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(54) Title: METHOD AND APPARATUS FOR SOCIAL NETWORK MARKETING WITH CONSUMER REFERRAL

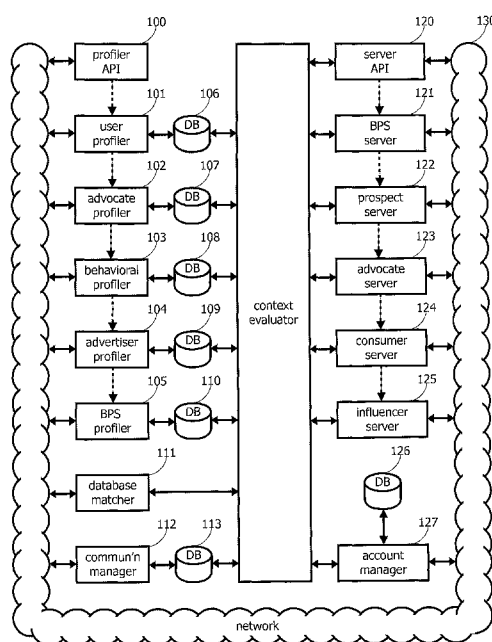


Fig. 1

(57) Abstract: A service provider facilitates consumption of goods, brands, or services on an interactive network using characterizations of consumers, behavior, brands, consumable goods, advertisers, and advocates to determine a three-way match between a consumable good, a consumer, and an advocate. The matching method determines one or more likely consumers by maximizing the estimated contextual value of personalized advocacy. Further, the service provider captures the value of the personalized advocacy in each match, and distributes that value in the form of various marketing incentives.

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METHOD AND APPARATUS FOR SOCIAL NETWORK MARKETING WITH CONSUMER REFERRAL

TECHNICAL FIELD

The present disclosure relates generally to an online marketing system with personalized advocacy for branded consumables.

5 BACKGROUND

The Internet has become a marketplace for goods and services offering wide selection at low prices. Despite these advantages, some consumers prefer the personalized experience of in-person sales and retain loyalty to so-called “brick and mortar” stores. Retailers, service providers, and advertisers seek improved means of marketing goods over the Internet.

10 Research has shown that some consumers prefer, and are more likely to be influenced by, marketing efforts provided by access to persons familiar with the marketed goods, brands, or services. In a brick and mortar store, consumers prefer retailers who provide individualized service, trustworthy knowledge, superior support, and easy access to quality goods. Some consumers prefer the social experience of personal interaction. Consumers are also heavily
15 influenced by the consumption preferences of their social peers.

Perhaps the most powerful kind of advertising is so-called “word-of-mouth” advertising. In typical word-of-mouth advertising, a potential consumer is influenced by a product advocate socially connected to the consumer. The advocacy is a valuable service to the product supplier or advertiser. At this time, there is no simple way to assess the value of this advocacy and no
20 infrastructure to support product advocacy, provide consumer-advocate-brand matching services, and provide advocacy incentives. Further, at this time no means exist for the consumable advertiser or supplier to compensate the network operator for facilitating communications between consumers and consumption advocates.

SUMMARY

A service provider facilitates consumption of goods, brands, or services on an interactive network by characterizing consumers, consumption behavior, brands, consumables, advertisers, and advocates to determine a three-way match between a consumable good, a consumer, and an advocate. The matching method inputs two out of three parties to the match, a consumable good and an advocate, and determines one or more likely consumers by maximizing the estimated contextual value of personalized advocacy. Further, the service provider captures the value of the personalized advocacy in each match, and distributes that value in the form of various marketing incentives.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a block diagram of an example backbone apparatus.

Fig. 2 shows a typical consumer-to-advocate funnel.

Fig. 3 shows a three-way match.

Fig. 4 shows an example matching value estimator.

Fig. 5 shows an example flowchart for a matching method.

Fig. 6 shows an example valuation unit.

Fig. 7 is a block diagram of an example computer server system.

Fig. 8 is the first half of an alternate embodiment of an adaptive value estimator.

Fig. 9 is the second half of the alternate embodiment.

DETAILED DESCRIPTION

A possible use of the present invention is to computationally capture, support and monetize word-of-mouth advertising, providing sponsors a way to utilize personalized advocates to deliver authentic marketing messages to prospective consumers. In particular, this invention

focuses on a system to manage and locate product consumers in personalized marketing campaigns on interactive networks.

Network users typically operate a physical device, such as a telephone, a text messenger, a cell phone, a smart phone, a personal digital assistant, a networked music/video player, a personal computer, or a public terminal, to access marketing information on the Internet, utilizing a number of application programs to consume network content. The Internet consumer is typically able to access a plethora of information available online. The digital information consumer perceives information conveyed over the network through various forms of media objects, including text, icons, voice, avatars, audio recordings, pictures, animations, videos, interactive widgets, and other audiovisual information.

The source code for a media object or a web page may contain metadata and one or more instances of script languages. ECMAScript is a script programming language, standardized by ECMA International of Geneva, Switzerland, in the ECMA-262 specification. JavaScript and Jscript are the most common implementations of the EMCA Script standard. "JavaScript" is a registered trademark of Sun Microsystems, Inc. of Santa Clara, CA; technology is further developed and implemented under license by the Mozilla Foundation of Mountain View, CA. "JScript" is an ECMAScript implementation from Microsoft Corporation of Redmond, WA. JavaScript and Jscript are often used for client-side interactive web applications.

When a consumer accesses a web page, script functions can interact with the Document Object Model (DOM) of the web page to perform one or more tasks. Scripts may also be used to make service requests to remote servers after a page has loaded. These requests can obtain new information or data, as well as load or launch additional applications, e.g., media object players, content viewers, application plug-ins, or software codes. Script code can merge with the DOM of the underlying page so that one or more additional media objects are displayed or otherwise rendered on the page. Alternatively, the script code may initiate one or more additional pages or other rendering for the additional media object(s). When script code is embedded into an HTML document and subsequently accessed by a client application, the client application may retrieve and execute the script. The script may initiate service requests to one or more remote servers to retrieve and render one or more media objects that enhance the underlying content of the page,

optionally using parameter values assigned in the embedded code. For example, the script, when executed, may access stored locally stored user preferences or user attributes stored in relation to the use of browser “cookies” and contain one or more user attributes in a dynamically generated service request.

5 The invention described herein is a backbone marketing system to support enhanced consumer access to marketing information, preferably provided by social peers of the consumer. The following embodiments and aspects thereof are described and illustrated in conjunction with systems, apparatuses and methods meant to be exemplary and illustrative, not limiting in scope.

10 The following description sets forth numerous details to provide a thorough understanding of various aspects of the present invention. It will be apparent to those skilled in the art, however, that the present invention may be practiced without these specific details. In other instances, algorithms for processing data and symbolic representations of algorithmic operations are the means used by those skilled in the art to most effectively convey the substance of their work to others skilled in the art. An algorithm, as used herein, is a sequence of operations
15 leading to a desired result, said operations requiring physical manipulations of physical quantities. Usually, though not necessarily, these quantities take the form of a sequence of electrical signals representing binary numbers to be stored, transferred, combined, compared, and otherwise manipulated.

20 The present invention also relates to apparatus for performing the operations herein. This apparatus may be specially constructed for the required purposes, or it may comprise one or more general-purpose computers selectively activated by one or more computer programs to achieve the required results. Such a computer program may be stored in any suitable computer-readable storage medium. A computer-readable storage medium includes any mechanism for storing or transmitting information in a form that is usable by a machine, such as a general-
25 purpose computer.

 The algorithms and displays presented herein are not inherently related to any particular computer or other apparatus. Various general-purpose systems may be used in accordance with the teachings herein, and it may prove expedient to construct more specialized apparatus to perform the algorithm operations. The required structure for a variety of these systems may

appear from the description below. In addition, the present invention is not described with reference to any particular programming language. Those skilled in the art will appreciate that a variety of programming languages may be used to implement the teachings of the invention as described herein.

5 The specification sets the framework by first describing a block diagram of a *PeopleMatch* backbone system, which operates to identify best matches between a consumer, a branded consumable, and an advocate. Second, examples of matching algorithms employed are described. In each match, various prospective consumers are considered and their marketing value is estimated in a context dependent manner to determine best matches. Various example
10 marketing and matching contexts are described. Third, a set of one or more best prospects is utilized in a marketing campaign, where the actual value of advocacy is determined and distributed. A portion of the distributed value provides various marketing incentives to expand the *PeopleMatch* marketing system. Fourth, an alternative embodiment demonstrates an adaptive matching algorithm based on primitive attributes.

15 A. System Backbone Apparatus

Fig. 1 is a block diagram of an example backbone system. Various profiling functions are performed by elements 101-105, including a user profiler 101, an advocate profiler 102, a behavioral profiler 103, an advertiser/publisher profiler 104, and a consumable brand, product, or service (BPS) profiler 105. The various profilers may be accessed directly through service
20 requests over network 130, or may be accessed indirectly through a profiler Application Programming Interface (API) 100. The profiler API 100 may be used to modify or access the functionality of any of the profilers 101-105. A possible use of the system is to provide network servers for matching services. Various matching functions are performed by host servers 121-125, which include a BPS server 121, a prospect server 122, an advocate server 123, a consumer
25 server 124, and an influencer server 125. A server API 120 may be used to access or modify the functionality of any of the third party servers 121-125.

A1. User Profiling

In the system, it is convenient to think of the typical user as a potential consumer of a brand, product, service, or other consumable, but as described further below, a user may also qualify as an advocate or as an expert, as discussed further below. Although the system may be used anonymously, in a preferred embodiment a user has a profile of various explicitly defined or implicitly derived attributes, including one or more attributes related to social interaction and consuming habits. In one embodiment, the user registers and optionally completes an explicit user profile at registration. In another embodiment, user profiles are obtained from an external service provider. In an alternate or further embodiment, user attributes are supplied in a backbone service request, such as by passing a user cookie as described above. In an alternate or additional embodiment, user attributes are learned through online activity. Attributes of users learned in network use are further tracked in user profiler 101, stored in a database of user profiles 106, and in one embodiment, adaptively modified as described further below.

A user profile in database 106 includes user attributes and one or more ratings related to a user's social preferences, such as user demographic groups, social connections, and relative ratings associated with the various attributes. In one embodiment, an attribute rating is on a scale from negative one to positive one, with a positive one denoting that the rating holder is perfectly aligned with the attribute, and a negative one denoting that the rating holder is perfectly misaligned with the attribute. To illustrate, an example attribute may be "male buying habits." A user who completely fit the pattern associated with the attribute would have an associated rating of positive one, while a user who completely fit the opposite pattern ("female buying habits") would have a "male buying habit" rating of negative one. Users who displayed a mix of male and female buying habits would be rated somewhere between negative and positive one.

A user profile may also include one or more rated attributes of consumption interest in a brand, product, or service (BPS), rated attributes of existing relationship(s) with a BPS and rated knowledge about a BPS. A user profile may also include one or more means of communicating with the user, and, with more than one means, a relative priority of means of communication. In one embodiment, the user profile is partitioned into social, temporal, spatial, and semantic ratings. In one embodiment, a user profile contains one or more personalized user consumption

ratings. In a preferred embodiment, each user is assigned a unique identifier to be associated with access to the various user attributes in database 106.

A2. Group Profiling

In a further embodiment, one or more groups of users with one or more common attributes may be formed. A user's attributes may include the identification of the user's groups and, for each such group, a rating of the user's alignment with the group. For example, two user groups might be "males" and "females". Further, two or more user groups may be hierarchically organized in a progression from personal association to local group association to global association. To illustrate, a user may be geographically classified in various groups, including a city group, a county group, a state group, a country group, a continent group, and the entire group of users. In one embodiment, the user has an associated rating for the one or more geographic groups. The ratings may be further characterized as personal ratings, local ratings, or global ratings. For example, a user may be a citizen of Oakland in the state of California in the United States. A user rating may be decomposed into the global view of users who are United States citizens, modified by the more localized view of users who are Californians, further influenced by the local view of users who are citizens of Oakland, and refined by the personal alignment of the user. In one embodiment, the averaged statistical response of each group in various contexts is tabulated and stored as a rating in the user database 106, and one or more ratings associated with a group are determined adaptively as described further below. For example, the consumption habits of the group of users in a "male group" may be statistically analyzed to determine average group consumption habits.

A3. Advocate Profiling

In the system, advocates are a pre-qualified and monitored subset of users. As used herein, advocates may be further classified into two or more categories. The advocate categories include non-monetary incentive advocates and monetary incentive experts. Further, some advocates are further qualified as experts. As mentioned above, a user may optionally choose to participate and may be further qualified as an advocate for a BPS by the marketing system. In one embodiment, general BPS advocates are motivated with non-monetary incentives related to the value of their advocacy. In a further embodiment, a user may optionally choose to participate

and may be further qualified as an expert advocate for a BPS. In one embodiment, expert BPS advocates are further motivated with monetary incentives related to the value of their advocacy.

