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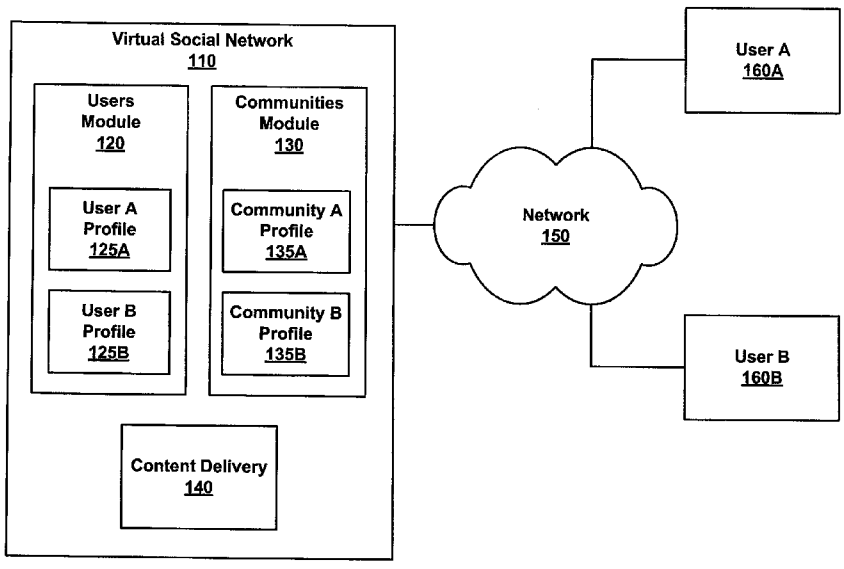
(54) **Title:** CONTENT DELIVERY IN VIRTUAL SOCIAL NETWORKS



(57) **Abstract:** Systems and methods for content delivery in virtual social networks are provided. Content may be provided to the virtual social network by users of the virtual social network, professional content developers, etc. Any content provided to the virtual social network may be stored in a content database and tagged based on the type of content. The tags associated with the content may be compared to information concerning the various users of the virtual social network. The content may be provided to the user based on matching of the tags and user information. In various embodiments of the present invention, the content may be provided to communities based on matches between content tags and community information.

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CONTENT DELIVERY IN VIRTUAL SOCIAL NETWORKS

BACKGROUND

Field of the Invention

[0001] The present invention relates generally to the field of virtual social networks. More specifically, the present invention relates to content delivery in virtual social networks.

Description of Related Art

[0002] Various virtual social networks allow a user to connect and interact with other individuals. Each user of a social network may choose to interact with certain other users of the virtual social network and form connections with those users. One type of interaction includes the user sharing information and content with other users in the virtual social network. A user may post content, including articles, blogs, pictures, video, etc. and share such content with other users. The user may also wish to share such content with a group of users. For example, if the user is a member of a community of music fans, the user may post an audio file of the user singing a cover of The Beatles' "Yesterday." The content would be available to anyone in the group to download, listen, give feedback, etc.

[0003] One way for users to meet and interact is through a community in the virtual social network. Created by an administrator, an individual user, or the like, a community represents an aggregation of users within the virtual social network who typically share something in common. A community is, therefore, generally directed toward a particular subject matter. Users with an interest in the subject matter may join the community and interact with other users with a similar interest. The subject matter may be, for example, social, hobby-related, fan-related, or business-related. A user may choose to create or join various communities corresponding with any of that user's interests. A community can allow for various activities, including posting content such as articles, blogs, photos, or video.

SUMMARY OF THE INVENTION

[0004] The present invention provides methods for content delivery in a virtual social network. Various types of content may be provided to the virtual social network by various users of the virtual social network, various professional content developers, etc. The types of content may include articles, blogs, photos, video, advertising, etc. Any content provided to the virtual social network is stored in a content database and tagged based on the type of content. The tags associated with the content are compared to information concerning the various users of the virtual social network. If the tags match a user's interests, for example, beyond a threshold level, the content is automatically provided to the user. Content may also be delivered to a user based on the user's demographic information, geographical information, community membership information, and participation in debates, surveys, polls, and the like. In various embodiments of the present invention, the content may be filtered by author preference, target preference, community rules, etc.

[0005] An exemplary method comprises receiving content that has been provided to the virtual social network. Then, information concerning relevancy flags associated with various potential targets is evaluated to determine whether to provide the content to those potential targets. Potential targets include users and communities of the virtual social network. Specifically, the relevancy flags are compared to the one or more tags associated with the content to determine whether there are any matches beyond a threshold level. The relevancy flags may include user interests designated in a user profile, community membership, community interests designated in a community profile, related communities, user activity within the virtual social network, etc. Further, the content may be filtered based on various preferences and rules. If the content passes the filters, the content may then be provided to the target. The present invention also provides a computer-readable storage medium having stored thereupon executable computing instructions for performing the method just described.

[0006] The present invention also provides systems for content delivery in a virtual social network. An exemplary system comprises a content database, a target

database, a relevancy module, and a content push module. In some embodiments of the present invention, the system may further comprise a content filter to prevent delivery to a target based on various preferences and rules, including author preferences, target preferences, community rules, virtual social network rules, etc.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] FIG. 1 is an illustration of a web-based implementation of a virtual social network, according to an exemplary embodiment.

[0008] FIG. 2 is an illustration of content delivery to a user of a virtual social network, according to an exemplary embodiment.

[0009] FIG. 3 is an illustration of content delivery to a community in a virtual social network, according to an exemplary embodiment.

[0010] FIG. 4 is an illustration of a system for content delivery in a virtual social network, according to an exemplary embodiment.

