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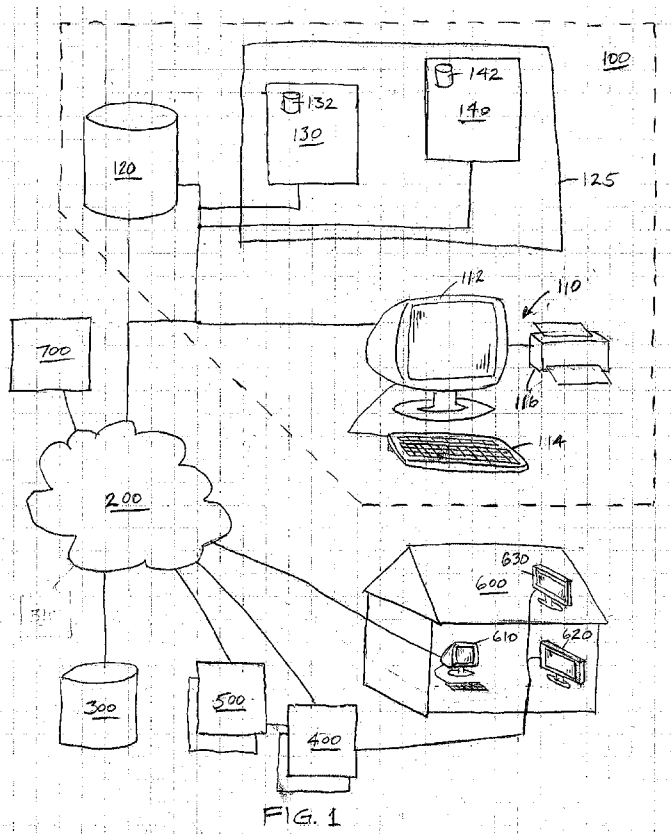
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(54) Title: METHOD AND APPARATUS FOR TELEVISION PROGRAM PROMOTION



(57) Abstract: A computer implemented method and apparatus for determining an optimal time and channel for delivery of television advertising content based on viewer profile information is disclosed. The method and apparatus provide for collecting viewer profile information for a viewer and storing it in a computer memory. Segments of viewers may be defined by viewer profile information thresholds in the computer memory. Viewers may be assigned to an audience segment based on a comparison of the viewer profile information thresholds with the collected viewer profile information. Information describing programs to be promoted, spots in which promotions for such programs may air, and geographic data also may be collected and stored. The computer may determine an optimal time and channel for delivery of the television advertising content to a selected audience segment based on the program to be promoted information, spot information and geographic data.

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METHOD AND APPARATUS FOR TELEVISION PROGRAM PROMOTION

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] The present invention and application relates to, and claims the benefit of
5 the earlier filing date and priority of United States Provisional Patent Application
61/160,115 filed March 13, 2009, which is hereby incorporated by reference in its
entirety.

FIELD OF THE INVENTION

[0002] The present invention relates to methods and apparatus for determining
10 an optimal time, channel, and/or cost for display of a television promotion, and
methods and apparatus for planning, effecting, and/or charging for such display.

BACKGROUND OF THE INVENTION

[0003] Currently, typical cable, fiber optic and satellite television services deliver
hundreds of television channels to viewers. While viewers may benefit from this
15 increased number of programs to chose from, it is frequently difficult for viewers to
be aware of all of the programming choices available to them, and therefore very
difficult for them to identify the programs they would prefer to watch. If a viewer
were to channel "surf" through all available channels to identify the best program to
watch, there would be little time left to view the program. Thus, the increased value
20 of television resulting from increased choice may be offset to a large degree by the
difficulty viewers have in identifying the programs that best meet their media
consumption profile.

[0004] The increased number of available channels also has negative
repercussions for television content providers, (e.g., cable television networks) and

television service providers (e.g., cable operators) because they are faced with extraordinary competition for each viewer's available viewing time. Given the number of channels available, the viewer may fail to discover the best channel and best program for her media consumption profile (i.e., viewer profile) due to the
5 overwhelming amount of choice available to her.

[0005] One method that television content providers have utilized to attract viewers to a channel and/or a program has been to use cross-network promotion. Cross-network promotion exists when a television content provider advertises a program that will air on its own channel or network in a spot or "avail" on another
10 channel or network. Such promotion can be expensive, however, and thus there is a need for optimizing the selection of the channels, programs, and/or time for placement of such cross-network promotions. Furthermore, there is a need to optimize such selection based on viewer profile information. In the context of the present application, the terms "optimize" and "optimizing," and all derivatives of
15 these terms, are intended to refer to an improvement or increased effectiveness of cross-network promotion or provision of television content generally, and do not imply that the improvement or increased effectiveness is necessarily maximized.

[0006] It is therefore an advantage of some, but not necessarily all, embodiments of the present invention to provide computer-implemented methods and apparatus
20 for optimizing the selection of times, channels, and programs for cross-network promotion of television programs. It is a further advantage of some, but not necessarily all, embodiments of the present invention to provide computer-implemented methods and apparatus for optimizing cross-network promotion of television programs based on viewer profile information. It is still a further
25 advantage of some, but not necessarily all, embodiments of the present invention to

optimize cross-network advertising based on viewer profile information. The afore-
noted optimization may take into account information relating to the program to be
promoted, the channel to be promoted, the channel on which the promotion will air,
the program or programs that will "carry" the promotion, promotion cost, spot
5 availability, and viewer profile information, such as, but not limited to viewer
demographics, geographic data, and viewing data, among others.

[0007] Additional advantages of various embodiments of the invention are set
forth, in part, in the description that follows and, in part, will be apparent to one of
ordinary skill in the art from the description and/or from the practice of the invention.

10

SUMMARY OF THE INVENTION

[0008] Responsive to the foregoing challenges, Applicants have developed an
innovative computer implemented method of determining an optimal time and
channel for delivery of television advertising content based on viewer profile
information, comprising the steps of: collecting viewer profile information for a
15 viewer; storing the viewer profile information in a computer memory; storing a
definition of one or more modal segments of viewers in terms of one or more viewer
profile information thresholds in the computer memory; assigning the viewer to one
or more modal segments based on a computer implemented comparison of the one
or more viewer profile information thresholds with the collected viewer profile
20 information; determining with said computer an optimal time and channel for delivery
of television advertising content based on viewer assignment to the one or more
modal segments and the collected viewer profile information; and providing a
computer implemented display indicative of the determined optimal time and
channel for delivery of the television advertising content.

25 **[0009]** Applicants have further developed an innovative computer implemented

method of determining an optimal time and channel for delivery of television advertising content based on viewer profile information wherein the attention value is based on one or more indices selected from the group consisting of: a TV View Duration index, a Channel View Duration index, a Genre View Duration index, a Guide Interactions per Time index, and a DVR Interactions per Time index.

[0010] Applicants have still further developed an innovative computer implemented method of determining an optimal time and channel for delivery of television advertising content based on viewer profile information wherein the step of assigning the viewer to one or more modal segments is further based on determination of an exploration utility value for the viewer.

[0011] Applicants have still further developed an innovative computer implemented method of determining an optimal time and channel for delivery of television advertising content based on viewer profile information wherein the exploration utility value is based on one or more indices selected from the group consisting of: a Genre Familiarity index, a Program Familiarity index, a Channels Viewed index, a Genres Viewed index, and a Guide Interaction Duration index.

[0012] Applicants have still further developed an innovative computer implemented method of determining an optimal time and channel for delivery of television advertising content based on viewer profile information wherein the step of determining an optimal time and channel for delivery of television advertising content is further based on geographic data, wherein said geographic data comprises data selected from the group consisting of: climate, population density, ethnic population quantity, ethnic population distribution, race population quantity, race population distribution, income distribution, age distribution, gender quantity, gender distribution, and marital status distribution data.

[0013] Applicants have still further developed an innovative computer implemented method of determining an optimal time and channel for delivery of television advertising content based on viewer profile information further comprising the steps of: receiving spot information for a plurality of television spots; and
5 receiving promoted program information for a plurality of television program promotions, wherein the step of determining the optimal time and channel for delivery of the television advertising content is further based on the spot information and the promoted program information, and comprises determining the optimal one of each of said plurality of television spots for delivery of each one of said plurality of
10 television program promotions.

[0014] Applicants have still further developed an innovative computer implemented method of determining an optimal time and channel for delivery of television advertising content based on viewer profile information further comprising the steps of: determining the number of viewers assigned to the one or more modal
15 segments in a geographic area; determining geographic data relating to the viewers in the one or more modal segments in the geographic area; and estimating with the computer a number of viewers to be associated with the one or more modal segments outside of the geographic area based on the number of viewers assigned to the one or more modal segments in the geographic area and the geographic data,
20 wherein the step of determining an optimal time and channel for delivery of television advertising content is further based on the estimating of the number of viewers to be associated with the one or more modal segments outside of the geographic area.

[0015] It is to be understood that both the foregoing general description and the following detailed description are exemplary and explanatory only, and are not
25 restrictive of the invention as claimed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] In order to assist the understanding of this invention, reference will now be made to the appended drawings, in which like reference characters refer to like elements.

5 [0017] Figure 1 is a schematic diagram of a television program promotion system that may be used to provide television program promotion in accordance with various embodiments of the present invention.

[0018] Figure 2 is a schematic diagram of a portion of the system shown in Fig. 1, which indicates information flow between elements of the system in accordance with
10 an embodiment of the present invention.

[0019] Figure 3 is a flow chart which illustrates the steps of a computer-implemented method of acquiring spots in accordance with an embodiment of the present invention.

[0020] Figure 4 is a flow chart which illustrates the steps of a computer-
15 implemented method of acquiring programs to be promoted in accordance with an embodiment of the present invention.

[0021] Figure 5 is a flow chart which illustrates the steps of a computer-implemented method of processing data collected to carry out an embodiment of the present invention.

20 [0022] Figure 6 is a flow chart which illustrates the steps of a computer-implemented method of content preference segment calculation in accordance with an embodiment of the present invention.

[0023] Figure 7 is a flow chart which illustrates the steps of a computer-implemented method of modal segment calculation in accordance with an
25 embodiment of the present invention.

[0024] Figure 8 is a flow chart which illustrates the steps of a computer-implemented method of segment population projection in accordance with an embodiment of the present invention.

[0025] Figure 9 is a flow chart which illustrates the steps of a computer-implemented method of spot selection optimization in accordance with an
5 embodiment of the present invention.

[0026] Figure 10 is a flow chart which illustrates the steps of a computer-implemented method of lift reporting in accordance with an embodiment of the present invention.

[0027] Figure 11 is a diagram of an Attention Value scale that may be used to
10 determine viewer membership in one or more modal segments in accordance with an embodiment of the present invention.

[0028] Figure 12 is a diagram of an Exploration Utility Value scale that may be
used to determine viewer membership in one or more modal segments in
15 accordance with an embodiment of the present invention.

[0029] Figure 13 is a diagram illustrating an example of modal segment definitions in accordance with an embodiment of the present invention.

[0030] Figure 14 is an illustration of a computer screen showing a call sign mapper utility user interface window used for data management in accordance with
20 an embodiment of the present invention.

[0031] Figure 15 is a print out of program data used to determine cross-network promotion program ranking in accordance with an embodiment of the present invention.

[0032] Figure 16 is an illustration of a computer screen showing a future program
25 finder utility user interface window used for identifying and ranking programs for

cross-network promotion.

DETAILED DESCRIPTION OF EMBODIMENTS OF THE INVENTION

[0033] Reference will now be made in detail to a first embodiment of the present invention, an example of which is illustrated in the accompanying drawings. With reference to Fig. 1, a television (also referred to as "TV") promotion system 100 is provided. The TV promotion system 100 may include a user interface 110 having a video monitor 112, keyboard 114, and a printer 116. It is appreciated that multiple user interfaces 110 may be included in the TV promotion system 100, including multiple monitors 112, keyboards 114, and printers 116, as well as including other known computer-related hardware and software that permit a user to interface with a computer. Both wired and wireless computing devices for implementation of the TV promotion system 100 are within the intended scope of the present invention.

[0034] The user interface 110 (also referred to as "UI") may be connected via wired or wireless connection to a Data Warehouse (also referred to as "DW") database 120, and one or more computers (including processing and memory devices) 125 that collectively provide through hardware and/or software a Segmentation Engine 130 (also referred to as "SE") and an Inventory Manager 140 (also referred to as "IM"). The Segmentation Engine 130 may have a dedicated database 132 assigned to it and the Inventory Manager 140 may have a dedicated database 142 assigned to it. Alternatively, these databases may be part of the DW 120 and more particularly, may be provided as database tables within the DW 120.

