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(54) SYSTEM AND METHOD FOR SINGLE SIGN ON TARGETED ADVERTISING

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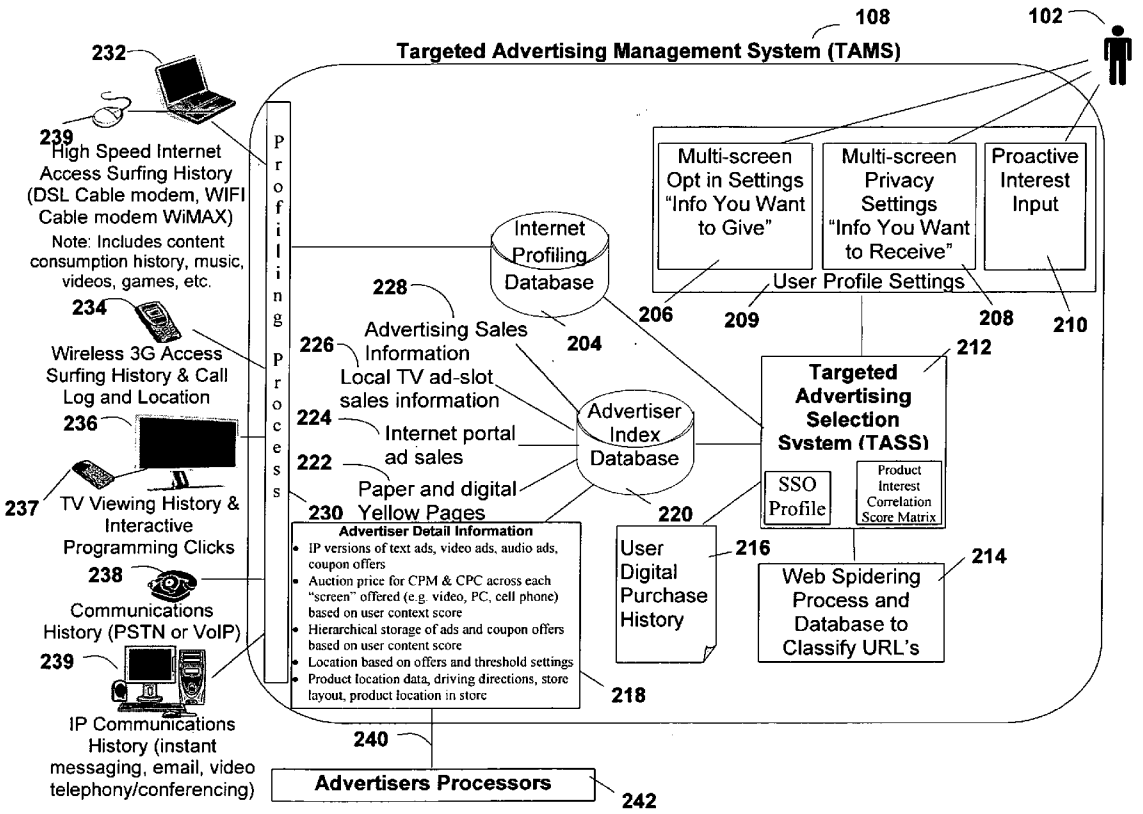
(57) **ABSTRACT**

A method is disclosed for sending targeted advertising data, the method including monitoring in a plurality of data communications networks, single sign on (SSO) subscriber event data from a first SSO subscriber end user device and a second SSO subscriber end user device, calculating product interest correlation scores in a plurality of advertising categories for an SSO subscriber advertising profile based on the monitoring SSO subscriber event data, selecting advertising data in at least one of the advertising categories from an advertiser database based on the SSO subscriber advertising profile, selecting a format to deliver the selected advertising data to a third SSO subscriber end user device and sending the targeted advertising data to the third SSO subscriber end user device. A system and a computer program are disclosed for performing the method. A data structure is disclosed for providing an interrelationship between a processor and data structure data.



FreeWheel, Ex. 1116

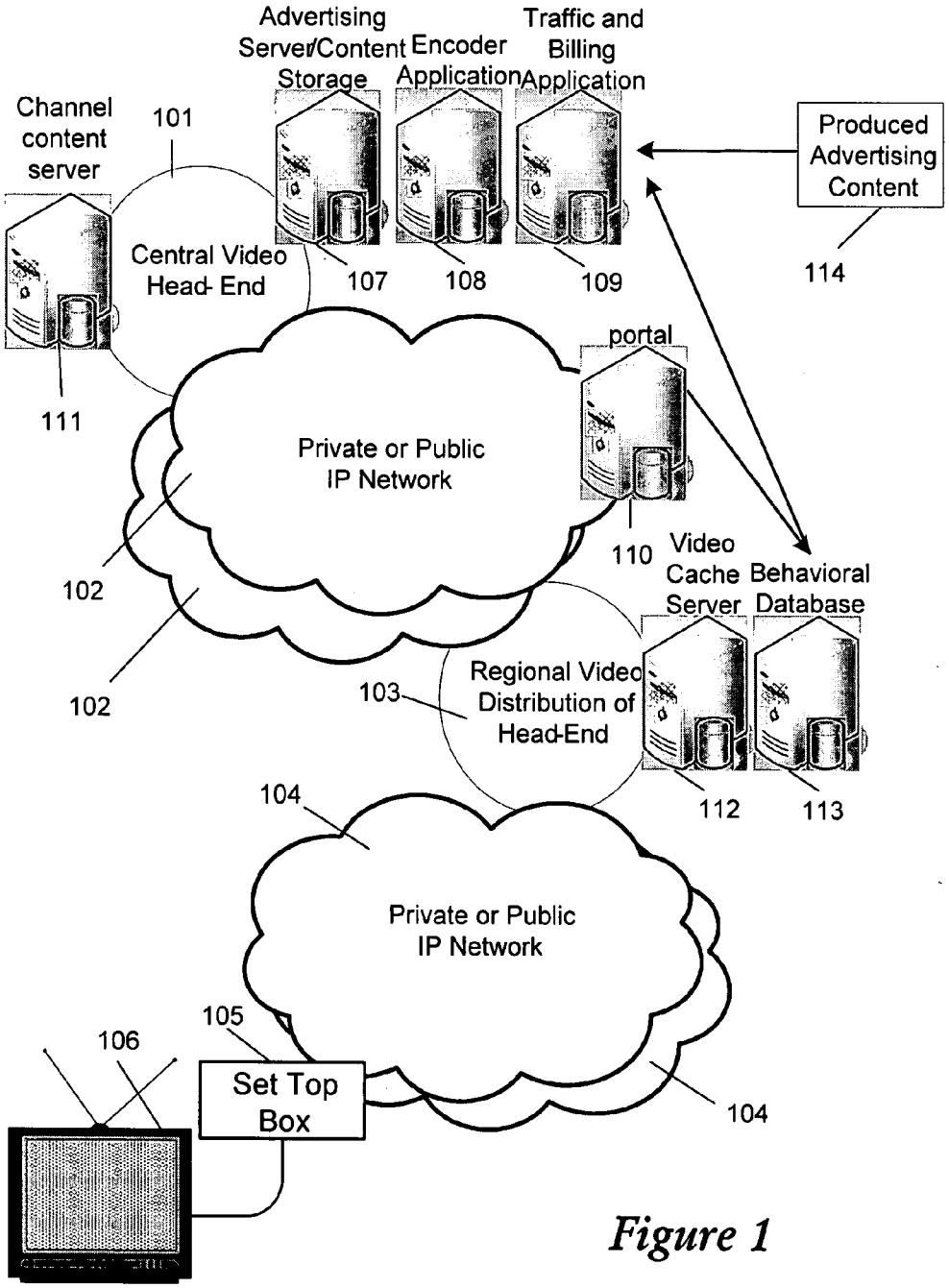

Advertising Server/Content Storage
Encoder Application
Traffic and Billing Application
Channel content server
101
Produced Advertising Content
114
Central Video Head- End
107
108
109
portal
111
Private or Public IP Network
110
Video Cache Server
Behavioral Database
102
102
103
Regional Video Distribution of Head-End
112
113
104
Private or Public IP Network
105
106
Set Top Box
104

Figure 1

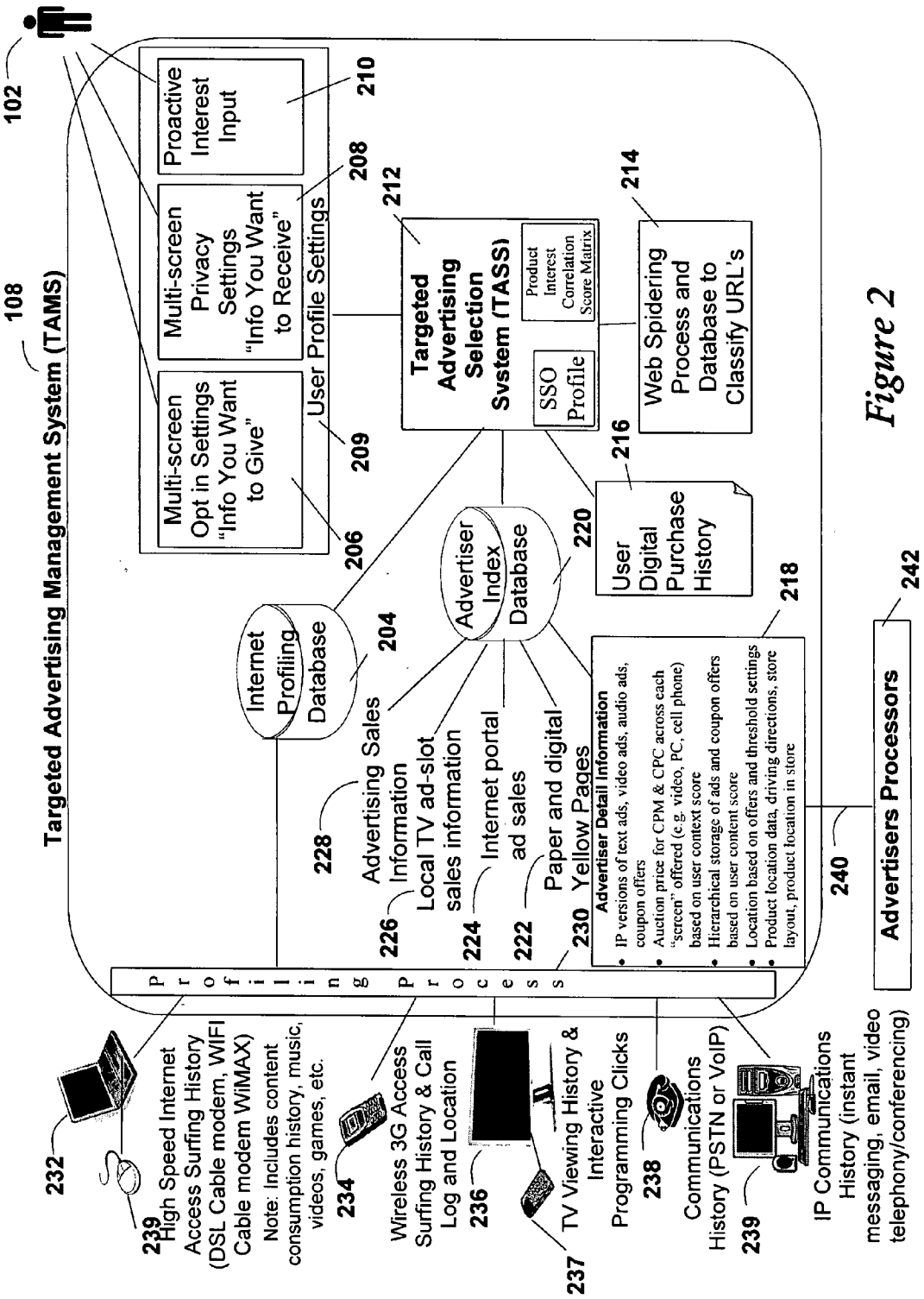

102
108
Targeted Advertising Management System (TAMS)
Proactive Interest Input
210
Multi-screen Privacy Settings "Info You Want to Receive"
208
Multi-screen Opt in Settings "Info You Want to Give"
206
User Profile Settings
209
212
Targeted Advertising Selection Svstem (TASS)
Product Interest Correlation Score Matrix
SSO Profile
214
Web Spidering Process and Database to Classify URL's
216
User Digital Purchase History
220
Advertiser Index Database
Internet Profiling Database
204
218
Advertiser Detail Information
IP versions of text ads, video ads, audio ads, coupon offers
Auction price for CPM & CPC across each "screen" offered (e.g. video, PC, cell phone) based on user context score
Hierarchical storage of ads and coupon offers based on user content score
Location based on offers and threshold settings
Product location data, driving directions, store layout, product location in store
242
Advertisers Processors
240
228
Advertising Sales Information
226
Local TV ad-slot sales information
224
Internet portal ad sales
222
Paper and digital Yellow Pages
230
Profiling Process
232
239
High Speed Internet Access Surfing History (DSL Cable modem, WIFI Cable modem WiMAX)
Note: Includes content consumption history, music, videos, games, etc.
234
Wireless 3G Access Surfing History & Call Log and Location
236
237
TV Viewing History & Interactive Programming Clicks
238
Communications History (PSTN or VoIP)
239
IP Communications History (instant messaging, email, video telephony/conferencing)