[0011] FIG. 5 is a flowchart illustrating a method for content delivery in a virtual social network, according to an exemplary embodiment.

DETAILED DESCRIPTION

[0012] The present invention provides methods for content delivery in a virtual social network. The content may be provided to the virtual social network by users of the virtual social network, professional content developers, etc. Such content may be subscribed to, requested, or otherwise voluntarily accessed by individual users and communities of users in the virtual social network. The content may also be provided without having been requested to certain users based on relevance of the content to the users' interests. Relevance is determined by comparing tags associated with the content with the interests of the users.

[0013] FIG. 1 is an illustration of a web-based implementation of a virtual social network 110, according to an exemplary embodiment. The virtual social network 110, comprising users module 120, communities module 130, and content delivery module 140, is accessible to exemplary users 160A and 160B through a network 150, such as the Internet or an intranet. Users 160A and 160B each have a respective user profile 125A and 125B, managed by users module 120. Communities module 130 manages profiles for various communities, such as community profiles 135A and 135B for exemplary communities A and B (not pictured).

[0014] A module (or application), as referenced herein, should be generally understood to be a collection of routines that perform various system-level functions and may be dynamically loaded and unloaded by hardware and device drivers as required. The modular software components described herein may also be incorporated as part of a larger software platform or integrated as part of an application specific component.

[0015] Virtual social network 110 is configured to allow a user to create, manage, and maintain that user's collection of relationships with other individuals in a virtual environment. Virtual social network 110 allows the user to encounter, interact with, connect, and share information with new acquaintances that also use virtual social network 110. Users may share information with each other in various ways. For example, users may post certain information, such as interests and hobbies, in their user profiles. A user may also participate in one of the various

activity modules associated with the user's own profile, with another user's profile, or with various communities in the virtual social network. Activity modules may include articles, blogs, pictures, video, etc.

[0016] Users module 120 stores and manages information concerning the users of virtual social network 110. Information concerning each user may be organized, stored, and managed by users through their respective user profiles. For example, information concerning exemplary users 160A and 160B may be stored in user profile 125A and user profile 125B, respectively. Such information may include information entered by the user, such as personal information, personal descriptions, interests, hobbies, etc. In some embodiments of the present invention, a user profile may further include information about the various activities and interactions involving the user within the virtual social network 110, such as membership in various communities, communities frequented by the user, and user participation in various activities in the virtual social network. Further, each user profile may include various modules which allow for the management of all of the information concerning the user within virtual social network 110.

[0017] Communities module 130 manages and stores information concerning communities in virtual social network 110. Communities may be directed toward a variety of topics, ranging from broad topics to very specialized topics. Just as topics may be related or overlap, a community concerning cars, for example, may have related or sub-communities concerning racecars, antique cars, car maintenance, etc. Information concerning exemplary communities A and B may be stored in community profile 135A and community profile 135B, respectively, within communities module 130. Community profiles, like user profiles, may include information concerning various interests, hobbies, relation to other communities, activities, and the like.

[0018] The user of virtual social network 110 may post content or post a link to content, which may include written, artistic, photographic, or various other types of content. Likewise, a professional developer of content may provide such content to a user, a community, or an activity module associated with a user or community in the virtual social network. A user may voluntarily subscribe to receive content

from designated sources in the virtual social network. Alternatively, content delivery module 140 allows for delivery of content to targets (i.e., users who have not requested such content specifically), based on certain relevancy flags associated with such targets. A target may also be a community of users in the virtual social network.

[0019] The relevancy flags considered by content delivery module 140 may include user interests or hobbies designated in a user profile, community membership, community interests designated in a community profile, related communities, user activity in the virtual social network, etc. Such user activity may include the communities visited by the user, the types of content viewed, the types of content posted, participation in various activities, and the like. A user may also designate a preference for certain types of content (e.g., photos) and for content from certain authors or groups of authors. The authors may include other users or members of the virtual social network and/or various professional content developers. All such information may be considered as relevancy flags by content delivery module 140 in determining whether to provide a particular target with the content. Some embodiments of the present invention allow for certain relevancy flags to be weighted more heavily in determining relevance of content to the user.

[0020] For example, an article concerning a new type of car may be posted to a certain car community. A user who is not a member of the community, but who has listed the specific car as an interest may be provided with the article. Further, another community that has listed the specific car as an interest may also be provided with the article. In various embodiments of the present invention, the number of matches between the tags associated with the content and a target's relevancy flags may have to exceed a certain threshold level to trigger delivery of the content to the target.

[0021] The relevancy flags considered by content delivery module 140 may include user interests or hobbies designated in a user profile, community membership, community interests designated in a community profile, related communities, user activity that has been tracked by the virtual social network, etc. Such tracked user activity may include the communities visited by the user, the types

of content viewed, the types of content posted, and the like. All such information may be considered as relevancy flags by content delivery module 140 in determining whether to provide a particular target with the content.

[0022] FIG. 2 is an illustration of content delivery to a user 160A of a virtual social network 110, according to an exemplary embodiment. User 160A may be provided content in various ways. One way is through voluntary subscription 210, which may include subscribing to certain content providers, certain communities, or specifically requesting and accessing the content. For example, if user 160A is interested in politics, user 160A may join a community dedicated to discussing politics. User 160A may be provided with the content or notification of the content by, for example, e-mail, RSS feed, private message, hyperlink, or the like. In some embodiments, user 160A may subscribe to receive all content or specific content (i.e., text only, pictures only, content provided by user 160B only) provided by another user (e.g., user 160B), provided by a group of users, by a community, etc. For example, membership in a community may include a subscription to receive content or notification of content provided in the community by other members or by content providers.

