

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
9 February 2012 (09.02.2012)

(10) International Publication Number
WO 2012/019072 A1

- (51) International Patent Classification:
G06Q 30/00 (2012.01)
- (21) International Application Number:
PCT/US2011/046696
- (22) International Filing Date:
5 August 2011 (05.08.2011)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
61/371,500 6 August 2010 (06.08.2010) US
- (71) Applicant (for all designated States except US):
TAPJOY, INC. [US/US]; 111 Sutter Street, San Francisco, CA 94104 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **TONG, Linda** [US/US]; 2001 McAllister Street, Apt. 245, San Francisco, California 94118 (US). **MANJI, Amir** [US/US]; 1918 15th Street, Apt. 2, San Francisco, California 94114 (US).

JOHNS, Ryan [US/US]; 1 Polk Street, Unit 1201, San Francisco, California 94102 (US). **MCCARTHY, Stephen** [US/US]; 1 Polk Street, Unit 1201, San Francisco, California 94102 (US). **CHOI, Hwan-Joon** [US/US]; 2792 Maria Street, Pleasanton, California 94588 (US). **TAN, Steve** [US/US]; 1261 Broderick Street #305, San Francisco, California 94115 (US). **CHAN, Johnny** [US/US]; 116 Marina Lakes Drive, Richmond, California 94804 (US).

(74) Agents: **YUAN, Mark D.** et al.; Schwegman, Lundberg & Woessner, P.A., P. O. Box 2938, Minneapolis, Minnesota 55402 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU,

[Continued on next page]

(54) Title: SYSTEM AND METHOD FOR REWARDING APPLICATION ACTIONS

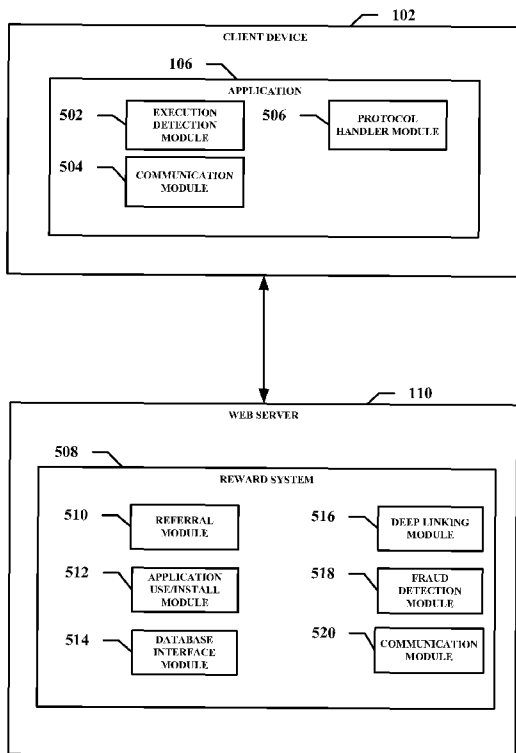


FIG. 5

(57) Abstract: A system and method for tracking performance of an action in an application is disclosed in which a link to perform the application action is transmitted to a client device. In response to receiving an indication of the selection of the link, the performance of the action in the application by the client device is detected. Based on the detected performance of the application action, reward data is associated with a user of the client device.

WO 2012/019072 A1



SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK,

Published:

- with international search report (*Art. 21(3)*)
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (*Rule 48.2(h)*)

SYSTEM AND METHOD FOR REWARDING APPLICATION ACTIONS

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of priority of U.S. Provisional Patent
5 Application No. 61/371,500, filed August 6, 2010, and entitled "SYSTEM AND
METHOD FOR REWARDING APPLICATION INSTALLS," which application is
incorporated by reference herein in its entirety.

FIELD

10 Example embodiments of the present application generally relate to an
application platform, and more specifically, to techniques for detecting actions
performed in applications.

BACKGROUND

15 Online advertising models generally involve the delivery of advertisements
or offers to users over one or more advertising channels. The effectiveness of the
offers, however, varies, depending on the type of offer and the channel used to
deliver the offer. In particular, one reason a user may ignore an offer is that there is
no incentive for the user to follow the offer.

20

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings, which are not necessarily drawn to scale, like numerals
describe substantially similar components throughout the several views. Like
numerals having different letter suffixes represent different instances of
25 substantially similar components. The drawings illustrate generally, by way of
example, but not by way of limitation, various embodiments discussed in the present
document.

FIG. 1 is a block diagram illustrating a networked environment within
which a client or mobile device connects, via a network, with an application server,
30 while a referral system monitors the connection, according to some embodiments.

FIG. 2 is a flow diagram illustrating example interactions between a client device, a reward machine, and an application store, according to some embodiments.

FIG. 3 is a flow diagram illustrating example interactions between a client device, a reward machine, and an application developer, according to some

FIG. 4 is a flow diagram illustrating example interactions between a reward machine, an advertiser, and a publisher in response to a user action, according to some embodiments.

FIG. 5 is a block diagram showing modules of an application, running on a client device, and modules of a reward system, running on a server, according to some embodiments.

FIG. 6 is a flowchart illustrating an example method for tracking and incentivizing application installs, according to some embodiments.

FIG. 7 is a flowchart illustrating an example method for delivering and monitoring targeted pay-per-action events occurring within an application, according to some embodiments.

FIG. 8 is a flowchart illustrating an example method for registering and mapping actions occurring within an application to a pay-per-action model, according to some embodiments.

FIG. 9 is a flowchart illustrating an example method for tracking and incentivizing the performance of actions within an application, according to some embodiments.

FIG. 10 illustrates a diagrammatic representation of machine in the example form of a computer system within which a set of instructions, for causing the machine to perform any one or more of the methodologies discussed herein, may be executed.

DETAILED DESCRIPTION

The following detailed description includes references to the accompanying drawings, which form a part of the detailed description. The drawings show

illustrations in accordance with example embodiments. These embodiments, which are also referred to herein as “examples,” are described in enough detail to enable those skilled in the art to practice the invention. It will be apparent to one skilled in the art that specific details in the example embodiments are not required in order to practice the present invention. For example, although the example embodiments are disclosed with reference to client devices, the teachings of the present disclosure can be used in other environments wherein applications are downloaded, installed, and executed. The example embodiments may be combined, other embodiments may be utilized, or structural, logical and electrical changes may be made without departing from the scope what is claimed. The following detailed description is, therefore, not to be taken in a limiting sense, and the scope is defined by the appended claims and their equivalents.

In a mobile environment, applications may be offered for download at a centralized site, such as an application store or market (“app store”). Applications in the app store may be listed by a variety of metrics, such as by category, popularity, and cost. As concerns applications provided for download in an app store, a publisher may refer to the entity that publishes or otherwise provides an application for download by users. An advertiser may refer to an entity that provides an offer, usually in the form of an action to be taken by the user.

FIG. 1 is a block diagram illustrating an example embodiment of a networked environment in which a client device connects, via a network, to an application server hosting an application store. Referring to **FIG. 1**, client devices 102 and 104, each storing one or more applications 106, may connect via a network 108, such as the Internet, to an application server 120 executing an application store 122. Client devices 102 and 104 may be re-directed to the app store 122 to download application(s) via the network 108.

Web server 110 may host a website for a mobile application platform that connects advertisers and publishers. Web server 110 may provide various hosted web services to the website, including code deployment and testing, online analytics, data storage, and task management. Web server 110 may be connected to one or more databases 112 that store data associated with the website, among other

things. In an example embodiment, web server 110 may be an Amazon.com hosted web server providing web services. However, it is contemplated that different third party hosted providers of web services may be used, or servers associated with the website may provide web services without resort to third party-provided web services. Additional web servers (not shown) may include servers associated with the hosted website.

In some embodiments, the one or more databases 112 may be SimpleDB distributed databases. SimpleDB distributed databases use a key-value pair to enable fast lookup and retrieval operations as compared to structured query language (SQL) databases. It is contemplated that other databases employing key-value pairs to store and index data may be used. In some embodiments, at least one of the databases 112 may be a SQL database. Data associated with the website, such as user data and application tracking data, also may be stored in cache server 114. Cache server 114 may include memory 116, in the form of RAM, for example, that stores part or all of the data stored in database(s) 112. Cache server 114 may operate as a backup or supplemental data store for the website. In some embodiments, cache server may be a Memcached distributed memory caching system. Publisher server 118 may either serve as the source of applications downloaded to a client device 102 or 104 or provide the applications to the application server 120 for storage and listing in the app store 122. Similarly, advertiser server 120 may provide and deliver advertisements to client device 102 or 104 on behalf of advertisers or advertising networks or may provide advertisements via the network 108 to the application server 120 for the application server 120 to deliver.

FIG. 2 is a flow diagram illustrating example interaction between a client device, a reward machine, and an application store, in accordance with an example embodiment. Referring to **FIG. 2**, when an application using or associated with the website ad platform executes, a call is made to the reward machine. In some embodiments, the reward machine may be part of a reward system or platform that comprises a website, one or more web servers providing web services, and one or more data storage devices, either distributed and accessible via the network 108 or

connected to the one or more web servers. The call may be in the form of a ping initiated by software code in the application. The ping is pushed to the reward machine.

At block 208, a reward machine(s) 204 associated with the reward platform
5 may deliver an advertisement to the client device 202 executing the application. The reward machine(s) may track the display of the advertisement so that the platform may record the advertisement impression. At block 210, the client device 202 may receive the advertisement. The advertisement may be an offer or a referral related to the application being executed on the client device 202. In some
10 embodiments, the referral offer may prompt the user to download a different application in exchange for a reward or incentive. In some embodiments, the reward or incentive may be virtual currency or a virtual good for use with the executing application. The virtual currency may be used to purchase virtual or actual goods associated with the executing application. At block 212, the client
15 device 202 accesses the referral, such as by clicking a URL or hyperlink. In some embodiments, the referral may direct the user to the app store 206, and in some embodiments, to the referred application in the app store 206.

At block 214, when the user clicks on the referral, the referral is directed to the reward machine(s) 204, where it is tracked and stored. In some embodiments,
20 the unique device identifier (“Udid”) for the client device 202 that accessed the referral is stored. Although Udid is the term commonly associated with a device identifier for client devices operating the Apple iOS mobile operating system, the present application is not intended to be limited to client devices operating the iOS operating system or device identifiers associated only with the iOS operating
25 system. The use of the term “unique device identifier” or “Udid” in the present application may refer to any device identifier associated with any operating system, including, but not limited to, device IDs commonly associated with client devices operating the Android operating system, the Palm operating system, and the Blackberry operating system. In some embodiments, an application identifier
30 (“AppID”) associated with the referred application also is stored. It is contemplated that other identification information may be stored as well, including an Internet

Protocol (“IP”) address, a Media Access Control (“MAC”) address, or an account identifier, such as a client device account identifier (e.g., a telephone number) or a third party account identifier (e.g., Facebook® username, Apple® account identifier, Google® account identifier). Once stored, the reward machine(s) 204
5 may redirect the user to the app store 206.