Figure 2

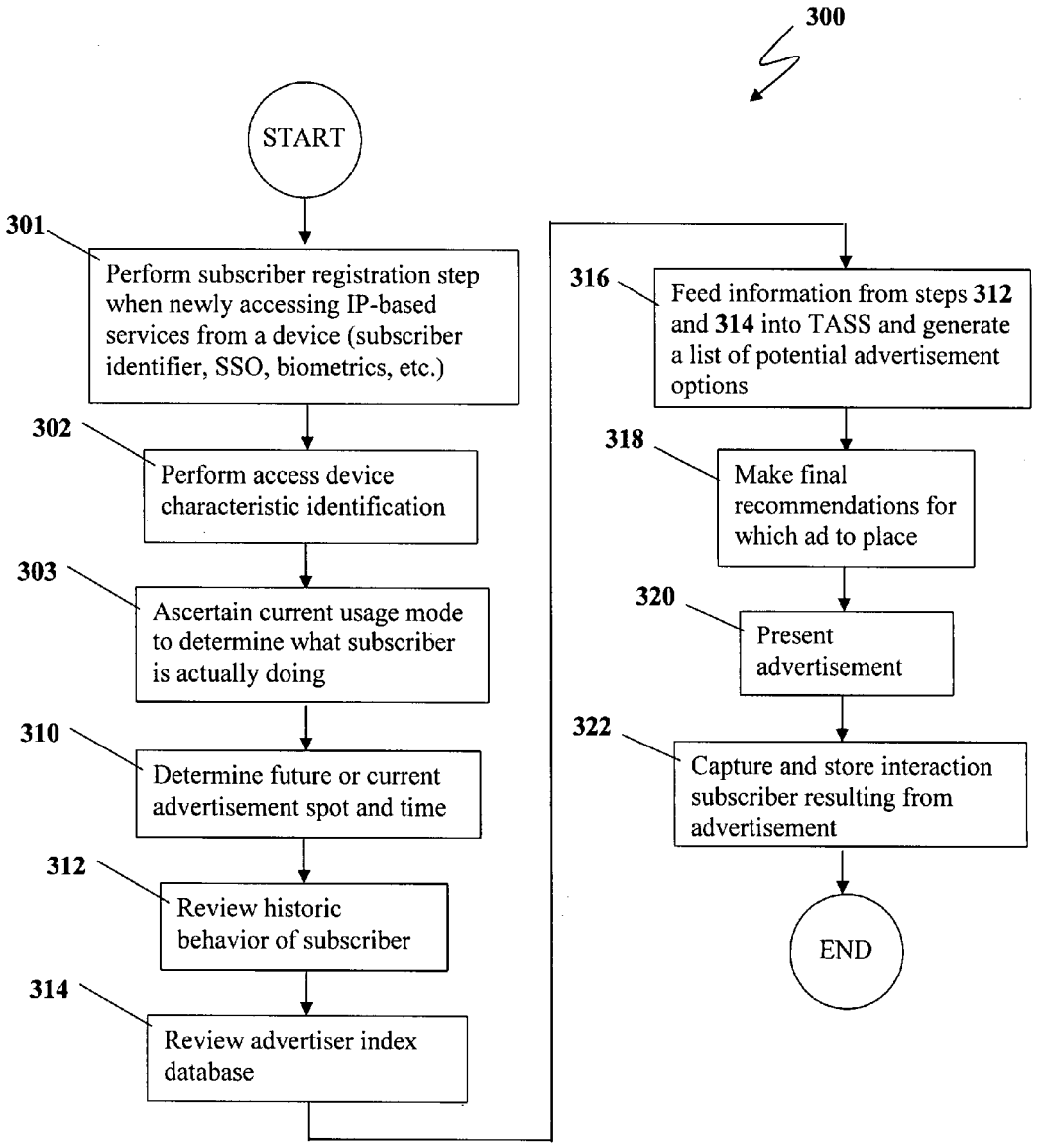

300
START
301
Perform subscriber registration step when newly accessing IP-based services from a device (subscriber identifier, SSO, biometrics, etc.)
302
Perform access device characteristic identification
303
Ascertain current usage mode to determine what subscriber is actually doing
310
Determine future or current advertisement spot and time
312
Review historic behavior of subscriber
314
Review advertiser index database
316
Feed information from steps 312 and 314 into TASS and generate a list of potential advertisement options
318
Make final recommendations for which ad to place
320
Present advertisement
322
Capture and store interaction subscriber resulting from advertisement
END

Figure 3

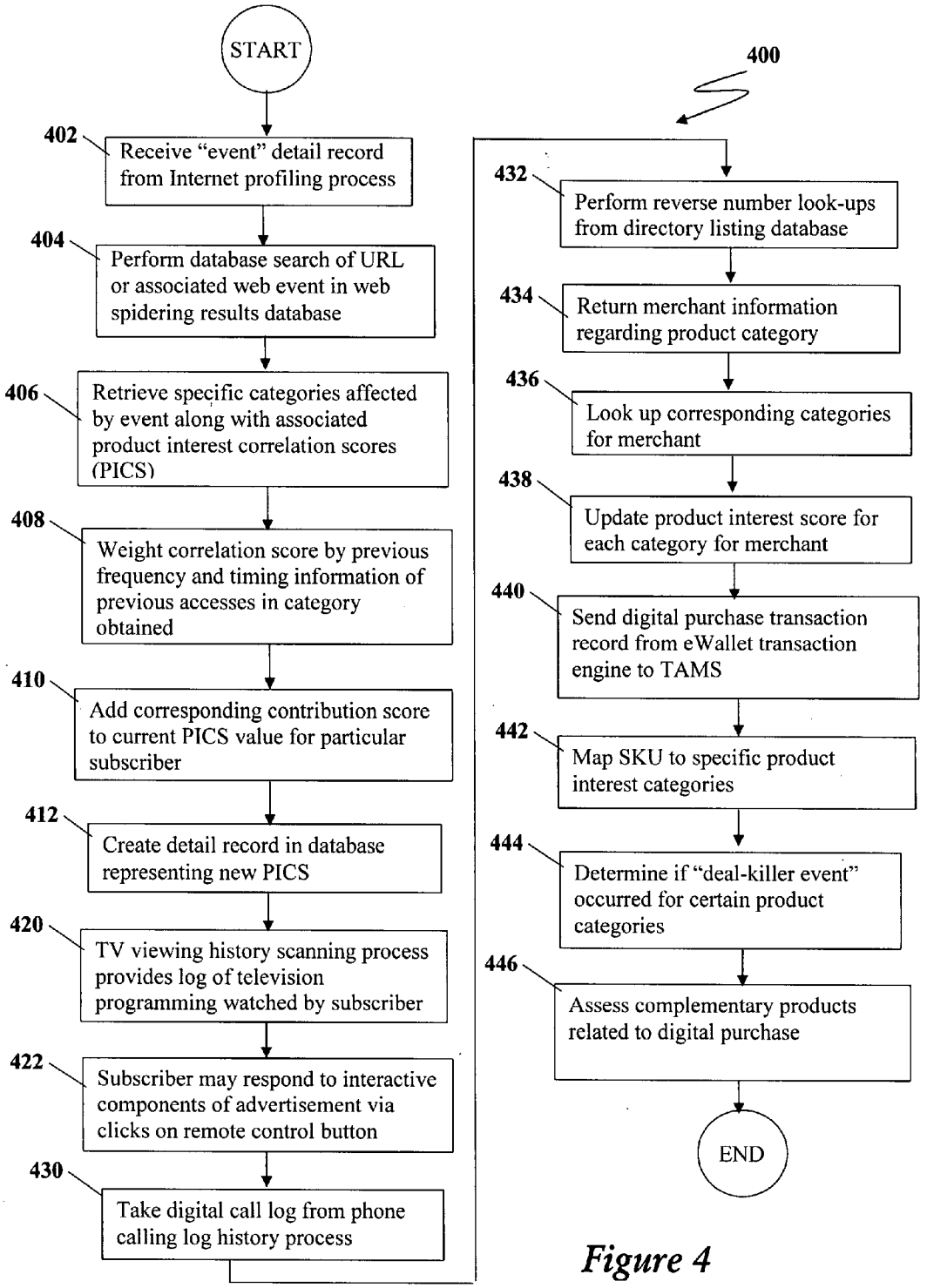

START
400
402
Receive "event" detail record from Internet profiling process
404
Perform database search of URL or associated web event in web spidering results database
406
Retrieve specific categories affected by event along with associated product interest correlation scores (PICS)
408
Weight correlation score by previous frequency and timing information of previous accesses in category obtained
410
Add corresponding contribution score to current PICS value for particular subscriber
412
Create detail record in database representing new PICS
420
TV viewing history scanning process provides log of television programming watched by subscriber
422
Subscriber may respond to interactive components of advertisement via clicks on remote control button
430
Take digital call log from phone calling log history process
432
Perform reverse number look-ups from directory listing database
434
Return merchant information regarding product category
436
Look up corresponding categories for merchant
438
Update product interest score for each category for merchant
440
Send digital purchase transaction record from eWallet transaction engine to TAMS
442
Map SKU to specific product interest categories
444
Determine if "deal-killer event" occurred for certain product categories
446
Assess complementary products related to digital purchase
END

Figure 4

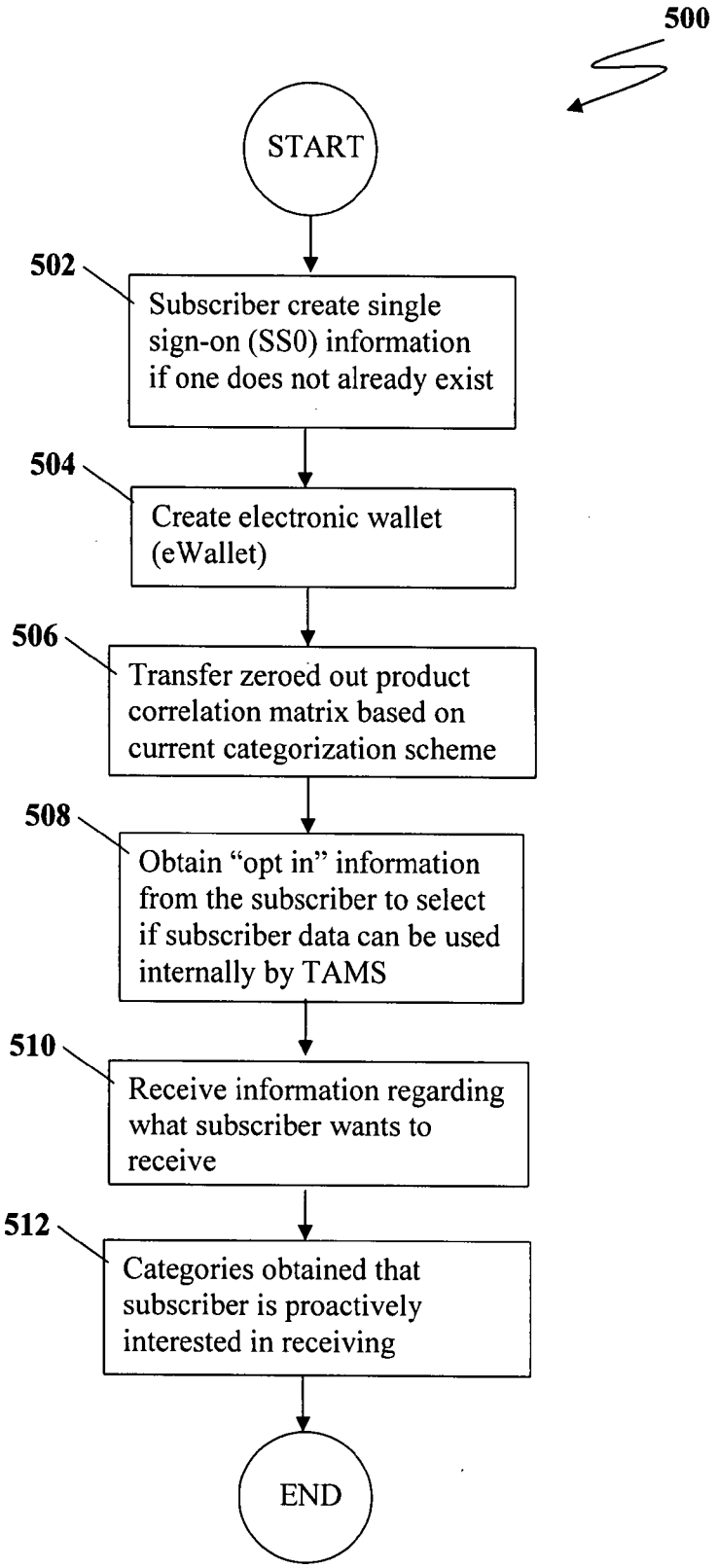

500
START
502
Subscriber create single sign-on (SS0) information if one does not already exist
504
Create electronic wallet (eWallet)
506
Transfer zeroed out product correlation matrix based on current categorization scheme
508
Obtain "opt in" information from the subscriber to select if subscriber data can be used internally by TAMS
510
Receive information regarding what subscriber wants to receive
512
Categories obtained that subscriber is proactively interested in receiving
END

Figure 5

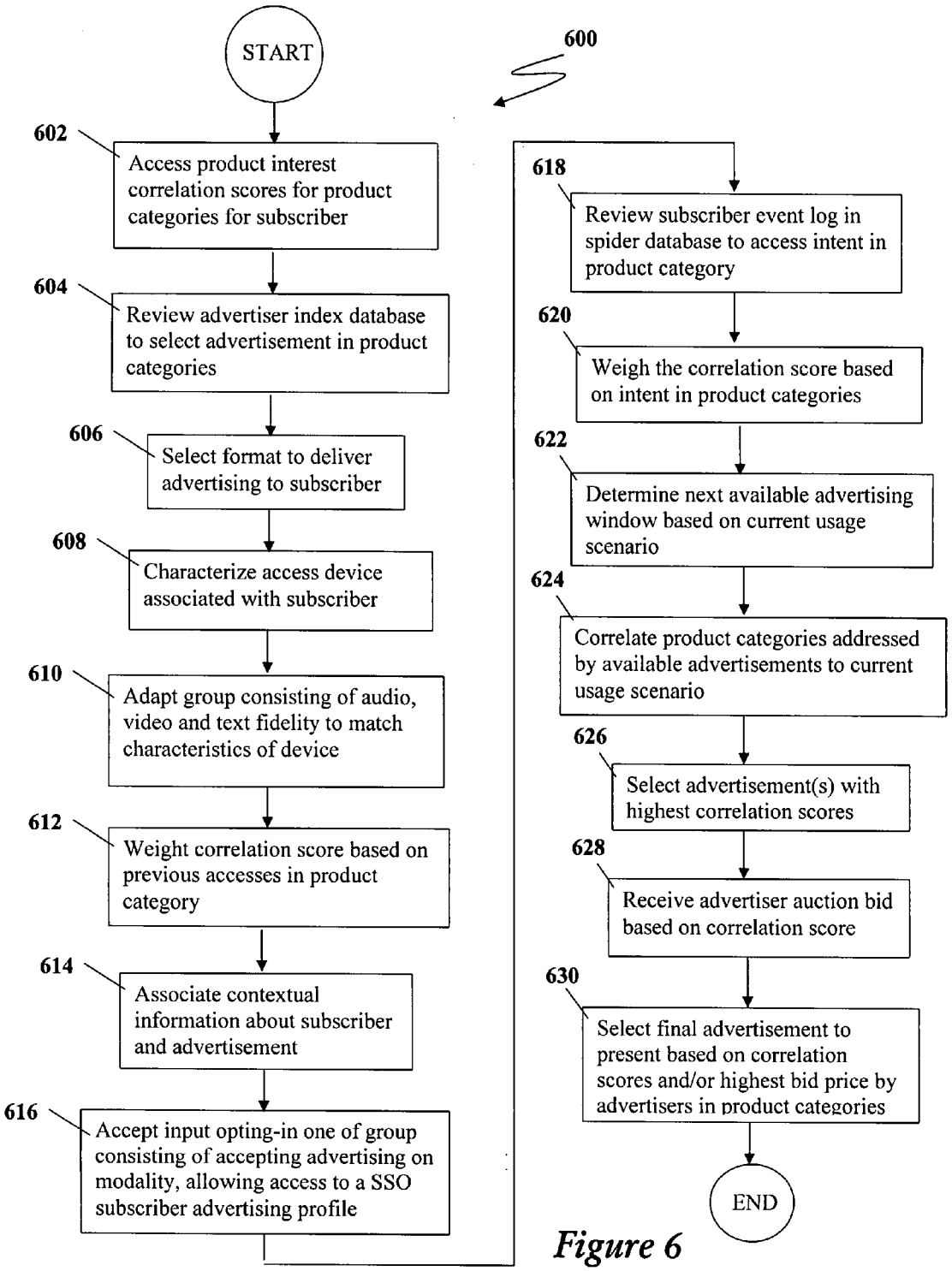

START
600
602
Access product interest correlation scores for product categories for subscriber
604
Review advertiser index database to select advertisement in product categories
606
Select format to deliver advertising to subscriber
608
Characterize access device associated with subscriber
610
Adapt group consisting of audio, video and text fidelity to match characteristics of device
612
Weight correlation score based on previous accesses in product category
614
Associate contextual information about subscriber and advertisement
616
Accept input opting-in one of group consisting of accepting advertising on modality, allowing access to a SSO subscriber advertising profile
618
Review subscriber event log in spider database to access intent in product category
620
Weigh the correlation score based on intent in product categories
622
Determine next available advertising window based on current usage scenario
624
Correlate product categories addressed by available advertisements to current usage scenario
626
Select advertisement(s) with highest correlation scores
628
Receive advertiser auction bid based on correlation score
630
Select final advertisement to present based on correlation scores and/or highest bid price by advertisers in product categories
END

