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(54) Title: SPONSORED STORIES UNIT CREATION FROM ORGANIC ACTIVITY STREAM

(57) Abstract: Methods, apparatuses and systems directed to sponsored story generation from an organic activity stream in a social networking site. A user wishing to promote an entry from an organic activity stream may, using a sponsor user interface, specify the types of stories to promote to a portion of the home page displayed to a member of a social network.



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## SPONSORED STORIES UNIT CREATION FROM ORGANIC ACTIVITY STREAM

TECHNICAL FIELD

The present disclosure relates generally to social networking websites and other systems in which users can form connections with other users, and in particular, promoting a specific organic stream story from a users' news feed to an sponsored stories area.

This disclosure hereby incorporates by reference commonly-owned U.S. utility patent application, U.S. Patent Application No. 12/968,786, entitled, "Targeting Social Advertising to Friends of Users Who Have Interacted with an Object Associated with the Advertising," previously filed on December 15, 2010.

This disclosure hereby incorporates by reference commonly-owned U.S. utility patent Application No. 12/884,010, entitled, "Action Clustering for News Feeds," previously filed on September 16, 2010.

BACKGROUND

Social networks, or social utilities that track and enable connections between users (including people, businesses, and other entities), have become prevalent in recent years. In particular, social networking websites allow users to communicate information more efficiently. For example, a user may post contact information, background information, job information, hobbies, and/or other user-specific data to a location associated with the user on a social networking website. Other users can then review the posted data by browsing user profiles or searching for profiles including specific data. Social networking websites also allow users to associate themselves with other users, thus creating a web of connections among the users of

social networking website. These connections among the users can be leveraged by the website to offer more relevant information to each user in view of the users' own stated interests in their connections.

A system, such as a website, that allows users to interact with the system typically stores a record for each users of the system. These records may comprise information provided by the user as well as information gathered by the system related to activities or actions of the user on the system. For example, a system may require a user to enter information such as contact information, gender, preferences, interests, and the like in an initial interaction with the system, which is stored in the user's record. A user's activities on the system, such as frequency of access of particular information on the system, also provide information that can be stored in the user's record. The system may then use information provided by the user and information gathered about the user, to customize interactions of the system with the user. For example, a website selling books may keep track of a users previous purchases and provide the user with information on related books during subsequent interactions with the system. Information in a user's profile may also be used by the system to target sponsored stories that are of interest to the user. Using information collected from and about users results in a system that is more efficient and beneficial for both the user and the system.

Users interacting with the social network may post stories or status updates to a live activity stream, such as a "news feed." A news feed is a data format typically used for providing users with frequently updated content. A social networking system may provide various news feeds to its users, where each news feed includes content relating to a specific subject matter or topic, and/or other users. Various pieces of content may be aggregated into a single news feed. In some implementations, a social networking system may provide a news feed that includes

selected entries corresponding to activities of a user's first-degree contacts and/or pages or topics that a user has indicated an interest for. Individual users of the social networking system may subscribe to specific news feeds of their interest. A group of related actions may be presented together to a user of the social networking system in the same news feed. For example, a news feed concerning the event organized through the social networking system may include information about the event, such as its time, location, and attendees, and photos taken at the event, which have been uploaded to the social networking system.

Generally, news feeds are customized for each member; only the status updates and stories posted by their connections are displayed. In this manner, members of the social network may quickly access their direct connections' status updates, story postings, and other interactions with the social network in a single stream, obviating the need to individually check their connections' profile pages.

However, given the vast number of contacts the average member of a social network has, and the prodigious amounts of status updates posted by users, it is possible that stories of interest to the user are lost in the unending stream of their newsfeed. Furthermore, sponsors may wish to pay for permanence of a particular story in members' newsfeeds; this functionality unavailable in typical social networking systems.

Typically sponsors pay for a static advertisement to be displayed to a member of the social network. In particular embodiments, advertisements may be displayed to a member's home page on the social network, mobile devices, third-party webpages and applications, television and other video streams, or any other particular display accessed by a member of the social network. Despite data mining techniques that match users based on their preferences,

activities, or other data stored in their social networking profile to the most relevant sponsored or promoted stories, no system currently exists for promoting a story from a user's news feed to the sponsored stories space of a social network home page. Sponsored or promoted stories generated from actual stories in users' newsfeeds are more likely to be viewed by users, because they generally involve interactions or suggestions by their connected friends, or fan pages that they are connected or subscribed to.

#### BRIEF DESCRIPTION OF THE DRAWINGS

FIGURE 1 illustrates the architecture of an example social network.

FIGURE 2 illustrates the hardware components of an example social network.

FIGURE 3 is depicts the interaction between the organic activity stream and the sponsored story specification database to create sponsored stories from newsfeed stories in accordance with one embodiment of the disclosure.

FIGURE 4 illustrates a method for promoting stream sponsored story to an sponsored story space.

FIGURE 5 depicts example components in an sponsored story system in a social network.

FIGURE 6A is an example of the sponsor GUI used by sponsors to specify the type of stories they wish to sponsor or promote to the sponsored story system, in accordance with an embodiment of the invention.

FIGURE 6B is an example of a simplified sponsor GUI.

FIGURE 7 is an example of a news feed story promoted to the sponsored story space of a user's social networking homepage in accordance with one embodiment of the disclosure.

FIGURES 7A-E illustrate examples of various types of sponsored stories.

FIGURE 8 illustrates an example computer system.

FIGURE 9 illustrates an example network environment.

The figures depict various embodiments of the present disclosure for purposes of illustration only. One skilled in the art will readily recognize from the following discussion that alternative embodiments of the structures and methods illustrated herein may be employed without departing from the principles of the invention described herein.

## DETAILED DESCRIPTION OF EXAMPLE EMBODIMENT(S)

### Overview

Particular embodiments relate to a social networking environment including a social networking system and related systems that integrate individual stories, status updates, and user interactions with an advertising system. A social networking system offers its users the ability to communicate and interact with other users of the social networking system. Users join the social networking system and then add connections to a number of other users to whom they desire to be connected. Once they are members of the social network, the users may interact with the social network itself, by posting stories and status messages on their own page, other users, by commenting, posting stories, etc. on other users' pages, or with non-user entities, such as fan pages that they subscribe to, online deals they redeem or subscribe to, or locations that they check in to.

Implementations of the present disclosure extend these concepts by allowing sponsors or specific users to export by promoting specific newsfeed stories to sponsored story space on users' social networking pages, thereby increasing the permanence and viewing frequency of these stories. In one example, a user may want to promote one of his news stories so that more of his connected friends can see the story in a more frequent and permanent view. For example, a sponsor who publishes an application, such as a social networking game, may wish for status updates generated with its application to have permanence on the application user's friends' homepages. In another example, a sponsor associated with a page on the social network, may want to promote news stories when a user connects to the page on the social network or to an object associated with the sponsor off network. In another example, the proprietor of a store may wish to promote news stories to a user's friends when that user "checks-in", or indicates that he physically visited, the store. In another example, the proprietor of a store may wish to promote news stories to a user's friends when that user subscribes, purchase, or redeems a deal or coupon associated with the sponsor. Other embodiments are readily envisioned by the disclosure and are described in detail below.

FIGURE 1 is a high-level block diagram illustrating a system environment suitable for operation of a social networking website 100. The system environment comprises one or more client devices 110, one or more third-party websites 140, a social networking website 100, and a network 120. In alternative configurations, different and/or additional modules can be included in the system.

Client devices 110 comprise one or more computing devices that can receive member input and can transmit and receive data via network 120. For example, client devices 110 may be desktop computers, laptop computers, smart phones, personal digital assistants (PDAs), or

any other device including computing functionality and data communication capabilities. Client devices 120 are configured to communicate via network 120, which may comprise any combination of local area and/or wide area networks, using both wired and wireless communication systems. Third party website 140 and action terminal 150 are coupled to network 120 for communicating messages to social networking website 100 about the members' actions off website 100.

Social networking website 100 comprises a computing system that allows members to communicate or otherwise interact with each other and access content as described herein. Social networking website 100 stores member profiles that describe the members of a social network, including biographic, demographic, and other types of descriptive information, such as work experience, educational history, hobbies or preferences, location, and the like. Website 100 further stores data describing one or more relationships between different members. The relationship information may indicate members who have similar or common work experience, group memberships, hobbies, or educational history. Additionally, the social network host site 120 includes member-defined relationships between different members, allowing members to specify their relationships with other members. For example, these member-defined relationships allow members to generate relationships with other members that parallel the members' real-life relationships, such as friends, co-workers, partners, and so forth. Members may select from predefined types of relationships, or define their own relationship types as needed.

FIGURE 2 is an example block diagram of a social networking website 100. Social networking website 100 includes a web server 250, an action logger 260, an action log 160, a newsfeed generator 270, an ad server 280, a database of ad requests 175, a member profile store

205, a group store 210, an event store 215, an application data store 220, a transaction store 225, and a content store 230. In other embodiments, social networking website 100 may include additional, fewer, or different modules for various applications.

Web server 250 links social networking website 100 via network 220 to one or more client devices 110, as well as to one or more third party websites 140. Web server 250 may include a mail server or other messaging functionality for receiving and routing messages between social networking website 100 and client devices 110 or third party websites 140. The messages can be instant messages, queued messages (e.g., email), text and SMS messages, or any other suitable messaging technique.

Action logger 260 is capable of receiving communications from the web server 250 about member actions on and/or off social networking website 100. Newsfeed generator 270 generates communications for each member about information that may be relevant to the member. These communications may take the form of stories; each story is an information message comprising one or a few lines of information about an action in action log 160 that is relevant to the particular member. The stories are presented to a member via one or more pages of the social networking website 100, for example in each member's home page or newsfeed page.

Ad server 280 performs an ad selection algorithm. Ad server 280 is communicatively coupled to the database of ad requests 175 and to action log 160 for this purpose.