[0035] The collective components of the TV promotion system 100 may be implemented as computer programs and associated database(s) and database tables which are run on, and provide storage for, general purpose computers having memory and/or processing capabilities. Furthermore, these components may be

used to collect, transform, and apply data in such a way as to produce a tangible result, including, but not limited to: the creation of a viewable display of information indicating the proposed or actual airing of a promotion or advertisement at a specified time on a specified television channel; a viewable display of information
5 indicating the optimal ranking of proposed airing of promotions or advertisements at a specified time on a specified television channel; visually perceptible reporting of the airing of a promotion or advertisement; visually perceptible reporting of financial information related to the airing of a promotion or advertisement; visually perceptible reporting of the data stored for use by the TV promotion system; delivery of a
10 promotion or advertisement to a viewer's set top box; and display of the promotion or advertisement on a viewer's television.

[0036] The TV promotion system 100 may also be connected via a wired or wireless connection to a communications network 200. The communications network 200 is intended to represent all networks that are necessary to provide the
15 communication between the devices shown in Fig. 1. Accordingly, it is appreciated that the communications network 200 may constitute multiple networks, which may or may not be interconnected and which may use diverse communications protocols and network infrastructure. For example, and without limitation, the communications networks 200 may include one or more cable, fiber optic, satellite, microwave, and
20 wireless networks which are capable of delivering video, audio, digital, and/or other data between the devices connected to the network 200.

[0037] The communications network 200 may be connected to one or more third party databases 300 which store one or more of: viewer profile information, television advertising content attributes, television program attributes, geographic
25 data, and viewer historical data. To the extent stored on the one or more third party

databases 300, the viewer profile information, television advertising content attributes, television program attributes, geographic data, and viewer historical data may be periodically retrieved by the TV promotion system 100 and stored in the DW 120.

5 **[0038]** The communications network 200 may also be connected to one or more TV service providers 400, which include without limitation, digital or analog broadcasters, digital video recorder (DVR) service providers, satellite TV service providers, cable TV operators (CO), and fiber optic TV service providers. The one or more TV service providers 400, in turn, may be connected to one or more TV
10 content providers 500, such as, but not limited to, any one of the number of cable TV networks (CN) and satellite TV networks. The TV service providers 400 may obtain TV content, including TV advertising content, from the TV content providers 500 for delivery to a viewer household 600. The TV content providers 500 may also be
15 advertising content 700, such as an advertising agency, may also be connected to the telecommunications network 200.

[0039] The viewer household 600 may include a telecommunications device, such as a home computer 610 which may be used in alternative embodiments to collect viewer information and/or viewer household information, and provide such
20 information to the DW 120. The viewer household 600 may contain multiple TVs 620 and 630. The TVs 620 and 630 may include one or more of a video display, a set top box (STB), a remote control unit, and a DVR. The TVs 620 and 630 may be connected to a TV service provider 400 through, for example, a co-axial cable, fiber optic, or satellite connection.

25 **[0040]** As a volume storage medium, DW 120 may be a central or distributed

repository of data useful to functions of other TV promotion system 100 functional components, including the SE 130 and the IM 140. DW 120 may host data describing viewer's attention allocation decisions, *i.e.*, viewer profile information, among other data. The viewer profile data may be obtained from any source, but is most likely obtained from the one or more TV service providers 400 or the third party database 300. A "viewer," "person" and "people" as referred to herein may indicate actual identified or anonymous individuals or groups of individuals, individual set top box(es) (*i.e.*, "STB") (or the equivalent of set top boxes) in a household or other television consuming unit, and/or the collective group of set top box(es) in a household or television consuming unit.

[0041] Examples of viewer profile information (also referred to as attention allocation information), include, but are not necessarily limited to indications of: content type of a television program, amount of time spent watching a television channel, amount (*i.e.*, volume) of time spent watching a television program or programming type, title of the television program, amount of time spent watching television programming of a particular content type, percentage share of overall viewing time spent watching one or more television channels, percentage share of overall viewing time spent watching one or more television programs, percentage share of overall viewing time spent watching television programming of a particular content type or different content types, a mode of content consumption, duration of viewing on a channel, number of channels viewed, degree of similarity between television programming viewed during a recent period and that viewed during a historical period, wherein said historical period includes time before said recent period, frequency with which the viewer changes television channels, actual display by a television of a particular television program, viewer interaction with a digital

video recorder including details of such interaction, viewer interaction with an electronic programming guide including details of such interaction, viewer interaction with a video-on-demand (VOD) service including details of such interaction, and keywords provided by the viewer or by an expert system.

5 **[0042]** With regard to the foregoing viewer profile information, content type of a television program may be indicated by a content genre, such as for example, news, sports, action, drama, science fiction, late night, horror, movie, situation comedy, etc. Program genre may have far more detail and be hierarchically related to the fundamental genre referenced herein. For example, Sports may include
10 Sports/Football, which in turn may include Sports/Football/NFL, etc. Furthermore, the use of "genre" in this application may include descriptors outside of the limited use of "genre" in the television arts. For example, genre may include alternative descriptors such as black and white v. color, time periods (*e.g.*, 1970's), geographic divisions (*e.g.*, British TV), etc.; production details (*e.g.* Director, Writer, Producers, Release or Original Air Date, Actors, Contestants, Music Composer, Runtime,
15 Country, Rating, Language, Filming Location, etc.); and user generated or Expert System supplied Key words or Tags applied to Program, Plot or Genre.

[0043] Details of viewer interaction with a DVR may include interactions such as recording, pausing, replaying, fast forwarding, and fast reversing, for example.
20 Further, details of viewer interaction with an electronic programming guide may include interaction details such as duration of interaction, time and date of interaction, program detail information selected for review, and frequency of viewer interaction. And, details of viewer interaction with a VOD may include interactions such as duration of viewer interaction with the VOD service, time and date details of
25 viewer interaction with the VOD service, and frequency of viewer interaction with the

VOD service.

[0044] The viewer profile information may further include viewer attribute data, which includes, but is not necessarily limited to indications of viewer or viewer household: income, employment, race, ethnicity, age, gender, marital status, parental status, children in household, number of people in household, number of televisions, and television subscription data.

[0045] DW 120 may also host geographic data and viewer historical data.

Examples of geographic data, may include, but are not necessarily limited to: climate, population density, ethnic population quantity, ethnic population distribution, race population quantity, race population distribution, income distribution, age distribution, gender quantity, gender distribution, and marital status distribution data for the geographic region in which the viewer or viewer household are located.

Examples of viewer historical data, include, but are not necessarily limited to the same types of information as included in viewer profile information, but for a period of time that predates the period to which current viewer profile information pertains.

Accordingly, viewer historical data and current viewer profile information may be subsets of viewer profile information as a whole.

[0046] The DW 120 preferably may exclude data that constitutes personally identifiable information. Examples of personally identifiable information may include: full name, national identification number, telephone number, street address, e-mail address, IP address, vehicle registration number, driver's license number, face image, fingerprints, or handwriting information, credit card numbers, and digital identity.

[0047] Equipped with computer processing capacity, the DW 120 may also schedule and execute scripts to retrieve data from the TV promotion system's 100

partners (e.g., which may include data providers compensated for the provision of data by also utilizing the system as a client or customer, or by direct payment). The TV promotion system 100 may utilize a set of extraction, transformation and loading (ETL) processes that insert the data into the table structures in the repository. The DW 120 may constitute one or more databases, and/or one or more data tables within a database. ETL processes may be used to locate useful data and convert it as necessary into a form that is useful to the TV promotion system 100 and capable of being stored in the DW 120. The ETL processes may convert such data so that it is in a completely uniform or more uniform for use across the TV promotion system 100. The DW 120 may interact with the UI 110 to support administrative functions governing script schedules and to publish alert messages associated with exceptions in script execution.

[0048] The SE 130 may utilize computer processing capacity to interface with the DW 120 to analyze viewer profile information and to assign viewers to audience segments according to their content preferences (*i.e.*, Content Preference segments), and/or their mode of content consumption (*i.e.*, Modal Segments). Other segmentation groups based on the viewer profile information and/or geographic data may be utilized in alternative embodiments.

[0049] Content Preference Segmentation may organize (*i.e.*, segment) viewers into groups according to the types of content they consume and the volume (*e.g.*, number of minutes per unit of time) and share (*e.g.*, percentage of overall viewing time) of their attention dedicated to types of content. The "type of content" may be synonymous with program "genre" as described above, or may be a descriptor of such content which is only tangentially related or completely unrelated to genre.

[0050] Modal Segmentation may be used to organize viewers into groups

according to the manner in which they consume content, and more particularly, the value of viewing time to a viewer, and the allocation of that viewing time. A viewer may be assigned to a different Modal Segment at different points in time depending on whether he or she is determined to be seeking comfort in (typically by viewing) the most familiar content, actively engaged in identifying and potentially viewing new types of content, or a combination of the foregoing. Assignment to Modal Segments may be impacted by the time and frequency of a viewer's viewing and searching habits in connection with different types of content, including but not limited to VOD and non-VOD programming consumption, and/or electronic programming guide use in the near and long term.

[0051] The SE 130 may execute statistical algorithms in order to determine segment membership for those viewers for which the DW 120 has data, whether based on direct observation or third party reporting, and to project segment membership distribution on populations for which the DW 120 has no data based on direct observation.

[0052] To assign a person to a Content Preference Segment, the SE 130 may retrieve the definition of the Content Preference Segment, a threshold volume and share of different types of content consumed that are established through classification and clustering techniques of the type used by those of ordinary skill in the art of statistics, retrieve records of viewers' television viewing in a specified time period, analyze the nature of the content the viewers have consumed, and compare the volumes and shares of different types of content consumed to the segment definition's threshold volume and share values. When a viewer's volume and share of different types of content consumed meets the threshold volume and share prescribed by the Content Preference Segment definition, the person is assigned to

the segment.

[0053] To assign an individual to a Modal Segment, the SE 130 may retrieve the definition of the Modal Segment, threshold values for, example, duration of content consumption, duration of content consumption on a single channel, number of channels viewed, and the degree of similarity of recent content consumption in comparison to historical content consumption (*i.e.*, how close a viewer's recent viewing consumption matches that over a longer historical period). Modal Segment definition thresholds may be established through classification and clustering techniques. The SE 130 may also retrieve records of a viewer's television viewing in a specified time period, analyze how the viewers have consumed content, and compare the values representing how content is consumed to the segment definition's thresholds. When a viewer's values representing the manner in which content was consumed meet the threshold values prescribed by the segment definition, the viewer may be assigned to one or more Modal Segments.

[0054] The IM 140 may utilize computer processing capacity to interface with the DW 120 and the SE 130, to optimize the allocation of TV service provider 400 and/or TV content provider 500 promotional spot inventory with respect to increasing and preferably optimizing programming tune-in and video-on-demand activation for a set of promoted programs, and update matrices hosting the optimized promotional insertion for each spot in inventory and the data supporting that assignment of promotion to a spot where a "spot" is a pre-ordained time period for insertion of an advertisement, preferably a cross-network program promotion advertisement. For example, there may be four 30 second duration spots in a Pod (*i.e.*, commercial break) and there may be three (3) Pods per 30 minutes of programming.

[0055] The IM 140 may select the spots which will improve or optimize

programming tune-in and video-on-demand activation for the entire portfolio of available promoted programs that are in circulation at any point in time. If a spot has the same value to more than one advertisement or promotion then the selection of an advertisement or promotion to insert into the spot may be based on the following

5 criteria arranged in order of importance: time until promoted program airs or, in the case of VOD, time until the program expires (where the promotion for the program to air or expire soonest has priority); business impact (*e.g.*, the promotion for the program owned by the partner with greatest contractual obligations to improve ratings or to provide additional services in response to performance shortcoming has

10 priority); financial gain/cost to one or more of the involved parties including the operator of the TV promotion system 100, a cable operator, a cable network provider, etc.; and/or random allocation.