Figure 6

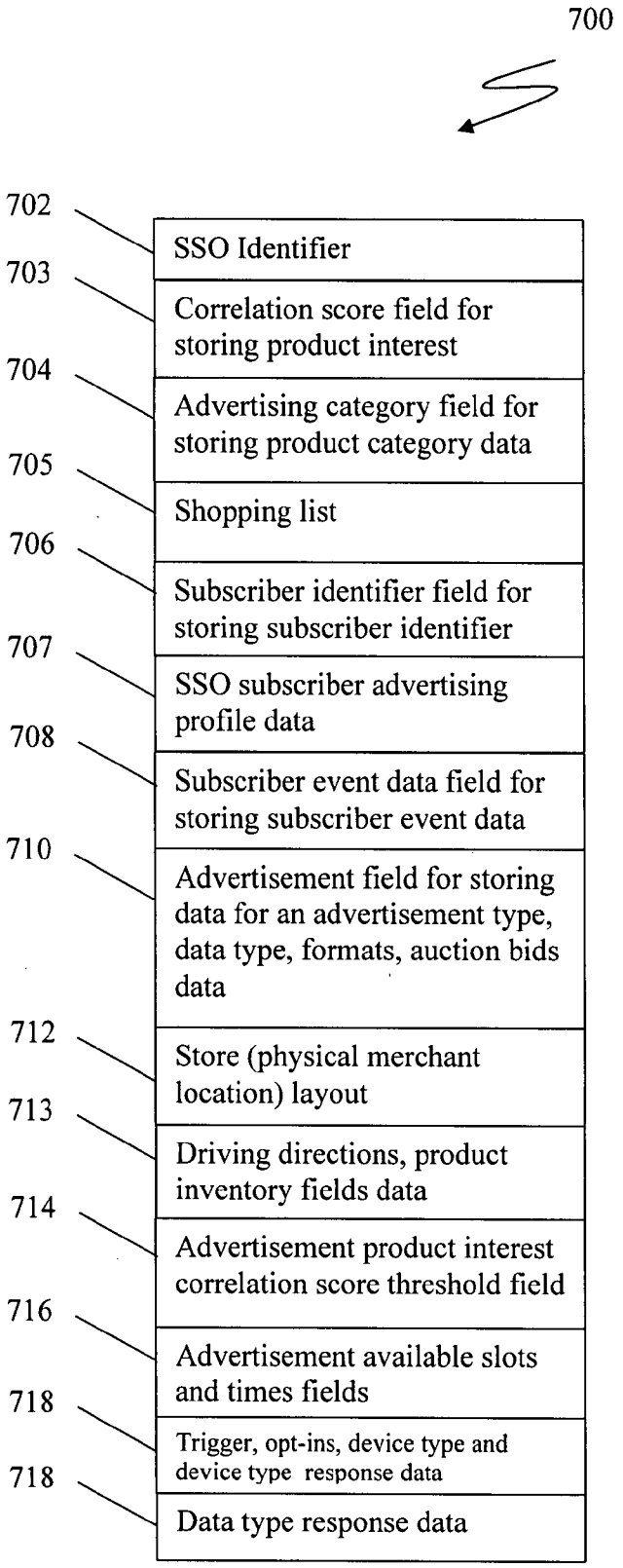
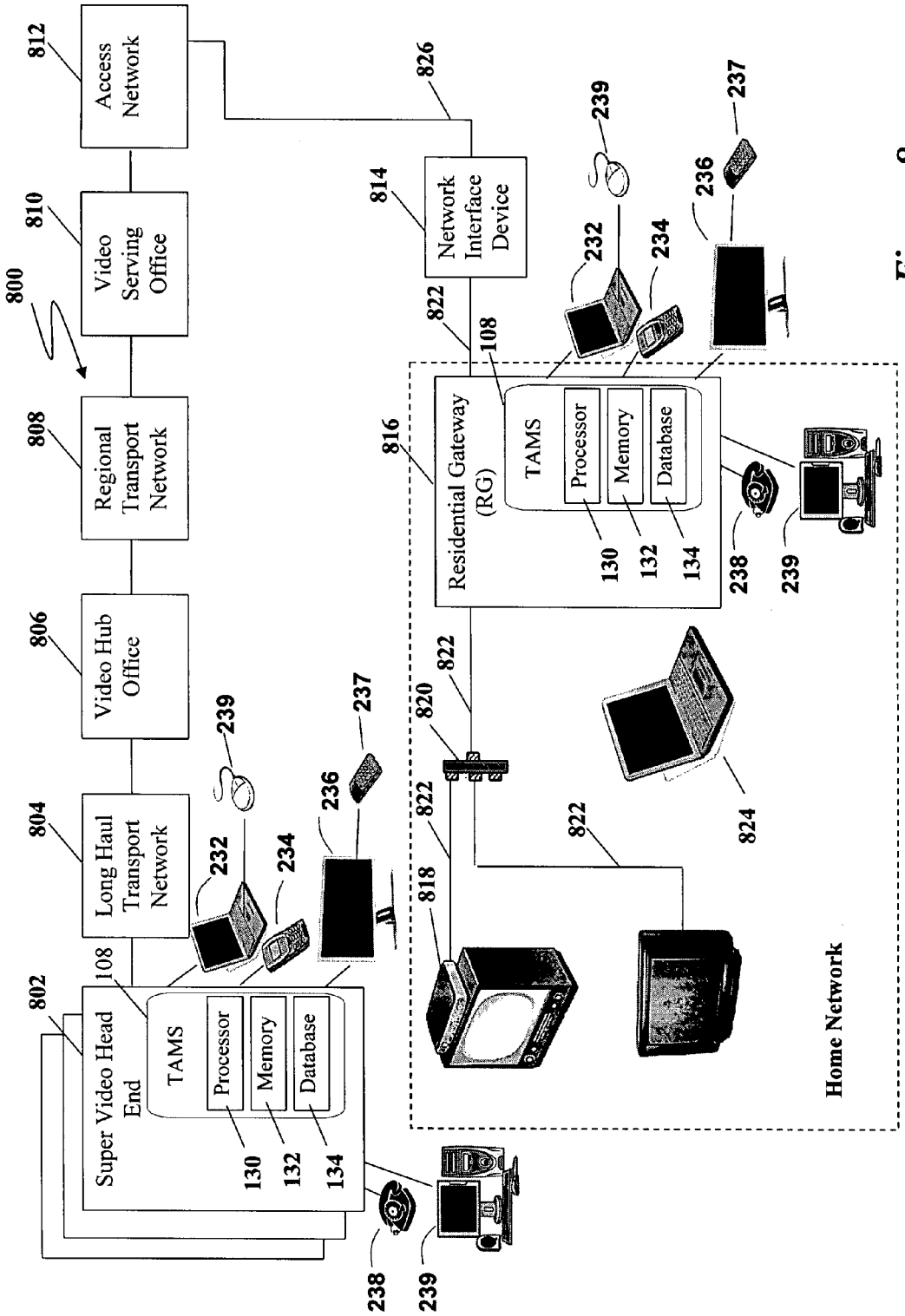

700
702
SSO Identifier
703
Correlation score field for storing product interest
704
Advertising category field for storing product category data
705
Shopping list
706
Subscriber identifier field for storing subscriber identifier
707
SSO subscriber advertising profile data
708
Subscriber event data field for storing subscriber event data
710
Advertisement field for storing data for an advertisement type, data type, formats, auction bids data
712
Store (physical merchant location) layout
713
Driving directions, product inventory fields data
714
Advertisement product interest correlation score threshold field
716
Advertisement available slots and times fields
718
Trigger, opt-ins, device type and device type response data
718
Data type response data

Figure 7


800
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810
812
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816
818
820
822
824
826
108
130
132
134
232
234
236
237
238
239
Access Network
Video Serving Office
Regional Transport Network
Video Hub Office
Long Haul Transport Network
Super Video Head End
TAMS
Processor
Memory
Database
Network Interface Device
Residential Gateway (RG)
Home Network

Figure 8

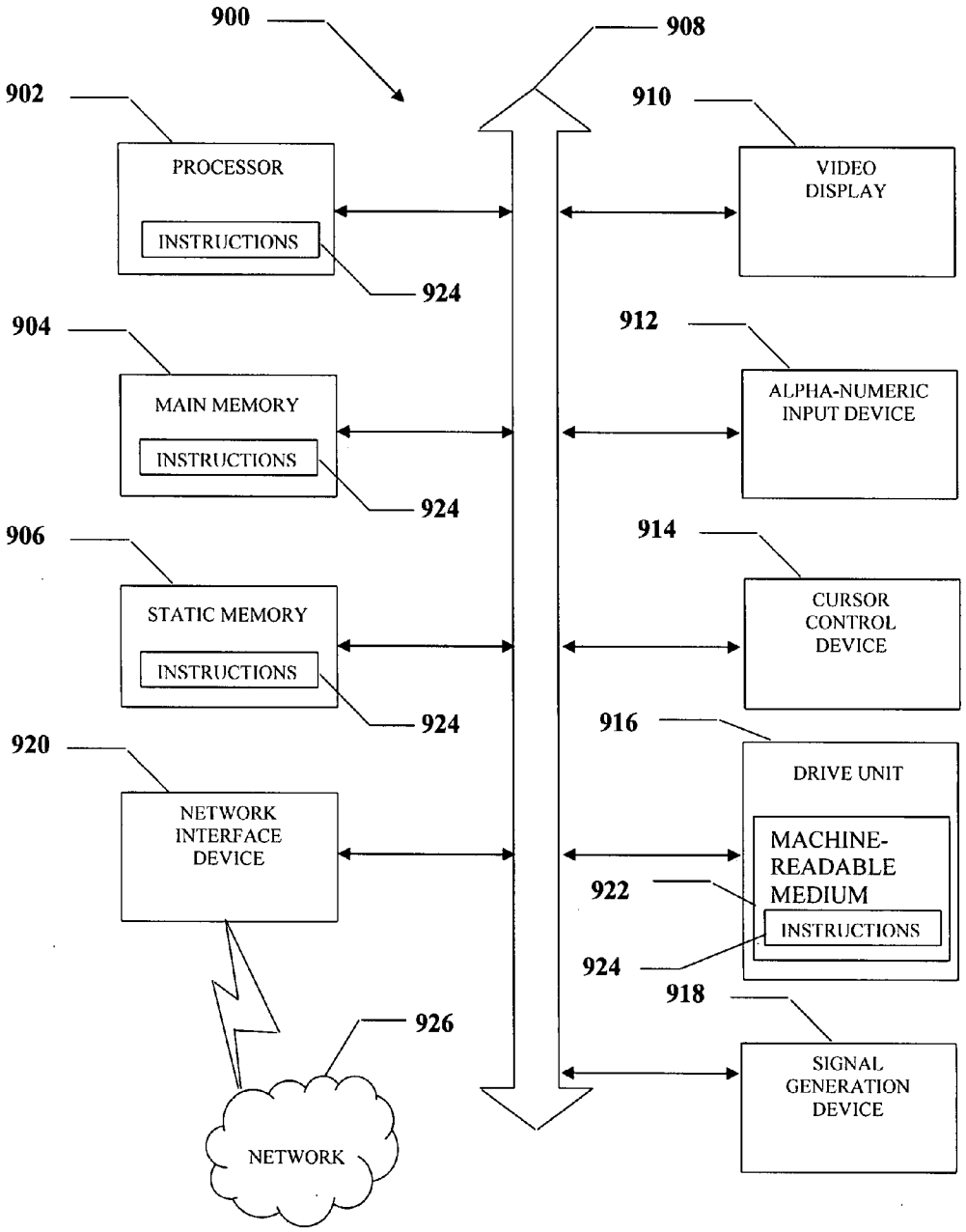
900
908
902
910
PROCESSOR
INSTRUCTIONS
VIDEO DISPLAY
924
904
912
MAIN MEMORY
INSTRUCTIONS
ALPHA-NUMERIC INPUT DEVICE
924
906
914
STATIC MEMORY
INSTRUCTIONS
CURSOR CONTROL DEVICE
924
916
920
DRIVE UNIT
NETWORK INTERFACE DEVICE
MACHINE-READABLE MEDIUM
INSTRUCTIONS
922
924
918
926
SIGNAL GENERATION DEVICE
NETWORK

Figure 9

SYSTEM AND METHOD FOR SINGLE SIGN ON TARGETED ADVERTISING

FIELD OF THE DISCLOSURE

[0001] The present disclosure provides a system and method for delivering targeted advertising data in a communications network.

BACKGROUND

[0002] Targeted advertising selects an advertisement and sends the advertisement to selected individuals who are targeted to receive the advertisement. Advertisers can potentially save advertising dollars by selecting who will receive their advertisements rather than indiscriminately broadcasting their advertisements to a general population of recipients. Thus, only those individuals selected by an advertiser receive the targeted advertisement in hope that the targeted recipients will be more responsive on a per capita basis than a general broadcast population. Advertisement distributors and providers that enable such an advertising model (e.g. Internet portals, television providers, access network providers) can correspondingly increase their revenue per advertisement impression by providing targeted advertising options for advertisers.

BRIEF DESCRIPTION OF THE DRAWINGS

[0003] For detailed understanding of the illustrative embodiment, references should be made to the following detailed description of an illustrative embodiment, taken in conjunction with the accompanying drawings, in which like elements have been given like numerals.