[0023] An alternative way for user 160A to be provided content is through relevancy matching 220 performed by content delivery module 140. User 160A may not have specifically subscribed to or requested content, but user 160A's profile and other associated records may indicate that user 160A may have an interest in the content. For example, a user profile associated with user 160A may indicate that user 160A is interested in all things related to The Beatles, the individual band members, all Beatles albums, movies, television appearances, etc. Further, user 160A may be a member of one or more Beatles fan communities, have visited various Beatles-related communities, blogged about The Beatles, and interacted with other users with a similar interest in The Beatles. User 160A would be a target to receive content related to The Beatles, as determined by relevancy matching 220. For example, an article about The Beatles provided to the virtual social network may be associated with tags indicating that the article concerns The Beatles. Content delivery module 140 would

compare the tags to user 160A's relevancy flags, and then based on matches, provide the article to user 160A without user 160A having to specifically request such article.

[0024] FIG. 3 is an illustration of content delivery to a community in a virtual social network 110, according to an exemplary embodiment. Content delivery module 140 provides content to Community A 310 in voluntary and involuntary ways, such as user posting 320, inter-community content delivery 330, voluntary subscription 210, and relevancy matching 220, described above. The content may then be provided to user 160A through voluntary subscription 210, as user 160A may be a member of Community A 310 or may have subscribed to receive content from Community A 310.

[0025] One way that community A 310 receives content is through user posting 320. Members of community A 310 may participate in various activities including posting articles, blogs, event listings, pictures, video, etc. A user providing content is not necessarily a member of the community. Further, professional content developers may have special user accounts that allow them to provide content to the community. User posting 320 may also include content from, for example, network administrators, community moderators, etc., as determined by community rules. Communities may have different rules determining who may provide content to the community.

[0026] Another way that community A 310 receives content is through inter-community content delivery 330. Some embodiments allow for a community to designate another community as related. Related communities may share content with each other. For example, a music community may have a jazz sub-community, and news posted to the music community may also be provided to the jazz sub-community. In some embodiments, all content provided to a sub-community may be automatically provided to the parent community.

[0027] Further, communities may also receive content through voluntary subscription 310 and relevancy matching 220. Like users, communities may have profiles, activity modules (e.g., blogs) where content is posted, etc. The interests listed in a community profile, for example, may serve as the relevancy flags in determining relevancy to the community. For example, a community profile may list

interests in cheese, American cheese, Swiss cheese, Gouda, mozzarella, Gorgonzola, Havarti, and brie. That community profile may serve as relevancy flags with which to measure relevancy when content (e.g., a blog about cheddar) is posted to the virtual social network (e.g., in a community of Wisconsinites). If the tags associated with the content match the relevancy flags above a threshold level, community A 310 may then be delivered content based on the relevancy matching 220. In another example, community A 310 may not list any interests, but may designate multiple cheese-dedicated communities as related communities and include multiple blog entries and discussions concerning cheese in the activity modules. Such related communities, activity modules, etc. serve as other relevancy flags that may also be matched against the tags of some content in determining the relevancy of the content to the community.

[0028] FIG. 4 is an illustration of a system for content delivery in a virtual social network 110, according to an exemplary embodiment. Content delivery module 140 may include input/output module 410, content database module 420, relevancy module 430, content push module 440, content filter module 450, and processing logic 460.

[0029] Input/output module 410 is configured to allow for communication between content delivery module 140, users of the virtual social network 110, and various other components of virtual social network 110. Input/output module 410 may be configured to receive information via a communication network 150, such as the Internet or an intranet.

[0030] Content database 420 is configured to receive and store information concerning all of the content posted to virtual social network 110. Such content may be provided by users of the virtual social network 110, by professional content developers, etc. The content stored in content database 420 is associated with various tags that describe the type of content. In various embodiments, the tags may be determined by an author of the content, by key words in the content title, content description, or content body, by an administrator, by users who have viewed the content, or any combination of the foregoing. Some embodiments of the present invention further allow for some types of tags to be weighted more heavily than

others in determining relevance of the content to a user. Content database 430 may also be configured to receive updates concerning new content, new tags associated with the content, etc.

[0031] Relevancy module 430 is configured to match the tags associated with content with the relevancy flags associated with a target user or target community. Tag information may be received directly through input/output module 410 (e.g., from a user), or relevancy module 430 may consult content database 420 for tag information. The relevancy flags associated with a target may be stored in a user profile or a community profile. Relevancy module 430, therefore, may also consult users module 120 or communities module 130 to access the relevancy flags associated with a particular target. The tags are compared to the relevancy flags associated with a target to determine whether the content would be of interest to the target. If the number of matches rise to a threshold level, the relevancy module 430 determines that the content is relevant to the target. The threshold level may be a number, a percentage, weighted average, etc. and may be determined by a network administrator, a moderator, the individual target, or the like.

[0032] If the content has been determined to be relevant to a particular target, content push module 440 provides the content or notification of the content to the target. In various embodiments of the present invention, the content push module 440 may send the content or notification to the target via e-mail, RSS feed, private message, hyperlink, or the like. For example, a hyperlink to content determined to be relevant may be posted in a community home page or in an activity module associated with a community. Alternatively, a user may receive a e-mail notification concerning content likely to be of interest to the user based on the user's interests or activities in virtual social network 110.