At block 216, the client device 202 may be re-directed to the referred application in the app store. At block 218, the referred application may be downloaded from the app store 206 to the client device 202. At block 220, the client device 202 may install the referred application. In some embodiments, the
10 reward machine(s) 204 may have no knowledge of whether the client device 202 actually downloaded the referred application from the app store 206 because the reward machine(s) 204 may not have access to the mechanisms and inner workings of the app store 206.

At block 222, the client device 202 may execute the installed application. A
15 script or other code included in the referred application by the reward machine(s) 204 or by an advertiser may trigger the referred application to ping or otherwise push data to the reward machine(s) 204 of the reward platform. The ping may indicate to the reward platform that the client device 202, as identified by its Udid, has executed the referred application.

At block 224, the reward platform may verify whether a referral conversion
20 has occurred. A referral conversion (e.g., an installation of a referred application) is verified by searching a table of stored clicks using the Udid of the device executing the application and the AppID of the application being executed. The stored clicks table may store an installation history for every application downloaded by a client
25 device, in addition to other data, such as a date of execution or access. If the search of the stored clicks table shows that the user recently clicked to the application within a predetermined amount of time and the user has not previously installed the application, the execution of the application is considered a conversion.

At block 226, if a conversion is determined to have occurred, a rewards
30 domain of the reward platform is updated. The rewards domain tracks all rewards in the system. At block 228, the rewards machine(s) 204 may associate reward data

with the client device 202 or an account associated with a user of the client device 202 and may transmit the reward data to the user account or the client device 202. The rewards machine(s) 204 may call a software method or command to transmit the reward to the user. In some embodiments, the rewards machine(s) 204 may
5 push the reward to the user account or client device 202. In some embodiments, a user of the client device 202 may retrieve the reward from the rewards machine(s) 204. The reward may be virtual currency or a virtual good for use within the referring application.

FIG. 3 is a flow diagram illustrating example interactions between a client
10 device, a reward machine(s), and an application developer, according to some embodiments. Referring to **FIG. 3**, an application developer may desire to engage a user of an application. In some embodiments, the application developer may accomplish deeper engagement of an application by incentivizing the user to perform targeted actions within the application. At block 308, the application
15 developer 306 may register an application action that it wishes to incentivize with the reward machine(s) 304. In some embodiments, as part of the registration process, the application developer 306 enters a name and a description of the action to be performed within the application. In some embodiments, the application
20 developer 306 also may enter a bid price corresponding to an amount of currency that the application developer 306 is willing to pay for the user to complete the action.

At block 310, the reward machine(s) 304 may generate an action identifier (ID) for the corresponding registered action. In some embodiments, the generated action ID may be a unique, random, or pseudo-random number of n bits. The action
25 ID may be mapped to the action. In some embodiments, the reward machine(s) 304 may be part of a reward system or platform that comprises a website, one or more web servers providing web services, and one or more data storage devices, either distributed and accessible via the network 108 or connected to the one or more web servers.

At block 312, the reward machine(s) 304 may create and store an offer corresponding to the incentivized action registered by the application developer 306. The action ID mapped to the action may be stored with the offer.

At block 314, the reward machine(s) 304 may generate software code
5 corresponding to the offer and return the software code and the action ID to the application developer 306. The application developer 306 may integrate the offer code and action ID into the application at the point of the action. The offer code may trigger a ping or cause a ping to be transmitted from a client device executing the application to the reward machine(s) 304 when the user completes the
10 incentivized action in the application. In some embodiments, the generated offer code may be client device platform-specific. The application developer 306 may specify which device platform (e.g., Android®, iOS®) the application is configured to execute on, and the offer code may be generated specifically for the specified device platform.

At block 316, a client device 302 may execute the application containing the incentivized action. In some embodiments, the application may have been
15 previously installed by the user of the client device 302. In some embodiments, the user may navigate to a web page that lists offers associated with various actions for various applications. The user may select an offer from the web page (called in some embodiments, an “offer wall”) and be redirected to the application relating to
20 the offer. In some embodiments, the redirection may guide a user to the application in the app store, where the user then is able to open or execute the application. In the event the user has not previously installed the application, the user may be prompted or offered the opportunity to download and/or install the application, in
25 some cases, for an additional incentive.

At block 318, the user may initiate and perform the action being incentivized within the application. The offer code inserted in the application by the application
30 developer 306 may cause the client device 302 to ping or otherwise notify the reward machine(s) 304 upon the initiation of the action. In some embodiments, the client device 302 may send an additional ping or other notification to the reward machine(s) upon completion of the action.

At block 320, the reward machine(s) 304 may receive the ping or other notification from the client device 302. In some embodiments, the reward machine(s) 304 may receive a first ping when the action is first initiated by the user of the client device 302 and a second ping when the action is completed by the user of the client device 302. For example, if an action is time consuming, the user may initiate the action at a first point in time and then resume completion of the action at a later point in time. Within or in addition to the ping or other notification, the reward machine(s) 304 may receive identifying information concerning the action. For example, the reward machine(s) 304 may receive a click ID that is generated when a user clicks or otherwise selects or interacts with the action, the action ID generated and mapped to the incentivized action, a partner ID, and a device ID, such as the Udid of the client device 302 or a user account identifier associated with the user. The click ID may enable the reward machine(s) 304 to match the click with stored clicks to determine when a user interaction in the application is a conversion of a referral offer or an organic interaction (unrelated to the referral offer) with an aspect of the application.

At block 322, the reward machine(s) 304 may update the reward domain to indicate the successful completion of an action by a user. The rewards domain tracks all rewards in the system. In some embodiments, the reward machine(s) 304 may record the identifying information received in block 320 in a record of a database along with an indication that a reward has been allocated or transmitted to the user for performing the action.

At block 324, the client device 302 or a user account associated with the user operating the client device 302 may receive the reward for performing and completing the incentivized action. In some embodiments, the reward may correspond to and be usable within the application in which the incentivized action was performed. In some embodiments, the reward may correspond to and be usable within a different application within the client device application platform, such as an application that referred the user to the offer to perform the incentivized action. The rewards machine(s) 304 may call a software method or command to transmit the reward to the user. In some embodiments, the rewards machine(s) 304 may

push the reward to the user account or client device 202. In some embodiments, a user of the client device 302 may retrieve the reward from the rewards machine(s) 304. The reward may be virtual currency or a virtual good for use within the referring application.

5 Note that **FIG. 3** shows operations 316, 318, 320, 322, and 324 are not connected to the other operations. This illustrates that, in some embodiments, these operations may be performed independently of the other operations.

FIG. 4 is a block diagram illustrating an example interaction between a reward system, an advertiser, and a publisher in response to a user action, in
10 accordance with an example embodiment. At block 408, an advertiser 406 seeking to market an application to users of the reward system platform adds credits to their account. The credits may instruct the platform as to how much the advertiser is willing to pay per application installation. At block 410, reward machine(s) 404 associated with the platform (or reward website) may update an account associated
15 with the advertiser 406. Account data may be stored in a database or lookup table.

 At block 412, the reward machine(s) 404 track and verify a referral conversion. A referral conversion may comprise the installation of an application referred by the advertiser 406. When a user clicks on a referral, that click and accompanying data, including but not limited to the client device's Udid and IP
20 address, are stored. Because the reward machine(s) 404 may not have access to the inner workings of an app store or other third party application repository, a referral conversion is verified by detecting execution of the referred application by the client device. The application may push data to the reward machine(s) 404 indicating that the client device has executed the referred application.

25 If a referral conversion has occurred, at block 414, financial records are updated on the rewards machine(s) 404. In an example embodiment, a software method "send_money_txn" may be called to send transaction data to web server 110. It is contemplated that the name of the software method used to send transaction data to web server 110 is immaterial; other software methods may be
30 invoked to send the transaction data to the web server 110. Web server 110 may insert the transaction into a database table that stores application transactions. A

script may execute on a periodic basis to perform a SUM operation over the table. In an example embodiment, the script may execute every minute. The script may debit an advertiser account at block 416. The script also may credit a publisher account at block 418. In an example embodiment, blocks 414, 416, and 418 may be performed for each detected application installation.

Note that **FIG. 4** shows operations 414, 416, and 418 are not connected to the other operations. This illustrates that, in some embodiments, these three operations may be performed independently of the other operations. Also, the embodiments of **FIG. 4** may be equally applicable to referrals involving incentivized actions. For example, block 412 may track the conversion of an incentivized action referral by receiving information from a client device that indicates an initiation and a completion of an incentivized and referred action.

FIG. 5 is a block diagram showing modules of an application, executing on a client device, and modules of a reward system, executing on a server, according to some embodiments. The application 106 may include an execution detection module 502, a communication module 504, and a protocol handler module 506.

Execution detection module 502 may detect when the application 106 is executed. In an example embodiment, execution detection module 502 may be inserted into application 106 by the reward system 508 or an advertiser to track execution of the application. In addition to tracking execution of the application 106, execution detection module 502 may track application usage data, including user interaction with the application, duration of use, and use of virtual goods or currency, among other things. In some embodiments, the application usage data tracked by the execution detection module 502 includes events or actions performed within the application by the user. Performance of the actions may be incentivized by an advertiser or other entity.

Communication module 504 may transmit and receive data to and from the application. Communication module 504 may operate in conjunction with execution detection module 502 to push data, for example, a ping, to the reward system upon execution of the application 106 or initiation and completion of an action within the application 106. In some embodiments, the ping may include

identifying information concerning use of the application, such as an action performed within the application. In some embodiments, identifying information, such as an identifier (e.g., Udid) of the client device 102 or an account identifier (e.g., user name, telephone number) associated with a user of the client device 102 is received by the communication module 504 in addition to the ping.

Communication module 504 also may receive referral offers from the reward system 508 and may transmit acceptance of a referral offer, along with identifying information about the application, the client device 102, and the incentivized and referred action.