[0056] The UI 110 may utilize computer processing capacity to provide a presentation layer to authenticated users of the TV promotion system 100 for the

15 purposes of inserting select data into the DW 120, executing exception processes to resolve issues in the DW (*e.g.* connectivity failures in data file retrieval, data format inconsistencies with specification, and insufficient disk space allocated to files), SE 130 and IM 140 application workflows and querying SE and IM application data output. An illustration of a computer screen 1000 showing a call sign mapper utility

20 which is used to map data associated with a particular data source to potentially multiple television channels is shown in Fig. 14. In the example shown in Fig. 14, the data identified in field 1010, which is labeled "TNS/Info Sys" is mapped to multiple affiliated TNT channels identified in field 1020 in the DW 120.

[0057] The UI 110 may support administration of user accounts, including the

25 specification of user roles, and provide access to documents and interface

functionality based on credentials supplied by users. For example, in a preferred embodiment, only users with administrative access credentials may access the UI 110 functionality to create new user accounts.

[0058] The following workflow functions, illustrated by Figs. 2-10, may be carried out by the TV promotion system 100 in accordance with an embodiment of the present invention. It is understood that not all functions may be required in alternative embodiments of the invention, and that still further alternative embodiments may include additional functions.

[0059] With reference to Figs. 1-3, in step 800 of Fig. 3, both or either of a TV content provider 500 and a TV service provider 400 may identify one or more spots for management by the TV promotion system 100. In step 802, information describing available spots may be provided to the DW 120 of the TV promotion system 100 by the computer-implemented transmission of spot information 162 (Fig. 2) from the TV content provider 500 and/or the TV service provider 400 over the telecommunications network 200 via a data insertion process 160. Alternatively, spot information may be provided to the TV promotion system 100 by an operator manually entering and storing the spot information 162 in the DW 120 using the UI 110 for data insertion process 160.

[0060] Examples of the spot information 162 which may be used to describe the spots include, without limitation: spot owner, indication of national or local spot, network affiliation, channel affiliation, carrier program affiliation, date, time of day, Pod number, Pod position, geographic, expected reach, actual reach, and rules governing use information.

[0061] Actual reach information may indicate the reported number of viewers for a spot, and expected reach information may indicate the number of viewers

predicted to view a spot. Pod number and position may indicate the time in a program that a set of spots will air. For example, a Pod may constitute four 30 second long messages/promotions, and there may be three Pods spaced a number of minutes apart in a 30 minute long program. In step 804, the UI 110 may be used to set computer-implemented controls to automatically update the spot information 162 in the DW 120 and/or to initiate such updating at the selection of a user.

[0062] With reference to Figs. 1-2 and 4, in step 810 of Fig. 4, both or one of the TV content provider 500 and the TV service provider 400 may identify one or more TV programs to be promoted by the TV promotion system 100. In step 812, information describing the programs to be promoted may be provided to the DW 120 of the TV promotion system 100 by the computer-implemented transmission of promoted program information 164 (Fig. 2) from the TV content provider 500 and/or the TV service provider 400 over the telecommunications network 200 via a data insertion process 160. Alternatively, promoted program information 164 may be provided to the TV promotion system 100 by an operator manually entering and storing the promoted program information 164 in the DW 120 using the UI 110.

[0063] Examples of the promoted program information 164 that relate to promotions include, without limitation: promotion name, owner, promoted program name, program type, Appointment/VOD, duration, and promoted program air data information. Appointment/VOD may indicate the time of day at which a program airs or the time of day that a VOD program is viewed. Examples of the promoted program information 164 that relate to programs include, without limitation: program name, distribution rights holder, program air date, VOD availability start date, VOD availability end date, genre, and production details information. Promoted program information may also include business impact information and financial information,

where financial information may include information indicative of cost for delivery of a television program promotion to an audience segment and/or information indicative of revenue generated for delivery of a television program promotion to the audience segment.

5 **[0064]** In step 814, the UI 110 may be used to set computer-implemented controls to automatically update the promoted program information 164 in the DW 120 and/or to initiate such updating at the selection of a user.

[0065] With reference to Figs. 1-2 and 5, in step 820 of Fig. 5, the TV content provider 500 and/or the TV service provider 400 may make viewer profile
10 information, spot information, promoted program information, and geographic data, and/or other data available to the TV promotion system 100 via a computer-implemented data transmission over the telecommunications network 200. The viewer profile information may be provided by the TV service providers 400. The spot information and promoted program information may be provided by the TV
15 content providers 500 and advertising content providers 700. The geographic data may be obtained from third party data sources 300. In step 822, the DW 120 may automatically retrieve the viewer profile information, spot information, promoted program information, and geographic data, and/or other data via a computer-implemented and automated routine that is carried out on a periodic basis and copy
20 it to locations accessible in database tables/databases which are part of the DW for extraction, transformation and loading (ETL) process 122 (Fig. 2). In step 824, the DW 120 may execute extraction, transformation and loading processes to update the database tables/databases which are accessed by the SE 130 and/or IM 140.

[0066] With reference to Figs. 1-2 and 6, in step 830 of Fig. 6, the SE 130 may
25 check for changes to any Content Preference Segment definition stored in the DW

120 or other memory associated with the computer 125. The Content Preference Segment definitions may be defined by one or more threshold values which are automatically or manually set and which indicate the minimum values or range of values for inclusion of a viewer in a Content Preference Segment. A "segment" may
5 be defined as a group of viewers who have attribute values that meet a minimum threshold value or are within a common range of values such that the viewers are considered to be like and in the same group or segment. The referenced threshold values or range of values for a Content Preference Segment may relate to any of the categories of viewer profile information which relate to the type and/or amount of
10 television content consumed by a viewer.

[0067] In a preferred embodiment, the Content Preference Segments may be defined by threshold volumes and/or shares of consumption of one or more of: a particular genre or genres per unit of time, a particular channel or channels per unit of time, and a particular television program or programs per unit of time. The unit of
15 time used may be any that is appropriate, including, for example, a day, week, or month. For example, a viewer may be assigned to a Sports Content Preference Segment if the viewer consumes five or more hours of television programming in the Sports genre per week, or if thirty or more percent the viewer's television programming consumption per month is in the Sports genre. In another example, a
20 viewer may be assigned to a Sports Content Preference Segment if the viewer consumes five or more hours of television programming from the ESPN channel in a week.

[0068] In step 832 of Fig. 6, the SE 130 may check the DW 120 for changes to the viewer profile information that relates to the type and/or amount of television
25 content consumed by a viewer. This viewer profile information may be used to

determine whether or not the viewer still satisfies the requirements for inclusion in a Content Preference Segment (*i.e.*, whether the data values associated with the viewer meet the thresholds for the segment).

[0069] In step 834, if the SE 130 detects changes to any Content Preference Segment definition or changes in the viewer profile information, the SE may assemble a queue of Content Preference Segments to recalculate membership of the segments.

[0070] In step 836, for each Content Preference Segment in the recalculation queue, the SE 130 may retrieve the threshold volume and/or share values for different types and/or amounts of television programming content consumed by the viewers that are established through classification and clustering techniques.

[0071] In one embodiment of the present invention, specially trained resources (users) may assign values in the TV promotion system 100 to programs based on knowledge of the programs' attributes for classification of the programs. The resources may then curate a subset of programs with like value assignments and instruct the computer-implemented TV promotion system 100 to identify the set-top boxes that are observed to tune in to that subset of programs (the clustering). In another embodiment of the present invention, algorithms, such as a k-means algorithm, may be used to cluster programs based on a set of pre-defined characteristics such as hour of airing, network, cast, genre, and others. In still another embodiment of the present invention, the TV promotion system 100 may cluster programs using a logistic regression classifier in which each available STB is assigned probability of tune in to a promoted program based on whether it was tuned in to a similar program in the past. For example, the STBs with an associated probability $p > .5$ may form a "likely to tune in" cluster. Still further, it is appreciated

that the segmentation resulting from this step may utilize a different binary classifier method, for example support vector machines (SVM).

[0072] In step 838, for each Content Preference Segment in the recalculation queue, the SE 130 may retrieve the viewer profile information for a specified time period. The viewer profile information required may include, in particular, the information which identifies the nature and content of the television programs watched by the viewers such as content type of a TV program, amount and/or percentage share of time spent watching television programming of a particular content type, amount and/or percentage share of viewing time spent watching one or more television channels, and amount and/or percentage share of viewing time spent watching one or more television programs. In step 840, the SE 130 may compare the volumes and shares of different types of content consumed by the viewers (*i.e.*, the viewer profile information) with the Content Preference Segment's definitional threshold volume and share. In step 842, the SE 130 may assign each viewer to one or more Content Preference Segments based on such comparison and record the assignment in the DW 120 thereby associating the viewer with the segments. The SE may also compare the strength of a viewer's association with more than one Content Preference Segment to determine which one Content Preference Segment is most appropriate for the viewer, if limitation to one or a limited number of Content Preference Segments is desired.

[0073] With reference to Figs. 1-2 and 7, in step 850 of Fig. 7, the SE 130 may check for changes to any Modal Segment definition stored in the DW 120 or other memory associated with the computer 125. The Modal Segment definitions may be defined by one or more threshold values which are automatically or manually set and which indicate the minimum values or range of values for inclusion of a viewer in

a Modal Segment. The referenced threshold values or range of values may relate to any of the categories of viewer profile information which indicate the mode (*i.e.*, manner) of television programming consumption by a viewer.

[0074] In a preferred embodiment, the values that may be considered for Modal Segment definition may be grouped into Attention Values and Exploration Utility Values. With reference to Fig. 11, an Attention Value may be representative of the value a viewer ascribes to her viewing time. It is appreciated that the Attention Value may differ during different parts of the day, week, or month, for example. As illustrated in Fig. 11, Attention Values may fall within a range extending generally from "passive" viewers to "engaged" viewers. Passive viewers may tend to have relatively longer television, channel and genre viewing durations, and relatively fewer channel guide and DVR (including "on-demand" service) interactions. Conversely, engaged viewers may tend to have relatively shorter television, channel and genre viewing durations, and relatively more channel guide and DVR (including "on-demand" service) interactions.

[0075] The following Table 1 provides examples of Attention Values, and particular Attention Value Indices, that may be calculated in determining Modal Segments.

	INDEX	CALCULATION
Attention Value	TV View Duration	Average Daily TV Viewing Time / Daily Viewing Time on Day D
	Channel View Duration	Average Daily Time Spent Viewing Channel C / Duration Spent Viewing Channel C on Day D
	Genre View Duration	Average Daily Time Spent Viewing Genre G / Duration Spent Viewing Genre G on Day D
	Guide Interactions / Time	Average Daily Count of Guide Interactions / Count of Guide Interactions on Day D
	DVR Interactions / Time	Average Daily Count of DVR Interactions / Count of Guide Interactions on Day D

TABLE 1

5 [0076] Each of the indices identified in Table 1 may be determined for individual viewers and then combined for all viewers in a segment or geographical area.

[0077] With reference to Fig. 12, an Exploration Utility Value may be representative of the value a viewer derives from discovery of new content. It is appreciated that the Exploration Utility Values may differ during different parts of the day, week, or month, for example. As illustrated in Fig. 12, Exploration Utility Values may fall within a range extending generally from "directed selection" viewers to "open exploration" viewers. Directed selection viewers may tend to view the same (*i.e.*, more familiar) genres, channels and programs, and view a relatively fewer number of channels and genres, and have relatively shorter channel guide interactions.

15 Conversely, open exploration viewers may tend to view the different (*i.e.*, less familiar) genres, channels and programs, and view a relatively greater number of

channels and genres, and have relatively longer channel guide interactions.

[0078] The following Table 2 provides examples of Exploration Utility Values, and particular Exploration Utility Indices, that may be calculated in determining Modal Segments. Each of the indices identified in Table 2 may be determined for individual viewers and then combined for all viewers in a segment or geographical area.

	INDEX	CALCULATION
Exploration Utility	Genre Familiarity	Probability of Viewing Genre G on Day D based on historical allocation of share of attention to Genre G
	Program Familiarity	Probability of Viewing Program P on Day D based on historical allocation of share of attention to Program P
	Channels Viewed	Average Daily Number of Channels Viewed / Number of Channels Viewed on Day D
	Genres Viewed	Average Daily Number of Genres Viewed / Number of Genres Viewed on Day D
	Guide Interaction Duration	Average Daily Time spent with Guide / Time with Guide on Day D

Table 2

[0079] With renewed reference to Fig. 7, the definition of a Modal Segment may be revised as a result of periodic "segment maintenance." The segment definitions may be reconsidered in light of one or more of the Attention Value and Exploration Utility Value indices. In particular, the TV View Duration index from the Attention Value Indices, and the Channels Viewed and Genres Viewed indices may be evaluated in order to determine if changes should be made to the definition of a segment. Additionally, the following indices listed in Table 3 may be considered in determining whether to make changes to the segment definitions. The indices in Table 3 may be determined for entire segments of viewers.