[0033] Some embodiments of the present invention may include a content filter 450. Content filter 450 enforces target preferences concerning content delivery. If a target has designated a preference to exclude certain content, then the delivery of that content (or notification of such content) is blocked, despite relevance to the target. Such preferences may include user preferences, community rules, or a combination of the foregoing. A preference may apply to some or all content

provided to the virtual social network 110, content provided in a community, content provided by a user, content provided by a group of users, or the like. For example, a user may designate a preference excluding all content from professional content developers. That user would still receive subscribed content through voluntary subscription 210 (FIG. 2), as well as content or notifications about content from content push module 440 concerning unsubscribed content provided by nonprofessional users found to be relevant by relevancy module 430. In another example, a community may have designated a preference (via a community moderator or the like) that all unsubscribed content be blocked, except for relevant content authored by user 160A. That community would still receive subscribed content through voluntary subscription 210, user posting 310, inter-community content 320, as well as content or notifications of content from content push module 440 concerning content provided by user 160A found to be relevant by relevancy module 430.

[0034] Processing logic 460 is configured to execute a variety of operations required by the various components of content delivery module 140. In various embodiments, processing logic 460 may be implemented through use of microprocessors, memory, firmware, and/or software.

[0035] FIG. 5 is a flowchart illustrating a method for content delivery in a virtual social network, according to an exemplary embodiment. In step 510, tagged content is received. The content may include various kinds of articles, blogs, photos, etc. Provided by a user or professional content developer through input/output module 410, the content may be uploaded, posted, or linked to through an activity module, for instance. The content may be associated with one or more tags describing the type of content. In various embodiments, the tags may be designated by an author of the content, the content provider, a network administrator, a community moderator, users viewing the content, or the like.

[0036] In optional step 520, the content may be stored. Illustrated in FIG. 4, content database 420 may serve as a repository where information concerning content is stored for use in, among other things, relevancy matching. Other components of virtual social network 110, such as relevancy module 430 (also

illustrated in FIG. 4), may refer to content database 420 in making determinations involving the content. Step 520 allows for the storage and archival of content in content database 420. Content from content database 420 may be provided to a new user to the virtual social network or a present user with updated interests, for example, based on the relevance of the content to the new or updated interests. Alternatively, skipping step 520 allows for automatic content delivery in real-time as the content is provided to the virtual social network.

[0037] In step 530, a determination is made as to whether the content is relevant to a particular target. Relevancy is determined by relevancy module 430, which considers tag information stored in content database 420 and information concerning relevancy flags stored in users module 120 (FIG. 1) and/or communities module (FIG.1). Relevancy module 430 compares the content tags with the relevancy flags associated with the target. If the matches between the tags and the relevancy flags meet a threshold level, the content is considered relevant and likely to be of interest to the target. If the content is relevant, the method proceeds to step 540. Otherwise, the method ends.

[0038] In step 540, a determination is made concerning the desirability of the content to the target. Various embodiments of the present invention allow for users and communities of the virtual social network 110 to designate preferences concerning desired and undesired content. A target's preference, for example, may designate some or all types of unsubscribed content as being undesirable to the target. By referring to these preferences, content filter 450 is able to block the undesirable content from being delivered to the target. If content is found to be undesirable based on target preferences, then content delivery by content push module 440 to the target is blocked, and the method ends. Step 540 may occur concurrently with or before step 530.

[0039] If the determination is made in step 540 that the content is not undesirable to the target, then in step 550, the content is provided to the target. The content may be provided in various ways, including by e-mail, private message, etc. In some embodiments of the present invention, the target is provided with a notification of the content. For example, a target user may receive an e-mail

notifying the user that content found likely to be of interest to the user has just been posted in a blog in community A 310. The notification may further include a hyperlink to the content, a hyperlink to the blog, a hyperlink to community A 310, a portion of the content, etc. In another example, a target community may receive a notification in the form of a blog entry, news item, or the like. Alternatively, the content itself may be posted in the blog, news, etc. associated with the target community. In some embodiments of the present invention, delivery of the content may be blocked based on the preferences of the content author, community rules, etc. concerning access. Access preferences are discussed in more detail in U.S. patent application titled "Selective Privacy Management in Virtual Social Networks" filed October 24, 2007.

[0040] It will be understood that the methods of the invention are not necessarily limited to the discrete steps or the order of the steps described with respect to FIG. 5. While the present invention has been described in the context of a series of exemplary embodiments, these descriptions are not intended to limit the scope of the invention to the particular forms set forth herein. To the contrary, the present descriptions are intended to cover such alternatives, modifications, and equivalents as may be included within the spirit and scope of the invention as defined by the appended claims and otherwise appreciated by one of ordinary skill in the art.

CLAIMS

What is claimed is:

1. A method for content delivery to a target in a virtual social network, the method comprising:

receiving content provided to the virtual social network, the content having been associated with one or more tags;

determining whether the content is relevant to a target in the virtual social network based on matching the one or more tags with relevancy flags associated with the target;

determining whether the content is undesirable to the target based on at least preferences designated by the target; and

providing the content to the target based on the determined relevancy and desirability of the content.

2. The method of claim 1, wherein the target is a user of the virtual social network.

3. The method of claim 1 or 2, wherein the target is a community in the virtual social network.

4. The method of claim 1, 2, or 3, further comprising storing the content in a content database.

5. The method of claim 1, 2, 3, or 4, further comprising maintaining information concerning relevancy flags in a target database.

6. The method of claim 1, 2, 3, 4, or 5, wherein the relevancy flags comprises profile information associated with the target.

7. The method of claim 1, 2, 3, 4, 5, or 6, wherein the relevancy flags comprises information derived by tracking activity of the target in the virtual social network.

8. The method of claim 1, 2, 3, 4, 5, 6, or 7, further comprising maintaining the preference information in a target database.