In a preferred embodiment, an advocate has a profile of various explicitly defined or implicitly derived attributes, including one or more attributes related to social interaction and advocacy skills. Attributes of advocates learned in use of the network or system are further tracked in advocate profiler 102, stored in a database of advocate profiles 107, and, in one embodiment, adaptively modified as described below. In a preferred embodiment, each advocate is assigned a unique identifier used to access the advocate attributes in database 107.

In a further embodiment, feedback from consumer actions, external product suppliers, advertisers and/or other marketers is also adaptively used to modify advocate profiles. An advocate profile may also include one or more personal attributes, such as advocate demographics, advocate social connections, a set of user groups for the advocate, and relative alignment and popularity ratings associated with different demographic groups. An advocate profile may also include one or more rated attributes of an existing relationship or connection to a brand, product, or service (BPS) and one or more rated attributes related to knowledge about a BPS. In one embodiment, the advocate database 107 includes one or more attributes indicating means of communicating with the advocate and/or one or more communication availability status indicators.

In one embodiment, an advocate profile contains one or more types of advocate marketing scores. In a further embodiment, advocates are sub-divided into a number of advocate classification types. For example, a user who purchases a product may be qualified as a product-consumer advocate, while a user who meets a higher product supplier's criterion may be qualified as a brand advocate. A set of advocate classification types may also include one or more categories of experts. Experts may be further classified as paid experts, incentive experts, or self-motivated experts. A paid expert may be, for example, a manufacturer's representative. An incentive expert is motivated to act to realize certain non-monetary incentives, as described further below. A self-motivated expert does not receive tangible incentives, but may receive intangible incentives such as an improved advocacy rating. Each type of advocate may have its

own standard of qualification and means of updating advocate ratings applied by advocate profiler 102.

A3. Brand Profiling

A database of consumable goods 110 is determined and updated by BPS profiler 105. A consumable good is typically a product, brand, or service, but could be anything that can be marketed, including a reference to further marketing materials, such as a manufacturer's website. The system characterizes and stores one or more attributes of a consumable BPS, such as a characterization of a BPS's typical buying cycle, a BPS's competing products, demographics of the average BPS consumer, BPS marketing goals, and so on.

10 A4. Behavioral Profiling

An example buying cycle for a hypothetical product is depicted as a funnel in Fig. 2. A favorable buying cycle for this product may contain various identifiable phases, typically progressing from the general to the specific. In this example, the number of phases from first inquiry to sale is illustrated as four, but this is for illustration purposes only and not by way of limitation. The actual number of identifiable phases may be smaller or larger for a particular consumable good. Further, one or more of the identified phases may be further subdivided or combined with another identified phase. In this example, the consumer is acquiring information about available products in a generalized market survey 200, narrowing to acquisition of marketing materials for a few competing products 201, comparison-shopping to focus on one or more specific branded products 202, and purchasing in a product sale 203. A consumer may further opt-in to become a product advocate 204, and finally, to become a product expert 205. As mentioned above, the categories of advocate and/or expert may be further subdivided and characterized. For example, a consumer who favors a purchased product may qualify as a "product-using advocate", while a consumer who also displays knowledge about competing products may qualify as a "product-comparison advocate".

The behavioral profiler may be considered as combining known members of the set of {who, what, where, how, when} related to a potential consumption to assess consumer interests, the probability of consumption and, in the case of a purchase, the location in a buying timeline.

In a typical evaluation, a known user is a prospect *who* would consume, influenced by socially related persons *who* would advocate consumption. A product, brand, or service is *what* the consumer would prospectively consume, as well as marketing messages for the BPS. The best advocate, marketing message, or product depends in part on *where* the consumer is, both in terms of physical location of the user or request, as well as in terms of network location, such as the current web page, domain, network, or service provider, and includes device specifics such as display device, communication device, and so on. The behavioral profiler 103 estimates *how* the purchase is to be made, as well as *how* best to approach the consumer. The behavioral profiler 103 also analyzes browsing requests to estimate *when* the purchase is to be made in an estimated user-modified product-buying cycle. By monitoring various browsing and other online activities of the user in behavioral profiler 103 and adaptively modifying behavioral database 108, future consumption habits of the consumer may be predicted, particularly as the consumer approaches a major purchase. Results from the behavioral profiler 103 are stored in database 108.

At each phase of the typical funneling behavior, the breadth of consumer inquiries is diminished, the consumer shifts focus from the more general to the more specific, and fewer consumers qualify for progression in the cycle, narrowing to a smaller stream. Note that the typical buying cycle for a long-term asset, such as an automobile, is very different than the buying cycle for a short-term convenience like an automatic can opener. In one embodiment, the behavioral profiler accounts for these differences by dividing BPSs into categories, and characterizes the various phases of the buying cycle in each category and marketing context.

A5. Product, Brand, or Service Specific Profiling

The BPS profiler 105 inputs or learns characterizations of the different buying phases for each general and specific type of a BPS, and stores characterization of various buying cycles indexed by BPS identifier in database 110. In one embodiment, similar products are grouped together in categories, such as example category "auto insurance." Alternatively, a characterization of product buying cycles for various products or categories is obtained from a third party. Further, an individual consumer may have individualized buying habits, stored in database 106, that differ from the typical buying cycle. Consumer actions are monitored and assessed in comparison with various consumption phase patterns to predict the location in a

buying cycle in behavioral profiler 103. In one embodiment, the behavioral profiler 103 further modifies the purchasing timeframe estimation using the output of the BPS profiler 105 and the user profiler 101 to combine the consumer's personalized buying habits stored in 106, a BPS's typical buying cycle stored in 110, and detected consumer actions stored in 108 to refine the prediction of the consumer's purchasing intentions and timeframe.

A6. Advertiser and Publisher Profiling

Advertisers or marketers ultimately seek to identify consumers heading toward a purchase, and to steer the consumer to an advertised product. However, the interim marketing goals of an advertiser can vary considerably, and different advertisers with differing marketing materials and methods are willing to pay differing rates for realization of differing goals. One or more attributes of an advertiser and advertising campaign are determined in advertiser profiler 104 and stored in database 109. In one embodiment, a measure of the fulfillment of each marketing goal is also stored in database 109. In one embodiment, marketing messages are also stored in database 109. Alternatively, a measure of the fulfillment of each marketing goal may be determined or maintained in account manager 127 or obtained from advertisers, suppliers, or external accounting service providers, and stored in database 126. In one embodiment, advertiser profiler 104 may also determine one or more relative priorities of advertisers to be stored in advertiser profile database 109. In one embodiment, an advertiser profile also contains one or more ratings of current network conditions, such as monetization goals, content obligations, network traffic conditions or trends, and a desired user experience.

Attributes of publishers may also affect the selection of appropriate consumers, products, advocates, experts, and marketing materials. Typically, an advertiser targets certain publications, and attributes of potential publishers may be stored in advertiser profile database 109. Alternatively, a publisher profiler (not shown) characterizes and updates attributes of publishers stored in a publisher database (not shown). A publisher database may contain one or more attributes related to publisher obligations, fulfillment of publisher goals, publisher marketing materials, publisher network conditions, qualified publisher advocates and experts, and so on.

A7. Database Matching

In various embodiments, a search is performed to determine a set of best three-way matches made between a BPS, a consumer, and an advocate. The best matches are determined by searching one or more databases to determine profiles with favorably weighted attributes. In one
5 embodiment, database matcher 111 receives a service request including one or more weighting functions and an identification of one or more databases to search from context evaluator 114. In response, database matcher 111 determines and provides identification of the best matches.

A8. Communication Manager

In various embodiments, direct “one-click” communication between a consumer and an
10 advocate often results in the most successful three-way marketing match. In an example embodiment, a representation of an advocate is displayed in proximity to a marketing message on a web page. By using a computer’s pointing device, such as a computer mouse, an interested consumer is able to move a screen cursor to position it over the representation of the advocate. In one embodiment, the representation of the advocate is instrumented to provide that a single click
15 of the mouse button initiates communication between the consumer and the advocate as facilitated by communication manager 112. In a further embodiment, communication manager 112 accesses the database of user profilers 106 and the database of advocate profiles 107 to determine a default or preferred means of communication suitable to both parties. In a typical implementation, a default means of communication is by Voice over Internet Protocol (VoIP),
20 but communication may be established through any convenient means, including one or more of communication by instant messaging, text instant messaging, audio-visual instant messaging, direct phone dialing, the Short Message Service (SMS) protocol, or e-mail communication. In a preferred embodiment, the communications manager allows each party to retain communication anonymity if desired. Communications activity and consumption activity completed through
25 such communications are logged in database 113.

A9. Account Manager

The system is designed to facilitate marketing and consumption of products. Account manager 127 tracks matching and marketing activity and associated consumption activity, and

stores logs of the activities in database 126. In one embodiment, the account manager further determines the enhanced value of marketing with supplied advocacy as described further below. In a further embodiment, the account manager updates client accounts, bills various system customers, maintains various account receivables, and determines distribution of a revenue stream. In one embodiment, a portion of the receivables stream is dedicated to providing various marketing incentives, including payments for experts and non-monetary incentives for advocates, as described further below.

A10. Server API

As indicated above, the marketing system provides one or more three-way matches between a consumer, a brand, product, or service (BPS), and an advocate. In a typical use of the system, two of the three parties to a three-way match are provided, and a marketing system server provides the identification of one or more third parties. In one embodiment, the third party may be obtained through the server Application Programming Interface (API) 120. The server API 100 may be used to access or modify the functionality of any of the third party servers 121-125, including one or more of the BPS server 121, the prospect server 122, the advocate server 123, the consumer server 124, and the influencer server 125.

A11. BPS Server

The BPS server is used to search for and access one or more attributes of a consumable good, such as a marketed brand, product, or service (BPS). In a typical use of the BPS server 121, the identification of a pair of users is provided in a service request, and the BPS server 121 responds with the identification of one or more brands, products, or services likely to benefit from marketing with personalized advocacy. As mentioned above, a consumer may be qualified as an advocate or further qualified as an expert with regard to a specific BPS. In order to make a successful match, at least one of the users must be qualified as a BPS advocate or expert.

When each user is qualified to act as an advocate for one or more products, the question arises as to which user should be regarded as the advocate and which should be regarded as the consumer. In one embodiment, a service request to the BPS server includes an identification of the user to be regarded as the advocate, and a search is performed among all brands, products,

and services qualified for advocacy by said user to find the BPS likely to provide the greatest marketing benefit with regard to the other consuming user. In an alternate or augmented embodiment, each user is regarded as a potential advocate, and a search is performed among all qualified brands, products, and services for either user as advocate to find the BPS likely to provide the greatest marketing benefit to the other consuming user. In the alternate embodiment, a service request response identifies the BPS and the user to be considered the advocate.

With each prospective match of a consumer, advocate, and BPS, an estimate of the match value is determined using the context evaluator 114, the database matcher 111, and the various databases 106-110, 113, and 126, as discussed further below. The match values associated with various matches are sorted, and one or more matches with the highest match values are considered the best.

A12. Advocate Server

The advocate server is used to search for and access one or more attributes of a marketing advocate. In a typical use of the advocate server 123, the identification of a consumer and a BPS is provided in a service request, and the advocate server 123 responds by providing the identification of one or more advocates likely to successfully promote consumption of the BPS. With each prospective match of a consumer, advocate, and BPS, an estimate of the match value is determined using the context evaluator 114, the database matcher 111, and the various databases 106-110, 113, and 126, as discussed further below. The match values associated with various matches are sorted, and one or more matches with the highest match values are considered the best.

A13. Consumer Server

The consumer server is used to search for and access one or more attributes of consumers. In a typical use of the consumer server 124, the identification of an advocate and a BPS is provided in a service request, and the consumer server 124 responds by providing the identification of one or more consumers likely to be motivated by personalized advocacy of the BPS. With each prospective match of a consumer, advocate, and BPS, an estimate of the match value is determined using the context evaluator 114, the database matcher 111, and the various

databases 106-110, 113, and 126, as discussed further below. The match values associated with various matches are sorted, and one or more matches with the highest match values are considered the best.

A14. Prospect Server

5 In a typical use of the prospect server 124, the identification of an advocate and a BPS is provided in a service request, and the prospect server 124 responds by providing the identification of one or more users likely to be motivated to consider consumption of the BPS. With each match of a prospect, advocate, and BPS, an estimate of the match value is determined. The match values associated with various matches are sorted, and one or more matches with the
10 highest match values are considered the best.