[0004] FIG. **1** is a high level block diagram depicting an illustrative embodiment of a system and method for selecting targeted advertising data for single sign on (SSO) end user devices;

[0005] FIG. **2** is a block diagram of system components in an illustrative embodiment of a system for determining which advertisement data are targeted to a SSO subscriber, in an illustrative embodiment;

[0006] FIG. **3** is a flow chart of an illustrative embodiment of a method to determine which advertisement to select to send to an SSO subscriber at a particular opportunity or time;

[0007] FIG. **4** is a flow chart showing an illustrative embodiment of a method of handling SSO subscriber event data and updating an SSO subscriber advertising profile in developing product interest correlation scores for the SSO subscriber;

[0008] FIG. **5** is a flow chart showing an illustrative embodiment of a method of SSO subscriber enrollment, registering a new SSO subscriber of the IP-based services and advertising system;

[0009] FIG. **6** is a flow chart showing an illustrative embodiment of a method for selecting an advertisement to send to an SSO subscriber;

[0010] FIG. **7** is a schematic diagram of a data structure embedded in a computer readable medium in an illustrative embodiment;

[0011] FIG. **8** is a schematic diagram of an illustrative embodiment showing an targeted advertising management system (TAMS) in an internet protocol television (IPTV) system; and

[0012] FIG. **9** is a diagrammatic representation of a machine in the form of a computer system within which a set of instructions, when executed, may cause the machine to perform any one or more of the methodologies of the illustrative embodiment.

DETAILED DESCRIPTION

[0013] In an illustrative embodiment a method is disclosed for sending targeted advertising data, the method including monitoring in a plurality of data communications networks, single sign on (SSO) subscriber event data from a first SSO subscriber end user device and a second SSO subscriber end user device, calculating product interest correlation scores in a plurality of advertising categories for SSO subscriber advertising profile data based on the monitoring SSO subscriber event data, selecting advertising data in at least one of the advertising categories from an advertiser database based on the SSO subscriber advertising profile data, selecting a format to deliver the selected advertising data to a third SSO subscriber end user device and sending the targeted advertising data to the third SSO subscriber end user device.

[0014] In another illustrative embodiment of the method, the plurality of data communications networks are selected from the group consisting of an internet protocol television network, a voice over internet protocol network, an internet service provider network and a cellular telephone network. In another illustrative embodiment of the method, the SSO subscriber event data indicates at least two events from two different platforms selected from the group consisting of selecting a television station, selecting an interactive television menu option, selecting content for an internet protocol (IP) end user device, accessing a resource indicated by a uniform resource indicator (URI), browsing a web site, creating a user profile, carrying out a digital purchase transaction, internet chatting, internet blogging, placing a telephone call, sending an instant message, receiving an instant message, receiving an email, and sending an electronic mail message.

[0015] In another illustrative embodiment of the method the first SSO subscriber end user device is selected from the group consisting of a cell phone, personal digital assistant (PDA), lap top computer, stationary personal computer, IPTV remote control, web tablet, laptop computer, pocket PC, a television set capable of receiving IP based video services and mobile IP device, the second SSO subscriber end user device is one selected from a group consisting of a cell phone, personal digital assistant (PDA), lap top computer, stationary personal computer, IPTV remote control, web tablet, laptop computer, pocket PC, a television set capable of receiving IP based video services and mobile IP device, and the third SSO subscriber end user device is one selected from a group consisting of a cell phone, personal digital assistant (PDA), lap top computer, stationary personal computer, IPTV remote control, web tablet, laptop computer, pocket PC, a television set capable of receiving IP based video services and mobile IP device.

[0016] In another illustrative embodiment of the method, the SSO subscriber advertising profile further comprises a shopping list of products selected by an SSO subscriber associated with the SSO subscriber advertising profile. In another illustrative embodiment the method further includes determining a characteristic for the third SSO subscriber end user device and adapting an advertising data format for the third SSO subscriber end user device to at least one of the group consisting of audio, video, graphics support, and text fidelity to match the characteristic of the third SSO end user device. In

another illustrative embodiment of the method, the third end user device is selected based on device response tendency data from the SSO subscriber advertising profile.

[0017] In another illustrative embodiment of the method, sending further comprises sending targeted advertising data having a data type selected from the group consisting of image, video, audio, text and icon, wherein the data type is selected based on an SSO end user data type response tendency data from the SSO subscriber advertising profile. In another illustrative embodiment of the method, the SSO end user data is collected from a plurality of different hardware and software platforms having different SSO subscriber identifiers associated with the SSO end user identifier. In another illustrative embodiment a system is disclosed for sending targeted advertising, the system including a processor in data communication with a computer readable medium and a computer program stored in the computer readable medium for execution by the processor, the computer program comprising instructions to monitor in a plurality of data communications networks, SSO subscriber event data from a first SSO subscriber end user device and a second SSO subscriber end user device, instructions to calculate product interest correlation scores in a plurality of advertising categories for SSO subscriber advertising profile data based on the monitoring SSO subscriber event data, instructions to select advertising data in at least one of the advertising categories from an advertiser database based on the SSO subscriber advertising profile data, instructions to select a format to deliver the selected advertising data to a third SSO subscriber end user device and instructions to send the targeted advertising data to the third SSO subscriber end user device.

[0018] In another illustrative embodiment of the system, the plurality of data communications networks are selected from the group consisting of an internet protocol television network, a voice over internet protocol network, an internet service provider network and a cellular telephone network. In another illustrative embodiment of the system, the SSO subscriber event data indicates at least two events selected from the group consisting of selecting a television station, selecting an interactive television menu option, selecting content for an internet protocol (IP) end user device, accessing a resource indicated by a uniform resource indicator (URI), browsing a web site, creating a user profile, carrying out a digital purchase transaction, internet chatting, internet blogging, placing a telephone call, sending an instant message, receiving an instant message, receiving an email, and sending an electronic mail message. In another illustrative embodiment of the system, the first SSO subscriber end user device is selected from the group consisting of a cell phone, personal digital assistant (PDA), lap top computer, stationary personal computer, IPTV remote control, web tablet, laptop computer, pocket PC, a television set capable of receiving IP based video services and mobile IP device, the second SSO subscriber end user device is one selected from a group consisting of a cell phone, personal digital assistant (PDA), lap top computer, stationary personal computer, IPTV remote control, web tablet, laptop computer, pocket PC, a television set capable of receiving IP based video services and mobile IP device, and the third SSO subscriber end user device is one selected from a group consisting of a cell phone, personal digital assistant (PDA), lap top computer, stationary personal computer, IPTV remote control, web tablet, laptop computer, pocket PC, a television set capable of receiving IP based video services and mobile IP device.

[0019] In another illustrative embodiment of the system, the SSO subscriber advertising profile further comprises a shopping list of products selected by an SSO subscriber associated with the SSO subscriber advertising profile. In another illustrative embodiment of the system, the computer program further comprising instructions to determine a characteristic for the third SSO subscriber end user device and instructions to adapt an advertising data format for the third SSO subscriber end user device to at least one of the group consisting of audio, video, graphics support, and text fidelity to match the characteristic of the third SSO end user device. In another illustrative embodiment of the system, the third end user device is selected based on device response tendency data from the SSO subscriber advertising profile.

[0020] In another illustrative embodiment of the system, the instructions to send further comprise instructions to send targeted advertising data having a data type selected from the group consisting of image, video, audio, text and icon, wherein the data type is selected based on an SSO end user data type response tendency data from the SSO subscriber advertising profile. In another illustrative embodiment of the system, the SSO end user data is collected from a plurality of different platforms having different SSO subscriber identifiers associated with the SSO end user identifier. In another illustrative embodiment, a computer readable medium containing a computer program is disclosed for execution by a processor useful for sending targeted advertising data, the computer program comprising instructions to monitor in a plurality of data communications networks, single sign on (SSO) subscriber event data from a first SSO subscriber end user device and a second SSO subscriber end user device, instructions to calculate product interest correlation scores in a plurality of advertising categories for SSO subscriber advertising profile data based on the monitoring SSO subscriber event data, instructions to select advertising data in at least one of the advertising categories from an advertiser database based on the SSO subscriber advertising profile data, instructions to select a format to deliver the selected advertising data to a third SSO subscriber end user device and instructions to send the targeted advertising data to the third SSO subscriber end user device.

[0021] In another illustrative embodiment of the medium, the computer program, the data communications network is selected from the group consisting of an internet protocol television network, a voice over internet protocol network, an internet service provider network and a cellular telephone network. In another illustrative embodiment a data structure embedded in a computer readable medium is disclosed, the data structure including a first field for storing data indicating a single sign on (SSO) identifier for a plurality of SSO subscriber identifiers and a second field for storing data indicating an SSO subscriber advertising profile for the SSO identifier. In another illustrative embodiment of the data structure, the data structure further includes a third field for storing data indicating an SSO end user device type response tendency for the SSO identifier. In another illustrative embodiment of the data structure, the further includes a fourth field for storing data indicating a data type response tendency for the indicated SSO end user device type.

[0022] In an illustrative embodiment a single sign on (SSO) end user (or subscriber) in a data communications network. The data communications network in the present example is a triple play network including a plurality of data communications networks (also referred to as "networks") and plat-

forms including but not limited to an IPTV network, VoIP network, Cellular Phone network and Internet Service provider network. In a particular illustrative embodiment, each platform and network uses a separate and distinct SSO subscriber identifier to identify a single SSO subscriber. Thus, a multiplicity of platform and network identifiers are used to represent a single SSO subscriber on the networks and platforms. In an illustrative embodiment, an SSO subscriber identifier is provided so that the single SSO identifier can be used on all the network and platforms to represent the SSO subscriber instead of the multiple platform identifiers and network identifiers. The SSO subscriber is able to input a shopping list of desired products for which they are currently shopping and forward this information to the advertising insertion behavioral database associated with the targeted advertising management system (TAMS) to be used for selection of triple play or 3 screen advertisements to be sent to the end user (customer specified advertising targeting) on one or more triple play devices (IPTV, cell phone, mobile IP device). The SSO end user is tracked across different platforms and data communication networks using a single sign on (SSO) identifier. The SSO serves as a single SSO subscriber identifier that can be used for each portal platform and network. The SSO identifier is useful on multiple if not all platforms and networks. Recent portal search information is added into the end user's advertising insertion behavioral database and SSO end user profile (based on monitoring and characterizing data communications in the triple network) to be used for updating the SSO end user profile useful for targeted advertising selection. The targeted advertising management system (TAMS) monitors SSO end user communications data in the triple play network, as SSO subscriber event data based on the SSO identifier and continuously updates the SSO end user profile in the behavioral database.

[0023] The end user's triple play behavioral data on the plurality of networks and platforms and SSO end user profile data based on the behavioral data is accessible by a triple play service provider. That is, a service provider will have access to SSO end user activity data, along with the SSO subscriber personalization capabilities, and the additional advertising insertion methods available on the IPTV STB platform and all other SSO end user devices (cell phones, PCs, etc.) such as VOD advertising insertion and long form banner and pop-up advertising insertion on the IPTV home page, will enable a competitive advantage in targeting advertising that will increase the value of advertisement to SSO subscribers.

[0024] In an illustrative embodiment, a system and method enable triple play service providers to insert new targeted advertising or copy over the advertising that the IPTV linear channel content providers included in their programming (given the content providers permission to copy). As a service provider acquires more IPTV subscribers, this will enable service providers to increase their targeting of these advertisements. In the current illustrative example, the IPTV network includes a plurality of data communications networks, platforms and services for IPTV, VoIP, Internet data and cellular telephone data.

[0025] As the IPTV and advertising insertion projects mature, service providers will move down the inventory hierarchy from targeting service provider's IPTV consumers based on channels or programs to targeting based on more detailed end user "psychographic" information that may be collected by the service provider. Psychographic information is derived from an end user's SSO subscriber advertising profile, which includes demographic data and response tendency data associated with data type and advertising type. The SSO subscriber advertising profile is discussed in more detail below. The SSO subscriber advertising will enable service providers to move to a direct marketing strategy of targeted advertisement. The ultimate goal is to provide the SSO subscribers on a triple play network with more relevant advertisement data on multiple end user devices, therefore improving their IPTV experience while at the same time maximizing the IPTV service provider's value to their targeted advertising insertion business customers. In an illustrative embodiment, a platform describes some sort of framework, either in hardware or software, which allows software to run. Typical platforms include a computer's architecture, operating system, or programming languages and their runtime libraries. A separate subscriber identifier is used to authenticate a subscriber to allow the subscriber to access each platform. An SSO subscriber identifier allows access to all platforms.

[0026] Search information may be used on internet search sites such as GOOGLE™ to provide related banner advertisements and sponsored search results. The illustrative embodiment may enable the search information to be used for targeting advertisements to the end user's television/STB as well as other end user screens such as personal computers, mobile IP devices and cell phones. Other internet activity may also be used for the advertising targeting such as visited uniform resource indicators (URIs) visited by SSO subscribers using SSO end user devices.

[0027] In another illustrative embodiment the explicit entering of a "shopping list" or list of products in which the SSO subscriber is interested, from the end user's PC on their portal is enabled so the end user may specify what types of advertisements they would like to receive on all of their service provider's services (all screens (IPTV, cell phone and web portal to the internet)).

[0028] In another illustrative embodiment, a system and method are provided to enhance triple play or 3 screen advertising (IPTV display screen, mobile or stationary personal computer display screen, cellular telephone display screen) targeting by collecting more specific information regarding products and services for which the end user is currently shopping. Response tendency data for data type, advertising type and end user device type is collected and stored in the data base and data structure. SSO subscriber response tendency data are stored indicating response tendencies for data type of advertising to which an SSO subscriber responds (e.g., image, video, audio, text, icon), response tendencies for advertising type to which an SSO subscriber responds (banner, pop up) and response tendencies for which device type to which an SSO subscriber responds (IPTV display, personal computer, cellular telephone, or other end user device). An illustrative embodiment allows an end user to be more specific to the service provider as to what they are shopping for by entering their shopping list of desired products and/or services or other interests into an online tool such as their SSO subscriber portal. In a particular illustrative embodiment, the shopping list data is stored in the SSO subscriber advertising profile.

[0029] For example, if an SSO end user enters their shopping list data via the online portal indicating that they are currently shopping for a pickup truck, this shopping list data information may be prioritized within the behavioral database to send targeted pickup truck advertisement data to the

end user's television (linear advertising insertion, VOD advertising insertion), cellular phone, and PC (banner advertisements). In an illustrative embodiment an SSO end user's responsiveness to particular data type (image, audio, video, text), advertising types (banner, pop-up, icon indicated) and end user device type (IPTV display, cell phone, personal computer, mobile laptop, etc.) is tracked and stored in a data structure associated with the SSO end user profile indicating data type response tendency, advertising type response tendency and device type response tendency.