9. The method of claim 1, 2, 3, 4, 5, 6, 7, or 8,wherein the preferences further comprise user preferences designated by the target.

10. The method of claim 1, 2, 3, 4, 5, 6, 7, 8, or 9, wherein the preferences further comprise community rules.

11. The method of claim 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10, wherein providing the content is further based on access preferences of an author of the content.

12. A system for content delivery to a target in a virtual social network, the system comprising:

a content database configured to store information concerning content provided to the virtual social network, the information including one or more tags associated with the content;

a target database configured to store information concerning a target in the virtual social network;

a relevancy module configured to determine whether the one or more tags matches target information of a target beyond a threshold level, as indicated by the content database and the target database respectively; and

a content push module configured to deliver the content to the target based on at least the matches between the one or more tags and the target information, as determined by the relevancy module.

13. The system of claim 12, wherein the content database is further configured to receive updated information concerning the content.

14. The system of claim 12 or 13, wherein the content database is further configured to receive content information from a user of the virtual social network.

15. The system of claim 12, 13, or 14, wherein the content database is further configured to receive content information from a professional content developer.

16. The system of claim 12, 13, 14, or 15, wherein the target database is further configured to store information derived by tracking activity of the target within the virtual social network.

17. The system of claim 12, 13, 14, 15, or 16, wherein the target is a user of the virtual social network system.

18. The system of claim 12, 13, 14, 15, 16, or 17, wherein the target is a community in the virtual social network system.

19. The system of claim 12, 13, 14, 15, 16, 17, or 18, further comprising a content filter configured to block content from being delivered to the target based on at least preferences designated by the target.

20. A computer-readable storage medium having stored thereupon executable computing instructions for performing a method comprising:

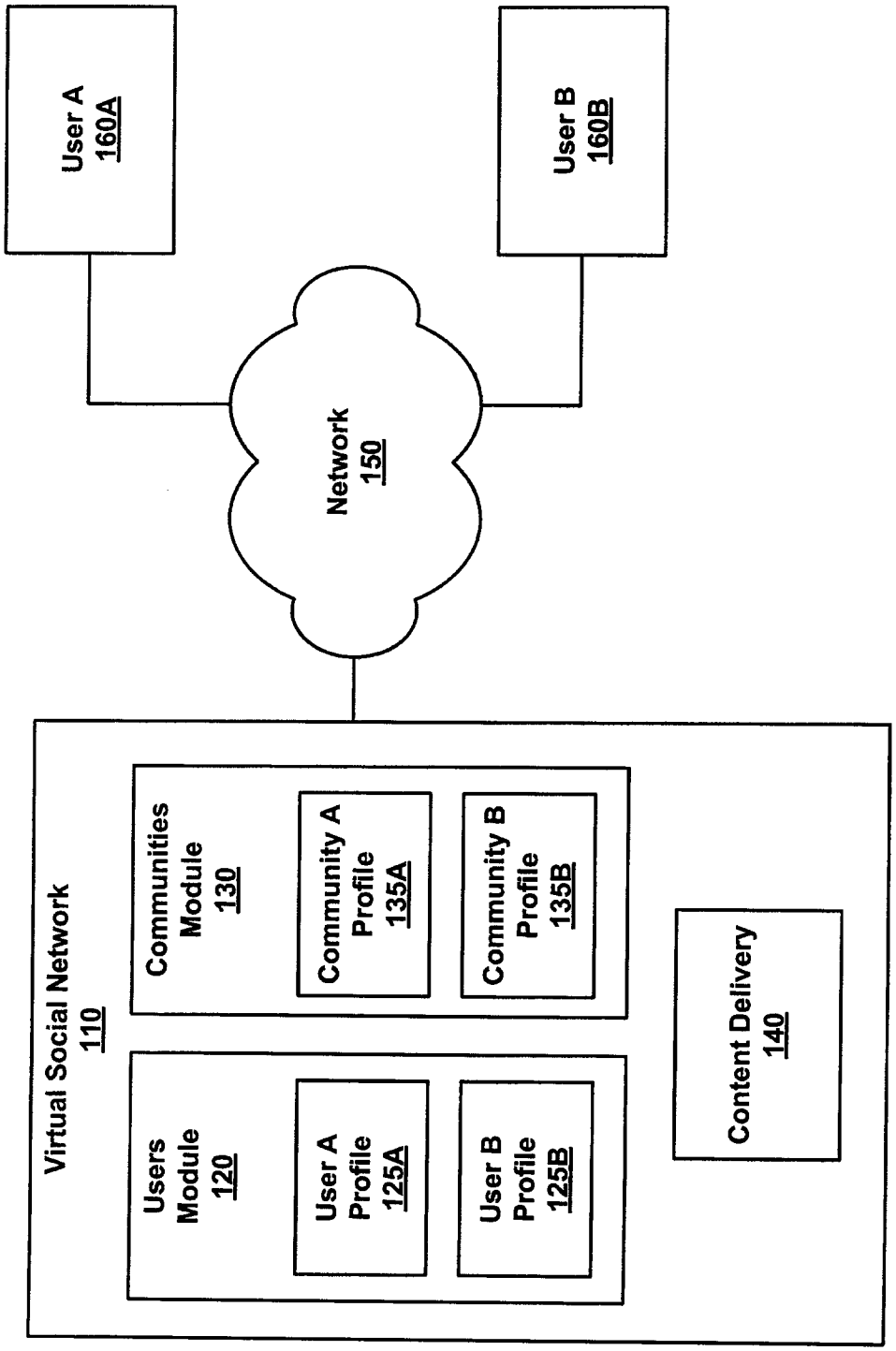
receiving content provided to the virtual social network, the content having been associated with one or more tags;

determining whether the content is relevant to a target in the virtual social network based on matching the one or more tags with relevancy flags associated with the target;

determining whether the content is undesirable to the target based on at least preferences designated by the target; and

providing the content to the target based on the determined relevancy and desirability of the content.