FIGURE 3 shows the interaction between SPONSORED STORY application 301 and an activity stream 302. In particular embodiments, SPONSORED STORY application 301 may be software residing within the sponsored story system 304, or part of the stream sponsored story

specification database 305. In particular embodiments, SPONSORED STORY application 301 may be software executed by any number of servers in the social networking system, either in conjunction or in isolation. In particular embodiments, SPONSORED STORY application 301 may reside on its own dedicated hardware. Activity stream 302 comprises the aggregate stream of status updates and news stories for all users of a social network. Activity stream 302 under normal operation passes to news feed engine 303, which parses the individual stories in activity stream 302 and determines which users' (generally the friends of the user who generated the story) pages to display each story on. In particular embodiments, both activity stream 302 and newsfeed engine 303 are applications residing in server 307. In particular embodiments, activity stream 302 or newsfeed engine 303 are applications distributed across one or more computing servers. This disclosure contemplates any suitable implementation of activity stream 302 and newsfeed engine 303.

A sponsor uses Sponsor GUI 306 to specify the type of stories it wants promoted to the sponsored story section of users' pages. Examples of Sponsor GUI 306 are depicted in FIGURES 6A and 6B. The Sponsor GUI 306 provides a method for the sponsor to create story filters to locate specific types of news feed stories for promoting to the sponsored story space of a user's home page. Once the sponsor sets up its preferences for the types of stories it wishes to promote to the sponsored story portion, the sponsor specifications are stored into stream sponsored story specification database 305.

FIGURE 4 depicts the overall flow of the SPONSORED STORY system and method. In step 401, SPONSORED STORY application 301 constantly monitors activity stream 302, searching for matches to any of the sponsored story specifications in stream sponsored story specification database 305. In step 402, the SPONSORED STORY system compares each story

in the activity stream 302 to all stream sponsored story specifications in stream sponsored story specification database 305. If there is a match, the procedure continues to step 403, if not, it loops back to 401.

In step 403, upon finding a match, SPONSORED STORY application 301 pulls the matching entry out of activity stream 302, and formats the entry into a predetermined visual specification. In particular embodiments, the visual specification is dictated by the social networking system to mimic a regular news feed story. In other embodiments, special identifiers may be added by the social networking system to indicate that the story is a sponsored story. In other embodiments, the visual specifications are entered by the sponsor through the Sponsor GUI 306 at the time of stream story specification. In such an embodiment, the visual specification is stored along with the story specification in the stream sponsored story specification database 305. In particular embodiments, the sponsor is given limited discretion as to the visual specifications for the promoted stream story, subject to predetermined constraints imposed by the social networking system.

In step 404, after the story is formatted pursuant to the visual specification or by the social networking system to visually comport with a news feed story, the sponsored story is passed to sponsored story system 304.

In step 405, after a social story is formatted into a sponsored story, it is priced and directed toward users in a similar manner as a social ad. In particular embodiments, the user may also add a weight to the story to alter its direction toward users. For example, certain stories may decay quickly, such as check-ins, and are not displayed to other users beyond a predetermined threshold time period from the story generation. In other embodiments, user-

specified temporal factors, such as deadlines, may increase the weight of the sponsored story so that it is promoted over other sponsored stories lacking time sensitivity.

In particular embodiments, ad targeting is based upon an affinity score calculated by social networking website 100. A member may have affinities for other members, types of actions, types of objects, and content. Accordingly, a calculated affinity score may be based on a weighted function that takes into account the set of affinities for the particular member for each type of data field that is in a candidate story. The website may obtain a member's affinities based on the member's express interests (whether provided directly or indirectly, for example, through communications with other members) and/or impliedly based on the member's actions (e.g., a member's checking of another member's page indicates an interest in that other member, or clicking on particular types of links may indicate an interest in similar links). An affinity, as measured for example by an affinity score, need not be an actual subjective interest or lack of interest that a member has for something (i.e., the member likes punk rock music, and dislikes vegetarian restaurants), but rather it may merely be a correlation between something in the candidate story and some information stored in connection with that member, whether is an action taken by the member, a communication involving the member, a characteristic, feature or expressed interest in the member's profile.

FIGURE 5 illustrates an event diagram for a sponsored story model in accordance with one embodiment of the invention. In this sponsored story model, a number of sponsors 502 bid for the placement of sponsored stories on a social networking website 100. A social networking website operator 501 receives these bids, for example, through a web interface accessible to sponsors 502. Accompanying each bid is a description of the sponsored story that sponsor 502 would like to publish to for display to a particular set of members of the social

network. This disclosure contemplates a variety of methods of publishing the sponsored story. In particular embodiments, the sponsored story is published on a social network member's home page on the social network. In particular embodiments, the sponsored story may be displayed on a predetermined area of a mobile device. In particular embodiments, the sponsored story may be published through notifications in the social network. In particular embodiments, the sponsored story may be published through e-mail, instant messaging, or other messaging applications. In particular embodiments, the sponsored story may be displayed on a third-party website integrated with the social network. The web interface may thus allow sponsor 502 to specify all of the relevant information for a sponsored story request, including the bid amount for the sponsored story.

The bid amount specified in the sponsored story request may indicate an amount of money that sponsor 502 will pay for each time a member presented with the sponsored story clicks on it. In one embodiment, the sponsor may be a non-profit or charity where the bid amount is given at little or no cost. Alternatively, the bid amount may specify an amount that sponsor 502 will pay the website operator 501 each time the sponsored story is displayed to a member or a certain number of members or each time the sponsored story is clicked on by a member or a certain number of members. In another embodiment, the sponsor may pay a set amount per month or period of time and the social networking website will determine the bid amount and/or how and when to display the sponsored stories. In addition, the sponsored story request may allow sponsor 502 to specify targeting criteria. This targeting criteria may be a filter to apply to fields of a member's member profile or other object, and/or it may include free form text such as wall posts, comments, and messages. In one embodiment, in order to optimize the targeting and selection of sponsored stories for users of a social network, social

information gathered on and off the social network about a user is leveraged to infer interests about users of the social network. A social network may maintain a social graph that identifies the mapping of connections among the users, including entities such as businesses, applications, groups, etc, of a social network, and the social network may also maintain profiles that contain full or partial information about each of the users in the social network. Targeting may be based one or more factors such as member demographics (age, gender, location, birthdate, age, education level, employers, employment type, work history and experience, hobbies, and or preferences. These factors may draw from explicit member statements such as listing it on their profile, connections to other members or entities, or through user-entered text on and off the social networking site. In another embodiment, these factors may be implicitly or inferred by the social network.

One or more sponsored stories available to the social network may contain targeting criteria for determining whether the sponsored story should be targeted to a particular user. While the social network may have sufficient information about some of its users to apply the targeting criteria, the social network may not have sufficient information about other users to apply the targeting criteria. Rather than missing out on the opportunity to target sponsored stories to this latter group of users, embodiments use the information for other users to whom a particular user is connected when the social network does not have sufficient information to apply the targeting criteria to the user. This may be thought of as "inferential" targeting because a user's likely interest in a particular ad is inferred based on whether that user's connections (e.g., friends in the social network) are good candidates for the sponsored story based on its targeting criteria.

FIGURE 6A depicts an example of sponsor GUI 601. Sponsor GUI includes a drop down window 610 that allows a user of the GUI 601 to select any previously saved stream sponsored story specification 602a-602e. User controls 603, 604, and 605 give the user the option to save, deactivate/activate, or delete an existing stream sponsored story specification. User control 606 provides the user with the option to create a new stream sponsored story specification. The process of creating a new stream sponsored story specification is described in detail below.

Upon selecting user control 606, the user is presented with another set of drop down commands 607. Drop down menu 607 lists all the entities with which a user is associated in the social network. Examples of such an entity include but are not limited to, pages that the user has created to interact with fans of the page, such as for a musician or TV show, applications associated with the user, such as social networking games, deals or coupons associated with the user, and physical locations associated with the user that members of the social network may “check in” to, in order to indicate that they or others were physically at the location.

After the user has selected the entity associated with the user to be included in the stream sponsored story specification, the user selects, using drop down menu 608, the types of interactions members of the social network have with the entity on and off the social network that the user would like to promote to the sponsored story space. User interactions include, but are not limited to tagging, sharing, “liking”, commenting on media or mentioning a user in a status update or comment, friending someone, RSVPing or inviting a user to an event or game, and the like. Other user interactions include but are not limited to “check-ins” and other location-based social interactions, sharing a link from a third-party website, “liking” a post or

page from a third-party site, buying, redeeming, or subscribing to deals and other promotions, and interacting with an application on or off the social network. Any time a user makes a connection or performs a social action on the social network, a new story is generated in activity stream 302 that may ultimately be promoted.

Depending on the type of entity selected in drop down menu 607, the interactions available in menu 608 available to the user vary. For example, if the user selects a page, such as for a band or musician, from menu 607, the interactions in 608 may include: when a member “likes” the page, when a member posts a link on page, when the page owner (generally, but not necessarily, the user of the sponsor GUI itself) posts a link on the page, or when a member shares a link to an external website that is related to the page. As another example, if the user of the sponsor GUI selects a place, such as a store location, from drop down menu 607, the GUI may show, in drop down menu 608: when a member of the social network “checks in” to the place, when a member of the social network gives a review of the place greater than a predetermined threshold, or when a member of the social network “likes” the place.

As described above, actions by users performed off of a social networking website (e.g., actions on third party websites or in the real world) may be used to generate sponsored stories on the social networking website. Conversely, in various embodiments of the invention, a social networking website can collect its users' actions and then present sponsored stories and/or other information concerning actions taken by its users on third party websites. In this way, the techniques for promoting actions using this information can be extended beyond a social networking website itself.