	INDEX	CALCULATION
Segment Maintenance	Share of Attention	Segment Time Viewing Genre / Segment Time Viewing TV
	Amount of Attention	Segment Time Viewing Genre
	Genre Share	(Segment Time Viewing Genre / Segment Time Viewing TV) / (Total Population Time Viewing Genre / Total Population Time Viewing TV)

Table 3

5 **[0080]** Fig. 13 illustrates four example Modal Segments that viewers may be placed into based on computer implemented comparisons of a combination of Attention Values and Exploration Utility Values for viewers with threshold values. The combination of one or more Attention Value indices and one or more Exploration Utility Value indices may cause a viewer to be assigned to one of the

10 four Modal Segments 950, 952, 954 or 956. It is appreciated that more or less than four Modal Segments may make up the full range of available Modal Segments in which a viewer may be assigned and that a viewer may be assigned to more than one Modal Segment for a particular time of the day, week, month, etc.

[0081] With renewed reference to Figs 1, 2 and 7, in step 852 of Fig. 7, the SE

15 130 may check the DW 120 for changes to viewer profile information that relate to the mode of television programming consumption by a viewer. Changes to the viewer profile information may be used to determine whether or not the viewer still satisfies the requirements for inclusion in a Modal Segment (*i.e.*, whether the data values associated with the viewer meet the thresholds for the segment).

20 **[0082]** In step 854, if the SE 130 detects changes to any Modal Segment definition or changes in the viewer profile information relating to the mode of

television programming consumption, the SE may assemble a queue of Modal Segments to recalculate membership of the segments.

[0083] In step 856, for each Modal Segment in the recalculation queue, the SE 130 may retrieve the threshold volume and/or share values for different modes of television programming consumed by the viewers that are established through classification and clustering techniques.

[0084] In step 858, for each Modal Segment in the recalculation queue, the SE 130 may retrieve the viewer profile information relating to the mode of television programming consumption for a specified time period. The viewer profile information required may include, in particular, the information which indicates a mode of television consumption, such as shown in the charts above and illustrated in Figs. 11 and 12. In step 860, the SE 130 may compare the volumes and shares of different modes of consuming content by the viewers (*i.e.*, the viewer profile information) with the Modal Segment's definitional threshold volume. In step 862, the SE 130 may assign each viewer to one or more Modal Segments based on such comparison and record the assignment in the DW 120 thereby associating the viewer with the segments.

[0085] With reference to Figs. 1-2 and 8, in step 870 of Fig. 8, the SE 130 may check for changes to any Content Preference or Modal Segment population (*i.e.*, membership). In step 872, the SE 130 may check for changes to geographic data stored in the DW 120 since it was last used. In step 874, the SE 130 may check for changes to models enabling projection of segment composition for geographic areas not explicitly represented in the viewer profile information. In an embodiment of the present invention, multivariate regression models may be used to project segment composition on geographical regions for which the TV promotion system 100 has not

gathered the necessary STB data for determination of Content Preference and/or Modal segments.

[0086] In step 876, if the SE 130 detects changes to any Content Preference or Modal Segment population, changes to geographic data, or changes to the models used to project segment compositions onto geographic areas for which less than sufficient viewer profile information is available, the SE 130 may enter geographic data from geographic areas for which sufficient and insufficient viewer profile information is available into the current models to predict segment composition in the geographic areas for which insufficient viewer profile information is available as a function of common geographic attributes. In step 878, the SE 130 may gather the output of the predicted segment composition calculations and enter the estimated segment size and compositions for the geographic areas for which insufficient viewer profile information is available to determine segment compositions. In a preferred embodiment, a viewer may be a member of only one of each of the segmentation schemes (*i.e.*, a member of a Content Preference Segment and a member of a Modal Segment, which are distinct segmentation schemes). It is appreciated, however, that a person can be a member of different Content Preference Segments, for example, if such segments are in different domains. It is also appreciated that a viewer may be a member of different Modal Segments for different times of the day, week or month, for example.

[0087] With reference to Figs. 1-2 and 9, in step 880 of Fig. 9, the IM 140 may retrieve forecasting models from the DW 120 and use the forecasting models to estimate the size and composition with respect to content preference and modal segmentation of viewer audiences that will be exposed to the spots (as opposed to a geographic region as in step 878).

[0088] In step 882, the IM 140 may use forecasting models to estimate the propensity of a segment of viewers exposed to spots to tune-in or activate as VOD one or more TV programs to be promoted. A value may be determined representing the propensity of each viewer segment to tune-in and/or activate as VOD each of the TV programs to be promoted. The forecasting model, and the value determined from it, may be based in part on one or more of the viewer profile information, spot information, and promoted program information. Historical viewer profile information also may be utilized for such forecasting.

[0089] In step 884, the IM 140 may enter each of the values determined in the preceding step into a matrix where each value in the matrix represents the expected incremental audience to tune-in to or activate as VOD every TV program to be promoted conditioned on allocating other spots to other programs to be promoted. The resulting matrix may include all possible permutations or combinations of spots and promotions. The forecasting models may result in the determination of and storage of data such as is shown chart 1100 shown in Fig. 15 as part of the matrix that is generated. The chart 110 may include database information that associates the title, time and channel for a program with its target reach, number of viewers, percentage of viewers, index score and future schedule for cross-network promotion of a particular program.

[0090] In step 886, the IM 140 may determine all permutations of spot-promotion combinations for the matrix until all potentially desirable spot-promotion combinations are determined. The IM 140 may then store the incremental number of viewers which are predicted to tune-in to or activate as VOD each TV program to be promoted for each permutation. The incremental number of viewers may be the number of extra viewers predicted to be attracted to view a program utilizing the spot

optimization process versus not using it.

[0091] In step 888, the predicted incremental number of viewers from the previous step may be used by the IM 140 to rank the spot and promotion combinations. A preferred combination may be one that is predicted to increase and preferably optimize the incremental number of viewers that will tune-in to or activate as VOD each of the programs to be promoted. The ranking may be used by the IM 140 to calculate the value of spots and update the value of spots under management by the TV promotion system 100 for each program to be promoted. The data used to determine the ranking may be input to the TV promotion system 100 using a graphic interface 1200 such as shown in Fig. 16. The graphic interface 1200 may include a field 1210 for selecting data for input, such as that shown in Fig. 15, for use in the ranking determination, including data to be input into a "Title-Time (Channel)" field 1220, a program schedule date and temporal proximity field 1230, a "future schedule" field 1240, and a "find programs" button 1250.

[0092] In step 890, the IM 140 may cause the UI 110 to create a computer-implemented display through video and/or print a report detailing all spots available for each program to be promoted, spots and their value for each program to be promoted grouped by carrier network, carrier program, and promoting TV service provider and/or TV content provider. The displayed report may indicated the optimal time and channel for delivery of television advertising content, namely the promotion for a program to be promoted. Alternatively, the IM may interface directly with a TV service provider and/or TV content provider to automatically implement spot-promotion assignments for inclusion in future television programming which represent the optimal time and channel for delivery of the television advertising content (*i.e.*, promotion). The reports referenced may be visually perceptible to a

user of the UI.

[0093] In step 892, the TV promotion system 100 may transmit the reports to the TV content provider and/or TV service provider. The TV content provider and/or TV service provider may be provided with approval authority to implement providing the promotions in the determined optimal spot. Preferably, the TV promotion system 100 may be used to determine optimal cross-network promotion channels and times for promoting one or more TV programs.

[0094] With reference to Fig. 10, the TV promotion system 100 may also generate lift reporting so that users, cable operators and cable networks, for example, may evaluate the effectiveness of the TV promotion system. With reference to Fig. 10, in step 900 the viewer profile information made available from the TCP and TSP, as well as spot information, promoted program information and optimal spot-promotion assignment information for past spots may be made available to the system. The system 100 may access such information in response to one or more triggers, such as when the current date is after the promoted program air date, data has been received describing when, on which channels, and/or in which geographic regions promotions for the program aired. A distinction may be made in this data as between data associated with promotions scheduled by the TV promotion system 100 and those scheduled by alternative means. In an alternative embodiment, the trigger may be receipt of data describing the programming and programming schedules for all channels and in all geographic regions where the promotions aired. In still another alternative embodiment, the trigger may be receipt of data describing the STB tune-in to channels in the time period in which the promotions and the promoted program aired.

[0095] In steps 902 and 904, the data that triggers lift reporting may be moved to

processing locations designed to manage the data and manipulate the data into forms that are useful for reporting.

[0096] In steps 906 and 908, similar to steps 842 and 862, the SE may calculate Content Preference and Modal Segment populations. Using these projected
5 segment populations, in step 910 the SE may calculate the proportion of promoted program viewers in each Content Preference Segment and each Modal Segment across geographic regions and/or nationally.

[0097] In steps 912 and 914, the UI may access the information determined by the SE in the preceding steps and publish it in one or more reports, both internally
10 and externally.

[0098] It will be apparent to those skilled in the art that variations and modifications of the present invention can be made without departing from the scope or spirit of the invention.

WHAT IS CLAIMED IS:

1. A computer implemented method of determining an optimal time and channel for delivery of television advertising content based on viewer profile information, comprising the steps of:

- 5 collecting viewer profile information for a viewer;
 storing the viewer profile information in a computer memory;
 storing a definition of one or more modal segments of viewers in terms of one or more viewer profile information thresholds in the computer memory;
 assigning the viewer to one or more modal segments based on a computer
10 implemented comparison of the one or more viewer profile information thresholds with the collected viewer profile information;
 determining with said computer an optimal time and channel for delivery of television advertising content based on viewer assignment to the one or more modal segments and the collected viewer profile information; and
15 providing a computer implemented display indicative of the determined optimal time and channel for delivery of the television advertising content.

2. The method of Claim 1 wherein the step of assigning the viewer to one or more modal segments is based on determination of an attention value for the
20 viewer.

3. The method of Claim 2 wherein the attention value is based on one or more indices selected from the group consisting of: a TV View Duration index, a Channel View Duration index, a Genre View Duration index, a Guide Interactions per Time
25 index, and a DVR Interactions per Time index.

4. The method of Claim 2 wherein the attention value is based on a TV View Duration index, a Channel View Duration index, a Genre View Duration index, a Guide Interactions per Time index, and a DVR Interactions per Time index.

5

5. The method of Claim 2 wherein the step of assigning the viewer to one or more modal segments is further based on determination of an exploration utility value for the viewer.

10 6. The method of Claim 5 wherein the exploration utility value is based on one or more indices selected from the group consisting of: a Genre Familiarity index, a Program Familiarity index, a Channels Viewed index, a Genres Viewed index, and a Guide Interaction Duration index.

15 7. The method of Claim 5 wherein the exploration utility value is based on a Genre Familiarity index, a Program Familiarity index, a Channels Viewed index, a Genres Viewed index, and a Guide Interaction Duration index.

20 8. The method of Claim 3 wherein the step of assigning the viewer to one or more modal segments is further based on determination of an exploration utility value for the viewer.

25 9. The method of Claim 8 wherein the exploration utility value is based on one or more indices selected from the group consisting of: a Genre Familiarity index, a

Program Familiarity index, a Channels Viewed index, a Genres Viewed index, and a Guide Interaction Duration index.

10. The method of Claim 8 wherein the exploration utility value is based on a
5 Genre Familiarity index, a Program Familiarity index, a Channels Viewed index, a Genres Viewed index, and a Guide Interaction Duration index.

11. The method of Claim 4 wherein the step of assigning the viewer to one or
10 more modal segments is further based on determination of an exploration utility value for the viewer.

12. The method of Claim 11 wherein the exploration utility value is based on one
or more indices selected from the group consisting of: a Genre Familiarity index, a
Program Familiarity index, a Channels Viewed index, a Genres Viewed index, and a
15 Guide Interaction Duration index.

13. The method of Claim 11 wherein the exploration utility value is based on a
Genre Familiarity index, a Program Familiarity index, a Channels Viewed index, a
Genres Viewed index, and a Guide Interaction Duration index.

20

14. The method of Claim 1 wherein the step of collecting viewer profile
information comprises collecting viewer attribute data selected from the group
consisting of: income, employment, race, ethnicity, age, gender, marital status,
parental status, children in household, number of people in household, number of
25 televisions, and television subscription data.