[0030] Another particular illustrative embodiment includes collecting specific information regarding products and services for which an SSO subscriber is looking by characterizing SSO end user event data, the event data for a multiplicity of networks and platforms and end user devices associated with a SSO subscriber identifier including but not limited to internet search history, and anonymous reverse look-up of telephone numbers (by SSO subscriber election only) dialed in the VoIP or Cellular telephone system, chat message text, etc.) into an end user's SSO subscriber behavioral database. The SSO subscriber behavioral database information may then be used to select targeted advertisement data types, advertisement types and device types for the SSO subscriber. For example, if a SSO subscriber enters a search for the GM Sierra pick-up, this information may be added to the SSO subscriber's database so that television advertisements may be sent to the SSO subscriber regarding pick-up trucks or related products. The IPTV service provider network may then target specific advertising via specific user profile.

[0031] The illustrative embodiment allows for real-time targeted advertising based upon an SSO subscriber's identified preferences as they have entered them under a "shopping list" or based on their internet behavior. The illustrative embodiment provides a process of targeted advertising across an IP network to an IPTV end user based on this behavioral information provided by their portal. This method may increase the relevance of advertisements to the SSO subscriber, which will increase the SSO subscriber's interest in watching the advertisements and therefore increase the value of the advertisements to the advertiser.

[0032] Turning now to FIG. **1**, FIG. **1** is an illustrative embodiment of an IPTV architecture providing a plurality of data communications networks offering a triple play network to support behavioral targeted advertising. The IPTV triple play architecture includes but is not limited to an integrated IPTV network, cellular network, and data including VoIP network. As a SSO subscriber views the television **106** across an STB **105** data is collected at the behavioral database **113**. In an illustrative embodiment the SSO subscriber is able to specify their shopping list from their PC on the internet and logon to their portal **110** where may enter their shopping list and SSO subscriber information. Their SSO logon information is logged into the behavioral database **113**. The TAMS accesses the SSO subscriber behavioral database and SSO subscriber advertising profile to use in selecting targeted advertising. Once the SSO end user device and associated SSO subscriber is authenticated to the portal the SSO subscriber uses the SSO end user device to enter various URIs or use the portal's search engine or an alternate search engine such as GOOGLE TM to enter internet search criteria to browse the World Wide Web. This search information is also logged into the behavioral database **113**. The behavioral database communicates the end user's behavioral information to the traffic and billing system **109** so the information may be used to sell and schedule linear video content advertisement data **114**. The advertisement data are encoded **108** and stored on the advertising content server **107**. The advertisements are spliced into the linear video content served up from the linear video content servers **111** and sent to the end user's STB **105** for viewing on their television **106**. The behavioral database information may also be used for advertising targeting to other screens such as cell phones and mobile IP devices and PCs. The IPTV behavioral advertising insertion model mentioned within this application are comprised of several subcomponents referenced in FIG. **1**. A federated type single sign on (SSO) mechanism is provided by the customers' portal and IPTV service, as well as other data communications networks and platforms, may provide for maintenance of state to personalize the SSO subscriber's cross platform and cross network advertisements to their cross platform/network behavior provided by system and method in an illustrative embodiment.

[0033] SSO subscriber event data from monitoring SSO data communications in the plurality of platforms and networks including the triple play network or IPTV network include image, video, text, audio and icon data and associated image, video, text, audio and icon data recognition systems for characterizing the SSO subscriber event data. The SSO subscriber communicates with the TAMS using an SSO subscriber end user device which can include but is not limited to a cell phone, personal computer, PDA, computer mouse, or IPTV receiver and input device, such as a remote control. An illustrative system includes a processor **130** coupled to memory **132** and database **134** in memory. A computer readable medium containing instructions that can be executed by the processor is embedded in the memory.

[0034] In an illustrative embodiment the system and method monitor and compile an SSO subscriber's event data including but not limited to current session and the device characteristics of the end user device being used to access IP-based services over a plurality of networks and platforms such as an IPTV network, along with previous usage history to assist service providers and advertisers in evaluating the potential appeal of their services and advertisements to the particular SSO subscriber. The SSO subscriber can use any end user device to interact with the IPTV network to access content, services and applications. The IP network may include but is not limited to a combination of an IPTV network, VoIP network, cellular telephone network, WiMax, WiFi and may access a public switched telephone network (PSTN).

[0035] Turning now to FIG. **2**, in an illustrative embodiment the system and method accesses the advertisements database **220** to select a targeted advertisement to send to the SSO subscriber. An illustrative system and method **108** automatically calculates a product interest correlation score (PICS) and recommends and/or selects an advertisement, SSO end user device and advertisement modality to be used to send a selected advertisement to a selected SSO subscriber end user device based on the SSO subscriber's current usage scenario. An SSO subscriber usage scenario includes but is not limited to an SSO subscriber's current end user device, location and activity (e.g., watching a particular show over an IPTV network, web surfing, gaming, talking on a phone, chatting on the internet, etc.).

[0036] For example, if an SSO subscriber has a PICS higher than a PICS threshold set by an advertiser for a product category in an illustrative embodiment TAMS system and

method can select and send an advertisement in the product category formatted suitably for reception on the SSO subscriber's cell phone (end user device) as the SSO subscriber drives near one of the advertiser's merchant physical locations. The SSO subscriber's location can be tracked by a global positioning system (GPS), cell tower proximity or triangulation or WiFi hot spot proximity based on the user's cell phone, laptop computer or other end user device and factored into the bid price by the advertiser. Alternatively, the user's current location, activity, and correlation scores for advertising categories may be used to select and queue up an advertisement for delivery later through a different end user device. For example, a merchant who is in the vicinity of an SSO subscriber's recent location may choose to send a 30-second television commercial, which cannot be accommodated on the SSO subscriber's current portable end user device. The commercial can be queued for delivery once the SSO subscriber is at home watching television rather than immediately sending an advertisement to the SSO subscriber's cell phone.

[0037] For example, in an illustrative embodiment a PICS may range from 1 to 100. An advertiser may set a PICS threshold of **20** for sending a text advertisement to an SSO subscriber's cell phone, a PICS threshold of 50 for sending a video advertisement to the SSO subscriber's cell phone and set a PICS threshold of 90 for sending a video advertisement to the SSO subscriber's IPTV receiver. In another particular illustrative embodiment, the PICS threshold and product interest correlation score is also weighted by SSO subscriber response tendencies for advertising type, data type and end user device type.

[0038] FIG. **2** is a block diagram **200** depicting informational components that are used by and integrated into the TAMS **108** in an illustrative system and method. In an illustrative embodiment, the TAMS **108** aggregates, collates and mines surfing and content (music, television, movies, audio books, etc.) consumption data across multiple end user devices platforms and network end user devices and mechanisms (e.g., including but not limited to, IPTV, wireless 3G, high speed Internet access), coordinating the information tightly with SSO subscriber opt-in preferences, to create a highly targeted and contextualized advertising system for SSO subscribers of IP-based services (including but not limited to, IPTV, VoIP, email, SMS, mobile calling, web surfing, instant messaging (IM), chatting, blogging, and mobile computing, etc.).

[0039] An Internet profiling process **230** monitors an SSO subscribers' end user devices event data used to access the platforms and networks and stores the access event devices data in an Internet profiling database **204**. The end user devices include but are not limited to telephones **238** calling via a public switched telephone network (PSTN) or connected over a VoIP network, remote controls for television viewing selections and interactive programming clicks or menu selections **236**, cell phones **234** using 3G access for accessing the Internet and calling and personal computers/lap top computers and other IP devices **232** using high speed Internet access for web browsing, SMS, IM, email, chatting, text messaging, etc. Location information **235** obtained during the SSO subscribers' use of mobile and/or portable Internet devices is also provided to the Internet profiling process **230**. Given that an SSO subscriber has "opted in" to allow being monitored for some or all of the information available through the Internet profiling process **230**, the Internet profiling process **230** monitors the end user devices event data associated for the SSO subscriber's communications including outgoing calls, telephone numbers called, Internet access surfing history, content consumption, music, videos and games, IM, text messaging, chatting, and locations of an SSO subscriber, etc. The Internet profiling process may monitor digital or analog electronic activity of the SSO subscriber to store in the SSO subscriber advertising profile **209** and calculate a PCIS in an advertising, product or service category for the SSO subscriber based on the monitored event data.

[0040] An advertiser index database **220** stores data indicating advertising sales information **228**, local television ad-slot sales information **226**, Internet portal advertising sales **224**, paper and digital yellow pages sales and advertiser detail information **218**. The ad-slot sales information may include times in which available advertising spots are available and in what medium, for example IPTV, IP radio, cell phone, web page banner advertisements, etc. The advertiser detail information **218** includes but is not limited to IP versions of text advertisements data, video advertisements, audio advertisements and coupon offers. The advertising detail information data further includes but is not limited to auction prices for cost per thousand (CPM), cost per hundred (CPC), and cost per one (CPO) data for each end user device display or "screen" offered for advertising, e.g., video, personal computer, and cell phone screens based on time slot and SSO subscriber product interest correlation score data in a designated product data category. The advertising detail information further includes but is not limited to hierarchical storage of advertisements and coupon offers based on SSO subscriber PICS data and SSO subscriber context score data in a product category. Audio advertisements can be sent to SSO subscriber cell phones or mobile IP devices as recorded messages and video, audio, text and email advertisements can be sent to SSO subscriber cell phones, PDAs, lap top computers and other mobile digital devices capable of receiving data.

[0041] The advertising detail information data further includes but is not limited to location based advertisements data and a product interest correlation score threshold data settings. The location data may include but is not limited to a distance from an advertiser location within which an SSO subscriber will be sent an advertisement for the location. The advertising detail information data further includes but is not limited to product location data, driving directions data to the nearest merchant physical location (or store) having the product in stock, product inventory data for that location and layout data for the merchant physical location having the product in stock and location data within the merchant physical location layout at which the product is located indicating where to find the product in the merchant physical location (e.g., "aisle 12").

[0042] Targeted advertisement data can be sent to an SSO subscriber end user device, e.g., cell phone, PC or IPTV receiver. The advertisement can include a menu button for selection by an SSO end user device to see if a product is in stock and where the product is located in a store having a product in stock. These advertising selections are tracked and stored in the SSO subscriber advertising profile for accumulation of response tendency data for data type, device type and advertising type.

[0043] The location of the product in the store can be based on the product uniform product code (UPC) data and digital store inventory data provided by the advertiser. Coupons for the product can be sent along with the advertisement which

can be displayed at the store or can be represented by a coupon code sent to the end user device that can be presented at the time of purchase to validate the coupon and receive a discounted price or other offer associated with the coupon and advertisement. The SSO subscriber may also have the option of completing the purchase digitally using the eWallet, so the item is ready for pick-up at the retail outlet when they arrive. In such an instance the SSO subscriber's user eWallet and digital purchase history **216** in the TAMS would be updated accordingly. The digital purchase history includes eWallet purchases, SSO subscriber purchases reported by merchants or monitored by the Internet profiling process and purchase information imported from another network.

[0044] Once an SSO subscriber enters a mall or store an advertiser can send video or hierarchical graphical displays to an SSO subscriber cell phone or other mobile device guiding the SSO subscriber through shopping and locating products at the store or mall. An advertiser may provide a shopper's assistant software agent in which an SSO subscriber may be guided by asking questions (using textual verbal entry through an automatic voice response system powered by the TAMS and advertising processor using data from the advertiser information data) of the software agent to guide the SSO subscriber through a shopping experience in the store or mall. A user may enter additional products via a selection menu presented by an advertisement sent to an SSO subscriber's mobile end user device to locate the products in the store or mall.

[0045] Advertiser processors **242** may send and receive data to and from and interact with the advertiser detail information data **218** via interface **240**. Interface **240** which may be any digital or electrical interface for sending and receiving messages and data between an advertiser processor **242** and the advertiser detail information **218** data storage. The advertiser index database **220** is in communication with the targeted advertising selection system (TASS) **212**. The TASS also communicates with the Internet profiling database **204**, a SSO subscriber's digital purchase history **216**, and a web spidering process that classifies URIs **214**, SSO subscriber intent and user (subscriber) settings. In an illustrative embodiment the web spidering process visits each URI visited by an SSO subscriber and assesses the SSO subscriber's intent in visiting the URI. Web spidering, otherwise known as web crawling, browses the World Wide Web in a recursive, automated manner by starting with a list of URIs to visit, and then checking for hyperlinks at each URI and visiting those also. In an illustrative embodiment, the web spidering process **214** parses the text on each web page visited by an SSO subscriber and infers product category interest intent for an SSO subscriber visiting the web page for one or more advertising categories.

[0046] In an alternative embodiment, instead or in addition to the web spidering system, a web proxy may be introduced between the SSO subscriber end user device and a server to monitor and capture, URIs and URI data accessed by any one of the SSO subscriber end user devices used by the SSO subscriber. A processor within the proxy or connected to the proxy will use this data to classify and categorize online events. Such URI data may include responses from the URI to the SSO subscriber including but not limited to purchase transactions, content including video, audio and text and messaging interactions. The URIs and URI data is cached, stored and classified/categorized and indexed with Meta data added by the spidering system or proxy.

[0047] Proxy manifestations include but not limited to a variety of proxy types (stateful or stateless) may be used for this purpose, including but not limited to a traditional web HTTP proxy/intermediary/gateway. The proxy may further function as a, but not limited to the following, simple object access protocol (SOAP) proxy, a caching proxy, a transcoding proxy (content translation, media conversion, etc.), a session initiation protocol (SIP) proxy for multimedia sessions, an OMA Push proxy, wireless applications protocol (WAP) proxy or a proxy acting as a firewall, network/application filter, providing network address translation (NAT) and other security functions such as border control. In an illustrative embodiment the proxy sits in between a client and server and can act as a client as well as server depending on its functions.

[0048] The PICS for such categories is then weighted appropriately for the SSO subscriber advertising profile to reflect this interest. The SSO subscriber advertising profile setting includes but is not limited to SSO subscriber advertising profile data and user profile settings data **206**, **208** and **210**. SSO subscriber advertising profile data includes but is not limited to ages, family size, ethnicity, language spoken, address, SSO subscriber user identifiers for family members, etc. SSO subscriber advertising profile settings may also include but are not limited to multiple screens or device opt-in settings for selecting SSO end user devices through which an SSO subscriber **102** is willing to allow advertising to be received **208**. SSO subscriber advertising profile settings may also include a shopping list of desired products and services, privacy (opt-in) settings defining specifically what categories of advertising may be received, and in what format **208**. SSO subscriber advertising profiles may also include proactive product interest input **210** provided by an SSO subscriber. The web spidering process described herein is for example only and not intended to limit the scope of the disclosure as a number of different spidering or assessment techniques can be utilized as well as a number of different methods for assessing an SSO subscriber's intent by analyzing and assessing an SSO subscriber's web surfing URIs visited, telephone numbers called, IM and other activities, all of which are included herein under the term "spidering".