Alternative embodiments are contemplated by the disclosure that may be contemplated by ones of ordinary skill in the art. In particular embodiments, the user may

specify geographic or temporal criteria used by sponsored story system 304 in determining which users to display the sponsored story to. For example, a user may desire to promote a promotion that expires in three days, and may specify to only promote stories for the next three days. In other embodiments, the user may specify to promote stories only for users located with a specific geographic location. In particular embodiments, user may specify a threshold of people taking the same action. For example, a user may want to display friend check-ins to members of the social network only if two or more friends of the user check-in to a given location substantially simultaneously. In such an embodiment, SPONSORED STORY application 301 may search for multiple check-ins to a given location by friends of a specific users within a predetermined time period. If such stories are found, SPONSORED STORY application 301 may aggregate the plurality of stories into a single sponsored story. After the user is satisfied with the specifications of the stream sponsored story that has just been created, the user may utilize controls 603 and 604 to save and activate the sponsored story, respectively.

FIGURE 6B depicts a simplified sponsor GUI 306. The sponsor may use controls 610 and 620 to select where to display the sponsored story. For example, in 620, the user may select to display the sponsored story on targeted members' walls. Using controls 640, the sponsor may select what kind of story SPONSORED STORY App 301 should search for in activity stream 302. In this example, the sponsor may select from a page post story, page "like" story, or a place check-in story. Finally, the sponsor GUI 306 may provide a preview 650 of the sponsored story.

In FIGURE 7, a user's newsfeed 701, recommendation space 702, sponsored story space 703, notifications 704, and questions 705 are depicted. In particular embodiments, elements 701-705 are displayed on a social networking user's home screen. In particular

embodiments, element 701 is displayed on a user's home screen, and one or more of elements 702-705 are displayed at all times. This disclosure contemplates any arrangement of elements 701-705 and any degree of persistence. In particular embodiments, elements 702-705 are displayed on other user's pages. In particular embodiments, these other users may be the user's friend. In other embodiments, these other users may be otherwise associated with the user. In particular embodiments, the display of elements to other users 702-705 is determined by sponsored story system 304. The sponsored story system 304 accesses a database of user privacy preferences when determining which users to display the sponsored story to. For example, if a user has previously specified that he or she does not wish to see sponsored stories from a particular company, the sponsored story system will not display stories promoted by that particular company. In particular embodiments, sponsored story system 304 accesses the visibility and privacy settings of the user that generated the newsfeed story to be promoted, and uses the settings in determining which users to display the promoted story to. For example, a user may have multiple friend lists, and members belonging to one or more different lists may be prevented from viewing specific stories, types of stories, or the user's newsfeed altogether. sponsored story system 304 respects these settings so that only friends of the user who are granted access to view the newsfeed story to be promoted are displayed the promoted stream sponsored story. This disclosure contemplates various methods of determining which users to display element 703 to as envisioned by those of ordinary skill in the art. Newsfeed 701 includes newsfeed stories 701a-701d. These stories are generated specifically for a user based upon the activities the user's friends or other entities the user is associated with. Newsfeed story 701b is an example of a newsfeed story that has been selected for promoting to sponsor space 703. When the SPONSORED STORY application 301 detects a match in the activity stream 302 to an

sponsor's stream sponsored story specification from the stream sponsored story specification database 303, the sponsored story 703 is formatted to resemble a news feed story and sent to the sponsored story system 304. In this particular example, the stream story relates to a story when four friends of a user "liked" the entity "Toys 'R' Us." The formatted sponsored story 703 is promoted to the user or another set of users by the sponsored story system 304.

FIGURES 7A-E illustrate examples of promoted sponsor stories 703. Each Sponsored Story 703 includes a social context 38. In particular embodiments, social context 38 comprises the user who performed the social action, a descriptor of the action, and a comment entered by the user who performed the social action. Sponsored stories 703 may also include an attribution 39, corresponding to the entity selected by the sponsor in sponsor GUI 306. In particular embodiments, the attribution is the node with which the user interacted or connected with to generate the stream story. For example, in FIGURE 7B, the user interacted with the entity "Starbucks" by checking-in to a Starbucks location. In FIGURE 7C, user interacted with the entity or node "CNN Heroes" by "liking" the entity. Sponsored stories 703 may also include a bling indicator 43, which provides a visual indication as to how many members of the social networking site have commented or liked the sponsored story. Emu like interface 65 allows users to quickly interact with the node/entity by "liking" it. In particular embodiments, sponsored story 703 may include an action link 42, which allows a user, when selecting the link, to quickly perform a predetermined action, such as, in FIGURE 7A, donating to a particular cause. FIGURE 7D depicts an example where an share link 24 to share a story published by an entity or node, in this case "CNN Heroes," is provided. Upon clicking share link 24, the user is taken to an interface depicted in FIGURE 7E, which allows the user to publish the sponsored story back to his or her own news feed. Action link 42 in FIGURE 7E posts the sponsored story

to the user's own wall along with any comments the user optionally chooses to append to the story. The embodiments depicted in FIGS. 7A-7E are merely examples and are in no way limiting; this disclosure contemplates any number of formatting and actions for sponsored stories.

FIGURE 8 illustrates an example computer system 800. In particular embodiments, one or more computer systems 800 perform one or more steps of one or more methods described or illustrated herein. In particular embodiments, one or more computer systems 800 provide functionality described or illustrated herein. In particular embodiments, software running on one or more computer systems 800 performs one or more steps of one or more methods described or illustrated herein or provides functionality described or illustrated herein. Particular embodiments include one or more portions of one or more computer systems 800.

This disclosure contemplates any suitable number of computer systems 800. This disclosure contemplates computer system 800 taking any suitable physical form. As example and not by way of limitation, computer system 800 may be an embedded computer system, a system-on-chip (SOC), a single-board computer system (SBC) (such as, for example, a computer-on-module (COM) or system-on-module (SOM)), a desktop computer system, a laptop or notebook computer system, an interactive kiosk, a mainframe, a mesh of computer systems, a mobile telephone, a personal digital assistant (PDA), a server, a tablet computer system, or a combination of two or more of these. Where appropriate, computer system 800 may include one or more computer systems 800; be unitary or distributed; span multiple locations; span multiple machines; span multiple datacenters; or reside in a cloud, which may include one or more cloud components in one or more networks. Where appropriate, one or more computer systems 800 may perform without substantial spatial or temporal limitation one

or more steps of one or more methods described or illustrated herein. As an example and not by way of limitation, one or more computer systems 800 may perform in real time or in batch mode one or more steps of one or more methods described or illustrated herein. One or more computer systems 800 may perform at different times or at different locations one or more steps of one or more methods described or illustrated herein, where appropriate.

In particular embodiments, computer system 800 includes a processor 802, memory 804, storage 806, an input/output (I/O) interface 808, a communication interface 810, and a bus 812. Although this disclosure describes and illustrates a particular computer system having a particular number of particular components in a particular arrangement, this disclosure contemplates any suitable computer system having any suitable number of any suitable components in any suitable arrangement.

In particular embodiments, processor 802 includes hardware for executing instructions, such as those making up a computer program. As an example and not by way of limitation, to execute instructions, processor 802 may retrieve (or fetch) the instructions from an internal register, an internal cache, memory 804, or storage 806; decode and execute them; and then write one or more results to an internal register, an internal cache, memory 804, or storage 806. In particular embodiments, processor 802 may include one or more internal caches for data, instructions, or addresses. This disclosure contemplates processor 802 including any suitable number of any suitable internal caches, where appropriate. As an example and not by way of limitation, processor 802 may include one or more instruction caches, one or more data caches, and one or more translation lookaside buffers (TLBs). Instructions in the instruction caches may be copies of instructions in memory 804 or storage 806, and the instruction caches may speed up retrieval of those instructions by processor 802.

Data in the data caches may be copies of data in memory 804 or storage 806 for instructions executing at processor 802 to operate on; the results of previous instructions executed at processor 802 for access by subsequent instructions executing at processor 802 or for writing to memory 804 or storage 806; or other suitable data. The data caches may speed up read or write operations by processor 802. The TLBs may speed up virtual-address translation for processor 802. In particular embodiments, processor 802 may include one or more internal registers for data, instructions, or addresses. This disclosure contemplates processor 802 including any suitable number of any suitable internal registers, where appropriate. Where appropriate, processor 802 may include one or more arithmetic logic units (ALUs); be a multi-core processor; or include one or more processors 802. Although this disclosure describes and illustrates a particular processor, this disclosure contemplates any suitable processor.

In particular embodiments, memory 804 includes main memory for storing instructions for processor 802 to execute or data for processor 802 to operate on. As an example and not by way of limitation, computer system 800 may load instructions from storage 806 or another source (such as, for example, another computer system 800) to memory 804. Processor 802 may then load the instructions from memory 804 to an internal register or internal cache. To execute the instructions, processor 802 may retrieve the instructions from the internal register or internal cache and decode them. During or after execution of the instructions, processor 802 may write one or more results (which may be intermediate or final results) to the internal register or internal cache. Processor 802 may then write one or more of those results to memory 804. In particular embodiments, processor 802 executes only instructions in one or more internal registers or internal caches or in memory 804 (as opposed to storage 806 or elsewhere) and operates only on data in one or more internal registers or

internal caches or in memory 804 (as opposed to storage 806 or elsewhere). One or more memory buses (which may each include an address bus and a data bus) may couple processor 802 to memory 804. Bus 812 may include one or more memory buses, as described below. In particular embodiments, one or more memory management units (MMUs) reside between processor 802 and memory 804 and facilitate accesses to memory 804 requested by processor 802. In particular embodiments, memory 804 includes random access memory (RAM). This RAM may be volatile memory, where appropriate. Where appropriate, this RAM may be dynamic RAM (DRAM) or static RAM (SRAM). Moreover, where appropriate, this RAM may be single-ported or multi-ported RAM. This disclosure contemplates any suitable RAM. Memory 804 may include one or more memories 804, where appropriate. Although this disclosure describes and illustrates particular memory, this disclosure contemplates any suitable memory.