15. The method of Claim 1 wherein the step of determining an optimal time and channel for delivery of television advertising content is further based on geographic data, wherein said geographic data comprises data selected from the group

5 consisting of: climate, population density, ethnic population quantity, ethnic population distribution, race population quantity, race population distribution, income distribution, age distribution, gender quantity, gender distribution, and marital status distribution data.

10 16. The method of Claim 1 wherein the computer memory comprises a computer database.

17. The method of Claim 1 wherein the step of determining an optimal time and channel for delivery of television advertising content is further based on promoted
15 program information.

18. The method of Claim 17 wherein the promoted program information includes information selected from the group consisting of: promotion name, owner, promoted program name, program type, Appointment/VOD, duration, promoted program air
20 dates, distribution rights holder, VOD availability start date, VOD availability end date, genre, and production details information.

19. The method of Claim 17 wherein the promoted program information includes promoted program name and promoted program air dates information.

25

20. The method of Claim 17 wherein the promoted program information includes promoted program name, VOD availability start date and VOD availability end date information.

5 21. The method of Claim 17 wherein the step of determining an optimal time and channel for delivery of television advertising content is further based on spot information.

10 22. The method of Claim 21 wherein the spot information includes information selected from the group consisting of: spot owner, indication of national or local spot, network affiliation, channel affiliation, carrier program affiliation, date, time of day, Pod number, Pod position, geographic, expected reach, actual reach, and rules governing use information.

15 23. The method of Claim 1 wherein the step of determining an optimal time and channel for delivery of television advertising content is further based on spot information.

20 24. The method of Claim 23 wherein the spot information includes information selected from the group consisting of: spot owner, indication of national or local spot, network affiliation, channel affiliation, carrier program affiliation, date, time of day, Pod number, Pod position, geographic, expected reach, actual reach, and rules governing use information.

25. The method of Claim 23 wherein the spot information includes network affiliation, channel affiliation, carrier program affiliation, date, time of day, Pod number and Pod position information.

5 26. The method of Claim 1, wherein the step of assigning the viewer to one or more modal segments comprises the step of:

assigning the viewer to a first modal segment and to a second modal segment.

10 27. The method of Claim 1, further comprising the step of assigning the viewer to a content preference segment,

wherein the step of determining with said computer an optimal time and channel for delivery of television advertising content is further based on viewer assignment to the content preference segment.

15

28. The method of Claim 1 further comprising the steps of:

receiving spot information for a plurality of television spots; and

receiving promoted program information for a plurality of television program promotions,

20

wherein the step of determining the optimal time and channel for delivery of the television advertising content is further based on the spot information and the promoted program information, and comprises determining the optimal one of each of said plurality of television spots for delivery of each one of said plurality of television program promotions.

25

29. The method of Claim 28, wherein said promoted program information comprises content type information.

30. The method of Claim 28, wherein said promoted program information
5 comprises program duration information.

31. The method of Claim 28, wherein said promoted program information comprises time until a promoted program airs information.

10 32. The method of Claim 28, wherein said promoted program information comprises time until a promoted program offering expires information.

33. The method of Claim 28, wherein said information describing a plurality of television program promotions comprises business impact information.

15

34. The method of Claim 28, wherein said promoted program information comprises financial information.

35. The method of Claim 34, wherein said financial information comprises
20 information indicative of cost for delivery of one of said plurality of television program promotions to the audience segment.

36. The method of Claim 34, wherein said financial information comprises
information indicative of revenue generated for delivery of one of said plurality of
25 television program promotions to the audience segment.

37. The method of Claim 28, wherein the spot information comprises available time and channel information.

5 38. The method of Claim 37, wherein the spot information further comprises content type information for television programs associated with the plurality of television spots.

39. The method of Claim 28, further comprising the step of:
10 receiving ratings information for television programs associated with the plurality of television spots,
wherein the step of determining the optimal time and channel for delivery of television advertising content is based in part on the ratings information.

15

40. The method of Claim 28 wherein the spot information comprises information selected from the group consisting of: owner, national/local, network, channel, carrier program, date, POD, POD position, geographical, expected reach, actual reach, and rules governing use information.

20

41. The method of Claim 40 wherein the promoted program information comprises information selected from the group consisting of: promotion name, owner, promoted program name, program type, VOD availability, VOD availability start date, VOD availability end date, duration, promoted program starting air date,

promoted program ending air date, promoted program distribution rights holder, genre, and production details information.

42. The method of Claim 1, further comprising the steps of:

5 determining the number of viewers assigned to the one or more modal segments in a geographic area;

determining geographic data relating to the viewers in the one or more modal segments in the geographic area; and

10 estimating with the computer a number of viewers to be associated with the one or more modal segments outside of the geographic area based on the number of viewers assigned to the one or more modal segments in the geographic area and the geographic data,

15 wherein the step of determining an optimal time and channel for delivery of television advertising content is further based on the estimating of the number of viewers to be associated with the one or more modal segments outside of the geographic area.

43. The method of Claim 42, wherein the step of determining with said computer the optimal time and channel for delivery of television advertising content is based
20 on a computer implemented estimate of the propensity of viewers in the one or more modal segments exposed to the television advertising content to undertake an activity promoted by the television advertising content.

44. The method of Claim 43, wherein the activity is watching a television program.

25

45. The method of claim 44, wherein the television program is a video-on-demand program.

46. The method of Claim 43, wherein the computer implemented estimate of the propensity of viewers in the one or more modal segments to undertake an activity is based on the viewer profile information.

47. The method of Claim 43, wherein the step of determining with said computer the optimal time and channel for delivery of television advertising content is based on a computer implemented estimate of the number of additional viewers in the one or more modal segments that will undertake the activity promoted by the television advertising content.

48. The method of Claim 47, wherein the step of determining with said computer the optimal time and channel for delivery of television advertising content is further based on ranking a plurality of computer implemented estimates of the number of additional viewers, said ranking indicating the relative value of delivering the television advertising content at a particular time on a particular channel.

49. The method of Claim 47, further comprising the step of re-ranking the computer implemented estimate of the number of additional viewers in response to an input received by said computer from a cable operator or a cable network provider.

50. The method of Claim 1 wherein said television advertising content is a cross-network promotion.

51. The method of Claim 15 wherein said television advertising content is a
5 cross-network promotion.

52. The method of Claim 28 wherein said television advertising content is a cross-network promotion.

53. The method of Claim 42 wherein said television advertising content is a
10 cross-network promotion.

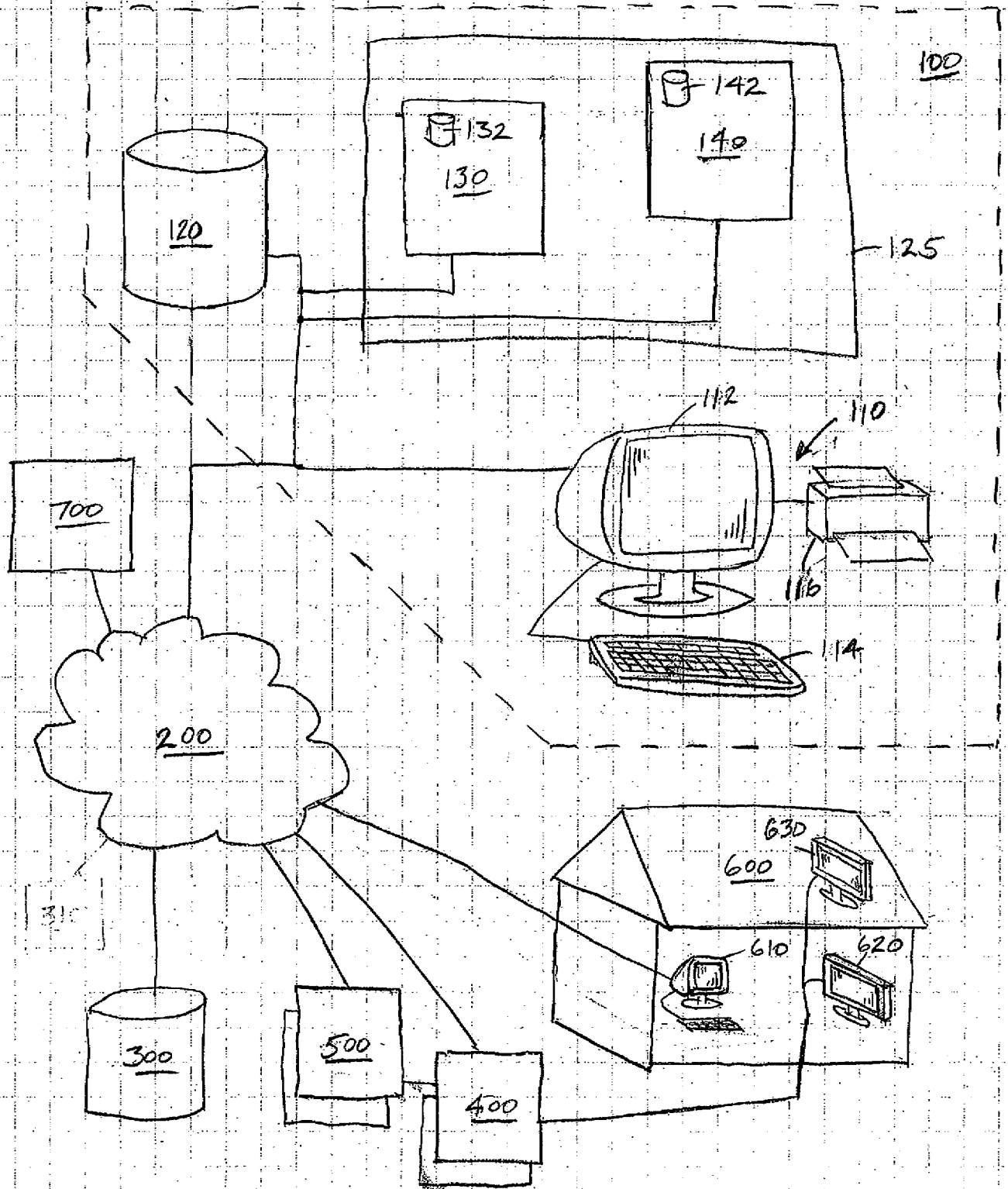
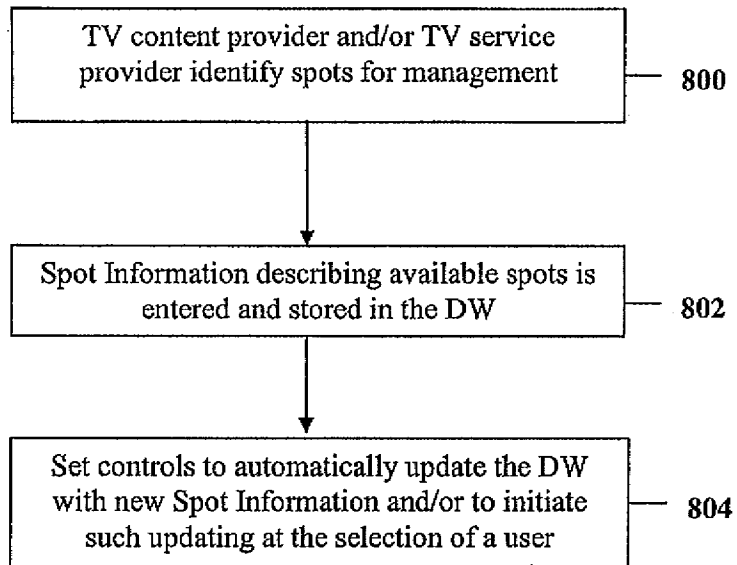
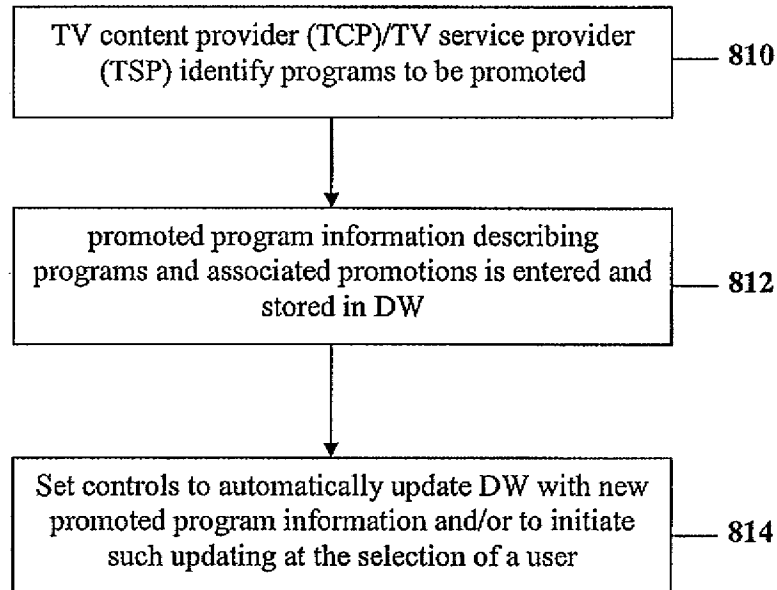


