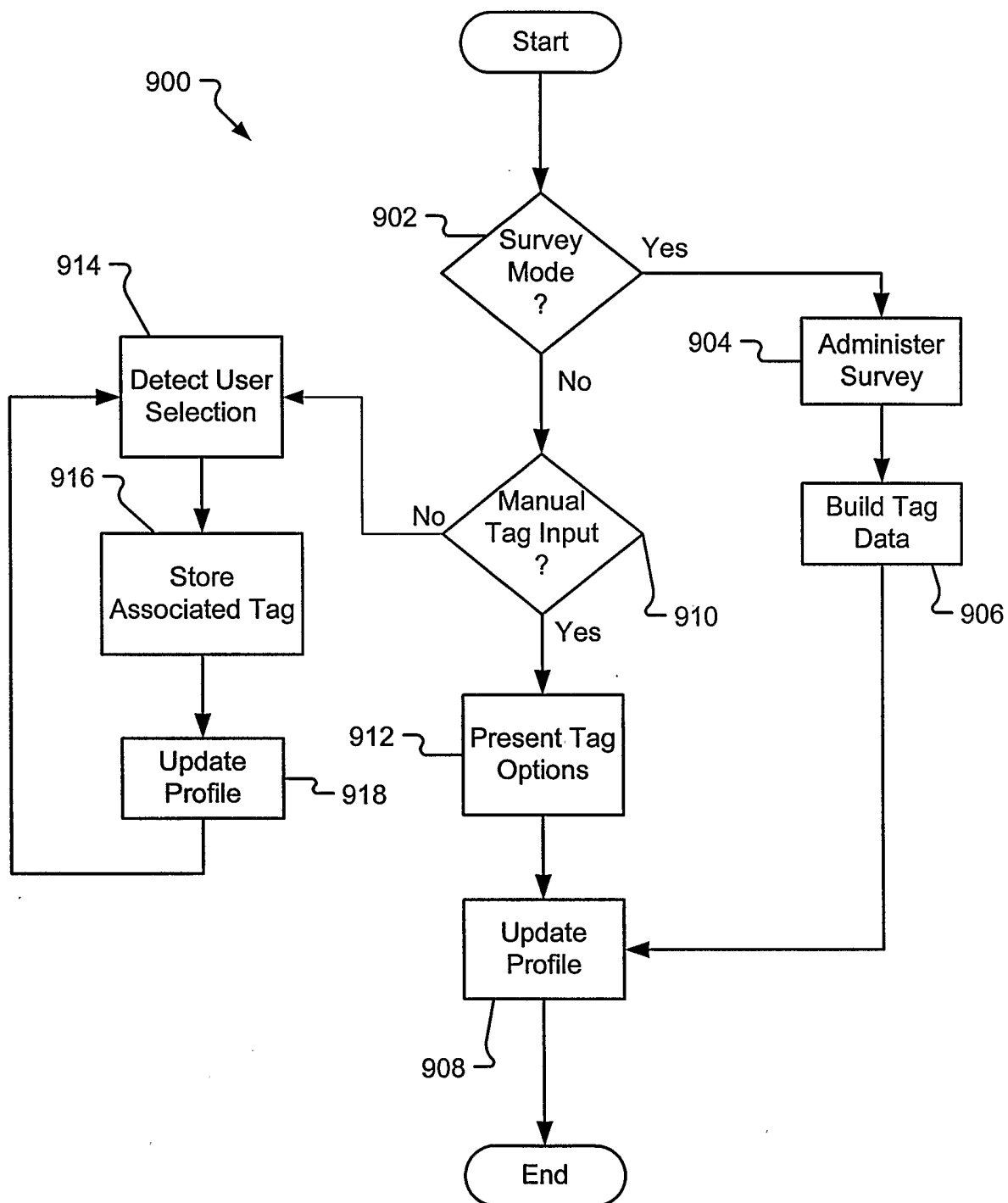
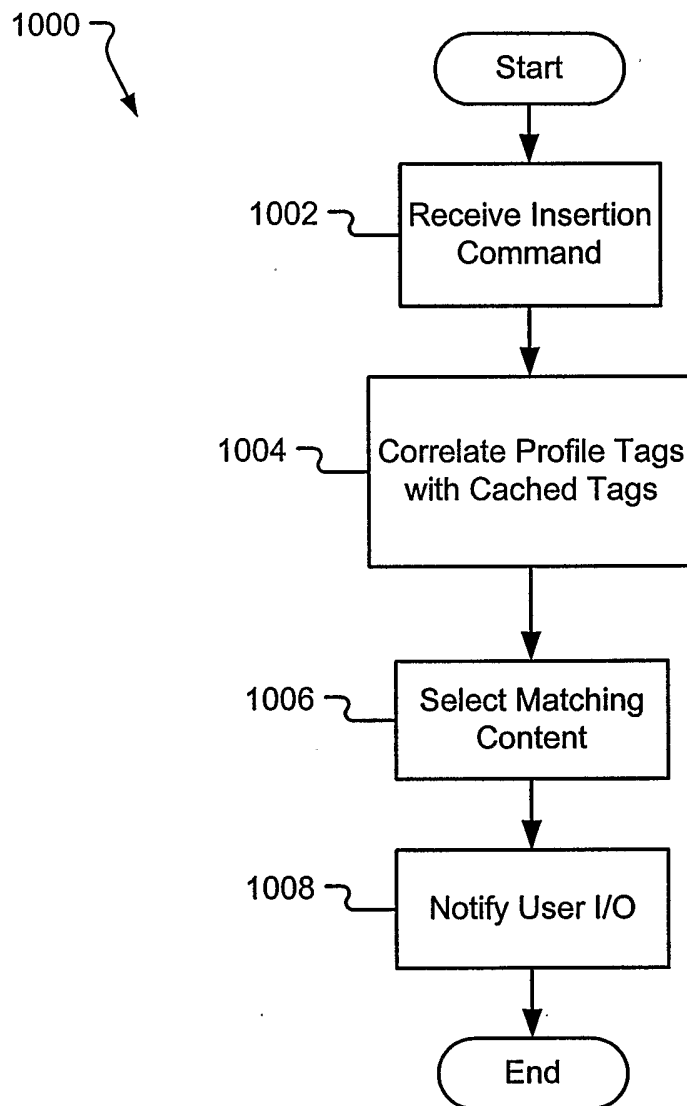
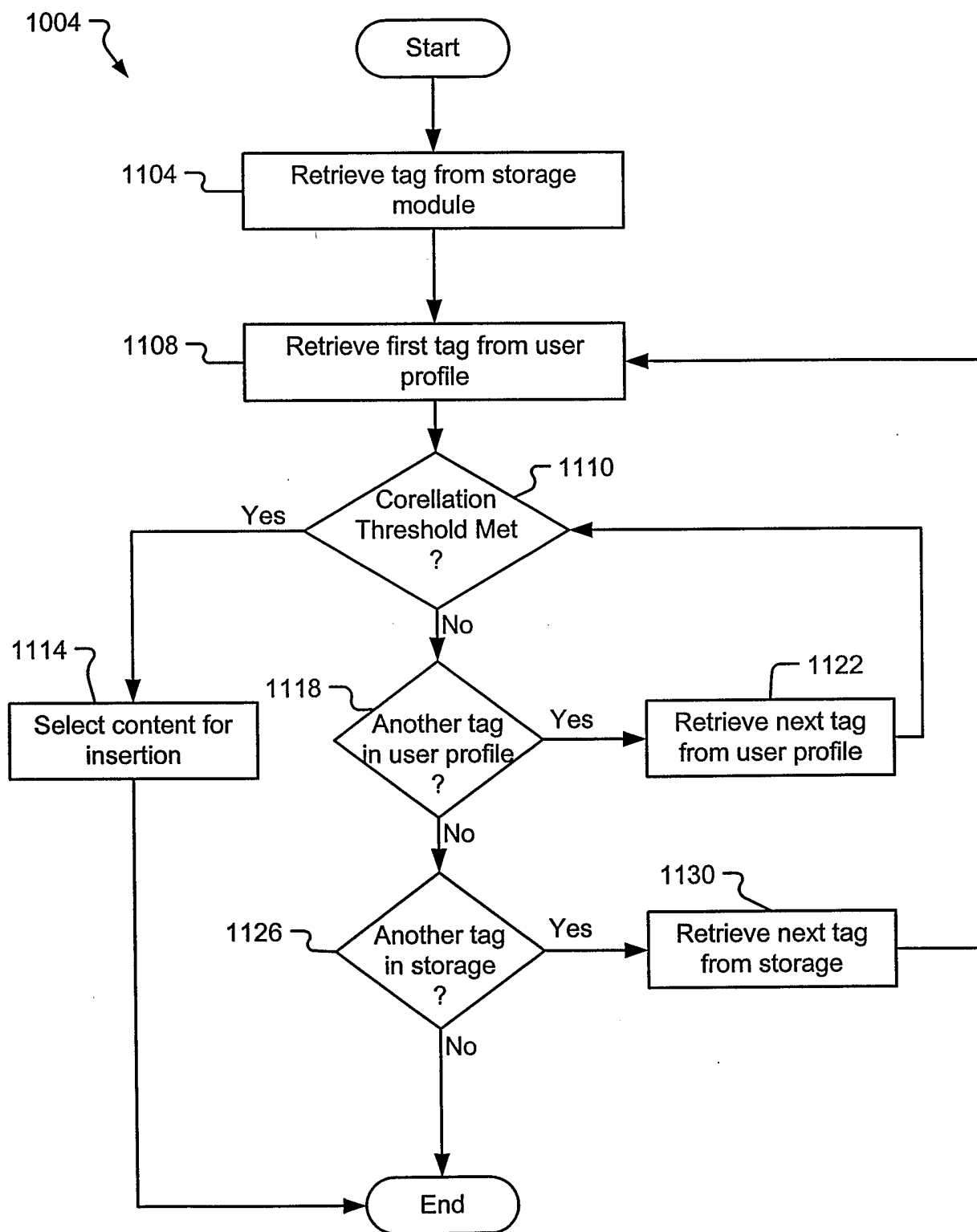
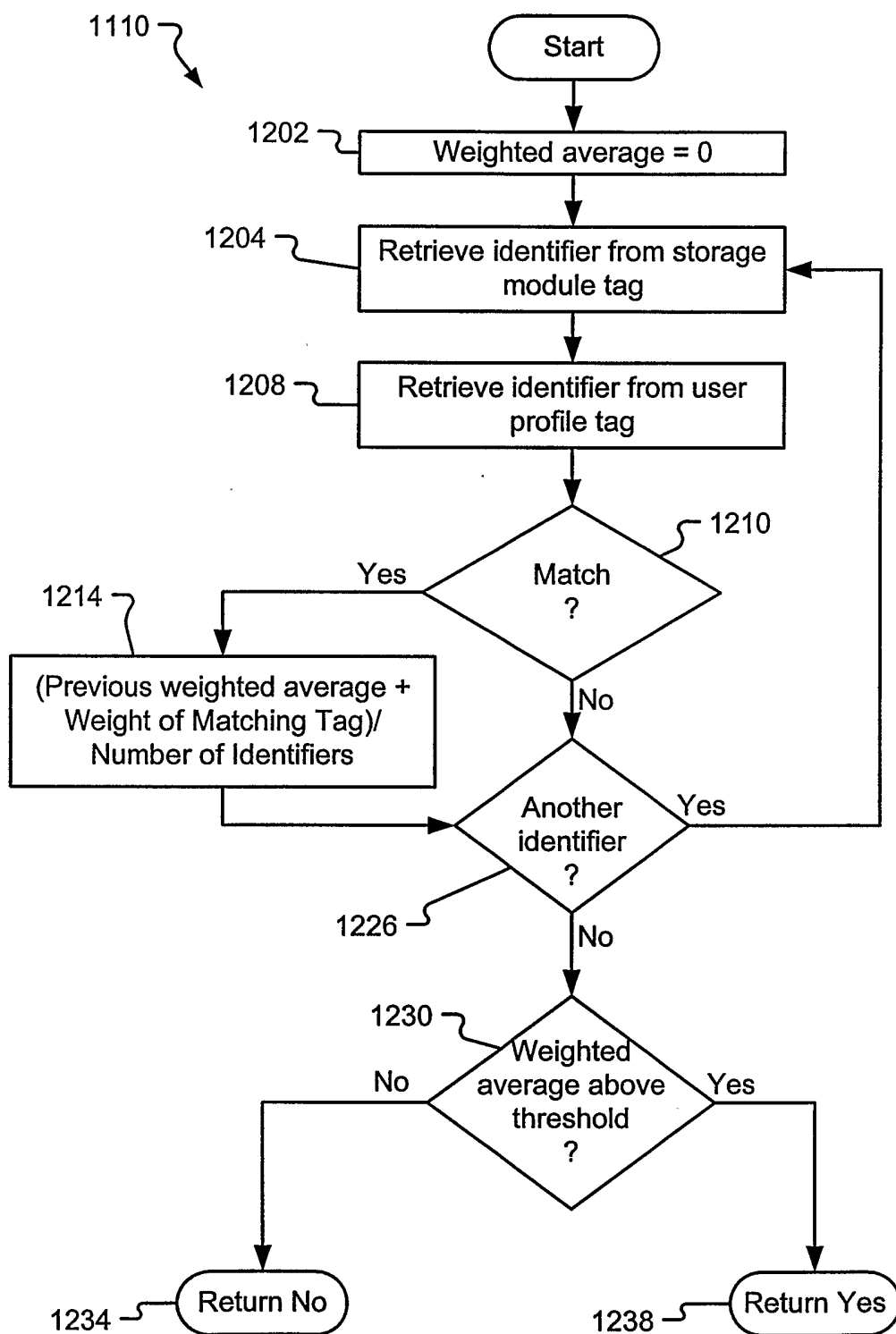


Figure 8

**Figure 9**

**Figure 10**

**Figure 11**

**Figure 12**



# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US02/41774

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G06F 17/60

US CL : 705/14

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

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 705/14

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

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

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6,327,574 B1 (KRAMER et al) 04 December 2001 (04.12.2001), all, especially col. 3, lines 10-60; col. 33, line 49 - col. 34, line 2).	1-22
Y	US 6,134,532 A (LAZARUS et al) 17 October 2000 (17.10.2000), col. 7, lines 39-41; col. 9, lines 39-59; col. 16, line 35 - col. 18, line 50.	1-22
Y, P	US 6,487,538 B1 (GUPTA et al) 26 November 2002 (26.11.2002), col. 9, line 34 - col. 11, line 13.	1-22

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

☐ See patent family annex.

* Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 08 March 2003 (08.03.2003)	Date of mailing of the international search report 26 MAR 2003
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703)305-3230	Authorized officer Lewis A. Bullock, Jr. <i>Peggy Hanaol</i> Telephone No. (703) 305-0439