In particular embodiments, storage 806 includes mass storage for data or instructions. As an example and not by way of limitation, storage 806 may include an HDD, a floppy disk drive, flash memory, an optical disc, a magneto-optical disc, magnetic tape, or a Universal Serial Bus (USB) drive or a combination of two or more of these. Storage 806 may include removable or non-removable (or fixed) media, where appropriate. Storage 806 may be internal or external to computer system 800, where appropriate. In particular embodiments, storage 806 is non-volatile, solid-state memory. In particular embodiments, storage 806 includes read-only memory (ROM). Where appropriate, this ROM may be mask-programmed ROM, programmable ROM (PROM), erasable PROM (EPROM), electrically erasable PROM (EEPROM), electrically alterable ROM (EAROM), or flash memory or a combination of two or more of these. This disclosure contemplates mass storage 806 taking any suitable physical

form. Storage 806 may include one or more storage control units facilitating communication between processor 802 and storage 806, where appropriate. Where appropriate, storage 806 may include one or more storages 806. Although this disclosure describes and illustrates particular storage, this disclosure contemplates any suitable storage.

In particular embodiments, I/O interface 808 includes hardware, software, or both providing one or more interfaces for communication between computer system 800 and one or more I/O devices. Computer system 800 may include one or more of these I/O devices, where appropriate. One or more of these I/O devices may enable communication between a person and computer system 800. As an example and not by way of limitation, an I/O device may include a keyboard, keypad, microphone, monitor, mouse, printer, scanner, speaker, still camera, stylus, tablet, touchscreen, trackball, video camera, another suitable I/O device or a combination of two or more of these. An I/O device may include one or more sensors. This disclosure contemplates any suitable I/O devices and any suitable I/O interfaces 808 for them. Where appropriate, I/O interface 808 may include one or more device or software drivers enabling processor 802 to drive one or more of these I/O devices. I/O interface 808 may include one or more I/O interfaces 808, where appropriate. Although this disclosure describes and illustrates a particular I/O interface, this disclosure contemplates any suitable I/O interface.

In particular embodiments, communication interface 810 includes hardware, software, or both providing one or more interfaces for communication (such as, for example, packet-based communication) between computer system 800 and one or more other computer systems 800 or one or more networks. As an example and not by way of limitation, communication interface 810 may include a network interface controller (NIC) or network adapter for communicating with an Ethernet or other wire-based network or a wireless NIC

(WNIC) or wireless adapter for communicating with a wireless network, such as a WI-FI network. This disclosure contemplates any suitable network and any suitable communication interface 810 for it. As an example and not by way of limitation, computer system 800 may communicate with an ad hoc network, a personal area network (PAN), a local area network (LAN), a wide area network (WAN), a metropolitan area network (MAN), or one or more portions of the Internet or a combination of two or more of these. One or more portions of one or more of these networks may be wired or wireless. As an example, computer system 800 may communicate with a wireless PAN (WPAN) (such as, for example, a BLUETOOTH WPAN), a WI-FI network, a WI-MAX network, a cellular telephone network (such as, for example, a Global System for Mobile Communications (GSM) network), or other suitable wireless network or a combination of two or more of these. Computer system 800 may include any suitable communication interface 810 for any of these networks, where appropriate. Communication interface 810 may include one or more communication interfaces 810, where appropriate. Although this disclosure describes and illustrates a particular communication interface, this disclosure contemplates any suitable communication interface.

In particular embodiments, bus 812 includes hardware, software, or both coupling components of computer system 800 to each other. As an example and not by way of limitation, bus 812 may include an Accelerated Graphics Port (AGP) or other graphics bus, an Enhanced Industry Standard Architecture (EISA) bus, a front-side bus (FSB), a HYPERTRANSPORT (HT) interconnect, an Industry Standard Architecture (ISA) bus, an INFINIBAND interconnect, a low-pin-count (LPC) bus, a memory bus, a Micro Channel Architecture (MCA) bus, a Peripheral Component Interconnect (PCI) bus, a PCI-Express (PCI-X) bus, a serial advanced technology attachment (SATA) bus, a Video Electronics Standards

Association local (VLB) bus, or another suitable bus or a combination of two or more of these. Bus 812 may include one or more buses 812, where appropriate. Although this disclosure describes and illustrates a particular bus, this disclosure contemplates any suitable bus or interconnect.

Herein, reference to a computer-readable storage medium encompasses one or more non-transitory, tangible, computer-readable storage media possessing structure. As an example and not by way of limitation, a computer-readable storage medium may include a semiconductor-based or other integrated circuit (IC) (such, as for example, a field-programmable gate array (FPGA) or an application-specific IC (ASIC)), a hard disk, an HDD, a hybrid hard drive (HHD), an optical disc, an optical disc drive (ODD), a magneto-optical disc, a magneto-optical drive, a floppy disk, a floppy disk drive (FDD), magnetic tape, a holographic storage medium, a solid-state drive (SSD), a RAM-drive, a SECURE DIGITAL card, a SECURE DIGITAL drive, or another suitable computer-readable storage medium or a combination of two or more of these, where appropriate. Herein, reference to a computer-readable storage medium excludes any medium that is not eligible for patent protection under 35 U.S.C. § 101. Herein, reference to a computer-readable storage medium excludes transitory forms of signal transmission (such as a propagating electrical or electromagnetic signal per se) to the extent that they are not eligible for patent protection under 35 U.S.C. § 101. A computer-readable non-transitory storage medium may be volatile, non-volatile, or a combination of volatile and non-volatile, where appropriate.

This disclosure contemplates one or more computer-readable storage media implementing any suitable storage. In particular embodiments, a computer-readable storage medium implements one or more portions of processor 802 (such as, for example, one or more

internal registers or caches), one or more portions of memory 804, one or more portions of storage 806, or a combination of these, where appropriate. In particular embodiments, a computer-readable storage medium implements RAM or ROM. In particular embodiments, a computer-readable storage medium implements volatile or persistent memory. In particular embodiments, one or more computer-readable storage media embody software. Herein, reference to software may encompass one or more applications, bytecode, one or more computer programs, one or more executables, one or more instructions, logic, machine code, one or more scripts, or source code, and vice versa, where appropriate. In particular embodiments, software includes one or more application programming interfaces (APIs). This disclosure contemplates any suitable software written or otherwise expressed in any suitable programming language or combination of programming languages. In particular embodiments, software is expressed as source code or object code. In particular embodiments, software is expressed in a higher-level programming language, such as, for example, C, Perl, or a suitable extension thereof. In particular embodiments, software is expressed in a lower-level programming language, such as assembly language (or machine code). In particular embodiments, software is expressed in JAVA. In particular embodiments, software is expressed in Hyper Text Markup Language (HTML), Extensible Markup Language (XML), or other suitable markup language.

FIGURE 9 illustrates an example network environment 900. This disclosure contemplates any suitable network environment 900. As an example and not by way of limitation, although this disclosure describes and illustrates a network environment 900 that implements a client-server model, this disclosure contemplates one or more portions of a network environment 900 being peer-to-peer, where appropriate. Particular embodiments may

operate in whole or in part in one or more network environments 900. In particular embodiments, one or more elements of network environment 900 provide functionality described or illustrated herein. Particular embodiments include one or more portions of network environment 900. Network environment 900 includes a network 910 coupling one or more servers 920 and one or more clients 930 to each other. This disclosure contemplates any suitable network 910. As an example and not by way of limitation, one or more portions of network 910 may include an ad hoc network, an intranet, an extranet, a virtual private network (VPN), a local area network (LAN), a wireless LAN (WLAN), a wide area network (WAN), a wireless WAN (WWAN), a metropolitan area network (MAN), a portion of the Internet, a portion of the Public Switched Telephone Network (PSTN), a cellular telephone network, or a combination of two or more of these. Network-910 may include one or more networks 910.

Links 950 couple servers 920 and clients 930 to network 910 or to each other. This disclosure contemplates any suitable links 950. As an example and not by way of limitation, one or more links 950 each include one or more wireline (such as, for example, Digital Subscriber Line (DSL) or Data Over Cable Service Interface Specification (DOCSIS)), wireless (such as, for example, Wi-Fi or Worldwide Interoperability for Microwave Access (WiMAX)) or optical (such as, for example, Synchronous Optical Network (SONET) or Synchronous Digital Hierarchy (SDH)) links 950. In particular embodiments, one or more links 950 each includes an intranet, an extranet, a VPN, a LAN, a WLAN, a WAN, a MAN, a communications network, a satellite network, a portion of the Internet, or another link 950 or a combination of two or more such links 950. Links 950 need not necessarily be the same throughout network environment 900. One or more first links 950 may differ in one or more respects from one or more second links 950.

This disclosure contemplates any suitable servers 920. As an example and not by way of limitation, one or more servers 920 may each include one or more advertising servers, applications servers, catalog servers, communications servers, database servers, exchange servers, fax servers, file servers, game servers, home servers, mail servers, message servers, news servers, name or DNS servers, print servers, proxy servers, sound servers, standalone servers, web servers, or web-feed servers. In particular embodiments, a server 920 includes hardware, software, or both for providing the functionality of server 920. As an example and not by way of limitation, a server 920 that operates as a web server may be capable of hosting websites containing web pages or elements of web pages and include appropriate hardware, software, or both for doing so. In particular embodiments, a web server may host HTML or other suitable files or dynamically create or constitute files for web pages on request. In response to a Hyper Text Transfer Protocol (HTTP) or other request from a client 930, the web server may communicate one or more such files to client 930. As another example, a server 920 that operates as a mail server may be capable of providing e-mail services to one or more clients 930. As another example, a server 920 that operates as a database server may be capable of providing an interface for interacting with one or more data stores (such as, for example, data stores 940 described below). Where appropriate, a server 920 may include one or more servers 920; be unitary or distributed; span multiple locations; span multiple machines; span multiple datacenters; or reside in a cloud, which may include one or more cloud components in one or more networks.