FIG. 1

Acquisition of Spot Information Fig. 3

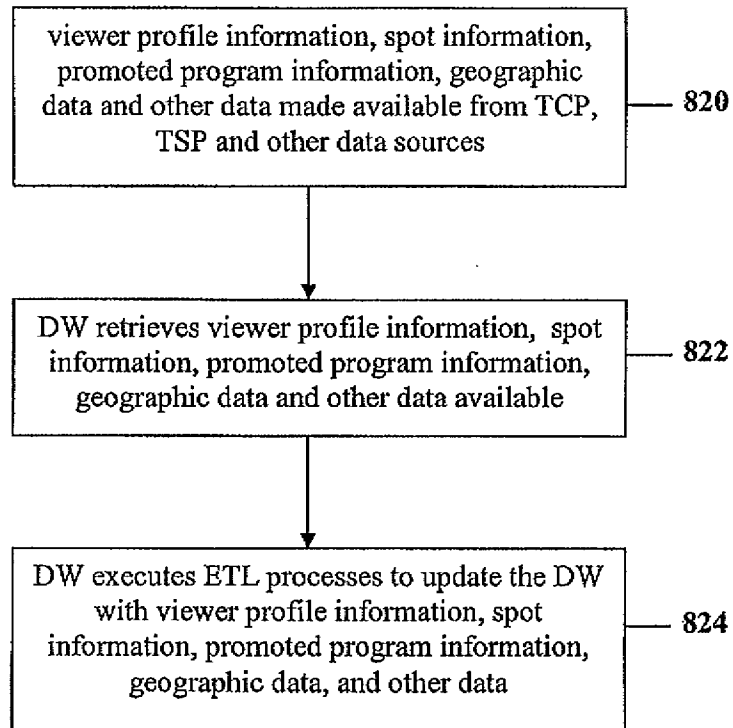


Acquisition of Programs to be Promoted Information Fig. 4

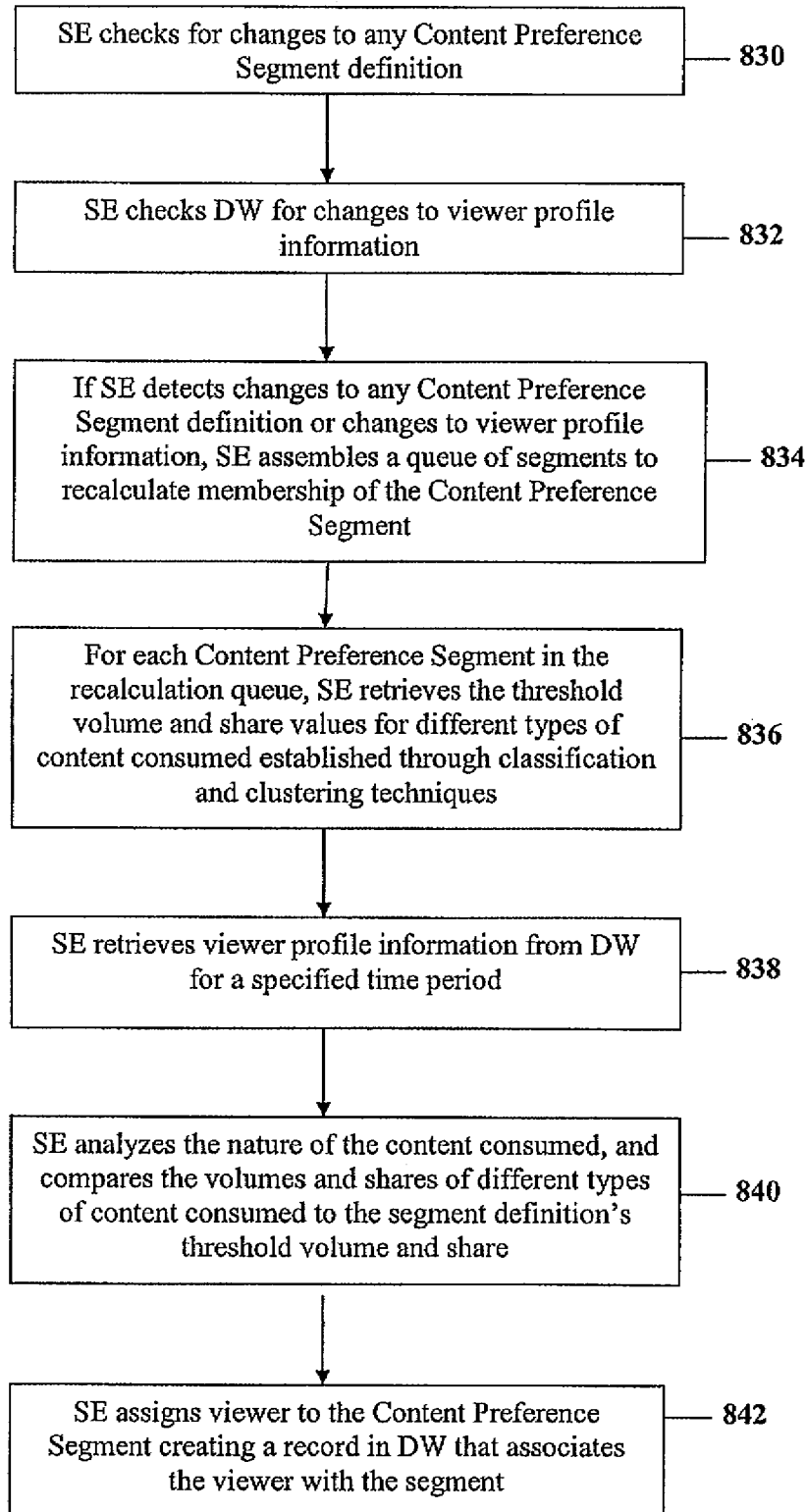


Processing Data

Fig. 5

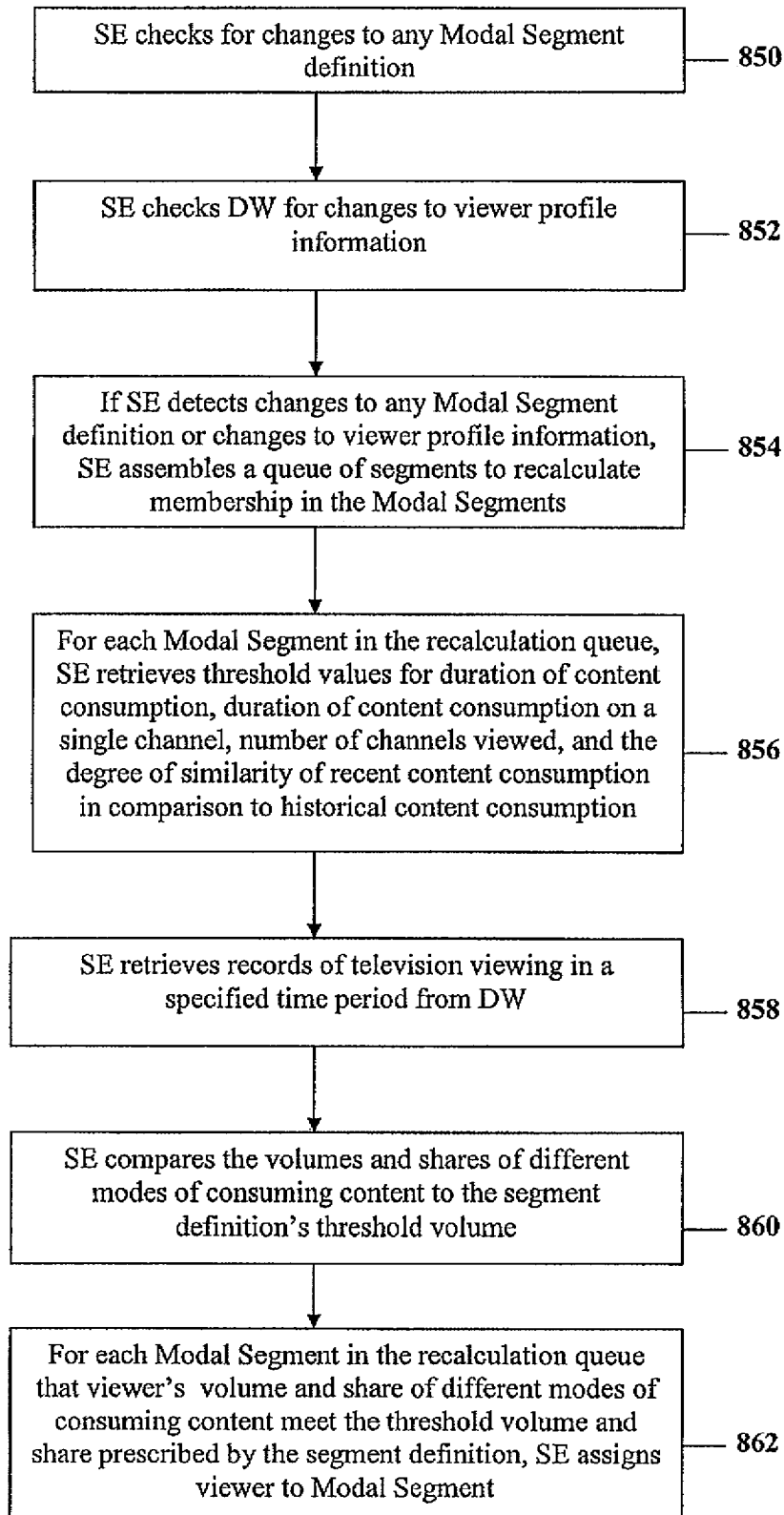


Content Preference Segment Calculation Fig. 6

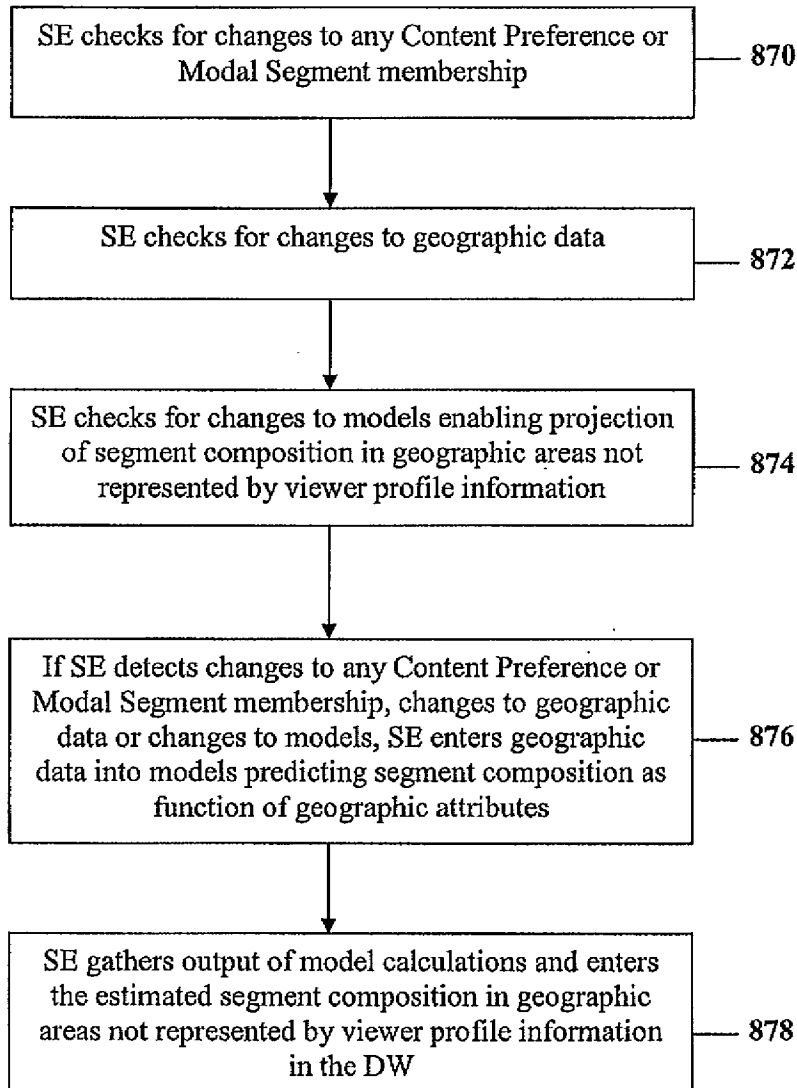


Modal Segment Calculation

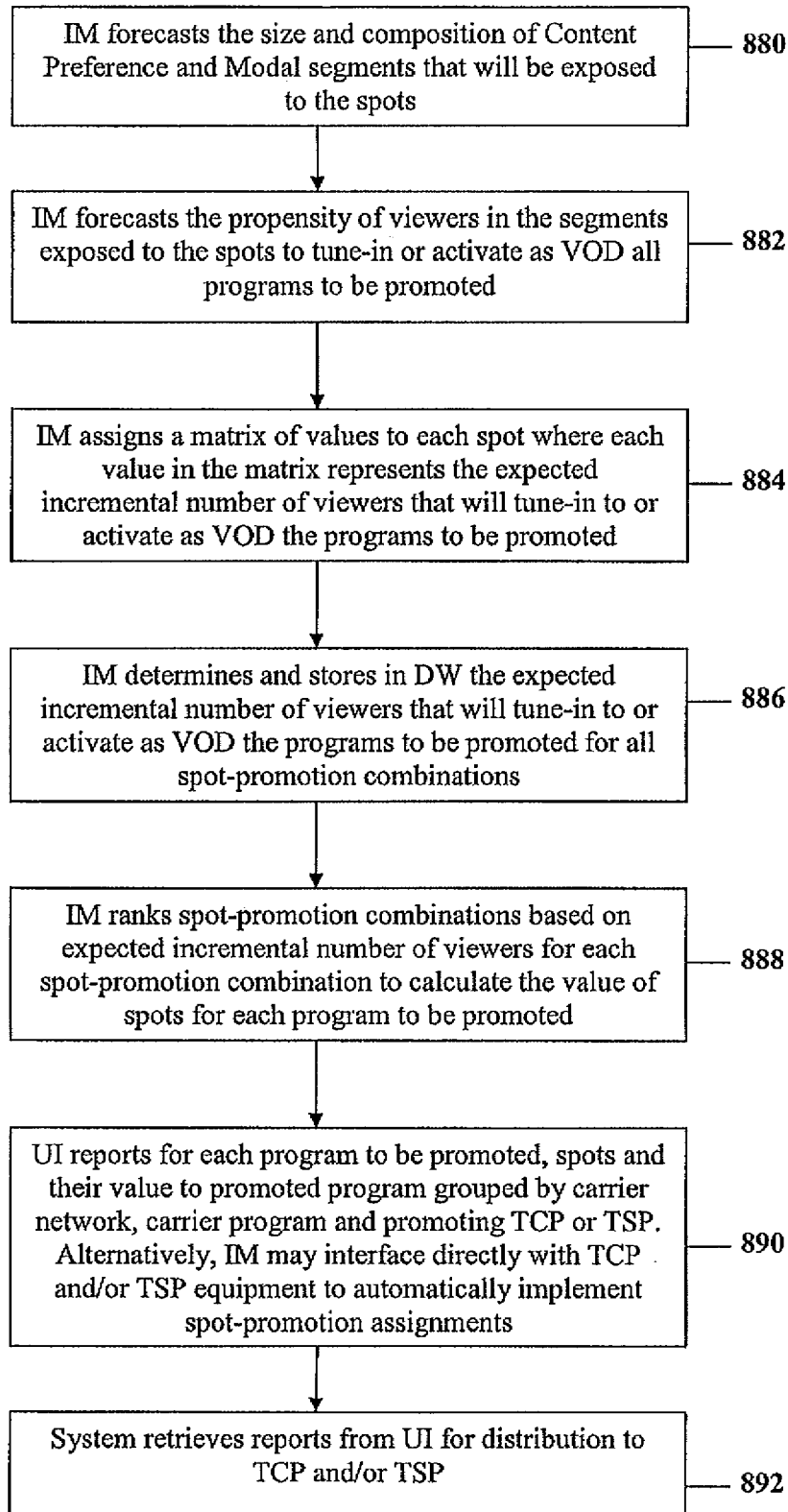
Fig. 7



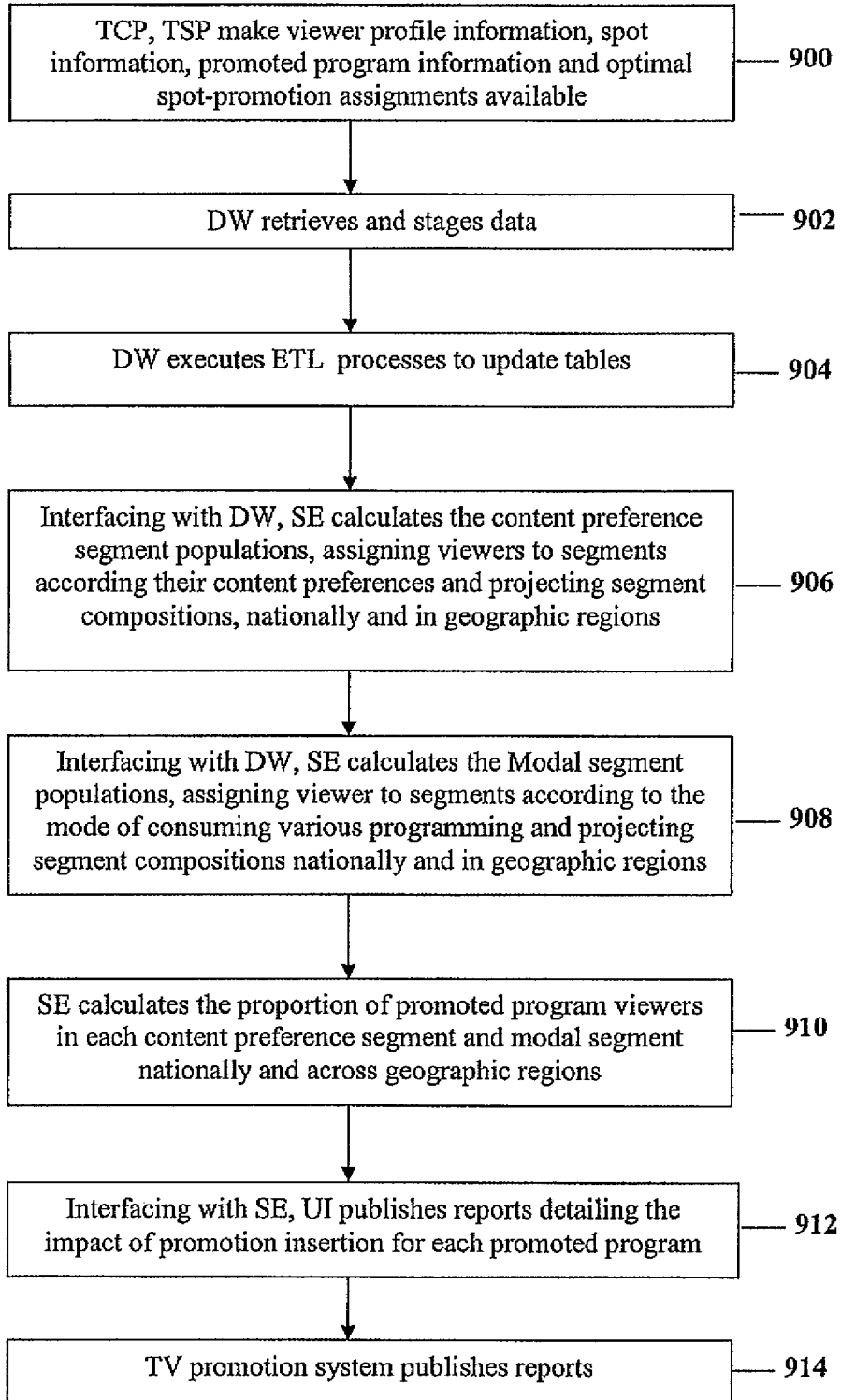
Segment Population Projection Fig. 8



Spot Optimization Fig. 9



**Lift Reporting
Fig. 10**



Attention Value

Attention Value is the price a viewer ascribes to their time. A fluid measure, viewers ascribe different values at different times

Relatively Low Relatively High



Passive

“Sit back” mode

- Longer TV View Duration
- Longer Channel Viewing Duration
- Longer Genre Viewing Duration
- Fewer Channel Guide Interactions
- Fewer DVR Interactions

Engaged

“Lean forward” mode

- Shorter TV View Duration
- Shorter Channel Viewing Duration
- Shorter Genre Viewing Duration
- More Channel Guide Interactions
- More DVR Interactions

FIG. 11

Exploration Utility

Exploration Utility is the value a viewer derives from discovery of new content.

Relatively High



Relatively Low

Directed Selection

Nesting mode

More Familiar Genres Viewed
More Familiar Programs Viewed
Relatively Fewer Channels Viewed
Relatively Fewer Genres Viewed
Shorter Guide Interactions

Open Exploration

Discovery mode

Less Familiar Genres Viewed
Less Familiar Programs Viewed
Relatively More Channels Viewed
Relatively More Genres Viewed
Longer Guide Interactions

FIG. 12

Modal Segmentation

When Attention Value and Exploration Utility are considered jointly, viewers move among four Modal Segments