A15. Influencer Server

 In a typical use of the influencer server 125, the identification of a BPS is provided in a service request, and the influencer server 125 responds by providing the identification of one or more groups of users likely to be motivated to consider consumption of the BPS, and for each
15 group, one or more advocates likely to influence the group. With each prospective match of a group, advocate, and BPS, an estimate of the match value is determined. The match values associated with various matches are sorted, and one or more matches with the highest match values are considered the best.

 In the context of a computer network terminology, a server is sometimes referred to as a
20 virtual server. A virtual server is physically one or more server systems connected to the network and support circuitry to execute application programs for processing data. Data may be stored by means which facilitate efficient processing, such as by storing the data in a “database” consisting of a collection of data organized by relationships between the various forms of data contained therein. When a virtual server consists of more than one computer server system, the set of
25 computer server systems is interconnected hierarchically to perform high-level functions as combined functions of several servers under central control.

 Functionally, a virtual server executes a sequence of low-level CPU commands to complete instructions for processing data. A virtual server typically accepts instructions and

executes commands for a multitude of “clients”. The instructions may include, but are not limited to, instructions to store or retrieve data, to modify, verify or erase data, or to reorganize data. A virtual server may also initiate instructions for other network-attached devices. For example, a virtual “music server” might maintain a database to locate a library of musical
5 compositions. The music server might receive commands to store new songs or retrieve old ones from a number of clients. Further, the music server might send commands to other devices on the network, e.g., to disseminate the musical database among various subservient servers, such as a “jazz server,” a “hip-hop server,” a “classical server,” and so on, to register paying user requests in a “billing server,” to verify the identity, preferences, and access privileges of a user in a
10 “registration server” and so on. The music server may therefore also be a client of other servers. Practitioners of the art will recognize that virtual servers and clients are abstract interactive devices controlled by software instructions, whose interaction protocols may be flexibly defined. A “client” as used herein may include functionally to process information and programs, as well as to issue commands. Similarly, a virtual server as used herein may include functionally to
15 initiate commands to users and other servers as well as to respond to instructions.

Similarly, a database should not be construed to be a single physical collection of data. As used herein, a database is an abstract collection of data and may be distributed over one or more physical locations. Said data may be stored physically within a single or multiple servers, within attached physical device(s), network attached device(s), or user devices(s). Similarly, an
20 application program should not be construed to be a single physical collection of commands. As used herein, an application program is an abstract collection of CPU commands, which may be physically executed, in whole or in part, within a single or multiple servers, within attached physical devices(s), within network attached device(s), or within user device(s).

B. Contextual Matching

25 Fig. 3 depicts a prospective three-way match between a user 300, denoted user A, a second user 301 acting as an advocate, denoted user B, advocate B, or expert B, and a consumable, denoted BPS C. In a typical environment, the consumable is a brand, product, or service drawn to the attention of user A. Each of the three parties of the match possesses a set of attributes, said sets denoted *attributes(A)*, *attributes(B)*, and *attributes(C)*, and stored in

databases 106, 107, and 110, respectively. Some or all of the attributes may be explicitly defined, while some attributes may be implicitly or probabilistically determined.

5 In a preferred implementation, the matching system operates by estimating a set of essential quantities reflecting pair-wise relationships in the three-way match. For example, in a preferred embodiment, user *A* and advocate *B* have a social relationship based on some commonality of experience, interests, and values. The social relationship may be characterized as having an objective or factual component, denoted “knowledge” in Fig. 3, and a subjective or emotional component denoted “connection.” To signify that the example relationship may not be reflexive, user *A*’s knowledge of advocate *B* is denoted *knowledge*(*A*, *B*), while advocate *B*’s knowledge of user *A* is denoted *knowledge*(*B*, *A*). Similarly, user *A*’s connection to advocate *B* is denoted *connection*(*A*, *B*), while advocate *B*’s connection to user *A* is denoted *connection*(*B*, *A*), and so on. The estimated essential quantities are further combined in a context-dependent manner to determine an overall match score or match value.

15 To estimate the strength of the social relationship between *A* and *B*, a social strength function combines the essential estimated quantities. In a preferred implementation, the essential social strength quantities include an estimate of social knowledge and social connection. In one implementation, each essential quantity is rated on a scale from negative one to positive one, assigned a weighting factor on a scale from negative one to positive one, and the social strength is determined as a weighted sum of the product of the rated factors. In a preferred embodiment, a set of weighting factors for each context, combining a marketing context and a phase of a buying cycle, is determined and stored. For example, in a generalized market survey, a consumer typically gives greater weight to fact gathering, whereas in a potential sales closing with an advocate, the consumer typically gives greater weight to intangible emotional aspects of the relationship with the advocate, such as trust in the advocate. This change in consumer focus is reflected by using a set of weighting factors giving greater weight to knowledge in an early buying cycle, and greater weight to connection in a later buying cycle.

25 In an alternate embodiment, each of the attributes of *A* and *B* are quantized. Attributes are then partitioned into groups affecting essential estimated quantities. For example, a social strength may be further characterized as having two components, attributes reflecting potential

common knowledge and attributes reflecting potential common connection. By correlating the common knowledge attributes of A and B, a common knowledge score is computed. By correlating the common connection attributes of A and B, a common connection score is computed. The social strength is computed by combining the component scores. In one
 5 implementation, the social strength is a sum of component scores. In an alternate implementation, the essential estimated quantities are thought of as occupying orthogonal dimensions, and the social strength is a Euclidean distance (or “L2 norm”) calculated as a sum of squares of orthogonal essential estimated quantity scores.

In a preferred embodiment, the attributes of A and B are combined using a combination
 10 of weighting factors, differences, squared distances, and correlation. Attributes are quantized and partitioned into groups affecting essential estimated quantities. Generally, user A and advocate B have more in common when they have highly correlated attributes. A weighting factor may be used to ignore or negatively weigh an undesired attribute. However, in some marketing efforts, it may be desired that the user A and the advocate B have some attributes with a large difference in
 15 quantized value, such as those characterizing product knowledge. For example, in a generalized market survey phase of a buying cycle, it may be desired that the advocate have a much greater knowledge of the BPS than the user, whereas a knowledgeable consumer about to make a purchase may prefer an advocate with similar knowledge of the product. An example knowledge score (Ks) for the early buying cycle phase is

$$20 \quad Ks = \text{knowledge}(B, C) - \text{knowledge}(A, C).$$

If the only significance is the magnitude of difference in knowledge, an example knowledge score is

$$Ks = \{\text{knowledge}(B, C) - \text{knowledge}(A, C)\}^2.$$

An example knowledge score for the later buying cycle phase is

$$25 \quad Ks = \text{knowledge}(B, C) * \text{knowledge}(A, C).$$

Further, as mentioned above, the scores are weighted to account for marketing context. In one embodiment, a marketing contact is classified as a direct contact or an indirect contact. For

example, a consumer may access marketing material consisting of a banner advertisement for a product motorcycle. The banner ad may be accompanied by an instrumented representation of an advocate, which provides a direct communication contact to the represented advocate.

Alternatively, the banner ad may be accompanied by a link to request an indirect contact to an advocate. When the context categories include one or more means of direct contact, an advocate profile includes one or more attributes related to the expected marketing value of the advocate in a direct contact context. Direct and indirect marketing contacts may be further classified and advocate attributes may be correspondingly expanded to account for differing responses in consumer-initiated contact and system-assisted contact.

In an alternate or augmented embodiment, a marketing contact is classified as explicit, implicit, or probabilistic. For example, the banner ad may be accompanied by a single explicit advocate reference, such as a representation of a specific named advocate. Alternatively, the banner ad may be accompanied by a single implicit advocate reference, such as the representation of an otherwise anonymous advocate labeled "Service Technician." When the context categories include one or more means of explicit (implicit) contact, an advocate profile includes one or more attributes related to the expected marketing value of the advocate in an explicit (implicit) context. An example of a probabilistic contact is a banner ad accompanied by two or more representations of competing advocates, any of which may be selected by the consumer. The expected marketing value of an individual advocate is a product of (a) the probability that the advocate is selected by the consumer and (b) the conditional expected marketing value of the advocate if selected. When the context categories include one or more means of probabilistic contact, an advocate profile includes one or more attributes related to the expected marketing value of the advocate in the probabilistic context.

Fig. 4 illustrates an example matching value estimator. In Fig. 4, the inputs are attributes of user A, user B, and BPS C, and a RuleSet identifier for the context of the marketing campaign and the phase of the buying cycle. The RuleSet identifier indexes a table 403 of filter rules and score combining weights. The filter rules control filters $p(A)$, $q(B)$, and $r(C)$. In one implementation, filter $r(C)$ scales and quantizes attributes of BPS C to determine which are quantized positively, which are quantized negatively, and which are ignored at the output of filter $r(C)$. Similarly, filter $q(B)$ determines the weighting of advocate B's attributes, and filter $p(A)$

determines the weighting of user A's attributes. User A's attributes are combined in score unit 407, advocate B's attributes are combined in score unit 408, and BPS C's attributes are combined in score unit 409.

5 Unit 404 evaluates the essential estimated quantities of the pair-wise relationship between user A and advocate B. Two or more essential quantities are estimated, denoted

$$\{ f_i(A,B) \}$$

where the essential quantity index i equals 1, 2, and so on. The two or more essential quantities included social knowledge score and social connection score.

10 Unit 405 evaluates the essential estimated quantities of the pair-wise relationship between user A and BPS C. Two or more essential quantities are estimated, denoted

$$\{ g_i(A,B) \}$$

where the essential quantity index i equals 1, 2, and so on. The two or more essential quantities include product knowledge score and product purchasing behavior score.

15 Unit 406 evaluates the essential estimated quantities of the pair-wise relationship between advocate B and BPS C. Two or more essential quantities are estimated, denoted

$$\{ h_i(A,B) \}$$

where the essential quantity index i equals 1, 2, and so on. The two or more essential quantities include product knowledge score and product connection score.

20 The various scores at the outputs of scoring units 407-409 and pair-wise evaluator units 404-406 are multiplied by weighting factors denoted w_1 - w_9 in scaling unit 410. The weighting factors are obtained from table 403 in response to an identified RuleSet. The weighted scores are combined in adder 411 to create a MatchValue output, where a greater MatchValue output indicates a three-way match with a greater expected marketing value.

C. Consumer Matching

A possible use of a matching estimator contemplated by this invention is in determining a set of best consumers. An example flowchart for a consumer selection algorithm is shown in Fig. 5, where it is assumed that two parties of the match, the advocate, user B, and the consumption object, BPS C, are fixed, and a set of best consumers for the two parties is to be determined.

The flowchart consists of a number of sequential steps. The matching process begins in step 500. In step 501, the advocate user identifier (ID), the consumption object ID, the advertiser ID (if any), the publisher ID (if any) and the context ID are input to the process in step 501. In step 502, the identifiers are used to index the databases 106-110 to obtain the attributes of related parties to the match. In step 503, the list of matched advocates is initialized as an empty list, with a list member count of zero.

Steps 504-506 are a repetitive loop used to process the database of consumers. In a preferred embodiment, the entries indexed by BPS C in database 110 include a list of likely prospects for consumption of BPS C. In such an embodiment, the list of likely consumer prospects for BPS C is compared to the list of available consumers in database 107 in step 505. If the list of likely prospects for BPS C is not included in database 110, the list of available consumers is checked to see if any qualify as a likely prospect for BPS C in step 505. If there is an unprocessed consumer who is available and qualified, the unprocessed consumer is processed in step 506. In step 506, the potential available and qualified consumer is processed to determine a MatchValue score, and the consumer identifier and associated MatchValue score are added to the match list. Steps 504 and 505 are repeated to see if there is another unprocessed qualified and available consumer, and if so, to continue scoring and adding the consumer(s). The loop continues until all qualified and available consumers are exhausted, at which point step 505 proceeds to step 507.

In step 507, the number of matches in the list is checked. If the count of list members is zero, no consumer was found in the search, an error message is generated in step 508, and the process terminates in step 513. Otherwise, the match list is non-empty, and the list of matching consumers is sorted according to MatchValue in step 509. Step 510 determines how the sorted list is to be further processed. In "threshold mode" all matches with a MatchValue exceeding a

threshold T are identified as best consumers in step 511 and the process terminates in step 513. Otherwise, it is assumed that up to N best consumers are desired, where N is a positive integer. In this mode, the top N scoring consumers in the matched list are identified in step 512 and the process terminates in step 513.