Protocol handler module 506 may register a protocol handler for use on the mobile device 102. The protocol handler module 506 may register the protocol handler on behalf of a publisher of an application. The reward system 508 may cooperate with the publisher of the application to use the protocol handler to gain access to the application. The reward system 508 may transmit code via communication module 504 to the client device 102 and use the exposed protocol handler to insert the code in the application 106. The code may enable the reward system to offer and track the effectiveness of incentives to users for targeted pay-per-action events. Examples of targeted pay-per-action events may include but are not limited to logging in or checking in to an application account, watching videos, taking surveys, performing specific actions within the application, and accessing particular advertisements. Protocol handler module 506 may operate in conjunction with execution detection module 502 to detect when a user performs a pay-per-action event. In response to a pay-per-action event, the execution detection module 502 may generate a ping or initiate a data push to notify the reward system that the user has engaged in a pay-per-action event. In some embodiments, the protocol handler module 506 may detect an initiation of a pay-per-action event and a completion of the pay-per-action event. The execution detection module 502 may generate a ping or initiate a data push upon the initiation of the pay-per-action event and upon the completion of the pay-per-action event.

In some embodiments, an application developer may contact the reward system 508 directly to register an action to be incentivized with the reward system

508. The application developer may describe the action, including measurable events, such as what constitutes an initiation of the action, what action steps need to be performed, and what constitutes a completion of the action, and circumstances surrounding the action (e.g., the action takes place in level 1 of a game). In some
5 embodiments, the reward system 508 may pre-approve the action as being suitable for a referral offer or incentive. The reward system 508 may generate an action ID to identify the action and code corresponding to a referral offer or incentive. The application developer may insert the code and the action ID into the application itself rather than use the protocol handler module 506.

10 The reward system 508 includes a referral tracking module 510, an application use/install module 512, a database interface module 514, a deep linking module 516, a fraud prevention module 518, and a communication module 520.

The referral module 510 may select and generate referral offers to be transmitted to the client device 102. In some embodiments, the referral offer is a list
15 of offers optimized for the application being executed. The list of offers may comprise a list of applications incentivized for download by the user, with the incentive being virtual currency or a virtual good. The list of offers also may include one or more actions capable of being performed within one or more applications, with different actions being awarded differing incentives. In some
20 embodiments, the difficulty of performing the actions may factor into the amount of incentive offered. In some embodiments, the advertiser or application developer's desire to have a particular action performed may influence the amount of incentive offered.

The list of offers may be compared to a list of disabled offers stored on a per
25 application basis to determine which offers should be culled from the offer list. The referral module 510 may use advertisements from a variety of advertising networks. The referral module 510 may select an advertisement to be offered to the user, with different advertisements being offered depending on the application being executed by the client device 102. The advertisement offered as a referral may be chosen for
30 delivery using an ad order algorithm that optimizes advertisements to be delivered by one or more predetermined metrics. In an example embodiment, the effective

cost per mille for each advertisement may be considered in determining which advertisement to deliver. In some embodiments, the advertisements may be aggregated and listed on a web page or user interface in the form of an offer wall. The advertisements may be sortable or capable of being filtered by application, action, incentive, Udid, and so forth. For example, if the user has installed the application previously via the reward machine(s) (e.g., as part of a pay-per-install offer), the offer to install the application may be filtered out and not shown to the user again.

The application use/install module 512 may monitor and track application usage and installation. The application use/install module 512 may store the client device's Udid whenever a referral sends a user to the app store for a specific application that the client device 102 has not previously run. The client device's Udid may be stored with application identifiers corresponding to every application executed by the mobile device 102. The Udid may serve as a key to enable a fast lookup whenever a client device executes an application. In this respect, the reward system 508 may use the Udid to lookup a list of every application executed by the client device 102 to determine whether an executed application is a newly installed application.

Similarly, the application use/install module 512 may store the Udid and AppID as a key in a stored click table whenever a user clicks to an app store to download an application. The stored click table may be referenced by the application use/install module 512 when the module 512 is attempting to determine whether an executing application was recently downloaded and is a new installation.

In some embodiments, the application use/install module 512 tracks application usage by a user. Application usage may include actions initiated and performed within one or more applications. The application use/install module 512 may store the Udid of the client device 102, the AppID and an action ID, among other things, as keys in a stored click table when a user initiates an incentivized action within an application. The application use/install module 512 also may store the same identifiers in the stored click table when the user completes the incentivized action within the application.

The database interface module 514 may interface with connected and distributed databases to store and retrieve application and user data. In an example embodiment, the database interface module 514 may interface with databases or data storage devices to access an installation history for applications on a per client device basis. For example, the reward platform may use both SQL and SimpleDB storage platforms for storing and maintaining records concerning installed applications and rewards. In some embodiments, the database interface module 514 interfaces with databases and data storage devices to access a history of application actions undertaken by a client device. The history of application actions may reflect the status and progress of actions performed by a client device 102. The database interface module 514 may receive database retrieval and storage commands from other modules in the reward system 508 and may translate these commands, if necessary, to appropriately interface with the storage platforms.

The deep linking module 516 may interface with a protocol handler registered on the client device 102 to insert code in the application 106, redirect users to the application from an offer wall (e.g., a user interface or web page containing referral offers), or redirect users to a specific event or action in the application. The code may facilitate the linking or redirection of users to specific events inside the application, thereby allowing the reward system to provide targeted incentives for certain pay-per-action events occurring in the application. For example, the deep linking module 516 may insert code in the application 106 that rewards a user for watching a video or performing a game action in the application 106. The deep linking module 516 may use the registered protocol handler, in essence, to open up the application and allow the reward system to deposit code related to pay-per-action events.

The fraud detection module 518 may detect and block fraudulent activity within the reward system. Fraudulent activity may be determined by monitoring certain identifiers, such as a client device IP address, a mobile device Udid, an AppID, an action ID, and a publisher identifier. In an example embodiment, fraud is detected by determining that the same IP address is installing the same application multiple times in an attempt to be rewarded for each installation of the same

application. In another example embodiment, fraud may be detected by identifying the same publisher ID being passed during multiple installations for the same application. In each scenario, the fraud detection module 518 may block the offending users from the reward system or otherwise prevent the offending users
5 from being unjustly rewarded.

The communication module 520 may transmit and receive data to and from the reward system 508 to the mobile device 102. The communication module 520 may operate in conjunction with other modules of the reward system to transmit generated referral offers, receive a ping or pushed data from an application executed
10 on the client device 102, and transmit rewards to the client device 102 upon a referral conversion.

FIG. 6 is a flowchart illustrating an example method for tracking and incentivizing application installs. At block 602, the reward system 508 may provide a client device 102 with a referral offer. The referral offer may be an offer to
15 download an application from an app store in exchange for virtual currency or a virtual good. The reward system 508 may determine prior to providing the client device 102 with the referral offer whether the client device is eligible to perform the referral offer. For example, the reward system 508 may determine whether the client device 102 has executed the application before determining whether to send
20 the referral offer to download and execute the application to the client device 102.

At block 604, the reward system may monitor whether the user clicked on the referral. The reward system may track referral clicks using the Udid of the client device 102. If the user did not click on the referral, the example method returns to block 602.

25 If the user did click on the referral offer, at block 606, the reward system 508 may store the click with the client device's 102 Udid. The click may be stored in a table. If the referral offer redirects the user to an app store to download an application, the AppID of the application may be stored as well in the table. Together, the Udid and the AppID may serve as a key in the table, thereby enabling
30 easy searching for the combination of the mobile device and application when the user runs the referred application.

At block 608, the reward system 508 detects the execution of the application. Detection may be facilitated by the pushing of data from the client device 102 to the reward system 508. The pushing of data may be caused by code inserted into the application 106 by the reward system 508 or an advertiser that transmits a ping to the server.

At block 610, in response to detecting the execution of the referred application, the rewards system 508 determines whether or not the client device 102 has clicked to the app in the app store recently. If the client device 102 is found to have clicked to the app within a predetermined amount of time, the client device 102 will be adjudged to have recently downloaded the app. If the client device 102 did not recently click to the app, the example method may return to block 608 for detection of additional application executions.

At block 612, the rewards system 508 determines whether or not the client device 102 has previously installed the referred application. Determination of this query may involve searching the stored click table using the client device 102 Udid and the AppID of the referred application 106. If the stored click table does not contain a record of the referred application 106 being previously installed, then in block 614, the rewards system 508 may be updated. If the stored click table does contain a record of the referred application being previously installed, then the example method returns to block 608 to detect additional application executions.

At block 614, the rewards system 508 may be updated to reflect that a referral conversion occurred. The updating may include updating the stored click table to indicate that the referred application has been installed. Further, the rewards system 508 may be updated to reflect that a reward (*e.g.*, virtual currency, virtual good) is to be awarded to the client device 102.

At block 616, the rewards system 508 may transmit the reward to the user, for example, by transmitting the reward to the client device 102 or an account associated with the user. At block 618, financial transaction data relating to the referral conversion may be recorded and stored. In an example embodiment, transaction data relating to the referral conversion may be inserted into a MoneyTransactions table. In one example embodiment, the MoneyTransactions

table may be a Microsoft SQL database. At block 620, an advertiser account is debited to reflect that a user installed a referred application. At block 622, a credit is given to a publisher account.

FIG. 7 is a flowchart illustrating an example method for delivering and monitoring targeted pay-per-action events occurring within an application. At block 5 702, the rewards system 508, or one of its components, may access an application via an exposed registered protocol handler. The protocol handler may be registered by a publisher of the application.

At block 704, the rewards system 508 may insert code into the application using the registered protocol handler. The code may operate to redirect a user 10 executing the application to a particular application event. For example, the user may be redirected to a particular video or survey and may be prompted to watch the video or take the survey. In some embodiments, the code may provide a callback mechanism by which the application pings or transmits data to the reward system 15 508 when the user performs an action or event associated with the portion of the application where the code is inserted. In some embodiments, no code is inserted by the rewards system 508 using the registered protocol handler. Rather, code may be generated by the rewards system 508 and provided to the application developer for integration with the application. Redirection of the user may occur in response to 20 the user selecting an offer from an offer wall (in the form of a user interface or web page with selectable referral offers). The offer wall may call a web view of the wall that triggers the protocol handler to redirect the user to the referred application or event in the application identified by the code inserted by the application developer.

At block 706, the rewards system 508 may monitor user interaction with the 25 application event. The user's interaction with the targeted pay-per-action event may be recorded in block 708. A reward or incentive offered in exchange for the user interacting with the pay-per-action application event may be logged and transmitted to the user.

FIG. 8 is a flowchart illustrating an example method for registering and mapping actions occurring within an application to a pay-per-action model, 30 according to some embodiments. At block 802, the referral module 510 of the

reward system 508 receives registration of an application action to be incentivized or referred. Registration of the application action may entail an application developer or publisher submitting a title of the action, one or more steps needed to perform the action, and a bid amount indicating an amount of currency the application developer or publisher is willing to pay for the user to perform the action. In some embodiments, the title of the action submitted to the rewards system 508 is shown to the users on an offer wall or when the user views the incentivized action. The steps submitted by the application developer or publisher are required to be performed in order for the incentive associated with the application action to be awarded to the user. The bid amount may be actual currency (e.g., U.S. currency) that the application developer is willing to pay the reward system 508. All or a portion of the actual currency may be converted into virtual currency to be awarded to the user. The virtual currency may be redeemable or applicable to the application in which the action is being performed or may apply to a different application. A remaining amount of the actual currency may be retained by the reward system 508 as a fee for providing the referral offer.