In particular embodiments, one or more links 950 may couple a server 920 to one or more data stores 940. A data store 940 may store any suitable information, and the contents of a data store 940 may be organized in any suitable manner. As an example and not by way or

limitation, the contents of a data store 940 may be stored as a dimensional, flat, hierarchical, network, object-oriented, relational, XML, or other suitable database or a combination or two or more of these. A data store 940 (or a server 920 coupled to it) may include a database-management system or other hardware or software for managing the contents of data store 940. The database-management system may perform read and write operations, delete or erase data, perform data deduplication, query or search the contents of data store 940, or provide other access to data store 940.

In particular embodiments, one or more servers 920 may each include one or more search engines 922. A search engine 922 may include hardware, software, or both for providing the functionality of search engine 922. As an example and not by way of limitation, a search engine 922 may implement one or more search algorithms to identify network resources in response to search queries received at search engine 922, one or more ranking algorithms to rank identified network resources, or one or more summarization algorithms to summarize identified network resources. In particular embodiments, a ranking algorithm implemented by a search engine 922 may use a machine-learned ranking formula, which the ranking algorithm may obtain automatically from a set of training data constructed from pairs of search queries and selected Uniform Resource Locators (URLs), where appropriate.

In particular embodiments, one or more servers 920 may each include one or more data monitors/collectors 924. A data monitor/collection 924 may include hardware, software, or both for providing the functionality of data collector/collector 924. As an example and not by way of limitation, a data monitor/collector 924 at a server 920 may monitor and collect network-traffic data at server 920 and store the network-traffic data in one or more data stores 940. In

particular embodiments, server 920 or another device may extract pairs of search queries and selected URLs from the network-traffic data, where appropriate.

This disclosure contemplates any suitable clients 930. A client 930 may enable a user at client 930 to access or otherwise communicate with network 910, servers 920, or other clients 930. As an example and not by way of limitation, a client 930 may have a web browser 932, such as MICROSOFT INTERNET EXPLORER or MOZILLA FIREFOX, and may have one or more add-ons, plug-ins, or other extensions, such as GOOGLE TOOLBAR or YAHOO TOOLBAR. A client 930 may be an electronic device including hardware, software, or both for providing the functionality of client 930. As an example and not by way of limitation, a client 930 may, where appropriate, be an embedded computer system, an SOC, an SBC (such as, for example, a COM or SOM), a desktop computer system, a laptop or notebook computer system, an interactive kiosk, a mainframe, a mesh of computer systems, a mobile telephone, a PDA, a netbook computer system, a server, a tablet computer system, or a combination of two or more of these. Where appropriate, a client 930 may include one or more clients 930; be unitary or distributed; span multiple locations; span multiple machines; span multiple datacenters; or reside in a cloud, which may include one or more cloud components in one or more networks. Herein, “or” is inclusive and not exclusive, unless expressly indicated otherwise or indicated otherwise by context. Therefore, herein, “A or B” means “A, B, or both,” unless expressly indicated otherwise or indicated otherwise by context. Moreover, “and” is both joint and several, unless expressly indicated otherwise or indicated otherwise by context. Therefore, herein, “A and B” means “A and B, jointly or severally,” unless expressly indicated otherwise or indicated otherwise by context.

This disclosure encompasses all changes, substitutions, variations, alterations, and modifications to the example embodiments herein that a person having ordinary skill in the art would comprehend. Similarly, where appropriate, the appended claims encompass all changes, substitutions, variations, alterations, and modifications to the example embodiments herein that a person having ordinary skill in the art would comprehend. Moreover, reference in the appended claims to an apparatus or system or a component of an apparatus or system being adapted to, arranged to, capable of, configured to, enabled to, operable to, or operative to perform a particular function encompasses that apparatus, system, component, whether or not it or that particular function is activated, turned on, or unlocked, as long as that apparatus, system, or component is so adapted, arranged, capable, configured, enabled, operable, or operative.

The foregoing description of the embodiments of the invention has been presented for the purpose of illustration; it is not intended to be exhaustive or to limit the invention to the precise forms disclosed. Persons skilled in the relevant art can appreciate that many modifications and variations are possible in light of the above disclosure. For example, although the foregoing embodiments have been described in the context of a social network system, it will be apparent to one of ordinary skill in the art that the invention may be used with any electronic social network service and, even if it is not provided through a website. Any computer-based system that provides social networking functionality can be used in accordance with the present invention even if it relies, for example, on e-mail, instant messaging or other form of peer-to-peer communications, and any other technique for communicating between users. The invention is thus not limited to any particular type of communication system, network, protocol, format or application.

Some portions of this description describe the embodiments of the invention in terms of algorithms and symbolic representations of operations on information. These algorithmic descriptions and representations are commonly used by those skilled in the data processing arts to convey the substance of their work effectively to others skilled in the art. These operations, while described functionally, computationally, or logically, are understood to be implemented by computer programs or equivalent electrical circuits, microcode, or the like. Furthermore, it has also proven convenient at times, to refer to these arrangements of operations as modules, without loss of generality. The described operations and their associated modules may be embodied in software, firmware, hardware, or any combinations thereof.

Any of the steps, operations, or processes described herein may be performed or implemented with one or more hardware or software modules, alone or in combination with other devices. In one embodiment, a software module is implemented with a computer program product comprising a computer-readable medium containing computer program code, which can be executed by a computer processor for performing any or all of the steps, operations, or processes described.

Embodiments of the invention may also relate to an apparatus for performing the operations herein. This apparatus may be specially constructed for the required purposes, and/or it may comprise a general-purpose computing device selectively activated or reconfigured by a computer program stored in the computer. Such a computer program may be stored in a tangible computer readable storage medium or any type of media suitable for storing electronic instructions, and coupled to a computer system bus. Furthermore, any computing systems referred to in the specification may include a single processor or may be architectures employing multiple processor designs for increased computing capability.

While the foregoing processes and mechanisms can be implemented by a wide variety of physical systems and in a wide variety of network and computing environments, the server or computing systems described below provide example computing system architectures for didactic, rather than limiting, purposes.

The present invention has been explained with reference to specific embodiments. For example, while embodiments of the present invention have been described as operating in connection with a social network system, the present invention can be used in connection with any communications facility that allows for communication of messages between users, such as an email hosting site. Other embodiments will be evident to those of ordinary skill in the art. It is therefore not intended that the present invention be limited, except as indicated by the appended claims.

Finally, the language used in the specification has been principally selected for readability and instructional purposes, and it may not have been selected to delineate or circumscribe the inventive subject matter. It is therefore intended that the scope of the invention be limited not by this detailed description, but rather by any claims that issue on an application based hereon. Accordingly, the disclosure of the embodiments of the invention is intended to be illustrative, but not limiting, of the scope of the invention, which is set forth in the following claims.

What is claimed is:

1. A method comprising, by one or more computing systems:  
receiving sponsor specifications designating a set of story characteristics;  
monitoring an organic activity stream for entries matching the story characteristics; and  
upon finding a match, exporting the entry to a sponsored story system.
2. The method of claim 1, the story characteristics comprising:  
an application ID; wherein a match is found any time an entry in the activity stream is published  
via an application with the same application ID.
3. The method of claim 2, further comprising displaying the converted entry to all users  
connected to the user generating the entry via the application.
4. The method of claim 1, the story characteristics comprising:  
an entity identifier, wherein a match is found any time an entry in the activity stream is generated  
by a user interacting with an entity corresponding to the entity identifier.
5. The method of claim 4, further comprising displaying the entry to all users connected to  
the user interacting with the entity.
6. The method of 4, further comprising displaying the entry to all users connected to the  
entity.
7. The method of claim 4, interacting with the entity comprising liking the entity.

8. The method of claim 4, interacting with the entity comprising posting a link to the page of the entity.
9. The method of claim 4, interacting with the entity comprising checking-in to a location associated with the entity.
10. The method of claim 4, interacting with the entity comprising posting a review of the entity above a predetermined threshold value.
11. The method of claim 1, the story characteristics comprising:  
an entity identifier and a specific tag requesting delivery to the sponsored story system.
12. The method of claim 1, wherein the sponsored story system displays the entry on a predetermined area of web page.
13. The method of claim 12, wherein the sponsor specifications includes a visualization characteristic, and the sponsored story system converts the entry in accordance with the visualization characteristic prior to display.
14. The method of claim 1, wherein the activity stream is a news feed of the collective actions of all the users of a social network while on the social network
15. The method of claim 1, wherein the activity stream is a news feed of the collective actions of all the users of a social network while interacting with networked entities that are not a

part of the social network.

16. The method of claim 4, further comprising displaying the entry to all users interacting with the entity

17. The method of claim 16, wherein interacting with the entity comprises liking the entity.

18. The method of claim 16, wherein interacting with the entity comprises checking in to a location associated with the entity.

19. The method of claim 4, further comprising:  
calculating a score for each user of the social network, the score comprising a numeric value representing each user's affinity for the entity based on each user's profile; and  
displaying the entry to all users whose score exceeds a predetermined threshold value.

20. The method of claim 4, further comprising:  
calculating a score for each user connected to the user interacting with the entity, the score comprising a numeric value representing the user's affinity for the entity based on the user's profile; and  
displaying the entry to all users whose score exceeds a predetermined threshold value.