5 D. Determining Actual and Added Value of Advocacy

The previous section discusses an example method of finding best advocates for a three-way match. In this section, the actual and added value of advocacy in a three-way match is determined. Fig. 6 is an example signal flow chart to reflect a method of determining these quantities. The AddedValue output of Fig. 6 is also used to provide adaptive matching in an
10 alternative embodiment, discussed further below. As discussed further below, the quantities determined in Fig. 6 may be determined by a number of sub-processes dispersed in time. Each processing block of Fig. 6 is assumed to operate as an independent process with inputs tagged as necessary to maintain the integrity and time alignment of the indicated signal flow.

In Fig. 6, it is assumed that an advocate user B and a BPS C of interest are input to the
15 marketing system. In block 601, a consuming user A with a qualifying match score is determined. This advocate may be determined as a member of the match list of the example matching process of Fig. 5. In an alternative embodiment, a user identifier for user A is supplied by a representative of one of the parties or a third party. In block 602, the marketing value of marketing materials with and without additional advocacy is estimated. In a preferred
20 embodiment, the "MatchValue" output of Fig. 4 represents the expected monetary value of the marketing materials with advocacy by advocate B. The "MatchValue" output from block 602 is scaled if necessary (not shown) to represent this expected monetary value.

In block 602, the expected value of the marketing materials without advocacy is also estimated or determined. In a typical environment, the marketing material is an advertisement
25 placed within a web page. In one embodiment, the value of the advertisement without advocacy is determined by repeatedly running the ad without accompanying advocacy, tracking commercial activity in relation to the ad, and accumulating a measure of the average economic value. For example, a product manufacturer may be willing to pay ten cents per click on a banner advertisement to a service provider. The service provider instruments the advertisement to record

and account for each click on the ad, and determines the average value per placed ad without advocacy. In an alternate or augmented embodiment, the service provider estimates the value of one or more advertisements without advocacy, using statistics for similar advertisements in similar product categories and similar contexts. The value of the marketing materials without
5 advocacy is denoted "WithoutValue" at the output of block 602.

In block 603, there is a check to see if there is a reason to provide advocacy because of an increase in expected marketing value with advocacy. If not, the marketing materials are placed without advocacy, and no further processing of advocacy value is required.

If there is an expected increase in marketing value, the marketing materials are
10 augmented to provide user B as a marketing advocate to consuming user A. The marketing materials are preferably instrumented to support one-click communicative access to advocate B, as described above, in block 603. In block 604, the terms of the advocacy contractual arrangement are registered with the account manager 127. Account manager 127 tracks all commercial activity in relation to the advertisement with advocacy, and tracks the actual
15 marketing value of the associated actions. When the marketing campaign has ended for the instrumented marketing materials, the accumulated actual marketing value is output as "RealValue" by block 605.

Block 606 calculates the added value of the advocacy by subtracting the WithoutValue from the RealValue. The advertising client is billed for the RealValue. The AddedValue
20 represents an augmented revenue stream generated by the advocacy. This added value is available to provide advocacy incentives, advocacy costs, service provider costs and a reasonable service provider profit for providing advocacy selection and/or advocacy accounting support. Block 607 assigns the costs of advocacy to an advocacy sponsor, and divides the advocacy revenue to provide advocacy system profit and incentives. In a preferred embodiment, monetary
25 incentives are reserved for expert advocates, and other advocates receive non-monetary incentives.

E. Adaptive Embodiment of Matching System

Figs. 8 and 9 represent a first and second half of an alternative embodiment of the matching system of Section B above. In Section B, it is assumed that the estimated value of a match may be determined by first determining a number of interim quantities which reflect essential components of a two-way relationship, and second, combining those components into a MatchValue score. Figs. 8-9 represent an alternative approach, which directly estimates a MatchValue score from primitive attributes without determining interim quantities.

When two of three parties to a match are known, the relationship of the known parties is fixed and the pre-existing value of the relationship is realized without an advocacy matching system. The value of a prospective third party is essentially determined by the relationships of the third party with each of the known parties. When the third party to be determined is a consumer, the advocate's relationship with the product determines a part of the context of the advocate matching, but does not change from one prospective consumer to the next. Ignoring the pre-existing relationship, an optimized search for a consumer is performed by evaluating the relationship of the consumer to the product and the relationship of the advocate to the consumer. The evaluation is performed in a context-dependent manner depending on the consuming user's present relationship with the product, as reflected in a behavioral profile of user actions in a characterized product buying cycle.

A first half of an optimized advocate processor is shown in Fig. 8. In Fig. 8, raw attributes of BPS C, user A, and advocate B are input to categorization and quantization blocks 804-806. The attributes are categorized into N categories, where N is a positive integer, and organized and indexed such that the i^{th} attribute of user A is the same as the i^{th} attribute of user B, and so on. In one embodiment, each attribute reflects a potential quality of the party, and the attributes are quantized positively to reflect the probability that the party possesses the attribute. In cases where it is more probable that the party does not possess the attribute, the attribute may be quantized negatively. For example, if a designated attribute of a user is that the user has a favorite color of red, a quantized value of 0.80 may reflect a probability of 80% that the user's favorite color is red. On the other hand, a quantized value of -0.70 may reflect a probability of 70% that the favorite color of the user is a different color, such as blue. The similarity between

two users in terms of preference for red may be taken as the product of the quantized party attributes for the two users.

In Fig. 8, various attributes for any party may be emphasized, de-emphasized, ignored, or rejected by weighting the quantized attributes for the party. Filters 807-809 provide a modified weighting of the quantized attributes of C, A, and B, respectively, using a RuleSet determined from context to index three tables of filter weights, 801-803. The filter weights determine the attribute emphasis or de-emphasis required for the marketing context.

The N weighted attributes of BPS C are denoted $x[1]$ to $x[N]$, the N weighted attributes of advocate B are denoted $x[4N+1]$ to $x[5N]$, and the N weighted attributes of user A are denoted $x[2N+1]$ to $x[3N]$. The weighted attributes of BPS C are further correlated with the weighted attributes of user A to produce N correlated attributes of the relationship of A and C denoted $x[N+1]$ to $x[2N]$. The correlations are output by multiplier unit 810. Similarly, the weighted attributes of user A are further correlated with the weighted attributes of advocate B to produce N correlated attributes of the relationship of A and B denoted $x[3N+1]$ to $x[4N]$, output by multiplier unit 811. The $5N$ outputs of Fig. 8 are further processed in Fig. 9.

In Fig. 9, the estimated value of advocacy is determined as a weighted sum of the $5N$ outputs of Fig. 8. The tap weights, $w[1]$ to $w[5N]$, are dependent on the marketing context. Multiplexer 904 has L different sets of tap weights as input, with $5N$ tap weights in each set, and a select control input. Examples sets of input tap weights are denoted 901-903. The output of 904 is a set of weights as determined by a "ContextSelection" input, which selects one of the L tap weight sets as $w[1]$ to $w[5N]$. Each tap weight $w[i]$ is multiplied by the corresponding i^{th} output of Fig. 8, $x[i]$, in multiplier unit 905. Adder 906 adds the outputs of the multipliers to output an estimated value of the advocacy. In one embodiment, the EstimatedValue output may be used as an alternative to the MatchValue output of Fig. 4.

In a further augmentation of the embodiment, the system adapts the tap weights to refine the predicted advocacy value to better track actual value. Recall that in Fig. 6, the output AddedValue reflects the additional value realized by the provided advocacy. This AddedValue output of Fig. 6 is input to block 907 of Fig. 9, which determines the difference between the EstimatedValue and the AddedValue. The difference, "error," is attributed to estimation error

and random system perturbations. The error is scaled by a small quantity, epsilon, in multiplier 908. Units 909 and 910 are example adaptation units for tap weights $w[1]$ and $w[5N]$. A similar adaptation unit is provided for each tap weight. The output of multiplier 908 is correlated with the inputs to the EstimatedValue filter at the time of estimation in multipliers 911-912. To align the inputs of the adaptation unit, the quantities $x[1]$ to $x[5N]$ may have to be stored for later processing after the AddedValue has been determined. The output of the multipliers 911-912 is a small adjustment to the tap weight, $w[1]$ or $w[5N]$. The adjustment to tap weight $w[1]$ is accomplished in adder 913, while the adjustment to tap weight $w[5N]$ is accomplished in adder 914.

If the attributes of a consumer-advocate relationship are thought of as contributing a subjective, emotion-based component to marketing decisions, the adaptability of Figs. 8-9 provides a distinct advantage. A consumer who develops a relationship with an advocate is likely to change subjective components of the advocate evaluation based on the accumulated results of marketing contacts with the advocate. An adaptive system learns the time-varying weights given to various attributes, and adjusts them accordingly.

F. Example Server System

As indicated above, one or more of the processes of Figs. 4, 5, and 6, as well as one or more of the processes of Figs. 8-9 discussed below, may be performed by specialized signal processing hardware, or may be performed using a general-purpose computer implementing a sequence of software steps. The processing may incorporate one or more steps performed on a user's computer system (a "client" system) and one or more steps performed on a service provider's computer system (a "server" system). Server and client systems described herein can be implemented by a variety of computer systems and architectures. Fig. 7 illustrates suitable components in an exemplary embodiment of a general-purpose computer system. The exemplary embodiment is only one example of suitable components and is not intended to suggest any limitation as to the scope of use or functionality of the invention. Neither should the configuration of components be interpreted as having any dependency or requirement relating to any one or combination of components illustrated in the exemplary embodiment of a computer

system. The invention may be operational with numerous other general purpose or special purpose computer system environments or configurations.

The invention may be described in the general context of computer-executable instructions, such as program modules, being executed by a computer. Generally, program modules include routines, programs, objects, components, data structures, and so forth, which perform particular tasks or implement particular abstract data types. The invention may also be practiced in distributed computing environments where tasks are performed by remote processing devices that are linked through a communications network. In a distributed computing environment, program modules may be located in local and/or remote computer storage media including memory storage devices.

With reference to Fig. 7, an exemplary system for implementing the invention may include a general-purpose computer system 700. Computer system 700 accesses one or more applications and peripheral drivers directed to a number of functions described herein. Components of the computer system 700 may include, but are not limited to, a CPU or central processing unit 702, a system memory 708, and a system bus 722 that couples various system components including the system memory 708 to the processing unit 702. As used by those skilled in the art, a signal "bus" refers to a plurality of digital signal lines serving a common function. The system bus 722 may be any of several types of bus structures including a memory bus, a peripheral bus, and a local bus using any of a variety of bus architectures. By way of example, and not limitation, such architectures include the Industry Standard Architecture (ISA) bus, Enhanced ISA (EISA) bus, the Micro Channel Architecture (MCA) bus, the Video Electronics Standards Association local (VLB) bus, the Peripheral Component Interconnect (PCI) bus, the PCI-Express bus (PCI-X), and the Accelerated Graphics Port (AGP) bus.

An operating system manages the operation of computer system 700, including the input and output of data to and from applications (not shown). The operating system provides an interface between the applications being executed on the system and the components of the system. According to one embodiment of the present invention, the operating system is a Windows ® 95/98/NT/XP/Vista/Mobile operating system, available from Microsoft Corporation of Redmond, Wash. However, the present invention may be used with other suitable operating

systems, such as an OS-X ® operating system, available from Apple Computer Inc. of Cupertino, Calif., a UNIX ® operating system, or a LINUX operating system.

5 The computer system 700 may include a variety of computer-readable media. Computer-readable media can be any available media that can be accessed by the computer system 700 and includes both volatile and nonvolatile media. For example, computer-readable media may include volatile and nonvolatile computer storage media implemented in any method or technology for storage of information such as computer-readable instructions, data structures, program modules or other data. Computer storage media includes, but is not limited to, random access memory (RAM), read-only memory (ROM), electrically erasable programmable ROM
10 (EEPROM), flash memory or other memory technology, compact-disk ROM (CD-ROM), digital versatile disks (DVD) or other optical disk storage, magnetic tape cassettes, magnetic tape, hard magnetic disk storage or other magnetic storage devices, floppy disk storage devices, magnetic diskettes, or any other medium which can be used to store the desired information and which can be accessed by the computer system 700.

15 Communication media may also embody machine-readable instructions, data structures, program modules or other data in a modulated data signal such as a carrier wave or other transport mechanism and includes any information delivery media. The term “modulated data signal” means a signal that has one or more of its characteristics set or changed in such a manner as to encode information in the signal. For instance, communication media includes wired media
20 such as a wired network or direct-wired connection, and wireless media such as acoustic, RF, infrared, cellular networks, and other wireless media.

The system memory 708 includes computer storage media in the form of volatile and/or nonvolatile memory such as read only memory (ROM) 706 and random access memory (RAM) 705. A basic input/output system 707 (BIOS), containing the basic routines that help to transfer
25 information between elements within computer system 700, such as during start-up, is typically stored in ROM 706 and other non-volatile storage, such as flash memory. Additionally, system memory 708 may contain some or all of the operating system 709, the application programs 712, other executable code 710 and program data 711. Memory 708 typically contains data and/or program modules that are immediately accessible to and/or presently being operated on by CPU

702. Optionally, a CPU may contain a cache memory unit 701 for temporary local storage of instructions, data, or computer addresses.