At block 804, the referral module 510 of the reward system 508 may generate an action ID and action code associated with the incentivized application action. The action ID identifies the action with the application. In some embodiments, the action ID may be a unique, random, or pseudo-random number. In some embodiments, the action code generated by the referral module 510 of the reward system 508 operates as a callback mechanism to the reward system 508 upon performance of the action. For example, the action code may prompt a ping and a transmission of identifying information (if the identifying information is not included in the ping itself) to the reward system 508. The identifying information may include user identifying information, such as an account identifier (e.g., telephone number, user name), the action ID, and the app ID.

At block 806, the referral module 510 of the reward system 508 may map the action ID to the application action. The mapping may be stored in a table, database, or other data structure. The mapping may enable a fast look up of the

action being performed by a user when action identifying information (e.g., action ID, App ID) is received by the reward system 508.

At block 808, the reward system 508 may transmit the action ID and action code to the application developer. In some embodiments, the reward system 508
5 may use the deep linking module 516 described in the example embodiment of **FIG. 5** to insert the action code in the application via protocol handler module 506. In some embodiments, the action code is transmitted to the application developer who incorporates the code into the application.

FIG. 9 is a flowchart illustrating an example method for tracking and
10 incentivizing the performance of actions within an application, according to some embodiments. At block 902, a referral offer to perform an action in an application is generated. In some embodiments, the reward system 508 generates the referral offer in response to the registration of the action by an application developer or publisher. The offer may include a title of the action, one or more steps needed to
15 be performed to complete the offer, and an incentive offered for performing the offer. The offer is caused to be displayed on a client device 102 to the user, for example, on an offer wall contained in a web page or user interface.

At block 904, a user's selection of an offer to perform an action is received. At block 906, in some embodiments, selection of the referral offer may redirect a
20 user to the application containing the incentivized action. If the application is not installed, in some embodiments, selection of the referral offer may redirect the user to an app store to download and install the application.

At block 908, the reward system 508 may receive an indication that the user has initiated the action within the application. The indication may take the form of a
25 ping and may include information identifying the application, the action being undertaken, and the user or client device performing the action. In some embodiments, the action code generated for the incentivized offer may prompt or cause the application or the client device 102 to transmit the indication of the action initiation to the reward system 508. The indication (and accompanying
30 identification information) may be recorded and stored in a table, database, or other data structure.

At decision block 910, the reward system 508 may wait for the completion of the action by the user of the client device 102. Completion of the action may be detected by the receipt of an additional indication, for example, in the form of a ping, representing a completion of the action. The identifying information may further identify the step of the action being performed such that the reward system 508 may be able to track the status of the performance of the action. If the completion of the action is not detected, the example method proceeds to decision block 912, where the reward system 508 determines whether the amount of time elapsed since the user selected the referral offer exceeds an expiration time for performing the referral offer. The expiration time may be set by the reward system 508 or the application developer.

If the referral offer has expired prior to performance of the action, the reward system 508 may notify the user and redirect the user to block 906 of the example method to restart the action in the application. In some embodiments, if the offer has not been completed, the reward system 508 may not display the offer again to the user.

If the referral offer has not expired yet, the example method is redirected to decision block 910, where the reward system 508 may continue monitoring and waiting for performed action data to arrive.

Referring back to decision block 910, if the completion of the action is detected and determined by the reward system 508, the method proceeds to block 914, where the reward system 508 may transmit the offered incentive to the user. In some embodiments, the reward system 508 will record the completion of the action in a table, database, or other data structure, along with other identifying information, such as the user identity (e.g., Udid, account identifier), the issuance of the incentive, the date and time of action performance, and so forth. In some embodiments, the reward system 508 may transmit the incentive to the client device 102 of the user or to a user account associated with the user. In some embodiments, a notification of the incentive may be transmitted to the user. The notification may inform the user that an incentive has been awarded and may be claimed at a location (e.g., a web site, a page identified by a hyperlink) specified in the notification.

MODULES, COMPONENTS AND LOGIC

Certain embodiments are described herein as including logic or a number of components, modules, or mechanisms. A component or a module is a non-
5 transitory and tangible unit capable of performing certain operations and may be configured or arranged in a certain manner. In example embodiments, one or more computer systems (*e.g.*, a standalone, client or server computer system) or one or more components of a computer system (*e.g.*, a processor or a group of processors) may be configured by software (*e.g.*, an application or application portion) as a
10 component that operates to perform certain operations as described herein.

In various embodiments, a component or a module may be implemented mechanically or electronically. For example, a component or a module may comprise dedicated circuitry or logic that is permanently configured (*e.g.*, as a special-purpose processor) to perform certain operations. A component or a module
15 also may comprise programmable logic or circuitry (*e.g.*, as encompassed within a general-purpose processor or other programmable processor) that is temporarily configured by software to perform certain operations. It will be appreciated that the decision to implement a component or a module mechanically, in dedicated and permanently configured circuitry, or in temporarily configured circuitry (*e.g.*,
20 configured by software) may be driven by cost and time considerations.

Accordingly, the term "component" or "module" should be understood to encompass a tangible entity, be that an entity that is physically constructed, permanently configured (*e.g.*, hardwired) or temporarily configured (*e.g.*, programmed) to operate in a certain manner and/or to perform certain operations
25 described herein. Considering embodiments in which components or modules are temporarily configured (*e.g.*, programmed), each of the components or modules need not be configured or instantiated at any one instance in time. For example, where the components or modules comprise a general-purpose processor configured using software, the general-purpose processor may be configured as respective
30 different components or modules at different times. Software may accordingly configure a processor, for example, to constitute a particular component or module

at one instance of time and to constitute a different component or module at a different instance of time.

Components or modules can provide information to, and receive information from, other components or modules. Accordingly, the described components or modules may be regarded as being communicatively coupled. Where multiple of such components or modules exist contemporaneously, communications may be achieved through signal transmission (*e.g.*, over appropriate circuits and buses) that connect the components or modules. In embodiments in which multiple components or modules are configured or instantiated at different times, communications between such components or modules may be achieved, for example, through the storage and retrieval of information in memory structures to which the multiple components or modules have access. For example, one component or module may perform an operation, and store the output of that operation in a memory device to which it is communicatively coupled. A further component or module may then, at a later time, access the memory device to retrieve and process the stored output. Components or module may also initiate communications with input or output devices, and can operate on a resource (*e.g.*, a collection of information).

ELECTRONIC APPARATUS AND SYSTEM

Example embodiments may be implemented in digital electronic circuitry, or in computer hardware, firmware, software, or in combinations of them. Example embodiments may be implemented using a computer program product, *e.g.*, a computer program tangibly embodied in an information carrier, *e.g.*, in a machine-readable medium for execution by, or to control the operation of, data processing apparatus, *e.g.*, a programmable processor, a computer, or multiple computers. In an example embodiment, the machine-readable medium may be a non-transitory machine- or computer-readable storage medium.

A computer program can be written in any form of programming language, including compiled or interpreted languages, and it can be deployed in any form, including as a stand-alone program or as a module, subroutine, or other unit suitable for use in a computing environment. A computer program can be deployed to be

executed on one computer or on multiple computers at one site or distributed across multiple sites and interconnected by a communication network.

In example embodiments, operations may be performed by one or more programmable processors executing a computer program to perform functions by
5 operating on input data and generating output. Method operations can also be performed by, and apparatus of example embodiments may be implemented as, special purpose logic circuitry, *e.g.*, an FPGA (field programmable gate array) or an ASIC (application-specific integrated circuit).

The computing system can include clients and servers. A client and server
10 are generally remote from each other and typically interact through a communication network. The relationship of client and server arises by virtue of computer programs running on the respective computers and having a client-server relationship to each other. In embodiments deploying a programmable computing system, it will be appreciated that that both hardware and software architectures
15 require consideration. Specifically, it will be appreciated that the choice of whether to implement certain functionality in permanently configured hardware (*e.g.*, an ASIC), in temporarily configured hardware (*e.g.*, a combination of software and a programmable processor), or a combination permanently and temporarily configured hardware may be a design choice. Below are set out hardware (*e.g.*,
20 machine) and software architectures that may be deployed, in various example embodiments.

EXAMPLE MACHINE ARCHITECTURE AND MACHINE-READABLE MEDIUM

25 **FIG. 10** is a block diagram of machine in the example form of a computer system 1000 within which instructions, for causing the machine to perform any one or more of the methodologies discussed herein, may be executed. In alternative embodiments, the machine operates as a standalone device or may be connected (*e.g.*, networked) to other machines. In a networked deployment, the machine may
30 operate in the capacity of a server or a client device 102, 104 in server-client network environment, or as a peer machine in a peer-to-peer (or distributed)

network environment. The machine may be a personal computer (PC), a tablet PC, a set-top box (STB), a Personal Digital Assistant (PDA), a cellular telephone, a web appliance, a network router, switch or bridge, or any machine capable of executing instructions (sequential or otherwise) that specify actions to be taken by that
5 machine. Further, while only a single machine is illustrated, the term "machine" shall also be taken to include any collection of machines that individually or jointly execute a set (or multiple sets) of instructions to perform any one or more of the methodologies discussed herein.

The example computer system 1000 includes at least one processor 1002
10 (*e.g.*, a central processing unit (CPU), a graphics processing unit (GPU) or both), a main memory 1004 and a static memory 1006, which communicate with each other via a bus 1008. The computer system 1000 may further include a video display unit 1010 (*e.g.*, a liquid crystal display (LCD) or a cathode ray tube (CRT)). The computer system 1000 also includes an alphanumeric input device 1012 (*e.g.*, a
15 keyboard), a user interface (UI) navigation device 1014 (*e.g.*, a mouse), a disk drive unit 1016, a signal generation device 1018 (*e.g.*, a speaker) and a network interface device 1020.

MACHINE-READABLE MEDIUM

20 The disk drive unit 1016 includes a machine-readable medium 1022 on which is stored one or more sets of instructions and data structures (*e.g.*, software 1024) embodying or utilized by any one or more of the methodologies or functions described herein. The software 1024 may also reside, completely or at least partially, within the main memory 1004 and/or within the processor 1002 during
25 execution thereof by the computer system 1000, the main memory 1004 and the processor 1002 also constituting machine-readable media.