21. The computer-readable storage medium of claim 20, wherein the executable instructions further provide for maintaining the target information in a target database, wherein the target information comprises information concerning activity of the target in the virtual social network.


User A
160A
User B
160B
Network
150
Virtual Social Network
110
Communities
Module
130
Community A
Profile
135A
Community B
Profile
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Users
Module
120
User A
Profile
125A
User B
Profile
125B
Content Delivery
140

FIG. 1

FIG. 2

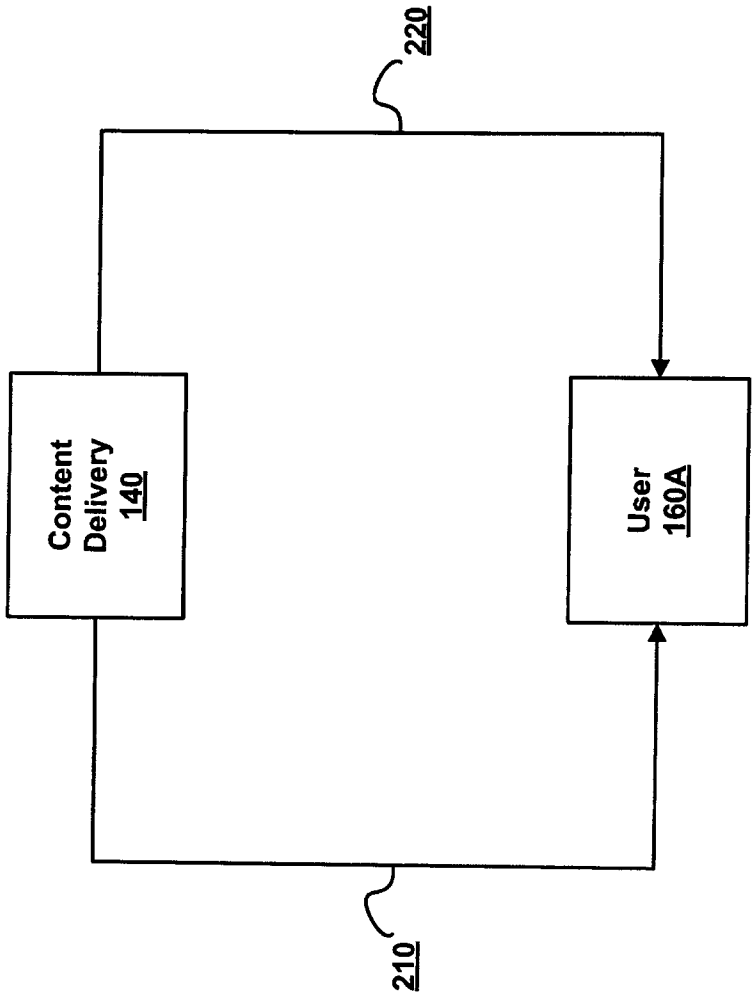
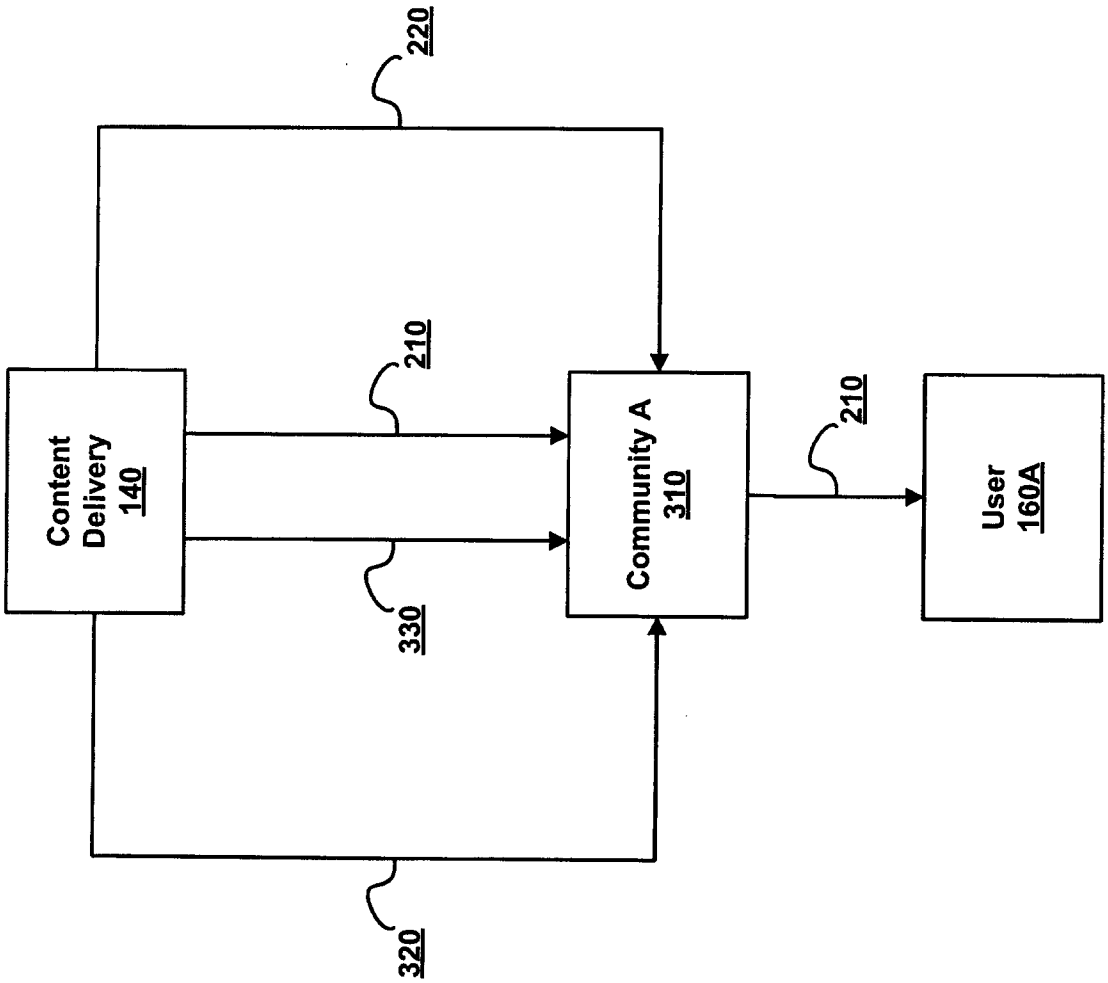