The computer system 700 may also include other removable/non-removable, volatile/nonvolatile computer storage media. By way of example only, and not by way of limitation, Fig. 7 illustrates a bulk storage unit 713 that reads from or writes to one or more magnetic disk drives of non-removable, nonvolatile magnetic media, and storage device 721 that may be an optical disk drive or a magnetic disk drive that reads from or writes to a removable, a nonvolatile storage medium 730 such as an optical disk or a magnetic disk. Other computer storage media that can be used in the exemplary computer system 700 includes removable or non-removable media and volatile or nonvolatile storage. The storage media includes, but is not limited to, magnetic tape cassettes, flash memory cards, digital versatile disks, digital video tape, solid state RAM, solid state ROM, and the like. Bulk storage 713 and the storage device 721 may be connected directly to the system bus 722, or alternatively may be connected through an interface such as storage controller 714 shown for bulk storage 713. Storage devices may interface to computer system 700 through a general computer bus such as 722, or may interconnect with a storage controller over a storage-optimized bus, such as the Small Computer System Interface (SCSI) bus, the ANSI ATA/ATAPI bus, the Ultra ATA bus, the FireWire (IEEE 1394) bus, or the Serial ATA (SATA) bus.

The storage devices and their associated computer storage media, discussed above and illustrated in Fig. 7, provide storage of computer-readable instructions, executable code, data structures, program modules and other data for the computer system 700. For example, bulk storage 713 is illustrated as storing operating system 709, application programs 712, other executable code 710 and program data 711. As mentioned previously, data and computer instructions in 713 may be transferred to system memory 708 to facilitate immediate CPU access from processor 702. Alternatively, processor 702 may access stored instructions and data by interacting directly with bulk storage 713. Furthermore, bulk storage may be alternatively provided by a network-attached storage device (not shown), which is accessed through a network interface 715.

A user may enter commands and information into the computer system 700 through the network interface 715 or through an input device 727 such as a keyboard, a pointing device commonly referred to as a mouse, a trackball, a touch pad tablet, a controller, an electronic digitizer, a microphone, an audio input interface, or a video input interface. Other input devices
5 may include a joystick, game pad, satellite dish, scanner, and so forth. These and other input devices are often connected to CPU 702 through an input interface 718 that is coupled to the system bus, but may be connected by other interface and bus structures, such as a parallel port, a game port or a universal serial bus (USB). A display 726 or other type of video device may also be connected to the system bus 722 via an interface, such as a graphics controller 716 and a
10 video interface 717. In addition, an output device 728, such as headphones, speakers, or a printer, may be connected to the system bus 722 through an output interface 719 or the like.

The computer system 700 may operate in a networked environment using a network 130 operably connected to one or more remote computers, such as a remote computer 725. The remote computer 725 may be a terminal, a personal computer, a server, a router, a network PC, a
15 peer device or other common network node, and typically includes many or all of the elements described above relative to the computer system 700. The network 130 depicted in Fig. 7 may include a local area network (LAN), a wide area network (WAN), or other type of network. Such networking environments are commonplace in offices, enterprise-wide computer networks, intranets and the Internet. In a networked environment, executable code and application
20 programs may be stored in the remote computer. By way of example, and not by way of limitation, Fig. 7 illustrates remote executable code 724 as residing on remote computer 725. It will be appreciated that the network connections shown are exemplary and other means of establishing a communications link between the computers may be used.

Collectively, these elements are intended to represent a broad category of computer
25 systems, including but not limited to general purpose computer systems based on one or more members of the family of CPUs manufactured by Intel Corporation of Santa Clara, California, the family of CPUs manufactured by Advanced Micro Devices (AMD), Inc., of Sunnyvale, California, or the family of ARM CPUs, originally designed by Advanced RISC Machines, Ltd., as well as any other suitable processor. Of course, other implementations are possible. For

example, the server functionalities described herein may be implemented by a plurality of server sub-systems communicating over a backplane.

Various components of computer system 700 may be rearranged, deleted, or augmented. For example, system bus 722 may be implemented as a plurality of busses interconnecting various subsystems of the computer system. Furthermore, computer system 700 may contain additional signal busses or interconnections between existing components, such as by adding a direct memory access unit (not shown) to allow one or more components to more efficiently access system memory 708.

As shown, CACHE1 and CPU1 are packed together as “processor module” 702 with processor CPU1 referred to as the “processor core.” Alternatively, cache memories 701, 703, contained in 702, 704 may be separate components on the system bus. Furthermore, certain embodiments of the present invention may not require nor include all of the above components. For example, some embodiments may include a smaller number of CPUs, a smaller number of network ports, a smaller number of storage devices, or a smaller number of input-output interfaces. Furthermore, computer system 700 may include additional components, such as one or more additional central processing units, such as 704, storage devices, memories, or interfaces. In addition, one or more components of computer system 700 may be combined into a specialized system-on-a-chip (SOC) to further system integration. In some computer system environments where component count is critical, the entire computer system may be integrated in one or more very large scale integrated (VLSI) circuit(s).

As discussed above, in one implementation, operations of one or more of the physical server or client systems described herein is implemented as a series of software routines executed by computer system 700. Each of the software routines comprises a plurality or series of machine instructions to be executed by one or more components in the computer system, such as CPU 702. Initially, the series of instructions may be stored on a storage device, such as bulk storage 713. However, the series of instructions may be stored in an EEPROM, a flash device, or a DVD. Furthermore, the series of instructions need not be stored locally, and could be received from a remote computer 725 or a server on a network via network interface 715.

While a number of exemplary aspects and embodiments have been discussed above, those of skill in the art will recognize certain modifications, permutations, additions and sub-combinations thereof. It is therefore intended that the following appended claims and claims hereafter introduced are interpreted to include all such modifications, permutations, additions
5 and sub-combinations as are within their true spirit and scope.

CLAIMS

What is claimed is:

1. A method of providing marketing advocacy over a network, the method comprising:
5 accessing a datastore to obtain one or more attributes of a marketed object, one or more
 attributes of an advocate of consumption of the object, and one or more attributes of one or
 more network users;
 determining, for each of the one or more network users,
 a measure of the value of the relationship between the network user and the object,
10 denoted knowledge, and
 a measure of the value of the relationship between the advocate and the network user,
 denoted connection;
 combining the knowledge and connection measures to estimate a net value of marketing
 advocacy for each of the network users;
15 sorting the network users using the estimated net value of marketing advocacy; and
 facilitating communication between the advocate and one or more network users with largest
 net marketing value.
2. The method of claim 1, wherein said facilitating communication between the advocate
20 and one or more network users further comprises providing instrumentation of a marketing
 message to the network user to establish a two-way communication link between the advocate
 and a network user instantiated by a single network user interface action.
3. The method of claim 2, wherein said two-way communication link further comprises one
25 or more of a Voice over Internet Protocol (VoIP) call, a telephone call, a cellular phone call, a
 smart phone call, an instant messaging session, an e-mail communication, a Short Message
 Sevice (SMS) protocol message, a text message, or a mail message.
4. The method of claim 1, wherein said determining measures of the knowledge and the
30 connection further comprises:

dividing the one or more attributes into groups, one group relevant to knowledge, and one group relevant to connection,

quantizing the attributes in each group;

determining the value of each attribute in each group;

5 combining the determined values for the group relevant to knowledge to compute a combined knowledge measurement; and

combining the determined values for the group relevant to connection to compute a combined connection measurement.

10 5. The method of claim 4, wherein said determining the value of each attribute in the group characterizing a relationship between a party A and a party B further comprises one or more of (a) correlating the quantized value of the attribute for the party A with the quantized value of the corresponding attribute for the party B, (b) determining the difference between the quantized value of the attribute for the party A and the quantized value of the corresponding attribute for
15 the party B, (c) determining the Euclidean distance between the quantized value of the attribute for the party A and the quantized value of the corresponding attribute for the party B, (d) determining the magnitude of the quantized value of the attribute for party A, and (e) determining the magnitude of the quantized value of the attribute for party B.

20 6. The method of claim 4, wherein said combining the determined values for the group relevant to a trait further comprises one or more of (a) computing a weighted linear combination of each of the determined values for attributes in the group relevant to the trait (b) computing a weighted sum of each of the determined values for attributes in the group relevant to the trait, and (c) computing a weighted sum of the squares of each of the determining values for attributes
25 in the group relevant to the trait.

7. An apparatus for providing marketing advocacy over a network, said apparatus comprising a memory, one ore more central processing units, and a set of one or more processor instructions, said instructions operative, when executed by one or more of the processor units, to:

access a datastore to obtain one or more attributes of a marketed object, one or more attributes of an advocate of consumption of the object, and one or more attributes of one or more network users;

determine, for each of the one or more network users,

5 a measure of the value of the relationship between the network user and the object, denoted knowledge, and

a measure of the value of the relationship between the advocate and the network user, denoted connection;

10 combine the knowledge and connection measures to estimate a net value of marketing advocacy for each of the network users;

sort the network users using the estimated net value of marketing advocacy; and

facilitate communication between the advocate and one or more network users with largest net marketing value.

15 8. The apparatus of claim 7, wherein to facilitate communication between the advocate and one or more network users further comprises to provide instrumentation for a marketing message to a network user to establish a two-way communication link between the advocate and the network user instantiated by a single network user interface action.

20 9. The apparatus of claim 8, wherein said two-way communication link further comprises one or more of a Voice over Internet Protocol (VoIP) call, a telephone call, a cellular phone call, a smart phone call, an instant messaging session, an e-mail communication, a Short Message Service (SMS) protocol message, a text message, or a mail message.

25 10. The apparatus of claim 7, wherein to determine measures of the knowledge and the connection further comprises:
dividing the one or more attributes into groups, one group relevant to knowledge, and one group relevant to connection,
quantizing the attributes in each group;
30 determining the value of each attribute in each group;

combining the determined values for the group relevant to knowledge to compute a combined knowledge measurement; and
combining the determined values for the group relevant to connection to compute a combined connection measurement.

5

11. The apparatus of claim 10, wherein to determine the value of each attribute in the group characterizing a relationship between a party A and a party B further comprises one or more of (a) correlating the quantized value of the attribute for the party A with the quantized value of the corresponding attribute for the party B, (b) determining the difference between the quantized value of the attribute for the party A and the quantized value of the corresponding attribute for the party B, (c) determining the Euclidean distance between the quantized value of the attribute for the party A and the quantized value of the corresponding attribute for the party B, (d) determining the magnitude of the quantized value of the attribute for party A, and (e) determining the magnitude of the quantized value of the attribute for party B.

15

12. The apparatus of claim 10, wherein to combine the determined values for the group relevant to a trait further comprises one or more of (a) computing a weighted linear combination of each of the determined values for attributes in the group relevant to the trait (b) computing a weighted sum of each of the determined values for attributes in the group relevant to the trait, and (c) computing a weighted sum of the squares of each of the determining values for attributes in the group relevant to the trait.

20

13. A method to capture and distribute the value of marketing advocacy over a network, the method comprising:

25

accessing a datastore to obtain one or more attributes of a network user, one or more attributes of an object of interest to the user, and one or more attributes of an advocate of consumption of the object;

providing instrumentation of one or more marketing messages for the object to track commercial activity in relation to the advocate;

30

determining a net value of marketing advocacy for consumption of the object;

collecting a measure of the net value of marketing advocacy from one or more marketing sponsors; and
distributing said collections to provide advocacy marketing incentives, advocacy system costs, and advocacy system provider profit.

5

14. The method of claim 13, wherein said providing instrumentation of one or more marketing messages for the object to track commercial activity in relation to the advocate further comprises one or more of linking the one or more marketing messages with one or more means of communication with the advocate, facilitating network-based communications between the advocate and the network user, logging any commercial activity related to communication
10 between the advocate and the network user, and calculating the market value of any of said commercial activity.

15

15. The method of claim 13, wherein said determining a net value of marketing advocacy for consumption of the object further comprises
calculating the gross commercial value of one or more marketing messages associated with advocacy by the advocate;
estimating the gross commercial value of the one or more marketing messages without advocacy by the advocate; and
20 determining said net value as the difference between the calculated gross commercial value with advocacy and the estimated gross commercial value without advocacy.