While the machine-readable medium 1022 is shown in an example embodiment to be a single medium, the term "machine-readable medium" may include a single medium or multiple media (*e.g.*, a centralized or distributed
30 database, and/or associated caches and servers) that store the one or more instructions or data structures. The term "machine-readable medium" shall also be

taken to include any tangible medium that is capable of storing, encoding or carrying instructions for execution by the machine and that cause the machine to perform any one or more of the methodologies of the present invention, or that is capable of storing, encoding or carrying data structures utilized by or associated
5 with such instructions. The term "machine-readable medium" shall accordingly be taken to include, but not be limited to, solid-state memories, and optical and magnetic media. Specific examples of machine-readable media include non-volatile memory, including by way of example semiconductor memory devices, *e.g.*, EPROM, EEPROM, and flash memory devices; magnetic disks such as internal
10 hard disks and removable disks; magneto-optical disks; and CD-ROM and DVD-ROM disks.

TRANSMISSION MEDIUM

The software 1024 may further be transmitted or received over a
15 communications network 1026 using a transmission medium. The software 1024 may be transmitted using the network interface device 1020 and any one of a number of well-known transfer protocols (*e.g.*, HTTP). Examples of communication networks include a local area network ("LAN"), a wide area network ("WAN"), the Internet, mobile telephone networks, Plain Old Telephone (POTS) networks, and
20 wireless data networks (*e.g.*, WiFi and WiMax networks). The term "transmission medium" shall be taken to include any intangible medium that is capable of storing, encoding or carrying instructions for execution by the machine, and includes digital or analog communications signals or other intangible medium to facilitate communication of such software.

25

EXAMPLE THREE-TIER SOFTWARE ARCHITECTURE

In some embodiments, the described methods may be implemented using one a distributed or non-distributed software application designed under a three-tier architecture paradigm. Under this paradigm, various parts of computer code (or
30 software) that instantiate or configure components or modules may be categorized as belonging to one or more of these three tiers. Some embodiments may include a

first tier as an interface (*e.g.*, an interface tier). Further, a second tier may be a logic (or application) tier that performs application processing of data inputted through the interface level. The logic tier may communicate the results of such processing to the interface tier, and/or to a backend, or storage tier. The processing performed
5 by the logic tier may relate to certain rules, or processes that govern the software as a whole. A third, storage tier, may be a persistent storage medium, or a non-persistent storage medium. In some cases, one or more of these tiers may be collapsed into another, resulting in a two-tier architecture, or even a one-tier architecture. For example, the interface and logic tiers may be consolidated, or the
10 logic and storage tiers may be consolidated, as in the case of a software application with an embedded database. The three-tier architecture may be implemented using one technology, or, a variety of technologies. The example three-tier architecture, and the technologies through which it is implemented, may be realized on one or more computer systems operating, for example, as a standalone system, or
15 organized in a server-client, peer-to-peer, distributed or so some other suitable configuration. Further, these three tiers may be distributed between more than one computer systems as various components.

COMPONENTS

20 Example embodiments may include the above described tiers, and processes or operations about constituting these tiers may be implemented as components. Common to many of these components is the ability to generate, use, and manipulate data. The components, and the functionality associated with each, may form part of standalone, client, server, or peer computer systems. The various
25 components may be implemented by a computer system on an as-needed basis. These components may include software written in an object-oriented computer language such that a component oriented, or object-oriented programming technique can be implemented using a Visual Component Library (VCL), Component Library for Cross Platform (CLX), Java Beans (JB), Java Enterprise Beans (EJB),
30 Component Object Model (COM), Distributed Component Object Model (DCOM), or other suitable technique.

Software for these components may further enable communicative coupling to other components (*e.g.*, via various Application Programming interfaces (APIs)), and may be compiled into one complete server, client, and/or peer software application. Further, these APIs may be able to communicate through various distributed programming protocols as distributed computing components.

DISTRIBUTED COMPUTING COMPONENTS AND PROTOCOLS

Some example embodiments may include remote procedure calls being used to implement one or more of the above described components across a distributed programming environment as distributed computing components. For example, an interface component (*e.g.*, an interface tier) may form part of a first computer system that is remotely located from a second computer system containing a logic component (*e.g.*, a logic tier). These first and second computer systems may be configured in a standalone, server-client, peer-to-peer, or some other suitable configuration. Software for the components may be written using the above described object-oriented programming techniques, and can be written in the same programming language, or a different programming language. Various protocols may be implemented to enable these various components to communicate regardless of the programming language used to write these components. For example, a component written in C++ may be able to communicate with another component written in the Java programming language through utilizing a distributed computing protocol such as a Common Object Request Broker Architecture (CORBA), a Simple Object Access Protocol (SOAP), or some other suitable protocol. Some embodiments may include the use of one or more of these protocols with the various protocols outlined in the Open Systems Interconnection (OSI) model, or Transmission Control Protocol/Internet Protocol (TCP/IP) protocol stack model for defining the protocols used by a network to transmit data.

A SYSTEM OF TRANSMISSION BETWEEN A SERVER AND CLIENT

Example embodiments may use the OSI model or TCP/IP protocol stack model for defining the protocols used by a network to transmit data. In applying

these models, a system of data transmission between a server and client, or between peer computer systems may for example include five layers comprising: an application layer, a transport layer, a network layer, a data link layer, and a physical layer. In the case of software, for instantiating or configuring components, having a three-tier architecture, the various tiers (*e.g.*, the interface, logic, and storage tiers) reside on the application layer of the TCP/IP protocol stack. In an example implementation using the TCP/IP protocol stack model, data from an application residing at the application layer is loaded into the data load field of a TCP segment residing at the transport layer. This TCP segment also contains port information for a recipient software application residing remotely. This TCP segment is loaded into the data load field of an IP datagram residing at the network layer. Next, this IP datagram is loaded into a frame residing at the data link layer. This frame is then encoded at the physical layer, and the data transmitted over a network such as an internet, Local Area Network (LAN), Wide Area Network (WAN), or some other suitable network. In some cases, internet refers to a network of networks. These networks may use a variety of protocols for the exchange of data, including the aforementioned TCP/IP, and additionally ATM, SNA, SDI, or some other suitable protocol. These networks may be organized within a variety of topologies (*e.g.*, a star topology), or structures.

Although an embodiment has been described with reference to specific example embodiments, it will be evident that various modifications and changes may be made to these embodiments without departing from the broader spirit and scope of the invention. Accordingly, the specification and drawings are to be regarded in an illustrative rather than a restrictive sense. The accompanying drawings that form a part hereof, show by way of illustration, and not of limitation, specific embodiments in which the subject matter may be practiced. The embodiments illustrated are described in sufficient detail to enable those skilled in the art to practice the teachings disclosed herein. Other embodiments may be utilized and derived therefrom, such that structural and logical substitutions and changes may be made without departing from the scope of this disclosure. This Detailed Description, therefore, is not to be taken in a limiting sense, and the scope

of various embodiments is defined only by the appended claims, along with the full range of equivalents to which such claims are entitled.

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

The preceding technical disclosure is intended to be illustrative, and not
15 restrictive. For example, the above-described embodiments (or one or more aspects thereof) may be used in combination with each other. Other embodiments will be apparent to those of skill in the art upon reviewing the above description. The scope of the claims should, therefore, be determined with reference to the appended claims, along with the full scope of equivalents to which such claims are entitled. In
20 the appended claims, the terms “including” and “in which” are used as the plain-English equivalents of the respective terms “comprising” and “wherein.” Also, in the following claims, the terms “including” and “comprising” are open-ended, that is, a system, device, article, or process that includes elements in addition to those listed after such a term in a claim are still deemed to fall within the scope of that
25 claim. Moreover, in the following claims, the terms “first,” “second,” and “third,” etc. are used merely as labels, and are not intended to impose numerical requirements on their objects.

In this document, the terms “a” or “an” are used, as is common in patent documents, to include one or more than one. In this document, the term “or” is used
30 to refer to a nonexclusive or, such that “A or B” includes “A but not B,” “B but not A,” and “A and B,” unless otherwise indicated. Furthermore, all publications,

patents, and patent documents referred to in this document are incorporated by reference herein in their entirety, as though individually incorporated by reference. In the event of inconsistent usages between this document and those documents so incorporated by reference, the usage in the incorporated reference(s) should be
5 considered supplementary to that of this document; for irreconcilable inconsistencies, the usage in this document controls.

The Abstract is provided to comply with 37 C.F.R. §1.72(b), which requires that it allow the reader to quickly ascertain the nature of the technical disclosure. The abstract is submitted with the understanding that it will not be used to interpret
10 or limit the scope or meaning of the claims. Also, in the above Detailed Description, various features may be grouped together to streamline the disclosure. This should not be interpreted as intending that an unclaimed disclosed feature is essential to any claim. Rather, inventive subject matter may lie in less than all features of a particular disclosed embodiment. Thus, the following claims are
15 hereby incorporated into the Detailed Description, with each claim standing on its own as a separate embodiment.

WHAT IS CLAIMED IS:

1. A computer-implemented method comprising:
transmitting, to a client device, a link to perform an action in an application;
responsive to receiving an indication of a selection of the link, detecting, by
at least one processor, the performance of the action in the application by the client
device; and
associating reward data with a user of the client device in response to the
detecting of the performance of the action by the client device.
2. The computer-implemented method of claim 1, wherein the link is
associated with a referral offer to perform the action in the application, and further
comprising storing access by the client device to the referral offer.
3. The computer-implemented method of claim 1, further comprising:
receiving a credit from an advertiser, the credit being deposited in an
advertiser account, wherein a portion of the credit is to be paid for every
performance of the action;
storing financial transaction data corresponding to the associated reward
data;
adjusting a value in the advertiser account to account for the performance of
the action; and
adjusting a value in a publisher account to account for the performance of
the action.
4. The computer-implemented method of claim 1, wherein the detecting of the
performance of the action comprises at least one of:
receiving a first indication from the application executing on the client
device, the first indication corresponding to an initiation of the performance of the
action; and

receiving a second indication from the application executing on the client device, the second indication corresponding to a completion of the performance of the action.

5. The computer-implemented method of claim 4, further comprising determining an amount of time elapsed between the receiving of the first indication and the receiving of the second indication, wherein based on the amount of time elapsed exceeding a predetermined amount of time, notifying the client device of an expiration of an offer to perform the action.

6. The computer-implemented method of claim 1, further comprising storing the detection of the performance of the action, the storing of the detection including storing a unique device identifier (Udid) of the client device and an application action identifier (action ID) corresponding to the action being performed.

7. The computer-implemented method of claim 1, wherein the reward data is one of a virtual currency amount and a virtual good.