FIG. 3


220
210
Content Delivery 140
Community A 310
210
User 160A
330
320

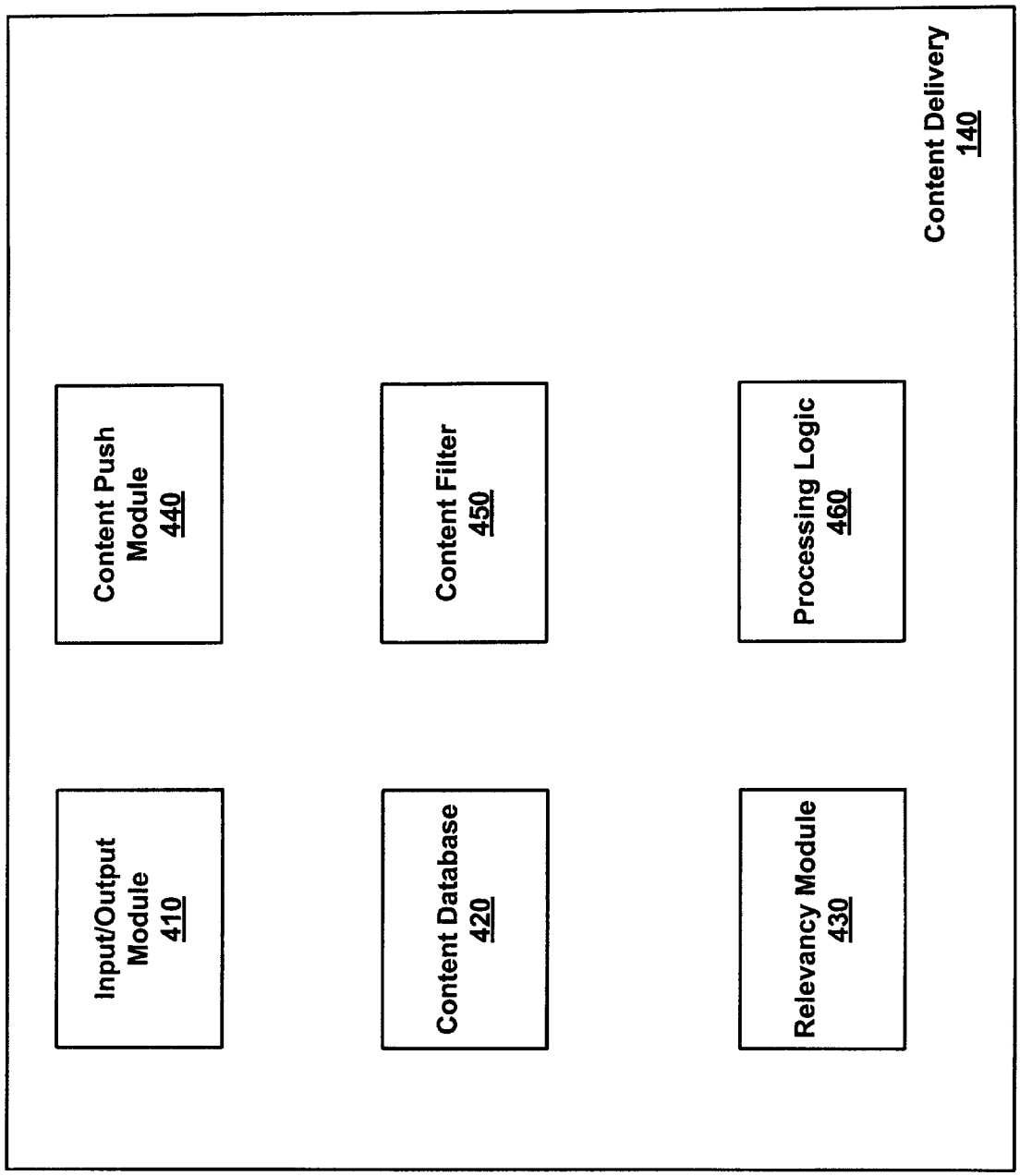

Content Delivery
140
Input/Output Module
410
Content Database
420
Relevancy Module
430
Content Push Module
440
Content Filter
450
Processing Logic
460