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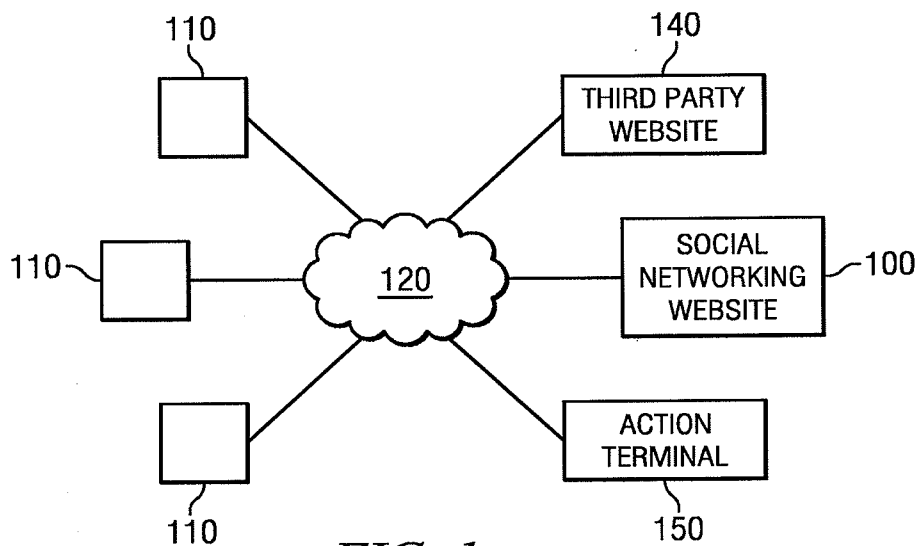


FIG. 1

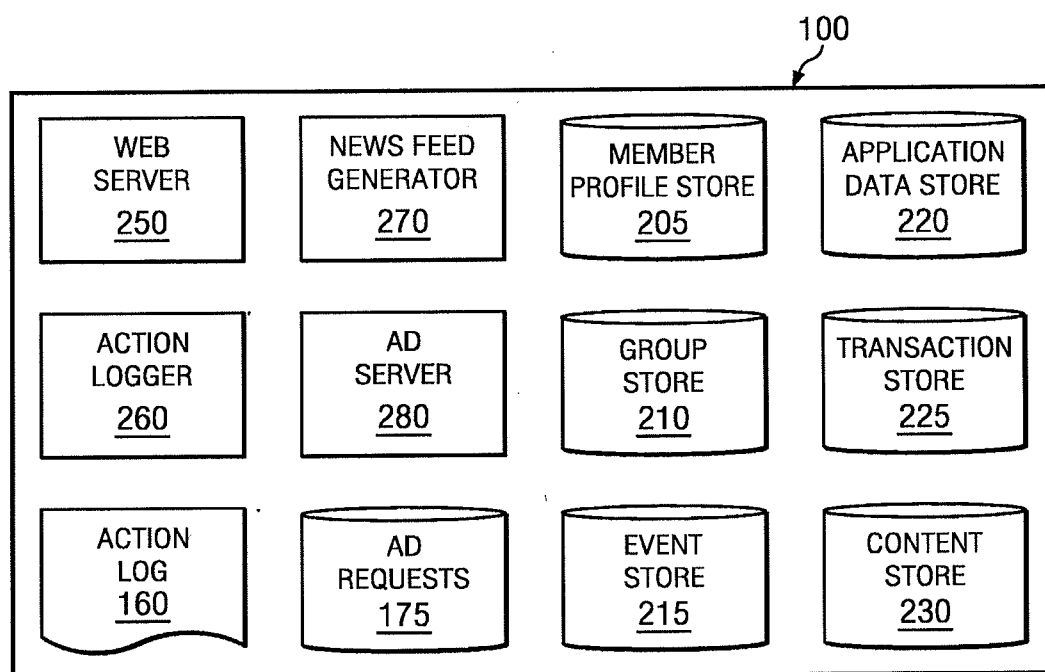


FIG. 2

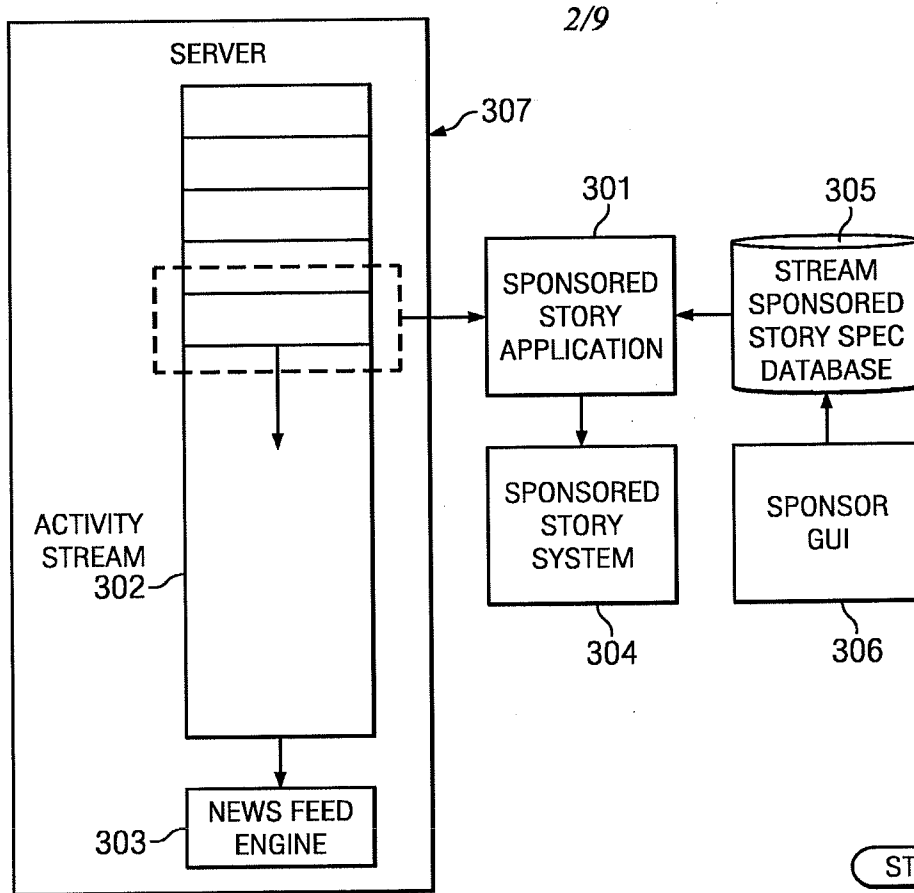


FIG. 3

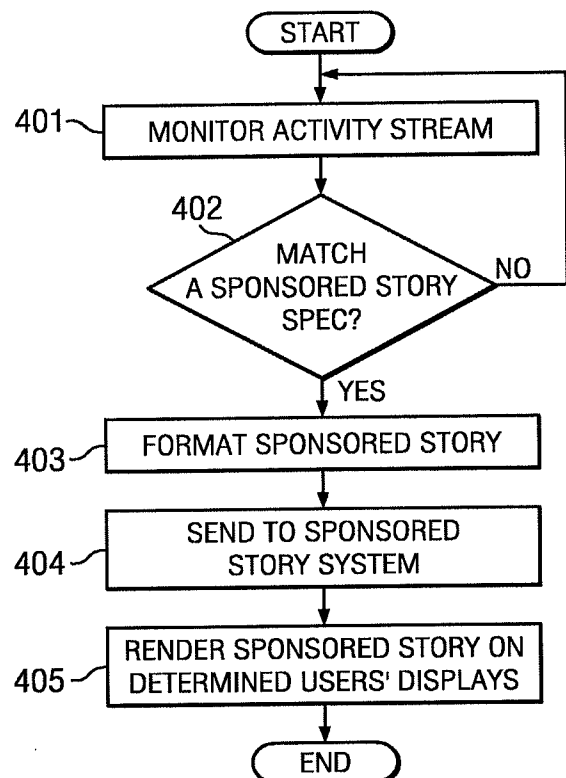
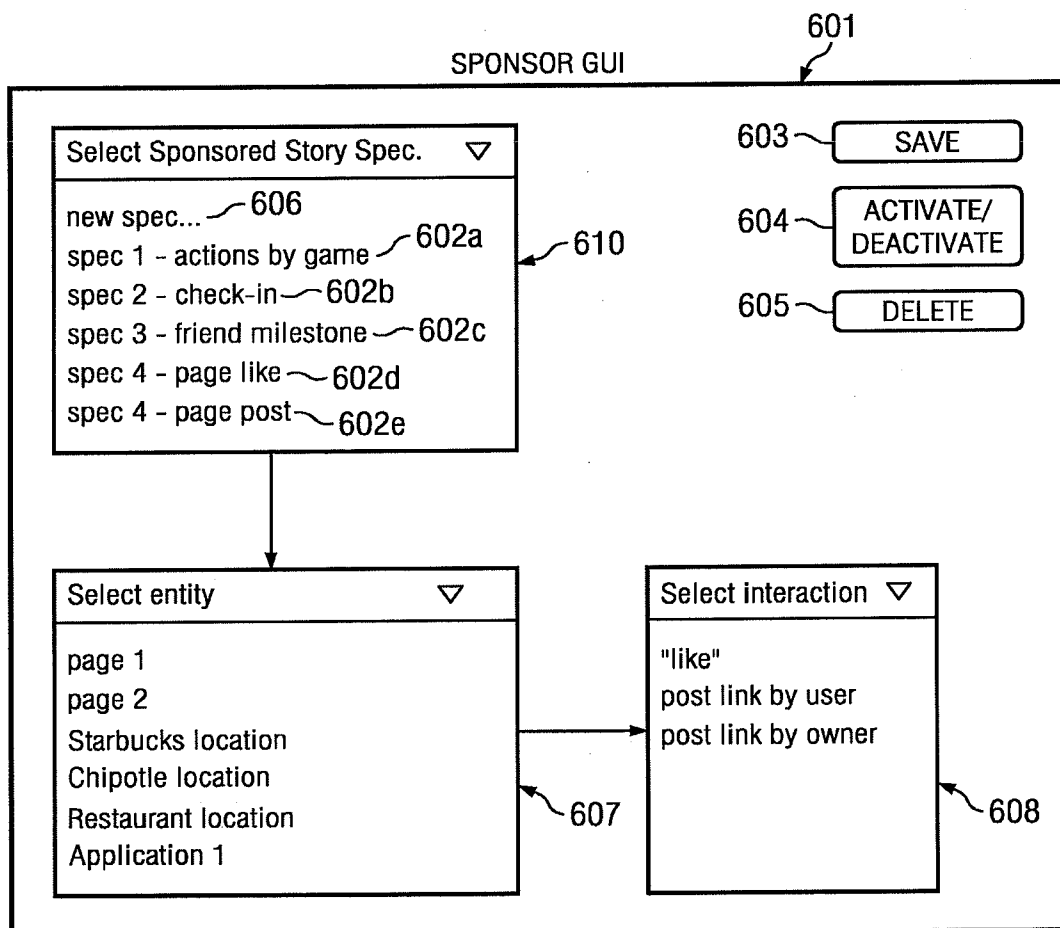
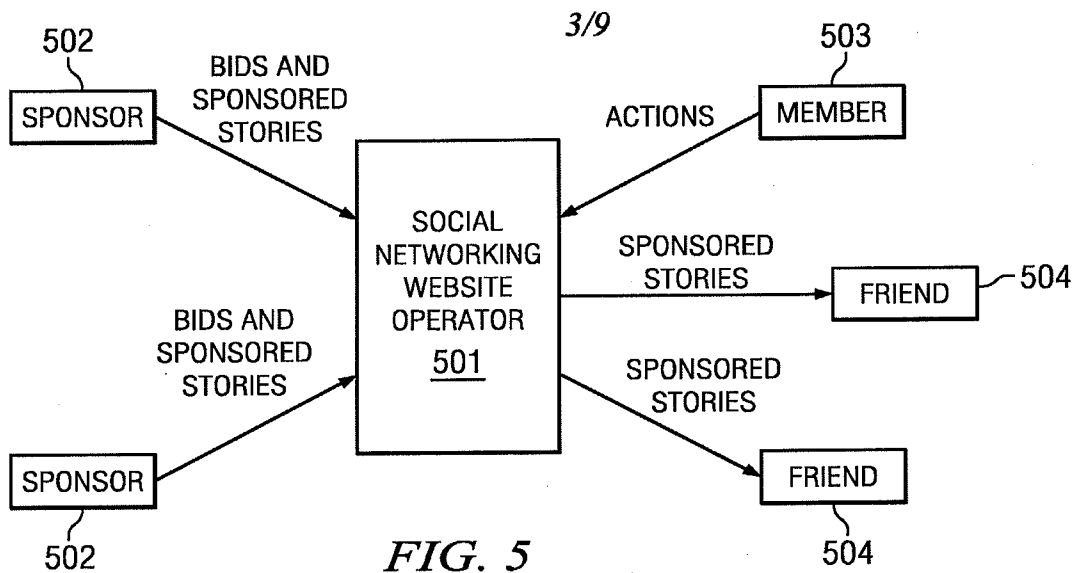