8. The computer-implemented method of claim 1, further comprising:
receiving a registration of the action in the application to be performed; and
generating an application action identifier (action ID) and action code, the action ID corresponding to the action, and the action code causing the client device to transmit at least one of a first indication and a second indication when the action is respectively initiated and completed.

9. The computer-implemented method of claim 8, further comprising:
mapping the action ID to the action;
storing the action ID and action code with the registration of the action;
inserting the action code in the application using a registered protocol handler; and
re-directing the user operating the client device to the application.

10. A system comprising:
at least one processor;
a referral module, implemented by the at least one processor, configured to generate a link to perform an action in an application;
an application usage module, implemented by the at least one processor, configured to detect a performance of the action in the application by a client device;
a communication module, implemented by the at least one processor, configured to:
transmit the link to the client device;
receive an indication of the performance of the application action from the client device; and
transmit reward data associated with a user of the client device in response to the detected performance of the action in the application by the client device.
11. The system of claim 10, wherein the link is associated with a referral offer to perform the action in the application, and further comprising a database interface module configured to store access by the client device to the referral offer.
12. The system of claim 10, wherein the application usage module is configured to detect the performance of the action by at least one of:
receiving a first indication from the application executing on the client device, the first indication corresponding to an initiation of the performance of the action in the application; and
receiving a second indication from the application executing on the client device, the second indication corresponding to a completion of the performance of the action in the application.

13. The system of claim 12, wherein the application usage module is further configured to determine an amount of time elapsed between the receiving of the first indication and the receiving of the second indication, wherein based on the amount of time elapsed exceeding a predetermined amount of time, the communication module is further configured to notify the client device of an expiration of an offer to perform the action.

14. The system of claim 10, further comprising a database interface module configured to store the detection of the performance of the action, the storing of the detection including storing a unique device identifier (Udid) of the client device and an application action identifier (action ID) corresponding to the action being performed.

15. The system of claim 10, wherein the reward data is one of a virtual currency amount and a virtual good.

16. The system of claim 10, wherein the referral module is further configured to: receive a registration of the action to be performed; and generate an application action identifier (action ID) and action code, the action ID corresponding to the action, and the action code causing the client device to transmit at least one of a first indication and a second indication when the action is respectively initiated and completed.

17. The system of claim 16, wherein the referral module is further configured to map the action ID to the application action, and further comprising:

a database interface module configured to store the action ID and action code with the registration of the action;

a deep linking module configured to:

insert the action code in the application using a registered protocol handler, the action code re-directing the user operating the client device to the application.

18. A non-transitory machine-readable medium storing a set of instructions that, when executed by at least one processor, causes the at least one processor to perform operations comprising:

transmitting, to a client device, a link to perform an action in an application; responsive to receiving an indication of a selection of the link, detecting, by at least one processor, the performance of the action in the application by the client device; and

associating reward data with a user of the client device in response to the detected performance of the action by the client device.

19. The non-transitory machine-readable medium of claim 18, wherein the link is associated with a referral offer to perform the action in the application, and further comprising storing access by the client device to the referral offer.

20. The non-transitory machine-readable medium of claim 18, wherein the detecting of the performance of the action in the application comprises at least one of:

receiving a first indication from the application executing on the client device, the first indication corresponding to an initiation of the performance of the action; and

receiving a second indication from the application executing on the client device, the second indication corresponding to a completion of the performance of the action.

21. The non-transitory machine-readable medium of claim 20, wherein the operations further comprise determining an amount of time elapsed between the receiving of the first indication and the receiving of the second indication, wherein based on the amount of time elapsed exceeding a predetermined amount of time, notifying the client device of an expiration of an offer to perform the action.

22. The non-transitory machine-readable medium of claim 18, wherein the operations further comprise storing the detection of the performance of the action, the storing of the detection including storing a unique device identifier (Udid) of the client device and an application action identifier (action ID) corresponding to the action being performed.

23. The non-transitory machine-readable medium of claim 18, wherein the reward data is one of a virtual currency amount and a virtual good.

24. The non-transitory machine-readable medium of claim 18, wherein the operations further comprise:

receiving a registration of the action in the application to be performed; and
generating an application action identifier (action ID) and action code, the action ID corresponding to the application action, and the action code causing the client device to transmit at least one of a first indication and a second indication when the action is initiated and completed.

25. The non-transitory machine-readable medium of claim 24, wherein the operations further comprise:

mapping the action ID to the action;
storing the action ID and action code with the registration of the action;
inserting the action code in the application using a registered protocol handler; and
re-directing the user operating the client device to the application.