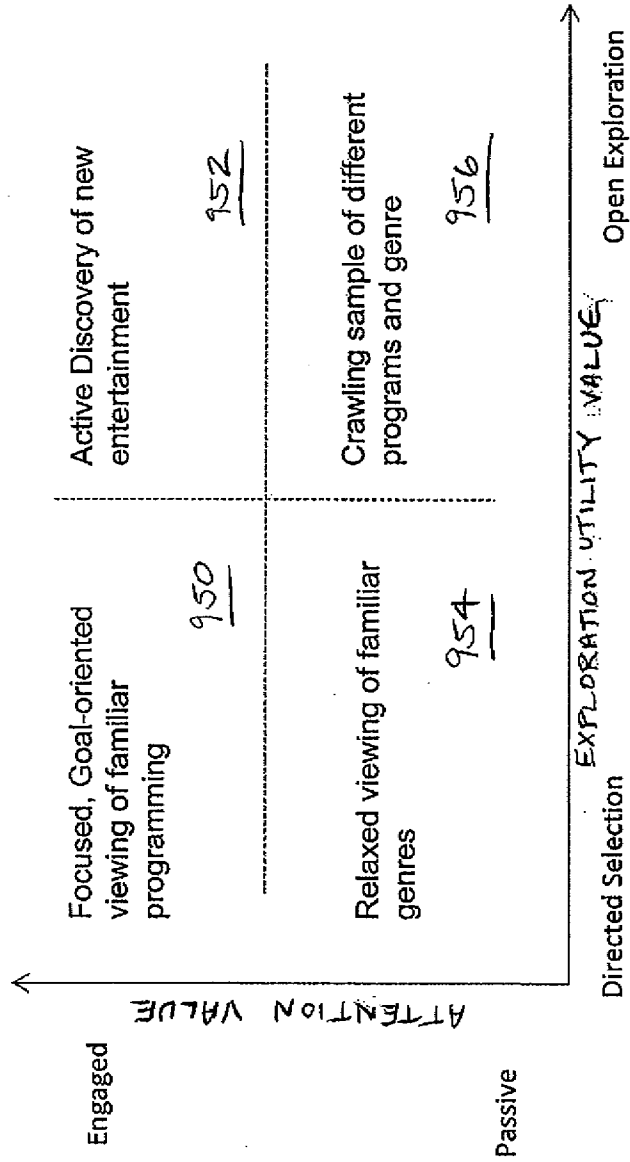


FIG. 13

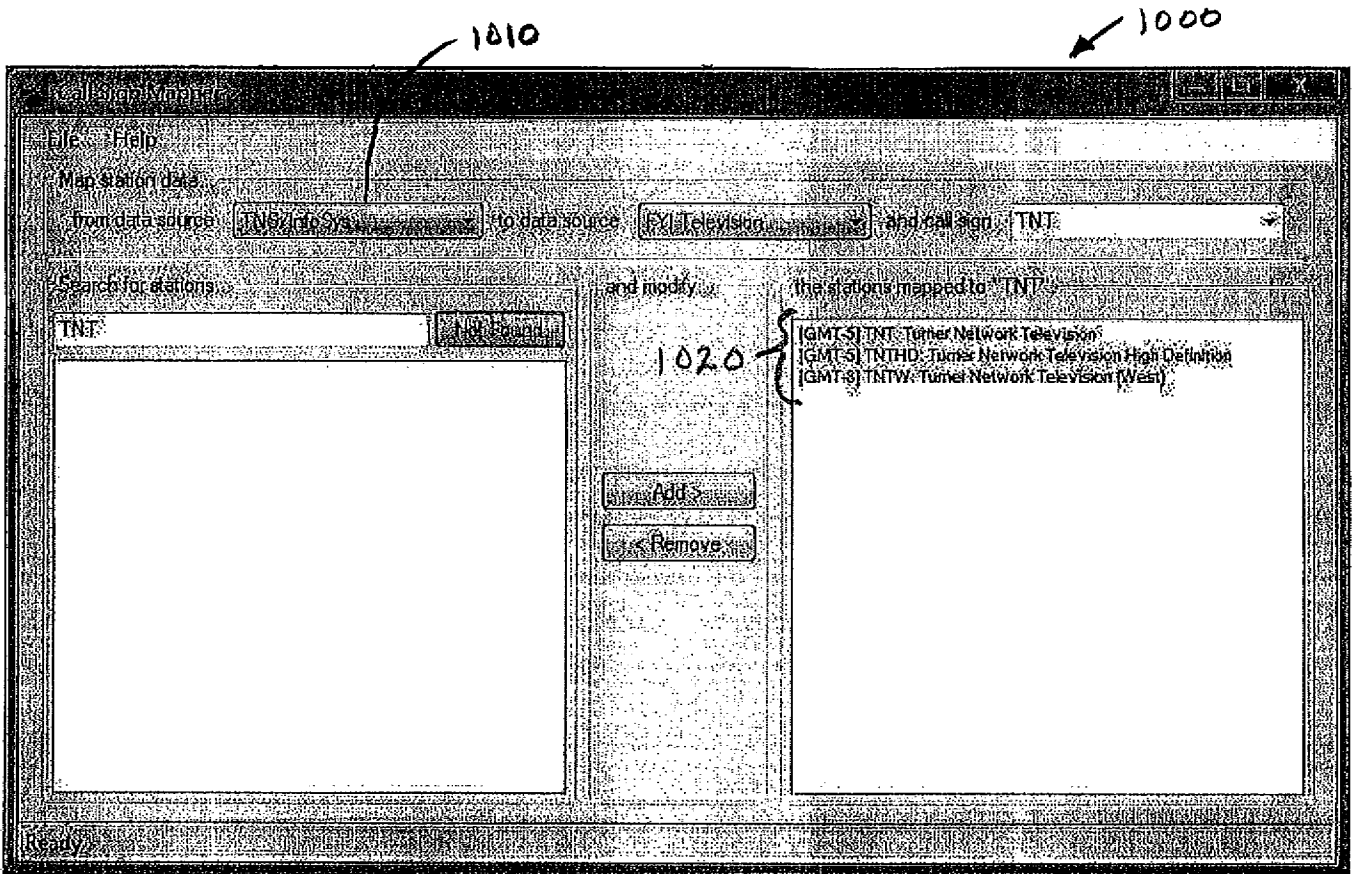


FIG. 14

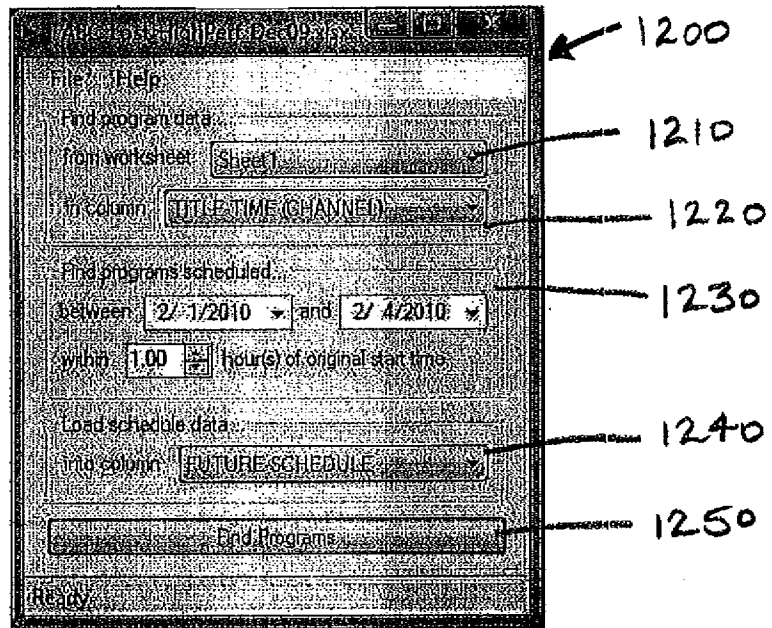


FIG. 16

1100

TITLE-TIME (CHANNEL)	TARGET REACH	ALL VIEWERS	% VIEWERS	INDEX	FUTURE SCHEDULE
Star Trek: Enterprise-04:00 PM (SYFY)	22,578	57,989	39.64%	392	Mon, Feb 01 at 3:00PM, 4:00PM, 5:00PM
Stargate Atlantis-05:00 PM (SYFY)	21,084	55,493	38.81%	384	Wed, Feb 03 at 5:00PM (CF 50%)
Scrubs-08:30 PM (COMEDY)	13,534	35,142	38.53%	383	Tue, Feb 02 at 8:00PM, 8:30PM
The Office-09:30 PM (TBS)	26,463	66,920	39.55%	382	Tue, Feb 02 at 8:30PM, 9:00PM, 9:30PM, 10:00PM, 10:30PM Tue, Feb 02 at 7:00PM; Wed, Feb 03 at 7:00PM; Thu, Feb 04 at 7:00PM
The Daily Show With Jon Stewart-07:00 PM (COMEDY)	12,961	35,327	38.03%	377	Mon, Feb 01 at 3:00PM (CF 50%), 3:30PM (CF 50%); Tue, Feb 02 at 3:00PM (CF 50%), 3:30PM (CF 50%); Wed, Feb 03 at 3:00PM (CF 50%), 3:30PM (CF 50%); Thu, Feb 04 at 3:00PM (CF 50%), 3:30PM (CF 50%)
Big Cat Diary-02:30 PM (APL)	10,964	28,604	38.36%	369	No showings within specified window
My Name Is Earl-07:30 PM (TBS)	29,878	80,071	37.34%	363	Mon, Feb 01 at 2:30PM; Tue, Feb 02 at 2:30PM, 3:00PM; Wed, Feb 03 at 2:30PM; Thu, Feb 04 at 2:30PM, 3:00PM
Malcolm in the Middle-03:30 PM (FX)	11,954	31,593	37.91%	358	
Cash Cab-05:00 PM (DISCOVERY)	10,399	28,776	36.14%	351	Mon, Feb 01 at 5:00PM (CF 50%), 5:30PM (CF 50%), 6:00PM (CF 50%); Tue, Feb 02 at 5:00PM (CF 50%), 5:30PM (CF 50%), 6:00PM (CF 50%); Wed, Feb 03 at 5:00PM (CF 50%), 5:30PM (CF 50%), 6:00PM (CF 50%); Thu, Feb 04 at 5:00PM (CF 50%), 5:30PM (CF 50%), 6:00PM (CF 50%)
Naked Science-10:00 AM (NGC)	10,709	29,962	35.97%	349	Thu, Feb 04 at 9:00AM, 10:00AM
South Park-09:30 PM (COMEDY)	26,862	73,912	36.11%	348	Mon, Feb 01 at 10:30PM; Tue, Feb 02 at 9:00PM, 9:30PM, 10:00PM, 10:30PM; Wed, Feb 03 at 10:00PM; Thu, Feb 04 at 9:00PM, 9:30PM
The Conquerors-03:00 PM (HISTINTL)	11,086	29,962	37.00%	347	No showings within specified window
Antiques Roadshow-03:00 PM (BBCA)	10,691	29,443	36.37%	344	Mon, Feb 01 at 2:00PM (CF 50%), 3:00PM (CF 50%), 4:00PM (CF 50%); Tue, Feb 02 at 2:00PM (CF 50%), 3:00PM (CF 50%), 4:00PM (CF 50%); Wed, Feb 03 at 2:00PM (CF 50%), 3:00PM (CF 50%), 4:00PM (CF 50%); Thu, Feb 04 at 2:00PM (CF 50%), 3:00PM (CF 50%), 4:00PM (CF 50%)
Dirty Jobs-09:00 PM (DISCOVERY)	58,597	162,343	35.28%	341	Tue, Feb 02 at 8:00PM (CF 50%), 9:00PM (CF 50%)
Pawn Stars-10:00 PM (HISTORY)	46,957	133,035	34.68%	336	Mon, Feb 01 at 10:00PM, 10:30PM; Thu, Feb 04 at 10:00PM, 10:30PM
Ask This Old House-07:30 PM (DIY)	11,851	34,311	34.52%	333	Mon, Feb 01 at 7:30PM; Tue, Feb 02 at 7:30PM; Wed, Feb 03 at 7:30PM; Thu, Feb 04 at 7:30PM
Sci Fi Science-10:30 PM (SCIENCE)	10,619	31,051	34.41%	331	No showings within specified window
Deadliest Catch-11:00 AM (DISCOVERY)	17,643	51,190	35.00%	331	No showings within specified window
Biography-12:00 PM (BIO)	10,542	31,655	33.30%	331	No showings within specified window
Animal Planet's Most Outrageous-03:00 PM (APL)	12,230	36,819	33.33%	324	Unidentified program
NASCAR Racing-12:00 PM (SPEED)	10,313	30,424	33.90%	320	Tue, Feb 02 at 12:30PM (CF 50%); Wed, Feb 03 at 12:00PM (CF 50%); Thu, Feb 04 at 12:00PM (CF 50%)

FIG. 15

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2010/025790

<p>A. CLASSIFICATION OF SUBJECT MATTER IPC(8) - G06F 3/00 (2010.01) USPC - 725/46 According to International Patent Classification (IPC) or to both national classification and IPC</p>																				
<p>B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC(8) - G06F 3/00; H04N 5/445 (2010.01) USPC - 725/44-47</p> <p>Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched</p> <p>Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) MicroPatent, Google.com, Google Patents</p>																				
<p>C. DOCUMENTS CONSIDERED TO BE RELEVANT</p> <table border="1"> <thead> <tr> <th>Category*</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>X</td> <td>US 6,738,978 B1 (HENDRICKS et al) 18 May 2004 (18.05.2004) entire document</td> <td>1-41, 50-52</td> </tr> <tr> <td>Y</td> <td></td> <td>42-49, 53</td> </tr> <tr> <td>Y</td> <td>US 7,370,342 B2 (ISMAIL et al) 06 May 2008 (06.05.2008) entire document</td> <td>42-49, 53</td> </tr> <tr> <td>A</td> <td>US 2003/0101451 A1 (BENTOLILA et al) 29 May 2003 (29.05.2003) entire document</td> <td>1-53</td> </tr> <tr> <td>A</td> <td>US 2008/0235722 A1 (BAUGHER et al) 25 September 2008 (25.09.2008) entire document</td> <td>1-53</td> </tr> </tbody> </table>			Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	X	US 6,738,978 B1 (HENDRICKS et al) 18 May 2004 (18.05.2004) entire document	1-41, 50-52	Y		42-49, 53	Y	US 7,370,342 B2 (ISMAIL et al) 06 May 2008 (06.05.2008) entire document	42-49, 53	A	US 2003/0101451 A1 (BENTOLILA et al) 29 May 2003 (29.05.2003) entire document	1-53	A	US 2008/0235722 A1 (BAUGHER et al) 25 September 2008 (25.09.2008) entire document	1-53
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<p>Date of the actual completion of the international search 14 April 2010</p>		<p>Date of mailing of the international search report 29 APR 2010</p>																		
<p>Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201</p>		<p>Authorized officer: Blaine R. Copenheaver</p> <p>PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774</p>																		