[0049] Advertisers can place advertisements in multiple media and formats, including text only, audio, HTML, and video that can be rendered to multiple end user devices used by the SSO subscriber as appropriate. Several criteria are used to determine advertisement placement or delivery and delivery timing for SSO subscribers. The criteria for determining advertisement placement or selection and delivery to an SSO subscriber can include but are not limited to location data, product interest correlation score data, current usage scenario (e.g., watching an IPTV show, listening to internet radio, playing a game, driving near a product advertiser physical location) and time of day. For example, an advertiser may place an auction bid for a price to send a text message advertisement to cell phones to reach the first 2000 14-18 year old boys between 5 and 9 pm on weekends who are within 5 miles of a shopping mall location having a product interest correlation score for a particular video game exceeding a product interest correlation score threshold of 50.

[0050] In another example, an advertiser may want to send an IPTV video advertisement on SSO subscriber IPTV displays for a Karaoke machine during showing of a television show, e.g., American Idol to everyone that is watching American Idol on IPTV (live or in replay) and that called in (or sent a text message) to vote on an American Idol contestant and

have a product interest correlation score in a product category greater than a product interest correlation score threshold of 90. Other people watching American Idol who called in to vote and having a product interest correlation score greater than 50 and less than 90 could be sent a text advertisement on their IPTV display for the Karaoke machine.

[0051] Product interest correlation scoring aggregates weighting and scoring for web surfing history, behaviors and context across multiple devices including more detailed knowledge of what transactions/interests were actually conveyed by SSO subscriber web surfing and behavior. A web spidering (spidering) system matches SSO subscriber accessed URIs anonymously with an SSO subscriber's inferred intent by way of checking a dynamic database of URIs for specific sites that have been compiled through the web spidering process **214**. The illustrative embodiment provides a classification system that schedules and conducts a web spidering procedure, in which procedure, web sites are scanned and specific URIs that have been visited by an SSO subscriber are categorized based on perceived or inferred intent of anyone accessing the URI, by using, e.g., natural language parsing and processing techniques. For example, the spidering system can anonymously ascertain that not only did an SSO subscriber visit a car manufacturer's web site to look at cars; the SSO subscriber actually looked at the product page for a particular model in detail and requested mailing of a product brochure. The SSO subscriber's inferred intent (in this case purchasing a Toyota Camry) derived by the web spidering system increases the SSO subscriber's product interest correlation score for a product category for Toyota Camry.

[0052] Auction-based advertising across multiple screens or end user devices based on a correlation or comparison of the advertisement product category with the product interest correlation score for the product/service for a particular SSO subscriber allows advertisers to tightly control and select what degree of advertisement contact should be made with an SSO subscriber (e.g., one to one TV advertisement, text message to phone) and what price contacting that SSO subscriber with an advertisement is worth. For example, in an example of contextual information, a person who has already received a video one to one TV advertisement may be sent a lower cost text advertisement as a reminder rather than paying to send another higher price video advertisement to the SSO subscriber. Once an advertisement type has been selected for the selected advertisement type in a given product category for an SSO subscriber or a group of SSO subscribers, auction based advertisements can be based on interactive bids between competing advertisers.

[0053] SSO subscriber-defined product and service interests along with privacy settings enable SSO subscribers to control what information they are willing to have monitored and used by the TAMS **108** for targeting advertisements to them, and what information they are willing to receive (e.g., on which end user devices, from which advertiser product interest categories, at what times). Digital purchase history **216** plus brick and mortar purchases bought with electronic wallet (eWallet) credentials help corroborate additional product interest information on behalf of the SSO subscriber by tracking purchase data for the SSO subscriber. SSO subscriber digital purchase history information keeps track of on-line purchases and purchases at retail outlets when an associated electronic wallet capability is used (eWallet).

[0054] SSO subscriber location is based on wireless networks (WiFi, WiMAX) or the fact the SSO subscriber is located at home using high-speed Internet access assists advertisers in determining how receptive the SSO subscriber might be to their advertisement/product at that time. The more receptive SSO subscriber is given a greater weight in their product interest correlation score.

[0055] An illustrative embodiment TAMS **108** aggregates data from multiple sources to provide a centralized storage for the TASS regarding determining the appropriate advertisements to target an SSO subscriber at a specific time. An illustrative TAMS **108** includes the TASS **212**. Inputs to the TASS **212** include an Internet profiling database **204** which supplies the surfing and content consumption history for the SSO subscriber across multiple end user devices, multiple platforms and multiple networks; an advertiser index database **220** which maintains substantially all advertising related information including what advertisements have been sold, along with digital versions of various IP-based advertisements; a purchase history **216** for the SSO subscriber that includes purchases made electronically online, plus and brick and mortar retail purchases that may be able to be tracked to the SSO subscriber via the SSO subscriber's use of the electronic wallet (eWallet) that are tied to his SSO subscriber sign-on identity. SSO subscriber advertising profile settings **209** provide the SSO subscriber the chance to define privacy settings by opt ins or by other privacy control settings on their internet browser, for example, with regard to what types of advertisements the SSO subscriber wants to receive, plus how much of the SSO subscriber's usage history can be monitored and used to drive the targeted advertising process; and a web spidering process **212** that provides more definitive information on what specific URI links within web sites convey about the surfing and purchase history for the SSO subscriber. SSO subscriber advertising profile settings can be used to define product interests, how much on-line usage information can be shared and with whom, and under what conditions an SSO subscriber wishes to receive an advertisement.

[0056] An advertiser index database is provided that assimilates, accesses, and stores data for advertising sales records including available slots (spots) for television advertisements, Internet advertisements, radio (audio) advertisements, and paper and digital yellow pages advertisements. The advertiser index database also stores information and data on registered advertisers and their advertisements including product category, various media versions of advertisements, auction prices for each media mode of delivery (audio, video, text), each end user device type, coupon offers, location based offers, and product interest correlation score threshold settings that define the conditions for which specific advertisements should be delivered to a specific SSO subscriber having a certain PICS.

[0057] A particular illustrative embodiment of a TAMS provides targeted advertising using multiple media or data types (e.g., video, HTML and associated browser plug-ins like flash, image, icon, audio, text). SSO subscribers can input product interest criteria including shopping list, product or service category, advertisement delivery scheduling deadline, and desired delivery end user device (e.g., cell phone, PC, IP-based television service, mobile IP device). An interactive and/or dynamic web based interface (e.g., XML) to advertisers is provided to enable advertisers to dynamically in real time update advertising offers, auction prices, and threshold settings data for determining when an advertisement in a

given product category should be delivered to a particular SSO subscriber. This data is stored in the SSO subscriber advertising profile and advertiser detail information **218**.

[0058] Independent of the specific dynamic process of keeping the PICSs in a product interest correlation scoring matrix including but not limited to advertising categories and product interest correlation scores for the advertising categories. The product correlation scoring matrix is updated dynamically for each SSO subscriber in real time by the TASS **212**, the spidering process **214** can occasionally be run as a supporting process, scanning the Internet (similar to search engine engines) and classifying web links based on implied intent of SSO subscribers visiting the page. Rather than indexing for search, in an illustrative embodiment the spidering process provides the TAMS with categorization information. For example, at a particular time the URI of http://www.buyatoyota.com/zipCodeEntry.aspx?zip_Code=78726&series_code=25&series_name=&model code=&s_van=GM_STN_FLS can be logged in the web spidering results database and used to ascertain that anyone accessing this link is not only interested in a particular car model, but actually was serious enough to inquire about local dealers and associated offers in their area. This can be determined by the spidering system employing a combination of indexing and natural language parsing and processing of text the spidering system finds on the page. This spidering information can be used to create a high product interest correlation "contribution" score for Autos By Make Manufacturer Model as well as Autos By Style Sedans Midsize Manufacturer Model. When an SSO subscriber subsequently surfs to this link, the "contribution" score can be added to the SSO subscriber's current product interest correlation score for this particular category. It should be noted that such a detected interest would increase the product interest correlation scores at each leg of the tree for both paths for which the manufacturer's model is a terminal value.

[0059] In an illustrative embodiment, the components and processes defined herein as part of the illustrative system and method TAMS **108** are intended for processing in real time as events occur. The associated modules that support the TAMS **108** provides messaging to the TASS **212** interactively (e.g. via XML or a web services framework) so a product interest correlation scoring matrix can be updated for the SSO subscriber in real time. The product interest correlation scoring matrix contains data indicating a product interest correlation score for a number of products and categories.

[0060] A significant amount of product interest information for each SSO subscriber is obtained by the profiling process **230** that is capable of receiving SSO subscriber event data indicating SSO subscriber surfing history from independent network service providers, including wireless 3G cellular, DSL, cable modem, broadband fiber, and IPTV. In an illustrative embodiment the profiling process **230** employs a media controller that is capable of logging URIs visited within an SSO subscriber's web browser, and/or performing deep packet inspection when desired to ascertain specific content and/or services that are being consumed by an SSO subscriber over the Internet, and assesses packet flows to the SSO subscriber to gauge more specifically what types of activities are being performed (e.g., services of interest, specific services/applications run, duration, location, etc.). (Media controllers that perform flow based packet analysis, available from vendors like Caspian Networks, can be used for this purpose.)

[0061] Regardless of access network and device used, the profiling process **230** usually will be able to identify the SSO subscriber via SSO credentials, and then maintains a URI history log for the identified SSO subscriber. The SSO credentials can be defined and cached in the SSO end user device (e.g. television set top box, cell phone, PC, laptop, etc.) to avoid requiring the SSO subscriber to sign in each and every time the Internet or another data communications network is accessed with such a device. This would likely be managed by an HTML cookie or similar mechanism to "time out" the login credentials if desired for security purposes. Alternatively, unique identifying information obtained from the end user device (e.g. cellular phone number, MAC address, product serial number) may be used to infer SSO credentials. The profiling process **230** would typically reside in the IP network **106**, specifically in the routing framework providing Internet access. The routing framework provides a centralized point to monitor and profile SSO subscriber surfing history, traffic characteristics, port usage, etc. with which to monitor activities by the SSO subscriber.

[0062] This information would only be used based on positive privacy allowance or opt-in settings **206** defined by the SSO subscriber allowing specific monitoring permissions. It is likely that profile SSO subscriber history data information may be obtained from disparate access networks, even those operated by independent network service providers, which may be combined to make a "complete view" (stored in a user profile) of SSO subscriber usage history across multiple end user devices and networks plausible. The internet profiling process **230** also includes the ability to accept data feeds (e.g. in XML or other suitable data format) from other network providers that summarize the SSO subscriber historical usage and Internet surfing information data obtained from profiling processes within their own independent network.

[0063] Example technologies that can used to facilitate the messaging to the TASS **101** to accomplish its correlation scoring procedure include but are not limited to extended markup language (XML), RDF, DAML and OIL. A total PICS is calculated by factoring in demonstrated levels of interest in a particular product category via a variety of usage patterns for an SSO subscriber. The magnitude of the correlation score stored in the PICS matrix accessible to the TASS **101** for one particular category for the SSO subscriber defines an SSO subscriber's interest level in a product or product category. In practice the final product interest correlation score is tallied by evaluating surfing habits, TV viewing habits, personal profiles expressing proactive product interest, phone calling logs/habits, content of other communications tasks like instant messaging (IM), electronic mail, video telephony, and previous purchases. Timing, frequency, and access of multiple unrelated pieces of information having some correlation to the category are all factored into computing the total correlation score for a category.

[0064] FIG. **3** portrays the illustrative steps taken to select which advertisement to target/send to an SSO subscriber at a particular opportunity or time. First, an SSO subscriber registration step **301** is performed when initially accessing IP-based services from a device. An SSO subscriber registers (via an end user device) with the IP network. This registration prepares the IP network for an advertisement triggering the TAMS into standby mode. One example of registration automatically occurring is by an SSO subscriber turning on the IPTV service while at home. The IPTV network is able to ascertain the SSO subscriber identity, or if there is a family of

SSO subscribers an easy method for delineation among family members can be supported by the IPTV set top box (STB) (e.g. typing in a 4-digit PIN for tracking SSO subscriber activity such as monitoring television channel changing behavior). Another way to identify an SSO subscriber is by SSO technology, where the SSO subscriber authenticates on a device with single sign-on (SSO) credentials, or the device uses cached SSO information to automatically logon and make the authentication implicit for the SSO subscriber.

[0065] Next, an end user device characteristic identification **302** occurs. This step determines whether the characteristics of the device currently being used by the SSO subscriber for Internet access are known. This may be validated by checking a medium access control (MAC) address or a database table which records previous end user devices used by the SSO subscriber, sorted by MAC address. If the SSO subscriber end user device characteristics are known, device parameters including screen resolution, audio/video capabilities, supported advertisement modes (e.g. TV advertisement, audio advertisement, web browser advertisement, MMS, SMS, phone call) are loaded. If device characteristics are not known, the process interrogates the SSO subscriber and/or end user device to obtain device characteristics from the SSO subscriber end user device, and these characteristics are then incorporated into a device database table in memory for future use.

[0066] After some time, an SSO subscriber begins to interact with IPTV network application or begins to consume content over the IPTV network. Details regarding the information/application being consumed are communicated to the TAMS **108**. One example would be the SSO subscriber selecting "Travel Channel" to watch on the IPTV service. The channel is broadcasting a show on the ruins of Rome. This information is communicated to TAMS **108**. At block **303** an illustrative embodiment determines what the SSO subscriber is actually doing at the moment, including but not limited to watching an IPTV stream, browsing the Internet, chatting, IM, talking on a cell phone, moving close to a advertiser location or perhaps doing nothing.

[0067] The TAMS **108** accesses the advertisement detail information and determines the future anticipated spot (and time) **310** for the advertisement—the commercial window in the content to place advertisements. Second, the TAMS reviews historic behavior **312** of the SSO subscriber relative to the subject—in this case traveling. For example, did the SSO subscriber recently shop for tickets or hotels on the web or via the phone? If so, did the shopping action consummate in a transaction? Does the SSO subscriber have frequent flyer miles? Has the SSO subscriber indicated preferences regarding receiving travel related promotions? What is the SSO subscriber's preference for dining and hotels and transportation? What is the likelihood of the SSO subscriber to consume complementary products? How large is the SSO subscriber's family? It should be noted that the review of historic behavior **312** is not limited to the SSO subscriber's current usage mode **303**. The SSO subscriber's history of use may have resulted in a high advertising category score for something totally unrelated to the "Travel Channel," for which an advertiser is willing to pay an acceptable price for delivering the advertisement in a format that the SSO subscriber's current end user device characteristics **302** are best suited for. There also may be advertisements queued for delivery on such a device based on past usage modes **303**.