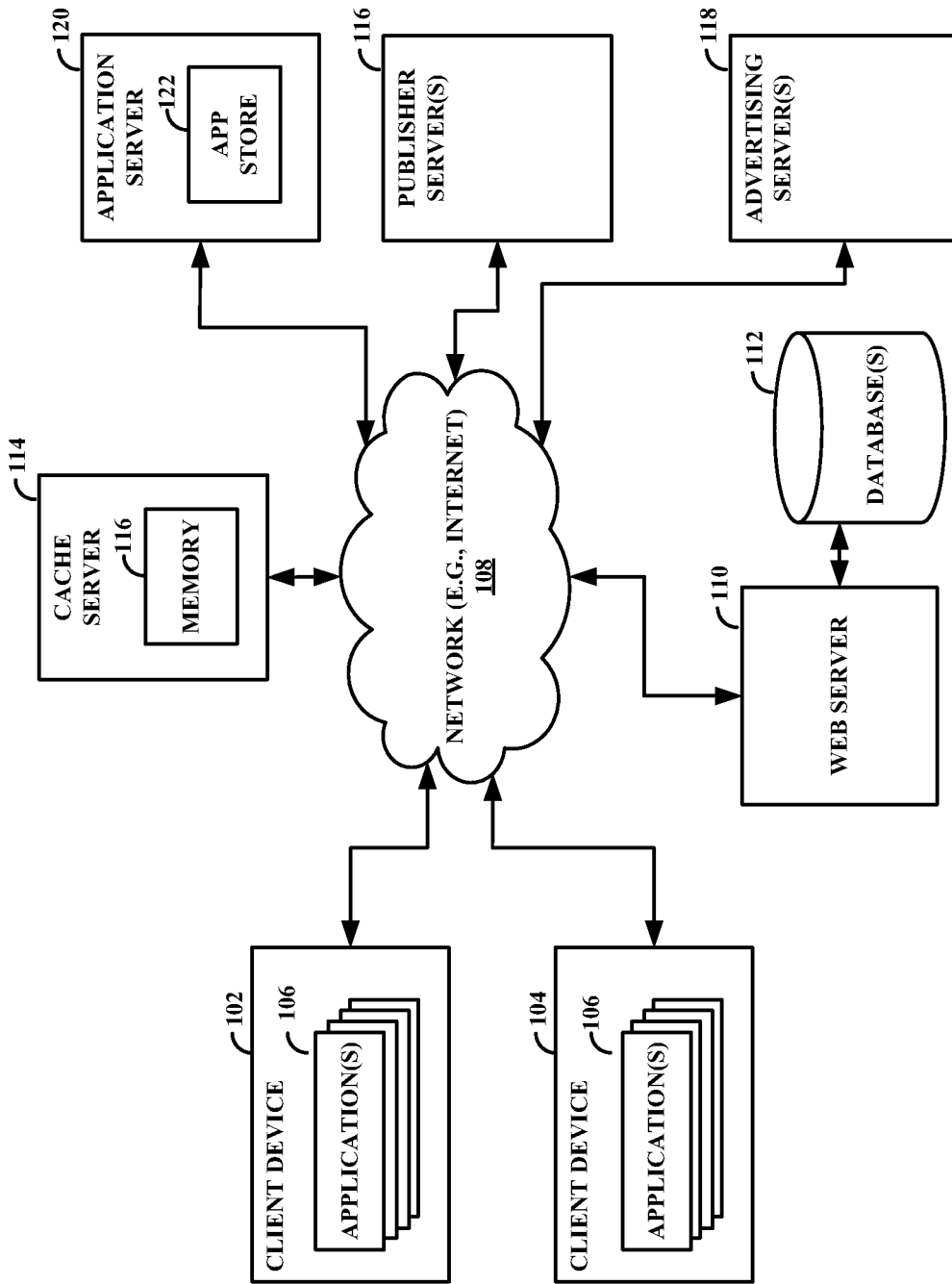


FIG. 1

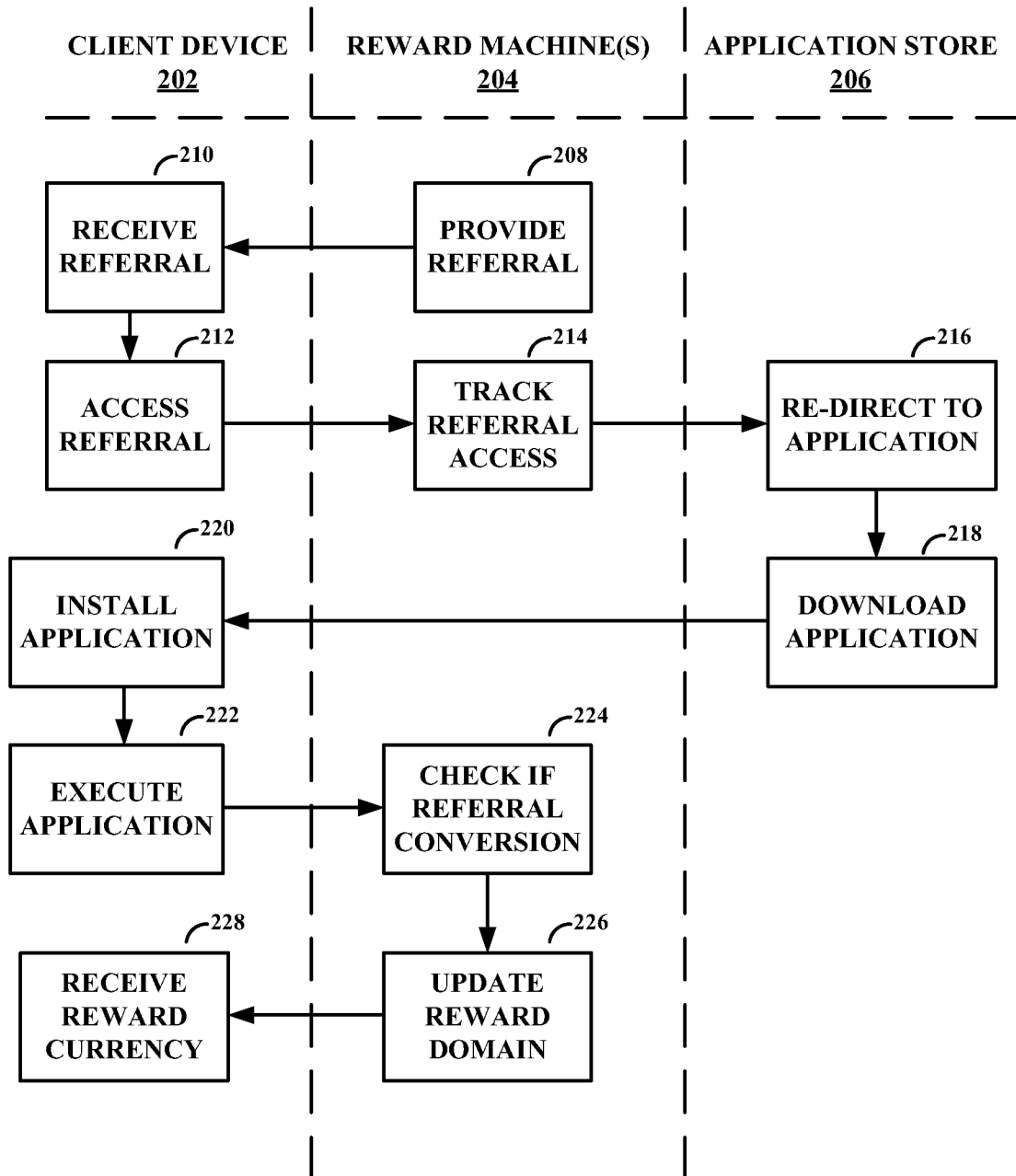


FIG. 2

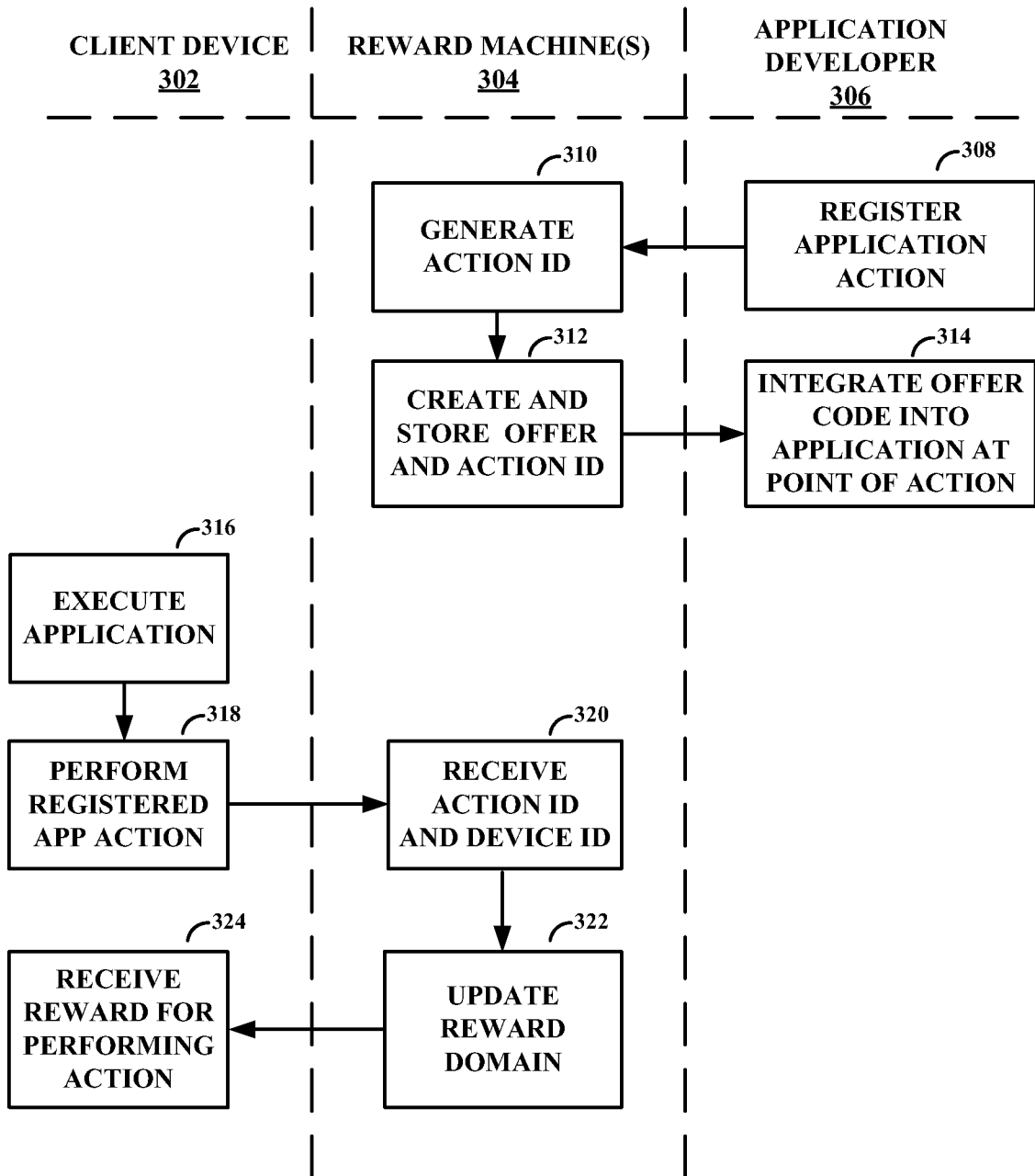


FIG. 3

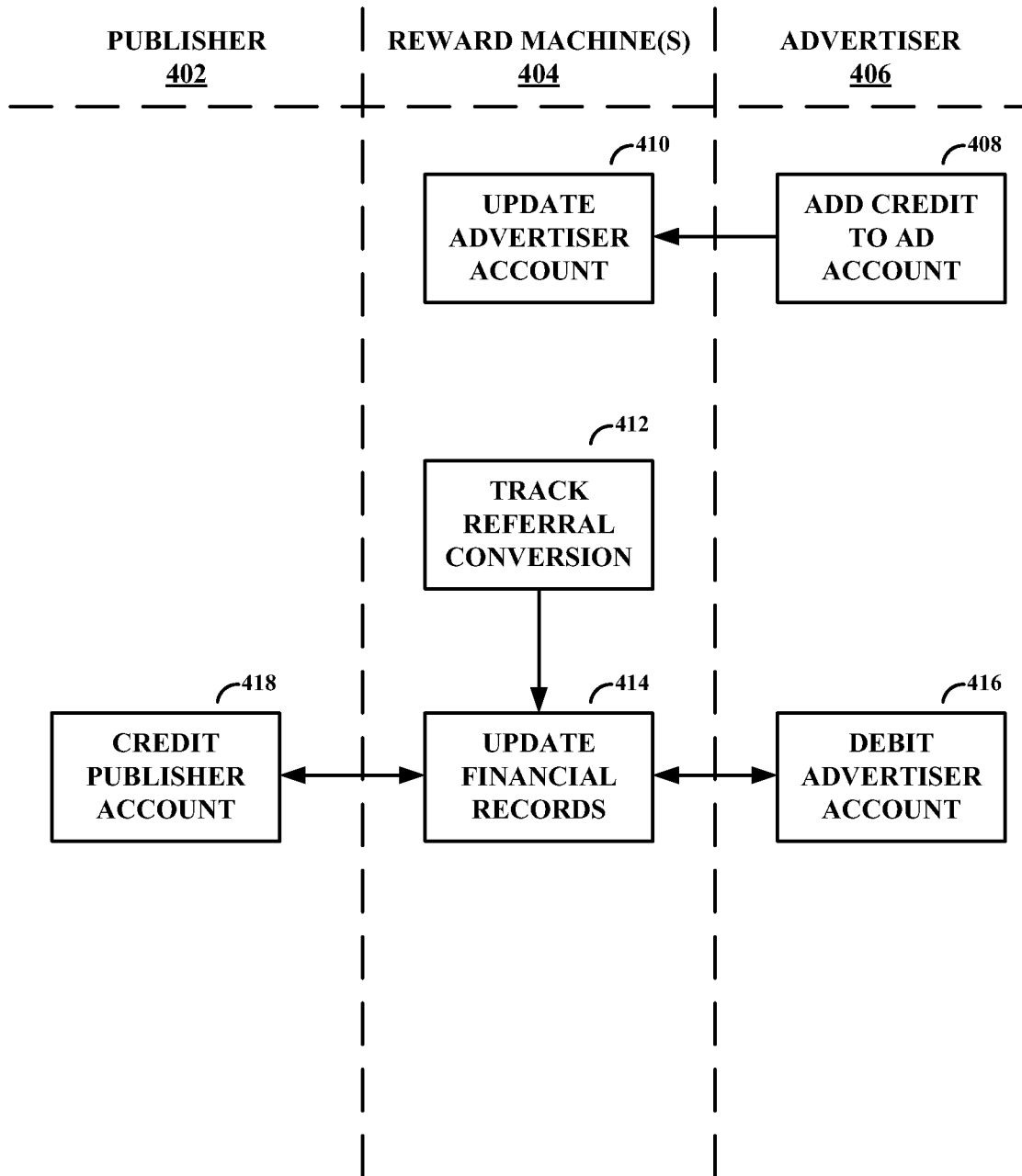


FIG. 4

5/10