FIG. 4

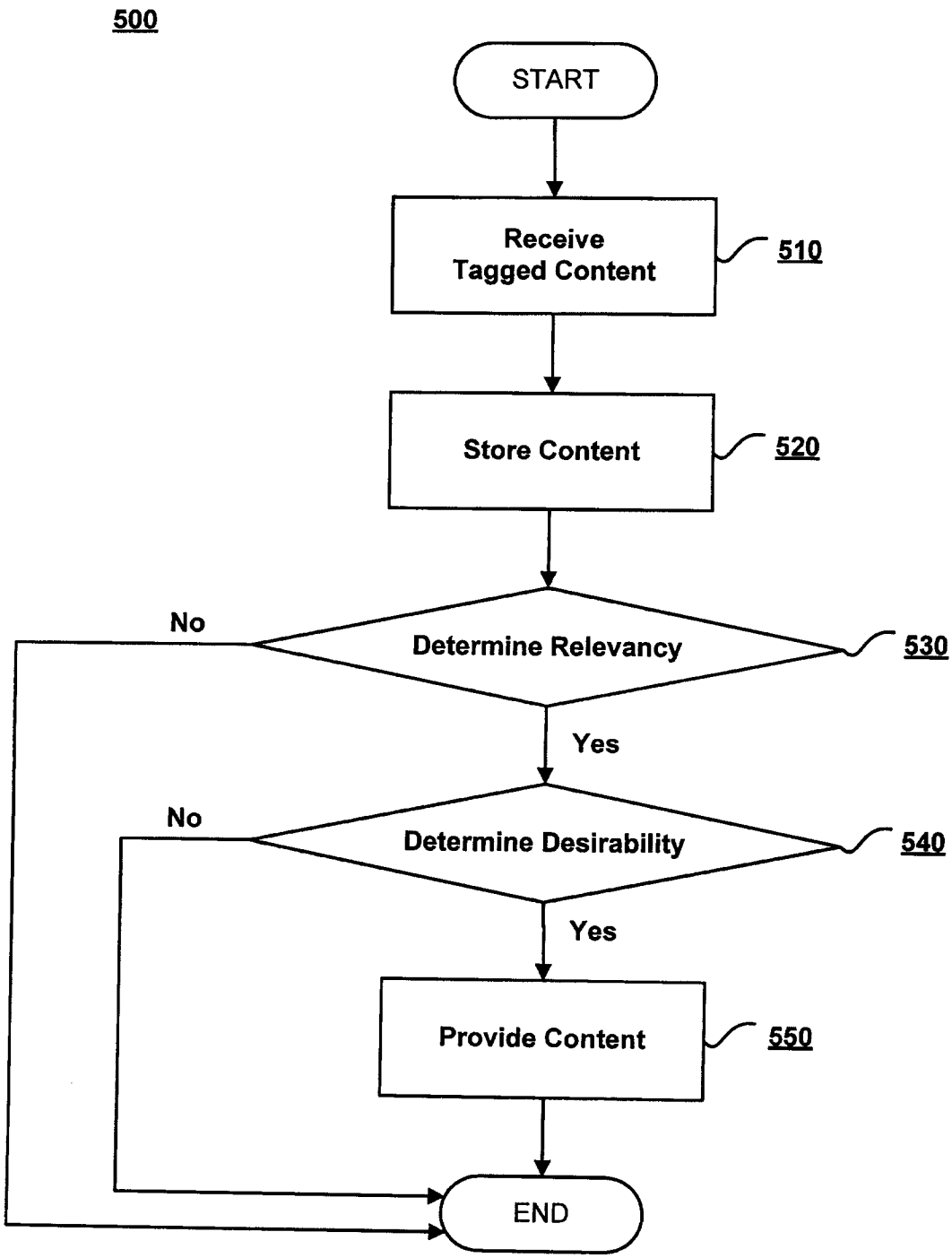

500
START
Receive Tagged Content
510
Store Content
520
No
Determine Relevancy
530
Yes
No
Determine Desirability
540
Yes
Provide Content
550
END

FIG. 5

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CA2007/001920

A. CLASSIFICATION OF SUBJECT MATTER
IPC: ***H04L 12/16*** (2006.01) , ***G06F 17/30*** (2006.01)
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC: ***H04L 12/16*** (2006.01) , ***G06F 17/30*** (2006.01)

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

Electronic database(s) consulted during the international search (name of database(s) and, where practicable, search terms used)
Canadian Patent Database, Delphion, IEEE Xplore and Internet - Search terms used: virtual, social network, target, content, relevan*, tag, flag, push, community, communities, group, interact, individual, interest, deliver*, blog, article

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2006/0240856 (COUNTS et al.) 26 October 2006 (26.10.2006) Abstract Figures 1-4 Paragraphs [0005-0012], [0033] and [0053]	1-21
Y	US 2005/0278443 (WINNER et al.) 15 December 2005 (15.12.2005) Abstract Paragraphs [0006-0008] and [0024-0025]	1-21
P,Y	US 2007/0208751 (COWAN et al.) 06 September 2007 (06.09.2007) Whole document	1-21

[**X**] Further documents are listed in the continuation of Box C.

[**X**] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
10 December 2007 (10-12-2007)	13 February 2008 (13-02-2008)

Name and mailing address of the ISA/CA	Authorized officer
Canadian Intellectual Property Office Place du Portage I, C114 - 1st Floor, Box PCT 50 Victoria Street Gatineau, Quebec K1A 0C9 Facsimile No.: 001-819-953-2476	Donald Lefebvre 819- 997-2822

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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A	US 2006/0218153 (VOON et al.) 28 September 2006 (28.09.2006) Whole document	1-21
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A	US 2005/0198305 (PEZARIS et al.) 08 September 2005 (08.09.2005) Whole document	1-21

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CA2007/001920

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