[0068] Third, the TAMS reviews the advertiser index database **314** to determine whether there is any advertiser on the related subject, complementary subject, or even a product unrelated to the current SSO subscriber behavior that has an advertisement for a advertising category in which the SSO subscriber has a high product correlation score, who desires to send an advertisement to this SSO subscriber at this moment or at a later time. For example, are any airlines, hotels, restaurants, cruises, travel agents, etc. complementary to this subject? Is there an advertisement/promotion specifically for Rome? What is the advertiser's willingness (auction bid) to pay for the advertisement to be delivered, based on the PICS of the SSO subscriber for travel, specifically to Rome? Which advertiser is the highest bidder? Is there a high bidder who wants to deliver an advertisement well suited for the current end user device or suited for delivery at a later time, given there is a high product correlation score that gives the advertiser reason to believe the SSO subscriber may be interested in their product regardless of current subject inferred through SSO subscriber use? Fourth, information from steps two and three above are fed into the TASS **212** and the current product interest correlation score for the user (periodically updated by recent event data), advertiser bid prices and viable formats based on the device characteristics **302** are used to generate a list of potential advertisement **316** to be sent to an SSO subscriber either now or later. Note that this is not just matching the historic behavior **312** with the related advertising offers **314**, but also associating other contextual information about the SSO subscriber (example, presence, location, etc.) and advertiser (example, ranking, advertiser auction bid, willingness to pay, etc.).

[0069] Such contextual information can include (but is not limited to) end user device capabilities, SSO subscriber's preference for style and format of an advertisement, advertiser's capabilities to deliver such an advertisement, SSO subscriber location, SSO subscriber advertising profile settings, PICS, and current usage scenario, etc. The current usage scenario for an SSO subscriber includes but is not limited to the activity in which an SSO subscriber is currently involved (including but not limited to web surfing, chatting, IM, web logging (blogging), telephone calls, etc.) the end user device being used (including but not limited to cell phone, PDA, laptop computer, personal computer, mobile IP devices, etc.) and location.

[0070] The TAMS **108** then selects **318** which advertisement from which advertiser to place and in which format to send the advertisement to the SSO subscriber end user device (and on which end user device) within the commercial spot (advertisement window) during the show or otherwise. This may involve sorting of the list, automated negotiation with advertisers in real time (or more likely a software agent defining bid rules and criteria for approving the sale of the advertisement) to dynamically negotiate auction bids for one advertiser or between two competing advertisers bidding against each other, etc.

[0071] The advertisement is then presented **320**. The advertisement is rendered within the IP stream at the local, regional or central content delivery end in the IP network. Specific media format conversions are carried out and the final advertisement is generated and sent to a selected SSO subscriber end user device. Any interaction **322** resulting from the advertisement is captured and stored. Additional computations or fine tuning of the PICS (and associated list of advertisements) may be performed for the next commercial spot.

[0072] FIG. **4** is a flow chart showing an illustrative embodiment of a method of handling SSO subscriber events and updating the TAMS with information which can assist in developing the product interest correlation scores for the SSO subscriber. Events include, but are not limited to, selecting a TV station, clicking on an interactive television advertisement, infomercial or menu selection option, browsing to a new web site, accessing or receiving via "push" technology information on the cellular telephone, sending electronic mails and instant messages, placing a standard telephone call.

[0073] In the case where the SSO subscriber accesses a web page, content, or an IP-based service from any end user device including personal computer (PC), IPTV set top box (STB), cell phone, etc. an event record detailing what the SSO subscriber accessed from their end user device is created. The TASS **101** receives an event detail record **402** containing data from the profiling process.

[0074] The TASS **212** then performs a database search **404** of the URI or associated event data in the spidering results database **214**. If the URI or other event exists in the database, the specific advertising categories affected by the event are retrieved **406** along with their associated PICSs and updated in the product interest correlation score matrix for the SSO subscriber. Historic information regarding frequency and timing of previous accesses in this category is then obtained and used to "weight" a contribution score **408** accordingly. For each category in the PICS matrix, a corresponding contribution score is added to the current product interest score **410** for the particular SSO subscriber.

[0075] A detail record is then created in the TAMS database block **412** representing this new information. (Note: The detail records for a particular SSO subscriber and product or advertising category within the SSO subscriber's PICS matrix can be used to re-create the current PICS for that advertising category from scratch if desired.). This can be implemented via physical and virtual schemas or database views such as in RDBMS, XML databases or object oriented databases, taxonomies or semantic resource descriptions using XML or RDF.

[0076] In the case where there is a television viewing event, the TV viewing history scanning process sends data representing a log of all television programming watched by the viewer **420**, including commercials for which the SSO subscriber may have responded to interactive components of the advertisement via clicks on the remote control **422** button. Similarly, data indicating commercials that were paused, rewound and viewed again, etc. can be sent to the TAMS **108**. The television event includes, but is not limited to, watching a broadcast programming event and viewing a program stored on a digital video recorder.

[0077] In the case where a phone call has been placed, the phone calling log history process as part of the Internet profiling process **230** takes a digital call log **430** from a PSTN phone, cell phone, VoIP phone, or combination thereof and performs reverse number look-ups **432** from a directory listing database to ascertain what merchants may have been called. The merchant information is returned **434**, which the TAMS **108** uses to look up the corresponding advertising categories **436** for the merchant, updating the product interest score **438** for each product interest or advertising category. Additionally, the communications history **238** may include other digital communication methods including IM, electronic mail, and video telephony/conferencing. Similar to the parsing and natural language processing techniques used by the web spidering process **214** to assess advertising category interest intent by the SSO subscriber, text from IM and electronic mail applications could similarly be parsed for product interest categorization. Categorization based on video telephony/conferencing could additionally employ speech recognition technology.

[0078] Advertising interest categories are essentially unlimited but may be represented by general categories including but not limited to sports, fashion, business, movies, etc. In the case of a digital purchase, a digital purchase transaction record is sent **440** from the eWallet transaction engine to the TAMS **108**. In case where the cell phone or mobile subscription is used as a form of currency (or eWallet), such transaction associated with billing the SSO subscriber mobile account is also captured. The TAMS **108** can use stock keeping unit (SKU) number of product(s) purchased and map the SKU numbers to specific product interest advertising categories **442**. The system then determines if this purchase represents a "deal-killer event" **444** for certain advertising categories. For example, if the item is not perceived to be a quickly perishable item and may impact future purchase opportunity in a specific category (e.g. customer finally buys the Toyota® Camry®) the PICS for that category within the SSO subscriber's matrix is reduced, if not zeroed out or blocked in its entirety for a period. Similarly, the system assesses whether there are complementary products **446** related to the digital purchase. Products known to be complementary to the purchase have product interest scores increased by a pre-defined "contribution" to the score.

[0079] It should be noted that any of preceding cases can be logged by the respective module, and transferred in bulk for handling by the TAMS **108** in batch mode on a scheduled basis also. In the more ideal dynamic mode for Internet profiling, for example, each URI visited or other event detected by the flow-based analysis process within the media controller would immediately send a message to the TAMS **108** so that the TAMS can treat each new piece of information or event in real-time and thus quickly provide an accurate product information scoring summary for the SSO subscriber in real time. Alternatively, some information may be obtained in non real time—examples include data feeds from third party access networks, or perhaps a transaction log from another service (e.g. phone calling log) that is not capable of providing information in real time.

[0080] FIG. **5** illustrates a method of SSO subscriber enrollment, i.e., handling a new SSO subscriber of the IP-based services and advertising system for this first time. The SSO subscriber first creates single sign on (SSO) information data **502** if one does not already exist, obtaining desired SSO subscriber ID and password with which to authenticate from all devices used henceforth. Next, an electronic wallet (eWallet) is created **504** for the SSO subscriber by obtaining online payment information and storing it in the SSO subscriber's profile. Alternately the eWallet is associated with the mobile subscription, in the case of the cellular subscription being used as a wallet. A zeroed out product correlation matrix is transferred **506** based on the current categorization scheme employed by the TASS **101**.

[0081] The steps that follow encompass setting the SSO subscriber advertising profile settings; including obtaining what information the SSO subscribers are willing to have stored in the SSO subscriber advertising profile settings and used to help generate PICSc. It is important to note from a privacy perspective that none of this information about the

SSO subscribers is shared with advertisers by default; rather the SSO subscriber advertising profiles are stored and used internally by the TAMS **100** to generate PICSs.

[0082] Obtaining "opt in" (privacy setting) information **508** lets the SSO subscriber enter data to select whether the event data can be used internally by the TAMS **100** to help in the SSO subscriber advertisement targeting process: e.g., phone calling log; Internet surfing log for specific devices; TV viewing history; interactive television clicks; electronic mail, IM, video telephony, application usage and digital purchase history. The SSO subscriber is also capable of changing opt in permissions for the TAMS to utilize any of the above information at any time, and even suspend its use temporarily if desired.

[0083] Obtaining what information the SSO subscriber wants to receive **510** allows SSO subscribers to create not only an approved "global" solicitation SSO subscriber advertising profile for advertisers, but can also customize advertising delivery methods based on advertising categories. SSO subscribers can thus personalize and select whether they wish to receive targeted TV advertisements, targeted Internet advertisements (banners in the browser, pop-ups, etc.) to their PC or laptop, text messages (SMS) and/or Multimedia messages (e.g. MMS) to their cell phone, electronic mail messages, audio recordings sent via a computer telephony system to the SSO subscriber's phone, direct contact, and U.S. mail and electronic coupon offers.

[0084] Obtaining a listing of categories and advertising categories in which the SSO subscriber is proactively interested in receiving information on **512** lets SSO subscriber select categories of interest for which they would like to be solicited with targeted advertisements and coupon offers. SSO subscribers can always update their proactive advertising category interests subsequent to this initial enrollment.

[0085] Turning now to FIG. **6**, FIG. **6** is a flow chart of an illustrative embodiment where PICSs **602** are retrieved for an advertising category for an SSO subscriber. The correlation score is already calculated and is updated periodically in real time as event data is monitored and the Internet profiling process has been occurring. An advertiser index database **604** is reviewed to select an advertisement in the respective advertising categories. Format **606** is selected to deliver advertising to the SSO subscriber, based on advertiser attributes that define willingness to pay for certain delivery modes based on the SSO subscriber's correlation score for the advertising categories. SSO end user device **608** is characterized as associated with the SSO subscriber. Audio, video and text fidelity **610** are adapted to match characteristics of the SSO subscriber end user device. Product interest correlation score **612** is weighted based on previous accesses, and how recently and the frequency of the accesses in the advertising categories by the SSO subscriber. Contextual information **614** about SSO subscriber and advertisement is associated. SSO subscriber input for opting-in one of the groups is accepted consisting of accepting advertising on end user device or modality and allowing access to a profile. The SSO subscriber's event log in the spidering database is then reviewed **618** to assess intent in advertising categories from the URI access. The PICS **620** of the SSO subscriber is weighted based on intent in the advertising category.

[0086] The next available advertising window **622** is determined based on an SSO subscriber's current usage scenario. Advertising categories addressed by available advertisements **624** are correlated to current usage scenario. Multiple advertiser auction bids **628** can be received based on the PICS. Advertisements **626** are selected with highest correlation scores matching the SSO subscriber's product interest correlation score. The correlation score for the advertisement is based on a comparison of the advertising category for the advertisement and the PICS for the SSO subscriber. Finally, the final advertisement to present is selected **630** based on correlation scores and/or highest bid price by advertisers.

[0087] Turning now to FIG. **7**, FIG. **7** illustrates a data structure embedded in a machine or computer readable medium or memory for storing targeted advertising data intended for an SOS subscriber in the memory. An SSO identifier filed is provided to store an SSO identifier for a network SSO subscriber having multiple SSO subscriber identifiers for use in multiple networks and multiple platforms. A SSO identifier field is provided in the data structure for storing SSO identifier data **702**. An associated correlation score field is provided in the data structure for storing product interest correlation score data **703**. An advertising category field is provided for storing advertising category data and product category data **704**. A shopping list field is provided for storing shopping list data **705**. An SSO subscriber identifier field is provided for storing SSO subscriber identifier data **706**. A SSO subscriber advertising profile field is provided for storing SSO subscriber advertising profile data **707**. An SSO subscriber event data field is provided for storing SSO subscriber event data **708** for determining an SSO subscriber's advertising interest correlation score in an advertising category.

[0088] An advertisement field is provided for storing data for an advertisement **710**, including but not limited to related advertising category type data response tendency; advertisement format data and auction bids data. A location filed **712** is provide for containing data indicating an SSO end user device location and a store (a physical merchant location) layout data for the location. A driving directions field and a product inventory field are provided for storing driving directions and product inventory data **713** for the store in the location. Advertisement product interest correlation score threshold data is stored in a provided product correlation interest score field **714**. Advertisement available slots and times data are stored in the data structure in a provided advertisement available field **716**. Trigger, opt-ins, advertising category interest, distance and location are stored in trigger and opt-in fields and device type **718**. A trigger can be set to send an advertisement to SSO subscribers having a product interest correlation score greater than a product interest correlation score threshold and within a given distance from a specified location. A data type response data field is provided for storing data type response data **719** indicating an SSO subscriber's tendency to respond to a particular advertising data type.

[0089] Turning now to FIG. **8**, FIG. **8** is a schematic diagram of an illustrative embodiment showing a TAMS in an IPTV system. As shown in FIG. **8**, in an illustrative embodiment, the TAMS **108** may be associated or contained in a super video head end **802**, a residential gateway **816** or a set top box **818**. As shown in FIG. **8**, the super video head end **802** (e.g., satellite ground station that receives channels via satellite and encodes for distribution over IP network) relays a video and data signal to a long haul transport network **804** (e.g. Gigabit Ethernet). The processor that hosts or is associated with the TAMS also monitors subscriber event data inputs associated with the SSO subscriber end user devices.

[0090] The SSO subscriber event data is monitored by the TAMS **108**. As discussed above, event data may be collected from SSO subscriber communications as an SSO subscriber uses an SSO subscriber end user device (or inputting files created by a service provided based on SSO subscriber verbal or text input), including creating an SSO subscriber advertising profile, or various other activities discussed above, including but not limited to using an SSO subscriber end user device which may include but is not limited to a PSTN telephone **238**, cell phone **234**, personal computer **239**, PDA, computer mouse **239**, or IPTV receiver **236** and input device, such as a remote control **237**, web tablet, lap top computer, pocket PC, and mobile IP device. The TAMS includes a processor **130** coupled to memory **132** and database **134** in memory. A computer readable medium containing instructions that can be executed by the processor is embedded in the memory.

[0091] The long haul transport network **804** relays the video and data signal to the video hub office **806** (e.g., metro office that receives video and data from super video head end (HE) and inserts local channels). The video hub office **806** relays the signal to the regional transport network **808** (e.g. Gigabit Ethernet). The regional transport network **808** relays the signal to the video serving office **810** (e.g. Telco Central Office delivering voice, data, and video to neighborhoods via Gigabit Ethernet links). The video serving office **810** relays the signal to the access network **812** (e.g. fiber to the Home Network, fiber to the Node Network with very high data rate video subscriber line (VDSL) delivery to the home). The access network **812** relays the signal via a fiber optic link (if fiber to the home (FTTH) is used to carry the video and data) or telephone wiring (if fiber to the node (FTTN) is used to carry the video and data) **826** to the network interface device (NID) **814**.