25

16. An apparatus to capture and distribute the value of marketing advocacy over a network, said apparatus comprising a memory, one or more central processing units, and a set of one or more processor instructions, said instructions operative, when executed by one or more of the processor units, to:
access a datastore to obtain one or more attributes of a network user, one or more attributes of an object of interest to the user, and one or more attributes of an advocate of consumption of the object;
30 provide instrumentation of one or more marketing messages for the object to track commercial activity in relation to the advocate;

determine a net value of marketing advocacy for consumption of the object;
collect a measure of the net value of marketing advocacy from one or more marketing
sponsors; and
distribute said collections to provide advocacy marketing incentives, advocacy system costs,
5 and advocacy system provider profit.

17. The apparatus of claim 16, wherein to provide instrumentation of one or more marketing
messages for the object to track commercial activity in relation to the advocate further comprises
one or more of linking the one or more marketing messages with one or more means of
10 communication with the advocate, facilitating network-based communications between the
advocate and the network user, logging any commercial activity related to communication
between the advocate and the network user, and calculating the market value of any of said
commercial activity.

15 18. The apparatus of claim 16, wherein to determine a net value of marketing advocacy for
consumption of the object further comprises
calculating the gross commercial value of one or more marketing messages associated with
advocacy by the advocate;
estimating the gross commercial value of the one or more marketing messages without
20 advocacy by the advocate; and
determining said net value as the difference between the calculated gross commercial value
with advocacy and the estimated gross commercial value without advocacy.

19. A method of providing marketing advocacy over a network, the method comprising:
25 accessing a datastore to obtain one or more attributes of a marketed object, one or more
attributes of an advocate of consumption of the object, and one or more attributes of one or
more network users; and
for each of the one or more network users,
determining, for each of the one or more attributes, a measure of the value of the attribute
30 as it pertains to the marketing value in the relationships between the advocate, the
network user, and the object, and

linearly combining each of the one or measures into an estimated net value of marketing advocacy in relation to the network user;

5 sorting the network users using the estimated net value of marketing advocacy; and
facilitating communication between the advocate and one or more network users with largest
net marketing value.

20. The method of claim 19, wherein said determining a measure of the value of each
attribute as it pertains to the marketing value in the relationships between the advocate, the
network user, and the object, further comprises quantizing each of the one or more attributes of
10 the network user, the advocate, and the object, and scoring the quantized attributes.

21. The method of claim 20, wherein said scoring the quantized attributes further comprises
one or more of (a) correlating the quantized value of the attribute for the advocate with the
quantized value of the corresponding attribute for the network user, (b) correlating the quantized
15 value of the attribute for the advocate with the quantized value of the corresponding attribute for
the object, (c) determining the difference between the quantized value of the attribute for the
advocate and the quantized value of the corresponding attribute for the network user, (d)
determining the difference between the quantized value of the attribute for the advocate and the
quantized value of the corresponding attribute for the object, (e) determining the Euclidean
20 distance between the quantized value of the attribute for the advocate and the quantized value of
the corresponding attribute for the network user, (f) determining the Euclidean distance between
the quantized value of the attribute for the advocate and the quantized value of the corresponding
attribute for the object, (g) determining the magnitude of the quantized value of the attribute for
the advocate, (h) determining the magnitude of the quantized value of the attribute for the
25 network user and (i) determining the magnitude of the quantized value of the attribute for the
object.

22. The method of claim 19, wherein said linearly combining each of the one or measures
into an estimated net value of marketing advocacy in relation to the network user further
30 comprises

calculating, for each measure of the value of an attribute as it pertains to the marketing value in the relationships between the advocate, the network user, and the object, a contribution consisting of the product of the measure and a tap weight; and
accumulating the contribution for each measure of the value of an attribute to obtain a total
5 estimated net value.

23. The method of claim 22, wherein said linearly combining further comprises
tracking an actual net value of provided marketing advocacy in relation to the network user;
determining a difference between the estimated net value and the actual net value to obtain
10 an error value;
correlating the error value with each measure of the value of an attribute to obtain an
adjustment quantity;
determining tap weight adjustments by scaling said adjustment quantities.

15

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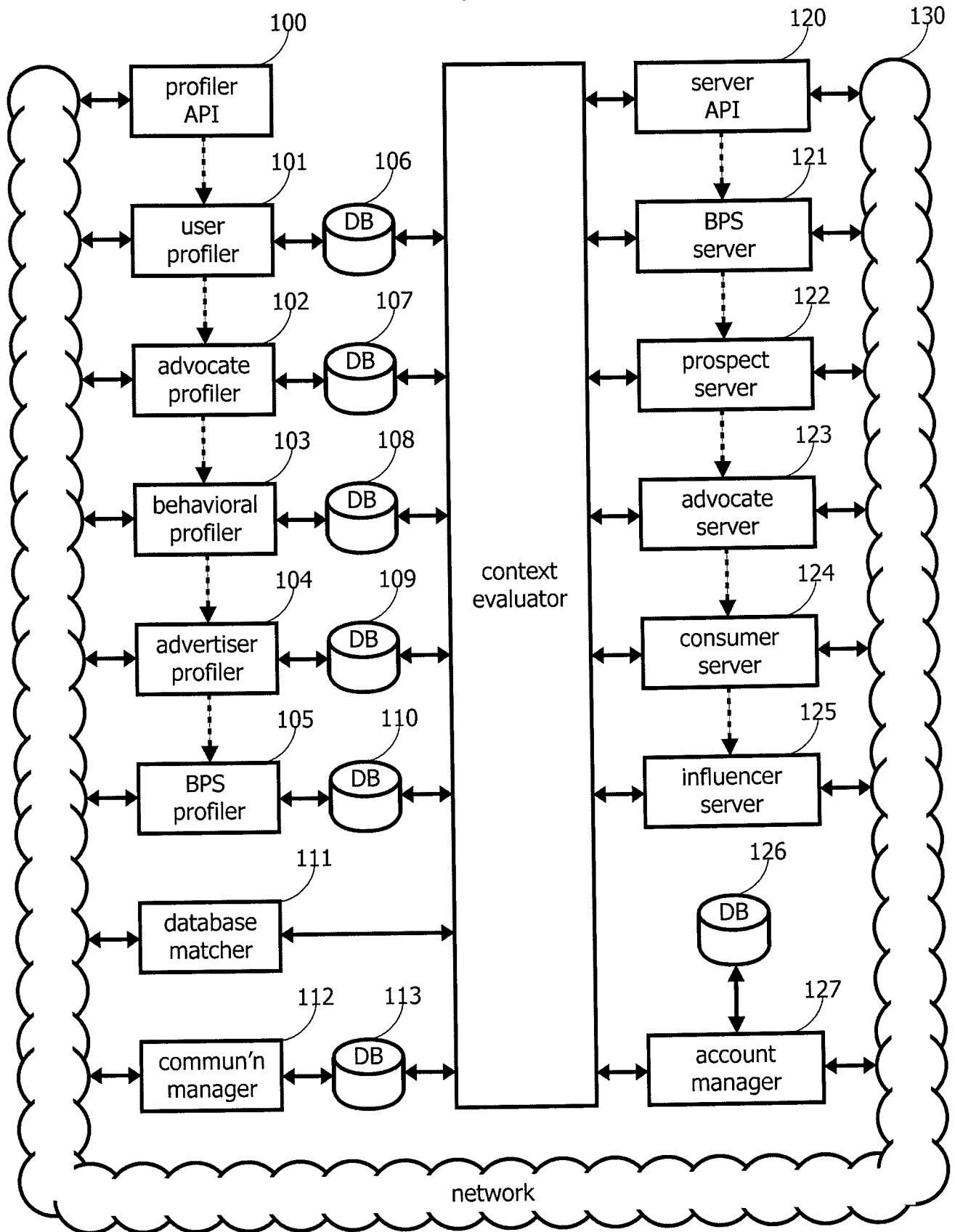


Fig. 1

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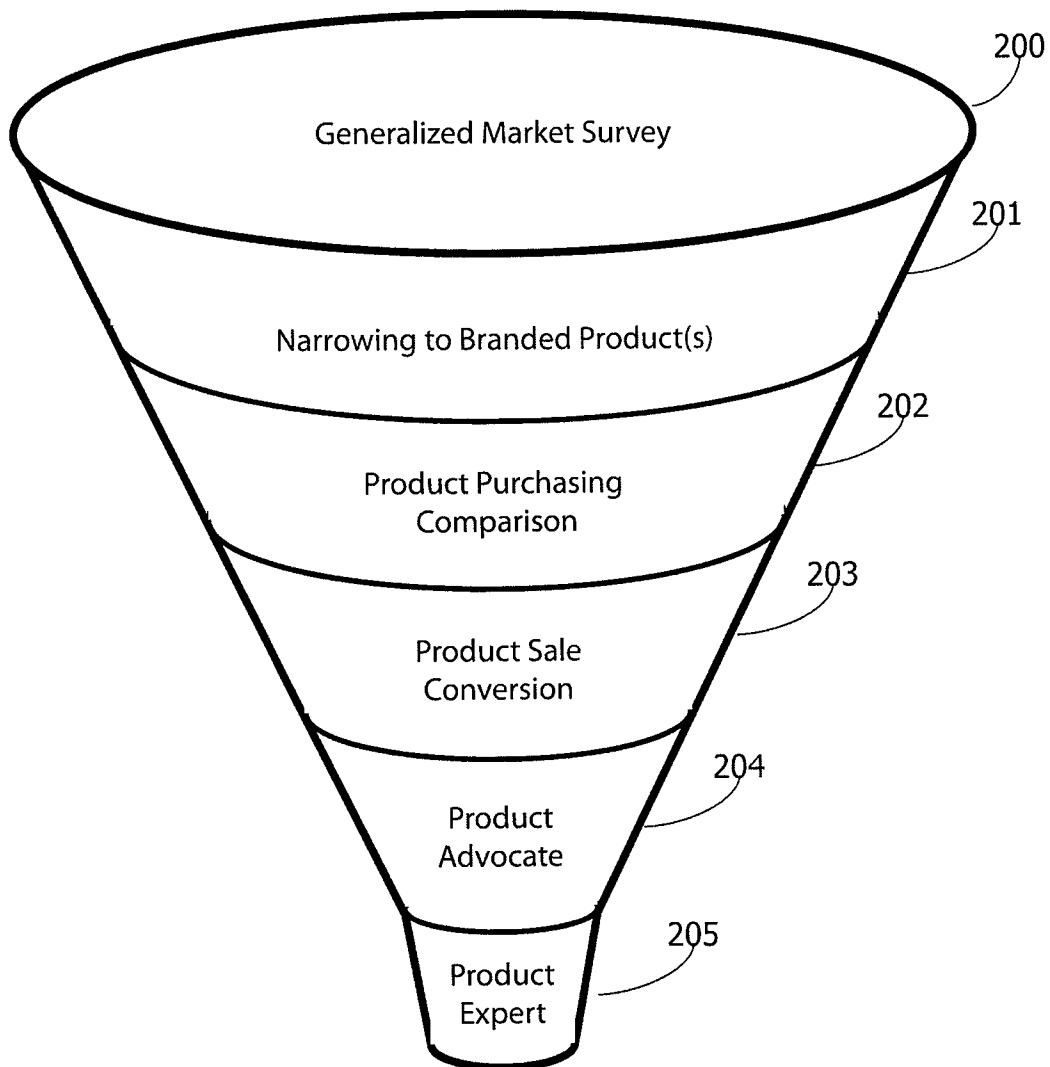