FIG. 4

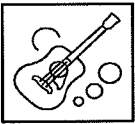



4/9

610 Destination: South Hero  Wall  ? 

630 Type: ☐ Facebook Ad [?]  
☒ Sponsored Story [?]

640 Story Type: ☒ Page Post Story [?]  
☐ Page Like Story [?]  
☐ Place Check-In Story [?]

650 Preview:  South Hero Here's a preview of one of our latest tracks. Let us know what you think.

 Snow Day  
via BandPage by  
RootMusic



  Share • More

FIG. 6B

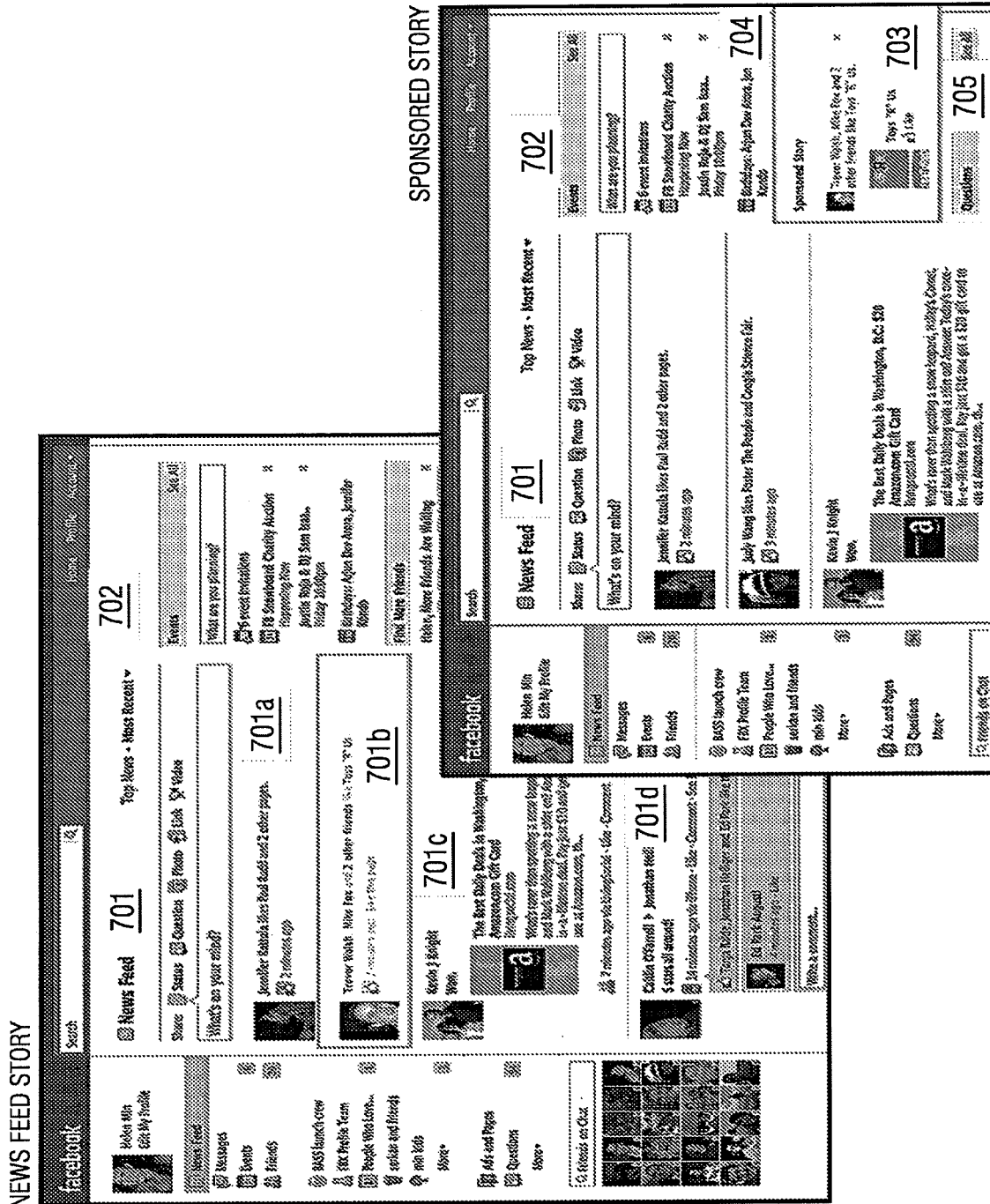


FIG. 7

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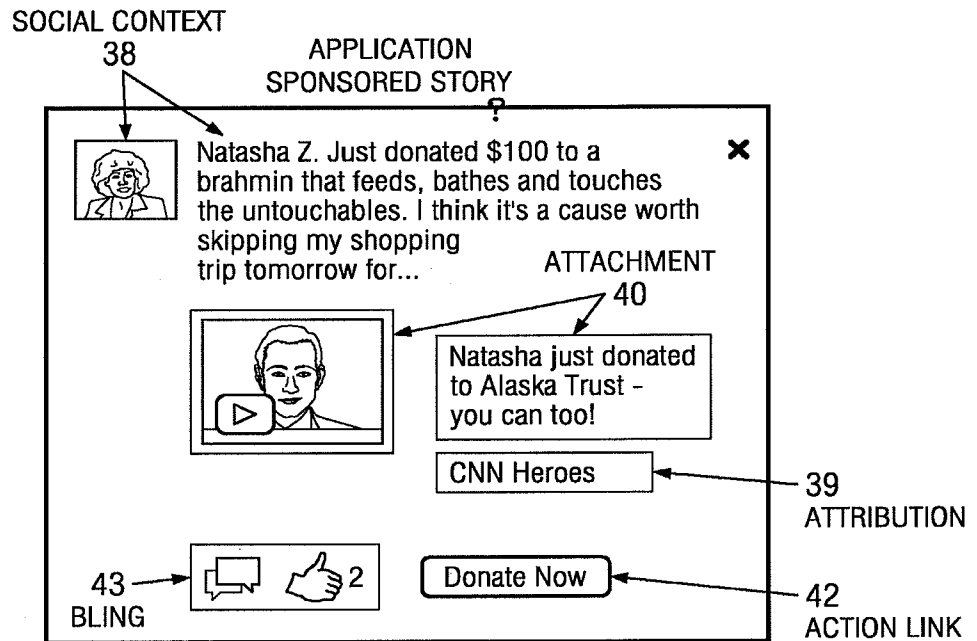