[0092] The NID **814** relays the signal via the coaxial cable **822** to a gateway such as a residential gateway (RG) **816**. The TAMS includes a processor **130** coupled to memory **132** and database **134** in memory. A computer readable medium containing instructions that can be executed by the processor is embedded in the memory. From the RG **816** the signal is relayed via the coaxial cable **822** to the coaxial splitter **820**, which splits the signal via coaxial cables **822** to an STB **818**, and other television sets on the home network. The signal can also be sent to laptop computers **824**. The above example is for illustration only and can be implemented in numerous different ways in an IPTV system.

[0093] FIG. **9** is a diagrammatic representation of a machine in the form of a computer system **900** within which a set of instructions, when executed, may cause the machine to perform any one or more of the methodologies discussed herein. In some embodiments, the machine operates as a standalone device. In some embodiments, the machine may be connected (e.g., using a network) to other machines. In a networked deployment, the machine may operate in the capacity of a server or a client user machine in server-client user network environment, or as a peer machine in a peer-to-peer (or distributed) network environment. The machine may comprise a server computer, a client user computer, a personal computer (PC), a tablet PC, a set-top box (STB), a Personal Digital Assistant (PDA), a cellular telephone, a mobile device, a palmtop computer, a laptop computer, a desktop computer, a communications device, a wireless telephone, a land-line telephone, a control system, a camera, a scanner, a facsimile machine, a printer, a pager, a personal trusted device, a web appliance, a network router, switch or bridge, or any machine capable of executing a set of instructions (sequential or otherwise) that specify actions to be taken by that machine. It will be understood that a device of the present invention includes broadly any electronic device that provides voice, video or data communication. Further, while a single machine is illustrated, the term "machine" shall also be taken to include any collection of machines that individually or jointly execute a set (or multiple sets) of instructions to perform any one or more of the methodologies discussed herein.

[0094] The computer system **900** may include a processor **902** (e.g., a central processing unit (CPU), a graphics processing unit (GPU), or both), a main memory **904** and a static memory **906**, which communicate with each other via a bus **908**. The computer system **900** may further include a video display unit **910** (e.g., liquid crystals display (LCD), a flat panel, a solid state display, or a cathode ray tube (CRT)). The computer system **200** may include an input device **912** (e.g., a keyboard), a cursor control device **914** (e.g., a mouse), a disk drive unit **916**, a signal generation device **918** (e.g., a speaker or remote control) and a network interface.

[0095] The disk drive unit **916** may include a machine-readable medium **922** on which is stored one or more sets of instructions (e.g., software **924**) embodying any one or more of the methodologies or functions described herein, including those methods illustrated in herein above. The instructions **924** may also reside, completely or at least partially, within the main memory **904**, the static memory **906**, and/or within the processor **902** during execution thereof by the computer system **900**. The main memory **904** and the processor **902** also may constitute machine-readable media. Dedicated hardware implementations including, but not limited to, application specific integrated circuits, programmable logic arrays and other hardware devices can likewise be constructed to implement the methods described herein. Applications that may include the apparatus and systems of various embodiments broadly include a variety of electronic and computer systems. Some embodiments implement functions in two or more specific interconnected hardware modules or devices with related control and data signals communicated between and through the modules, or as portions of an application-specific integrated circuit. Thus, the example system is applicable to software, firmware, and hardware implementations.

[0096] In accordance with various embodiments of the present invention, the methods described herein are intended for operation as software programs running on a computer processor. Furthermore, software implementations can include, but not limited to, distributed processing or component/object distributed processing, parallel processing, or virtual machine processing can also be constructed to implement the methods described herein.

[0097] The present illustrative embodiment contemplates a machine readable medium containing instructions **924**, or that which receives and executes instructions **924** from a propagated signal so that a device connected to a network environment **926** can send or receive voice, video or data, and to communicate over the network **926** using the instructions **924**. The instructions **924** may further be transmitted or received over a network **926** via the network interface device **920**. The machine readable medium may also contain a data structure for containing data useful in providing a functional

relationship between the data and a machine or computer in an illustrative embodiment of the disclosed system and method.

[0098] While the machine-readable medium **922** is shown in an example embodiment to be a single medium, the term "machine-readable medium" should be taken to include a single medium or multiple media (e.g., a centralized or distributed database, and/or associated caches and servers) that store the one or more sets of instructions. The term "machine-readable medium" shall also be taken to include any medium that is capable of storing, encoding or carrying a set of instructions for execution by the machine and that cause the machine to perform any one or more of the methodologies of the present invention. The term "machine-readable medium" shall accordingly be taken to include, but not be limited to: solid-state memories such as a memory card or other package that houses one or more read-only (non-volatile) memories, random access memories, or other re-writable (volatile) memories; magneto-optical or optical medium such as a disk or tape; and carrier wave signals such as a signal embodying computer instructions in a transmission medium; and/or a digital file attachment to e-mail or other self-contained information archive or set of archives is considered a distribution medium equivalent to a tangible storage medium. Accordingly, the invention is considered to include any one or more of a machine-readable medium or a distribution medium, as listed herein and including art-recognized equivalents and successor media, in which the software implementations herein are stored.

[0099] Although the present specification describes components and functions implemented in the embodiments with reference to particular standards and protocols, the invention is not limited to such standards and protocols. Each of the standards for Internet and other packet switched network transmission (e.g., TCP/IP, UDP/IP, HTML, and HTTP) represent examples of the state of the art. Such standards are periodically superseded by faster or more efficient equivalents having essentially the same functions. Accordingly, replacement standards and protocols having the same functions are considered equivalents.

[0100] The illustrations of embodiments described herein are intended to provide a general understanding of the structure of various embodiments, and they are not intended to serve as a complete description of all the elements and features of apparatus and systems that might make use of the structures described herein. Many other embodiments will be apparent to those of skill in the art upon reviewing the above description. Other embodiments may be utilized and derived there from, such that structural and logical substitutions and changes may be made without departing from the scope of this disclosure. Figures are also merely representational and may not be drawn to scale. Certain proportions thereof may be exaggerated, while others may be minimized. Accordingly, the specification and drawings are to be regarded in an illustrative rather than a restrictive sense.

[0101] Such embodiments of the inventive subject matter may be referred to herein, individually and/or collectively, by the term "invention" merely for convenience and without intending to voluntarily limit the scope of this application to any single invention or inventive concept if more than one is in fact disclosed. Thus, although specific embodiments have been illustrated and described herein, it should be appreciated that any arrangement calculated to achieve the same purpose may be substituted for the specific embodiments shown. This disclosure is intended to cover any and all adaptations or variations of various embodiments. Combinations of the above embodiments, and other embodiments not specifically described herein, will be apparent to those of skill in the art upon reviewing the above description.

[0102] The Abstract of the Disclosure is provided to comply with 37 C.F.R. §1.72(b), requiring an abstract that will allow the reader to quickly ascertain the nature of the technical disclosure. It is submitted with the understanding that it will not be used to interpret or limit the scope or meaning of the claims. In addition, in the foregoing Detailed Description, it can be seen that various features are grouped together in a single embodiment for the purpose of streamlining the disclosure. This method of disclosure is not to be interpreted as reflecting an intention that the claimed embodiments require more features than are expressly recited in each claim. Rather, as the following claims reflect, inventive subject matter lies in less than all features of a single disclosed embodiment. Thus the following claims are hereby incorporated into the Detailed Description, with each claim standing on its own as a separately claimed subject matter.

What is claimed is:

1. A method for sending targeted advertising data, comprising:

monitoring in a plurality of data communications networks, single sign on (SSO) subscriber event data from a first SSO subscriber end user device and a second SSO subscriber end user device;

calculating product interest correlation scores in a plurality of advertising categories for SSO subscriber advertising profile data based on the monitoring SSO subscriber event data;

selecting advertising data in at least one of the advertising categories from an advertiser database based on the SSO subscriber advertising profile data;

selecting a format to deliver the selected advertising data to a third SSO subscriber end user device; and

sending the targeted advertising data to the third SSO subscriber end user device.

2. The method of claim **1**, wherein the plurality of data communications networks are selected from the group consisting of an internet protocol television network, a voice over internet protocol network, a internet service provider network and a cellular telephone network and wherein the advertising category is one of the group consisting of sports, fashion, business and movies.

3. The method of claim **2** wherein the SSO subscriber event data indicates at least two events from two different platforms selected from the group consisting of selecting a television station, selecting an interactive television menu option, selecting content for an internet protocol (IP) end user device, accessing a resource indicated by a uniform resource indicator (URI), browsing a web site, creating a user profile, carrying out a digital purchase transaction, internet chatting, internet blogging, placing a telephone call, sending an instant message, receiving an instant message, receiving an email, and sending an electronic mail message.

4. The method of claim **1**, wherein the first SSO subscriber end user device is selected from the group consisting of a cell phone, personal digital assistant (PDA), lap top computer, stationary personal computer, IPTV remote control, web tablet, laptop computer, pocket PC, a television set capable of receiving IP based video services and mobile IP device, the second SSO subscriber end user device is one selected from a

group consisting of a cell phone, personal digital assistant (PDA), lap top computer, stationary personal computer, IPTV remote control, web tablet, laptop computer, pocket PC, a television set capable of receiving IP based video services and mobile IP device, and the third SSO subscriber end user device is one selected from a group consisting of a cell phone, personal digital assistant (PDA), lap top computer, stationary personal computer, IPTV remote control, web tablet, laptop computer, pocket PC, a television set capable of receiving IP based video services and mobile IP device.

5. The method of claim **1**, wherein the SSO subscriber advertising profile further comprises a list of products selected by an SSO subscriber associated with the SSO subscriber advertising profile.

6. The method of claim **1**, further comprising:

determining a characteristic for the third SSO subscriber end user device; and

adapting an advertising data format for the third SSO subscriber end user device to at least one of the group consisting of audio, video, graphics support, and text fidelity to match the characteristic of the third SSO end user device.

7. The method of claim **1**, wherein the third end user device is selected based on device response tendency data from the SSO subscriber advertising profile.

8. The method of claim **1**, wherein sending further comprises sending targeted advertising data having a data type selected from the group consisting of image, video, audio, text and icon, wherein the data type is selected based on an SSO end user data type response tendency data from the SSO subscriber advertising profile.

9. The method of claim **1**, wherein the SSO end user data is collected from a plurality of different platforms having different SSO subscriber identifiers associated with the SSO end user identifier.

10. A system for sending targeted advertising, the system comprising:

a processor in data communication with a computer readable medium; and

a computer program stored in the computer readable medium for execution by the processor, the computer program comprising instructions to monitor in a plurality of data communications networks, single sign on (SSO) subscriber event data from a first SSO subscriber end user device and a second SSO subscriber end user device, instructions to calculate product interest correlation scores in a plurality of advertising categories for SSO subscriber advertising profile data based on the monitoring SSO subscriber event data, instructions to select advertising data in at least one of the advertising categories from an advertiser database based on the SSO subscriber advertising profile data, instructions to select a format to deliver the selected advertising data to a third SSO subscriber end user device and instructions to send the targeted advertising data to the third SSO subscriber end user device.

11. The system of claim **10**, wherein the plurality of data communications networks are selected from the group consisting of an internet protocol television network, a voice over internet protocol network, a internet service provider network and a cellular telephone network and wherein the advertising category is one of the group consisting of sports, fashion, business and movies.

12. The system of claim **11** wherein the SSO subscriber event data indicates at least two events selected from the group consisting of selecting a television station, selecting an interactive television menu option, selecting content for an internet protocol (IP) end user device, accessing a resource indicated by a uniform resource indicator (URI), browsing a web site, creating a user profile, carrying out a digital purchase transaction, internet chatting, internet blogging, placing a telephone call, sending an instant message, receiving an instant message, receiving an email, and sending an electronic mail message.

13. The system of claim **11**, wherein the first SSO subscriber end user device is selected from the group consisting of a cell phone, personal digital assistant (PDA), lap top computer, stationary personal computer, IPTV remote control, web tablet, laptop computer, pocket PC, a television set capable of receiving IP based video services and mobile IP device, the second SSO subscriber end user device is one selected from a group consisting of a cell phone, personal digital assistant (PDA), lap top computer, stationary personal computer, IPTV remote control, web tablet, laptop computer, pocket PC, a television set capable of receiving IP based video services and mobile IP device, and the third SSO subscriber end user device is one selected from a group consisting of a cell phone, personal digital assistant (PDA), lap top computer, stationary personal computer, IPTV remote control, web tablet, laptop computer, pocket PC, a television set capable of receiving IP based video services and mobile IP device.

14. The system of claim **10**, wherein the SSO subscriber advertising profile further comprises a list of products selected by an SSO subscriber associated with the SSO subscriber advertising profile.

15. The system of claim **10**, the computer program further comprising instructions to determine a characteristic for the third SSO subscriber end user device and instructions to adapt an advertising data format for the third SSO subscriber end user device to at least one of the group consisting of audio, video, graphics support, and text fidelity to match the characteristic of the third SSO end user device.

16. The system of claim **10**, wherein the third end user device is selected based on device response tendency data from the SSO subscriber advertising profile.

17. The system of claim **10**, wherein the instructions to send further comprise instructions to send targeted advertising data having a data type selected from the group consisting of image, video, audio, text and icon, wherein the data type is selected based on an SSO end user data type response tendency data from the SSO subscriber advertising profile.

18. The system of claim **10**, wherein the SSO end user data is collected from a plurality of different platforms having different SSO subscriber identifiers associated with the SSO end user identifier.

19. A computer readable medium containing a computer program for execution by a processor useful for sending targeted advertising data, the computer program comprising instructions to monitor in a plurality of data communications networks, single sign on (SSO) subscriber event data from a first SSO subscriber end user device and a second SSO subscriber end user device, instructions to calculate product interest correlation scores in a plurality of advertising categories for SSO subscriber advertising profile data based on the monitoring SSO subscriber event data, instructions to select advertising data in at least one of the advertising categories

from an advertiser database based on the SSO subscriber advertising profile data, instructions to select a format to deliver the selected advertising data to a third SSO subscriber end user device and instructions to send the targeted advertising data to the third SSO subscriber end user device.

20. The medium of claim **19**, wherein in the computer program, the data communications network is selected from the group consisting of an internet protocol television network, a voice over internet protocol network, an internet service provider network and a cellular telephone network and wherein the advertising category is one of the group consisting of sports, fashion, business and movies.

21. A data structure embedded in a computer readable medium, the data structure comprising:

a first field for storing data indicating a single sign on (SSO) identifier for a plurality of SSO subscriber identifiers; and

a second field for storing data indicating an SSO subscriber advertising profile for the SSO identifier.

22. The data structure of claim **21**, further comprising:

a third field for storing data indicating an SSO end user device type response tendency for the SSO identifier.

23. The data structure of claim **22**, further comprising:

a fourth field for storing data indicating a data type response tendency for the indicated SSO end user device type.

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