Fig. 2

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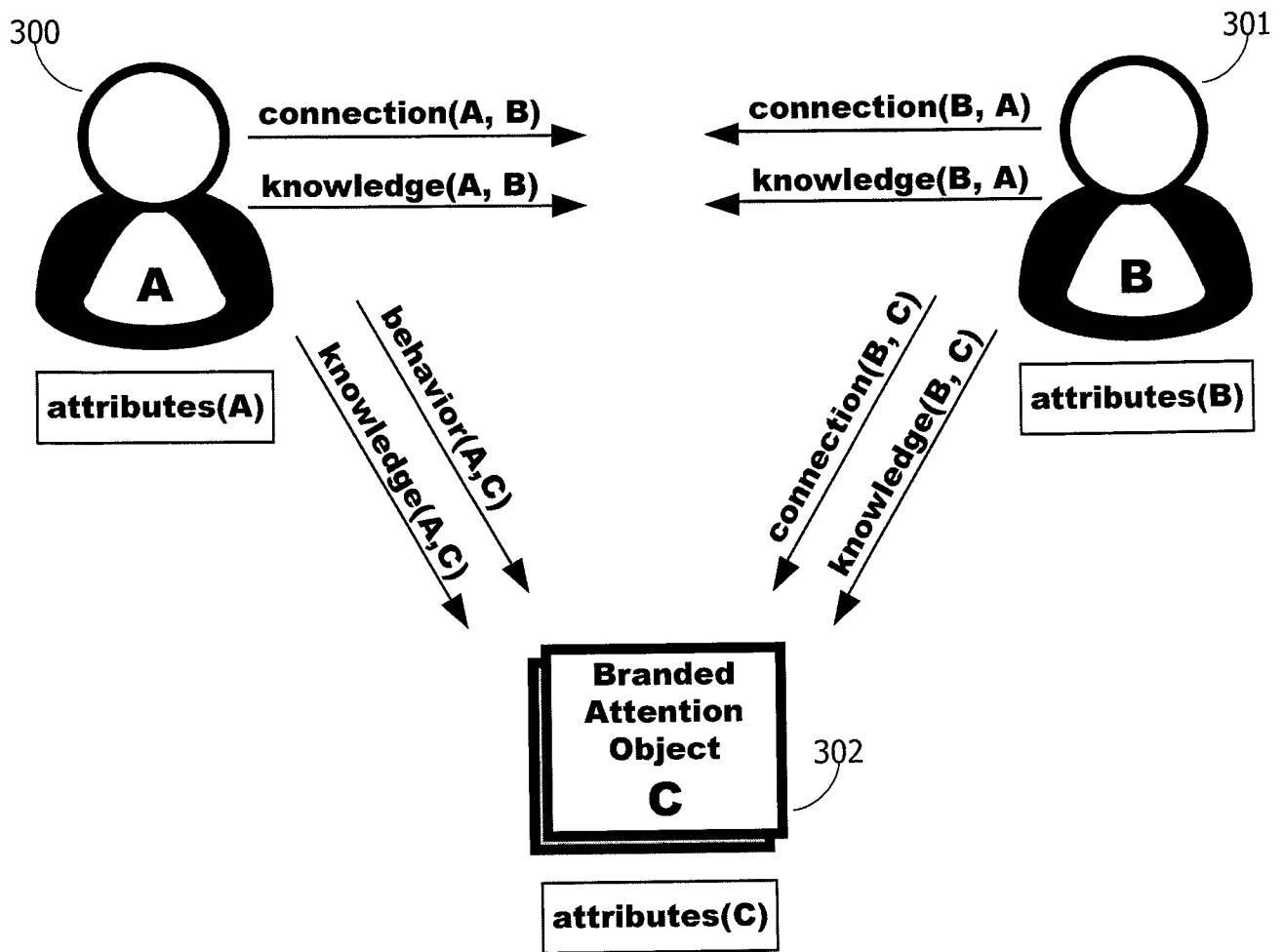


Fig. 3

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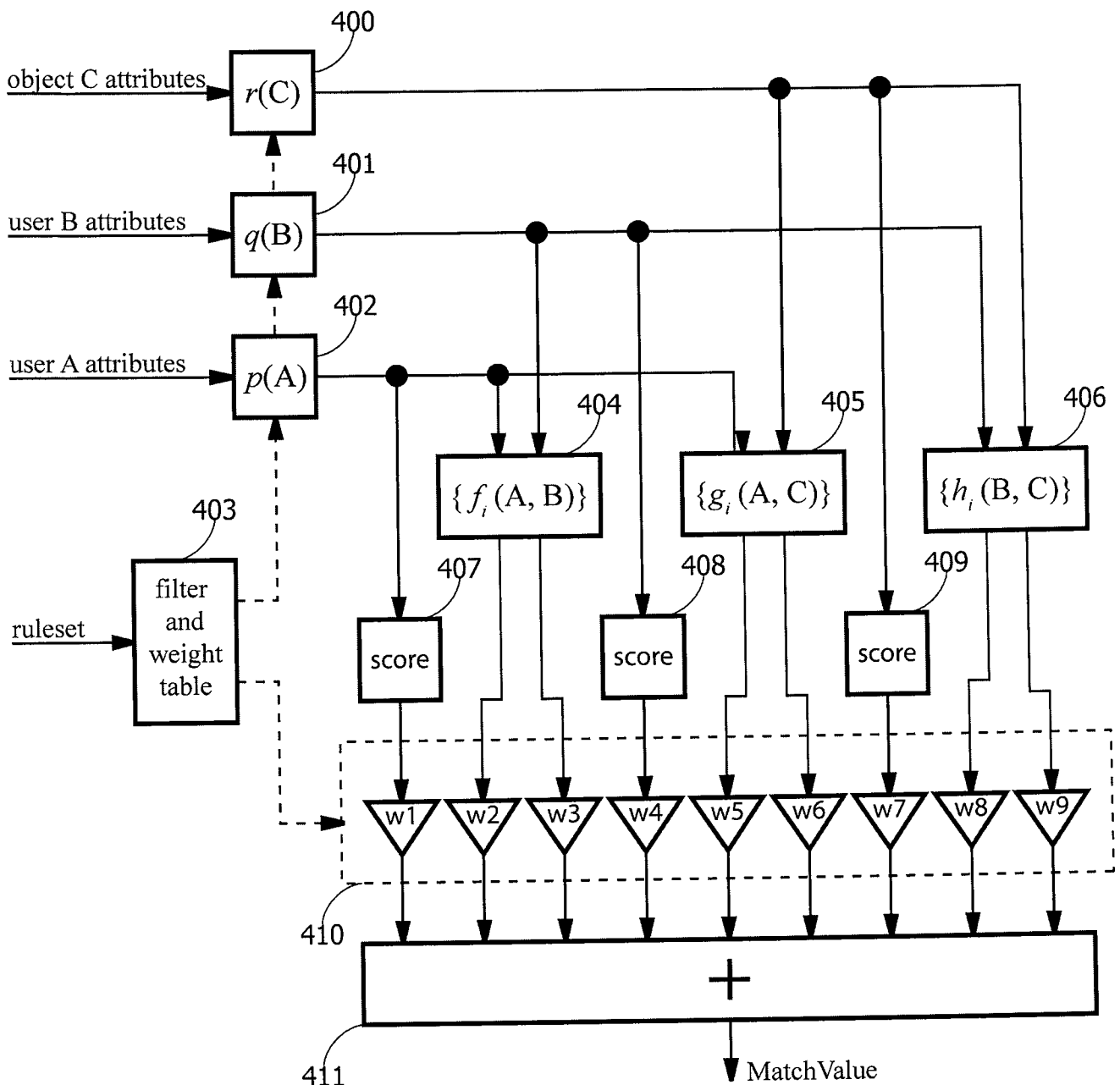


Fig. 4

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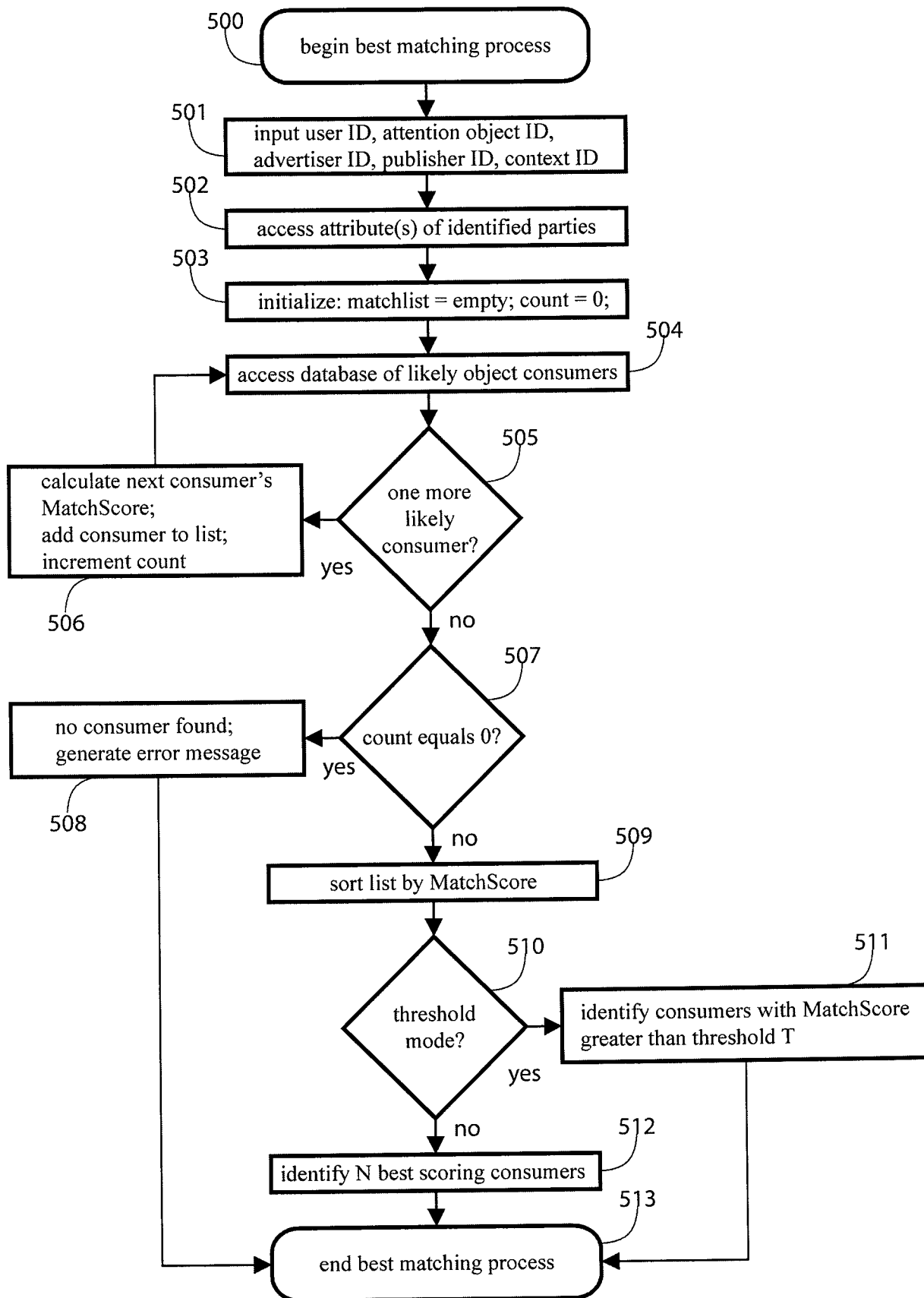


Fig. 5

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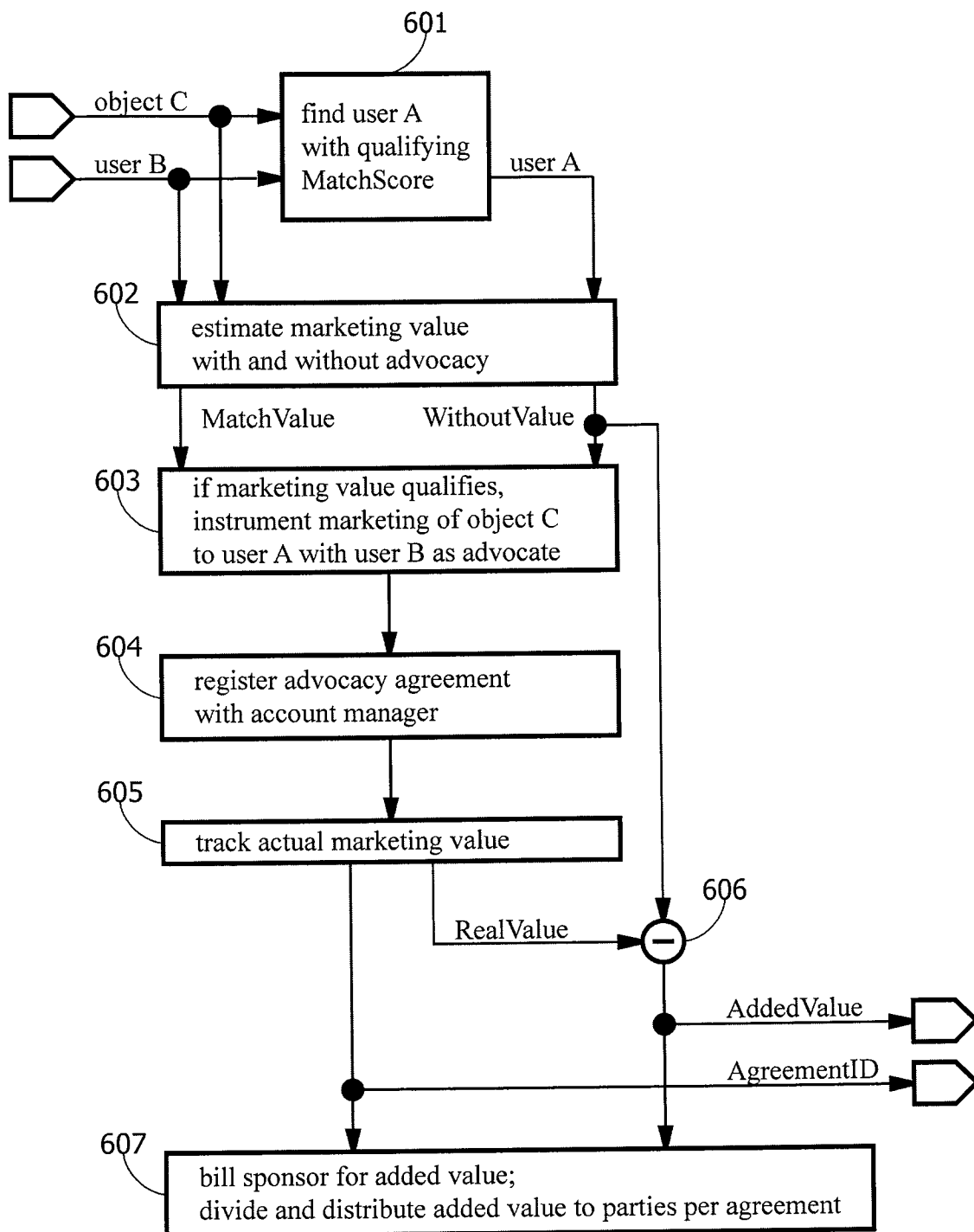