FIG. 7A

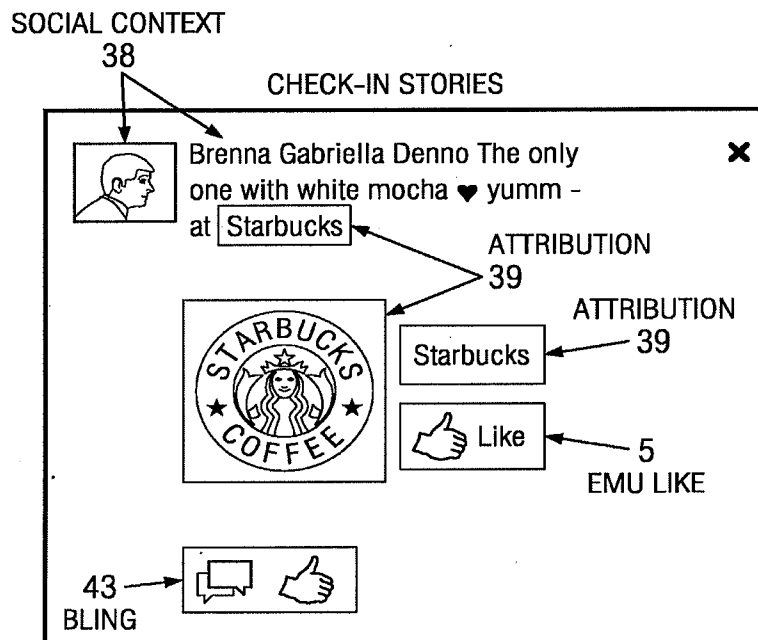


FIG. 7B

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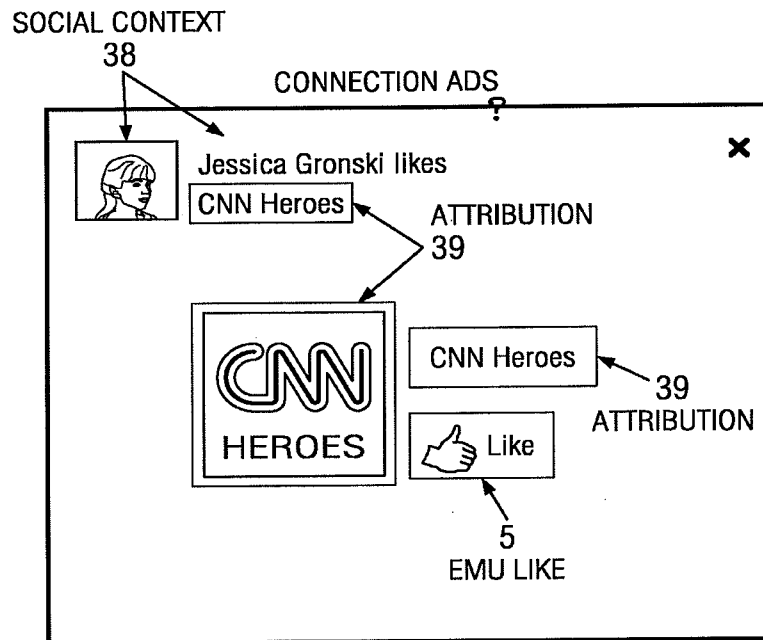


FIG. 7C

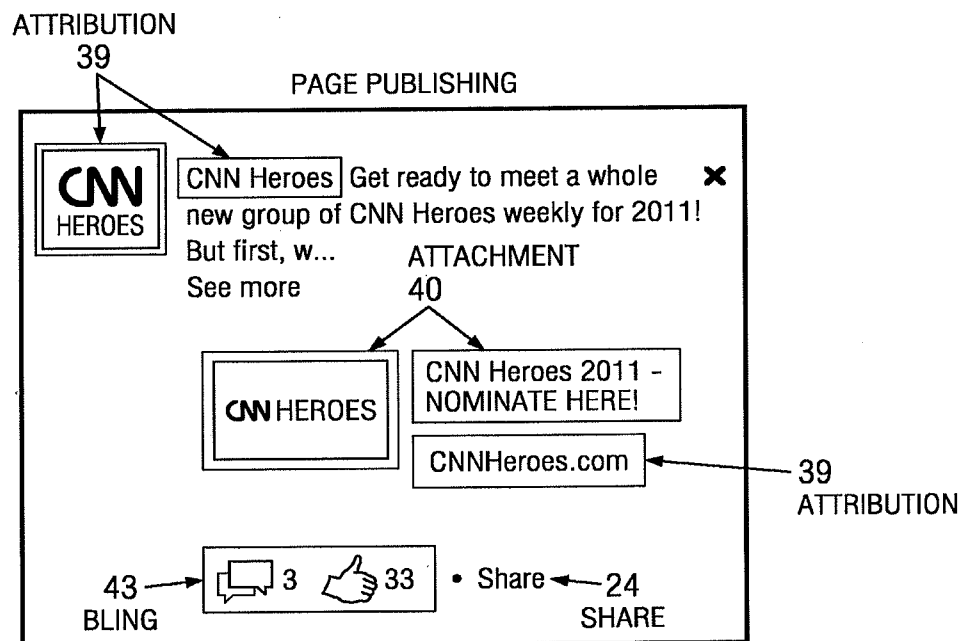


FIG. 7D

(PAGE PUBLISHING CONTINUED)

Post to Profile

What's on your mind?

via CNN Heroes (Remove)

CNN HEROES

CNN Heroes 2011 - NOMINATE HERE!

http://CNNHeroes.com/

1 of 1

Choose a Thumbnail

☐ No Thumbnail

Send as a Message instead

Share

Cancel

ACTION LINK

42

Email Password

nds

ok won't store your password

Create an Ad

Heroes Get ready yo meet a

e new group of CNN Heroes

ply for 2011! But first, w...

More

OES

CNN Heroes 2011 -

NOMINATE HERE!

http://CNNHeroes.com/

35

• Share

ated: Expired

See All

the best place to live in Palo

Hackathon 22: 1.11.11

Tuesday, January 11 at 5-10pm at Facebook

Let's rock this

Asked by a friend of David Alves

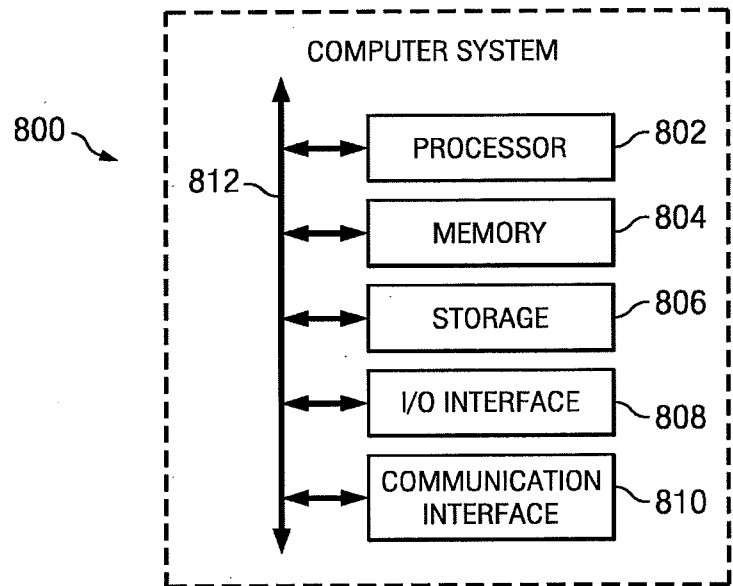
How much does it cost to store a

petabyte of data?

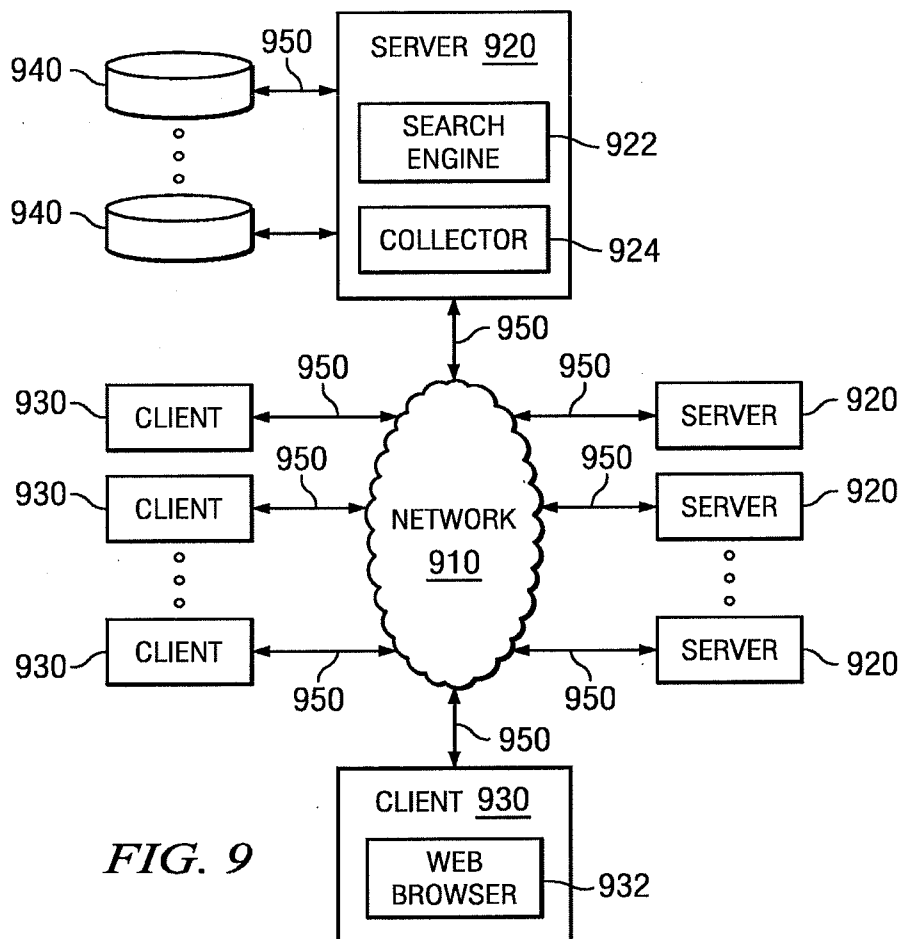
Asked by Paul Carduner

FIG. 7E

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**FIG. 8**



**FIG. 9**