Fig. 6

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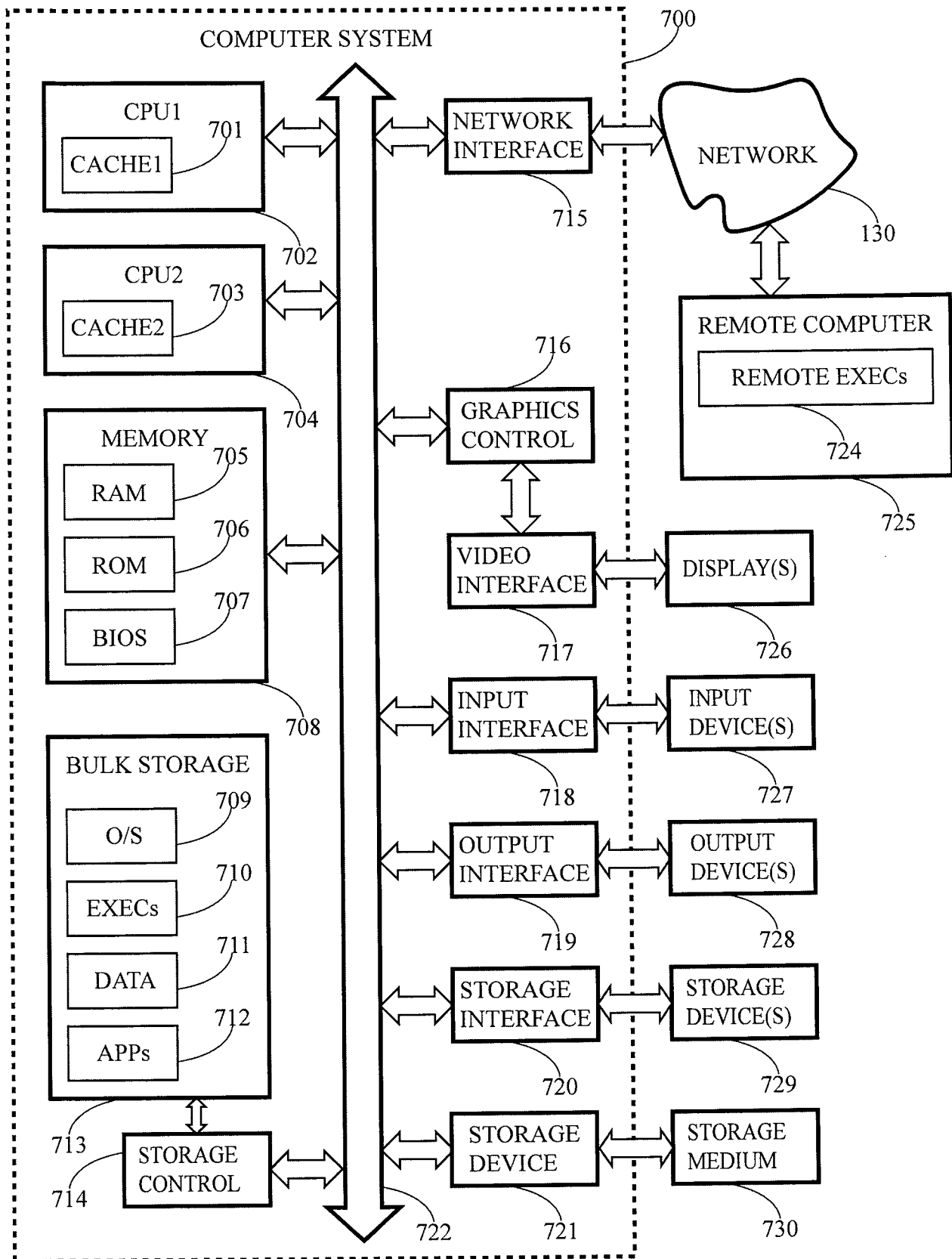


Fig. 7

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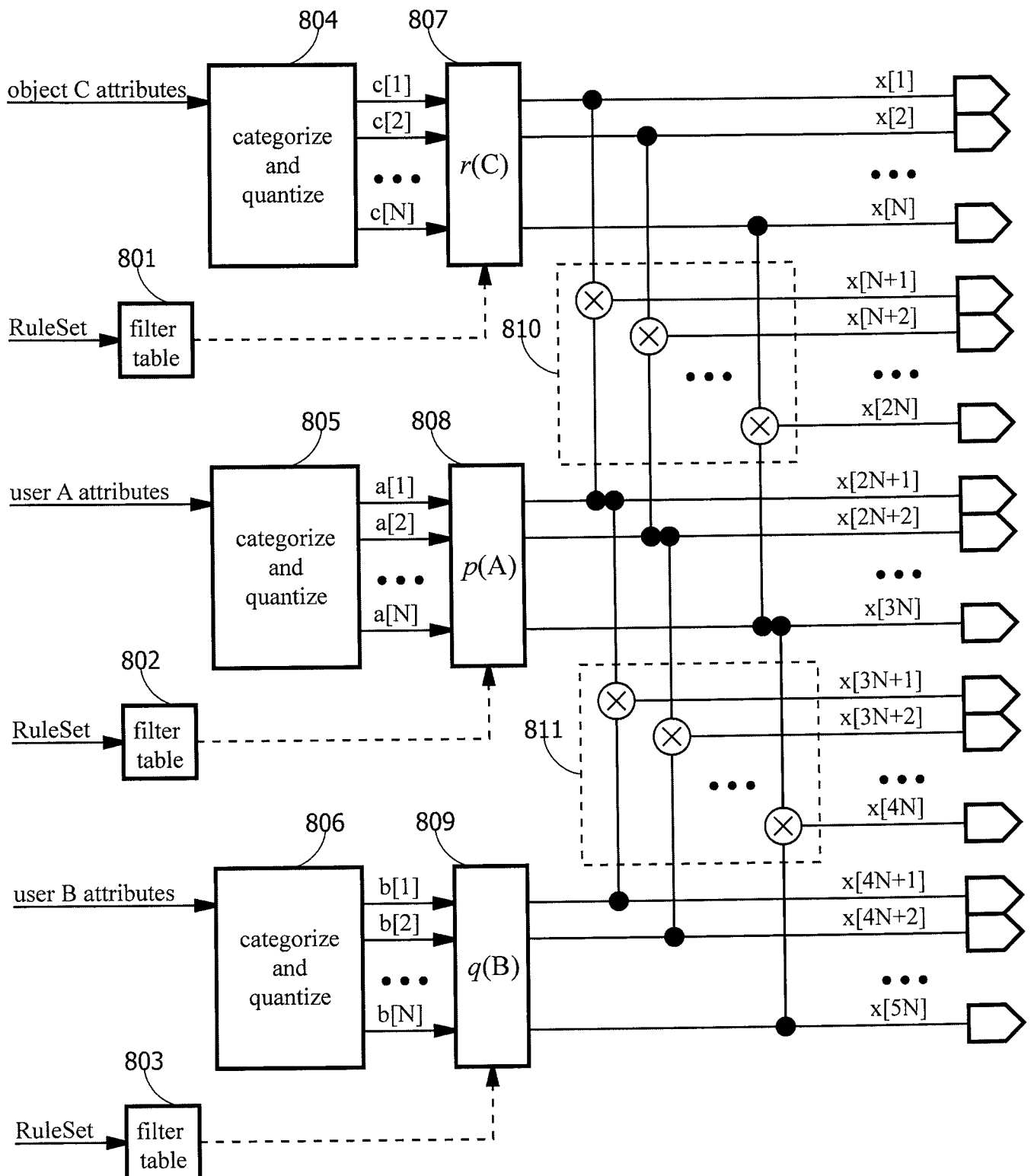


Fig. 8

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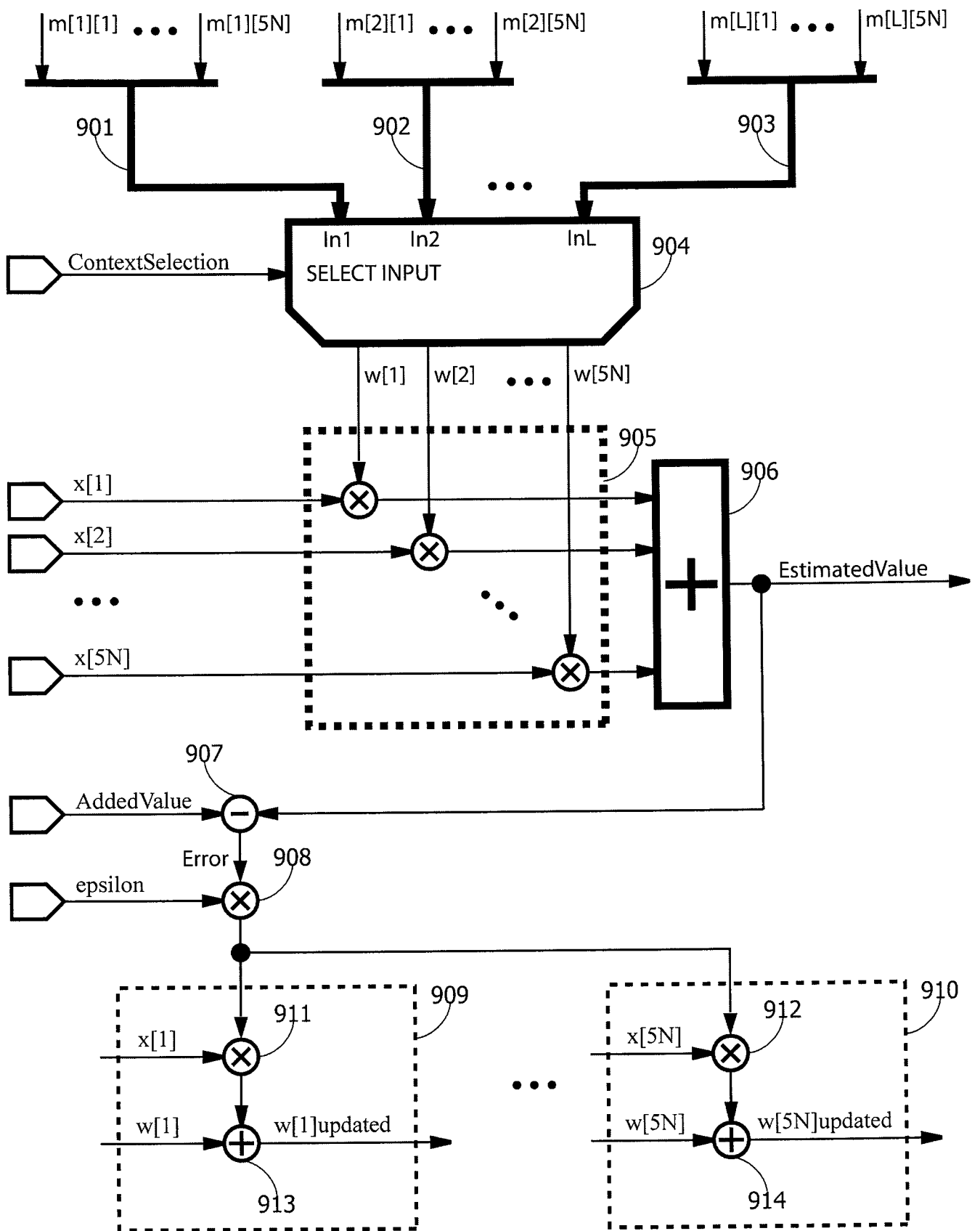


Fig. 9