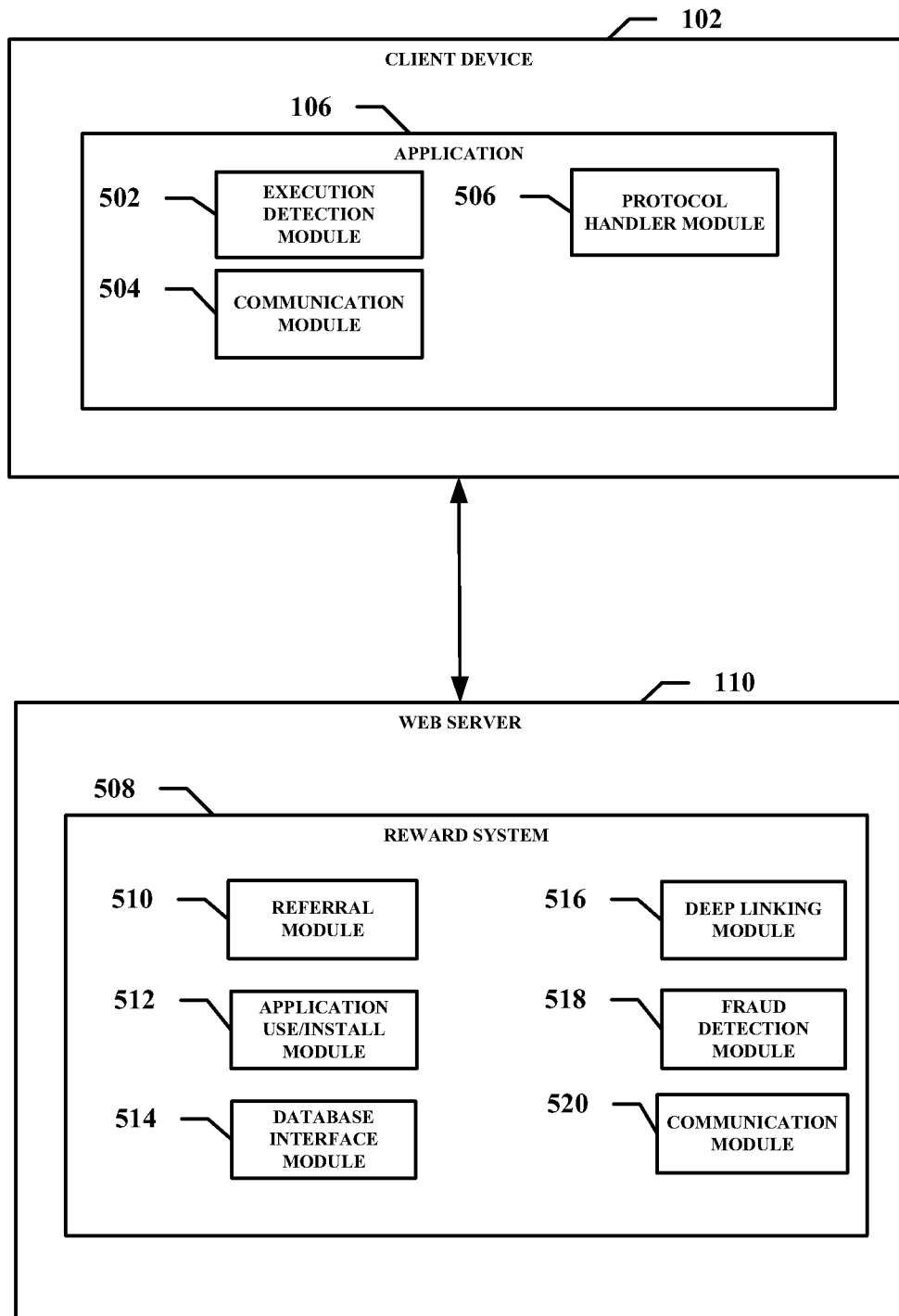


FIG. 5

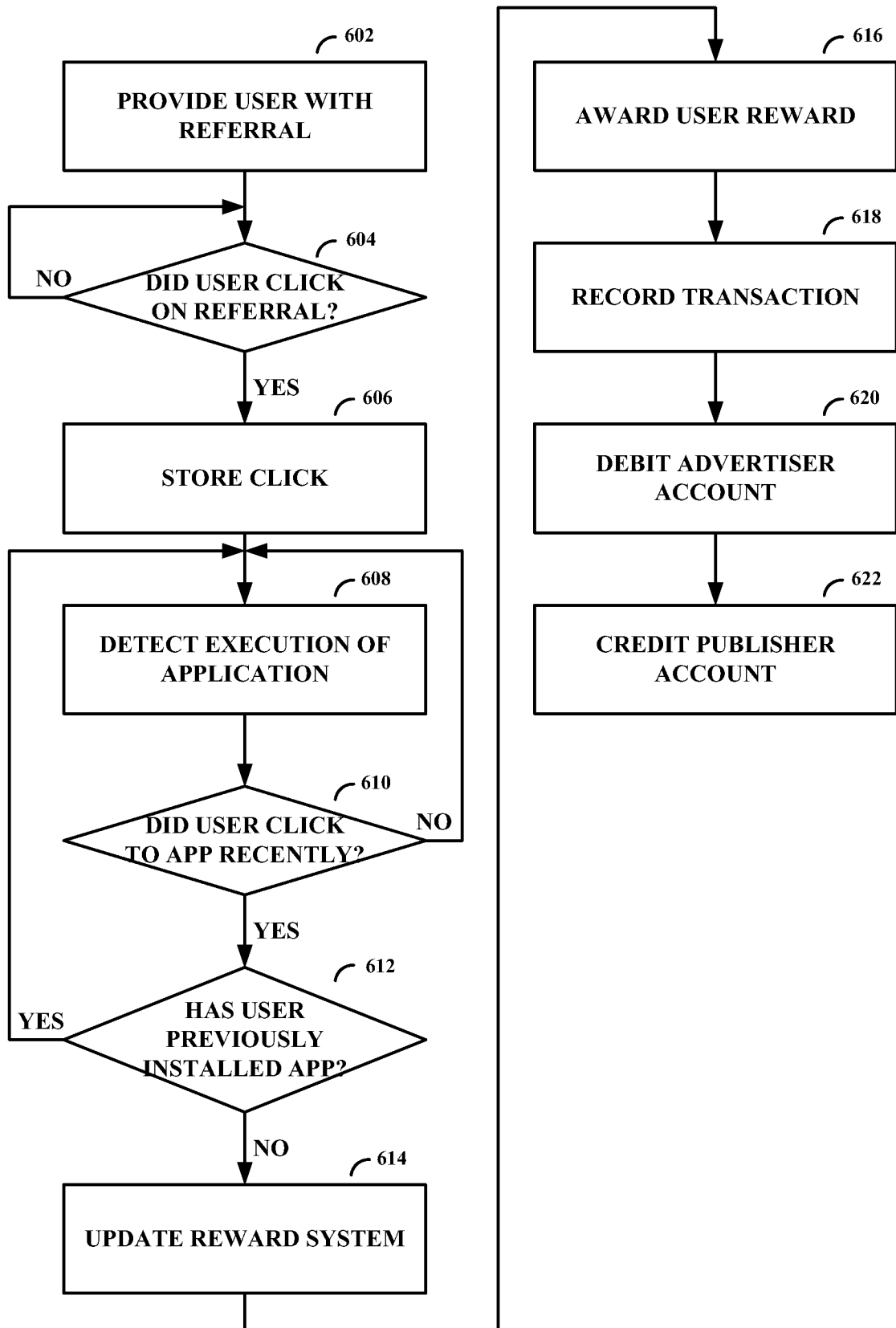


FIG. 6

7/10

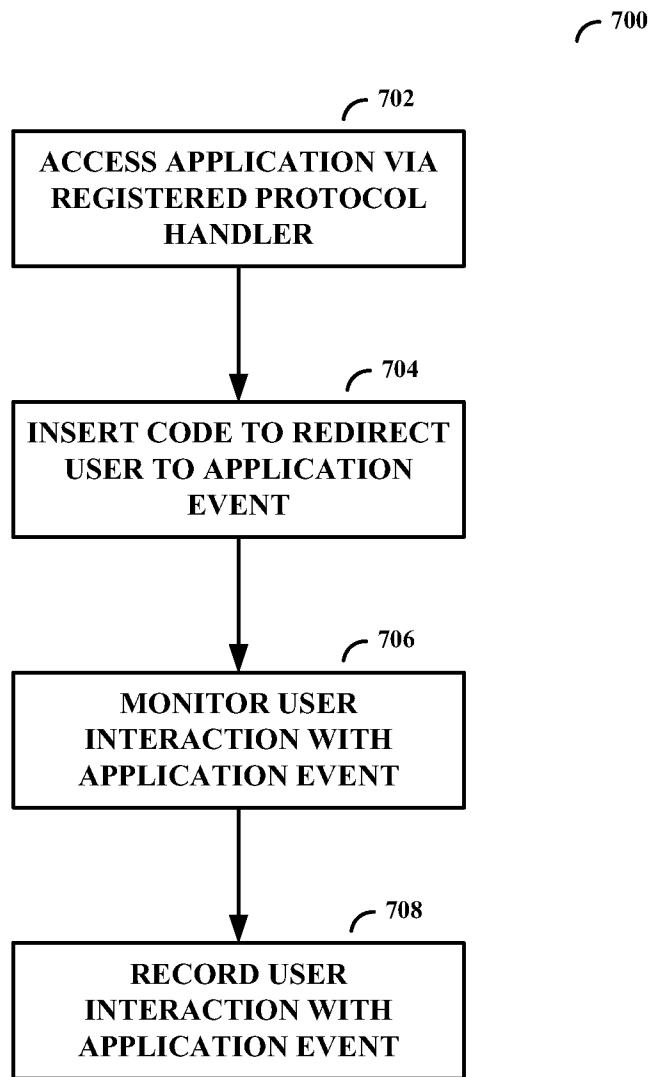


FIG. 7

8/10

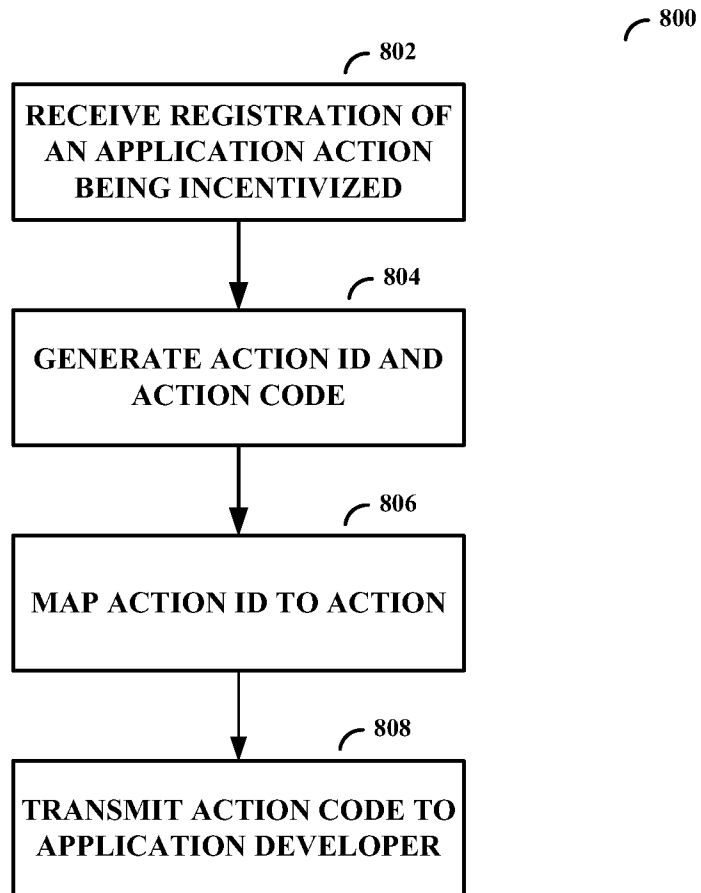


FIG. 8

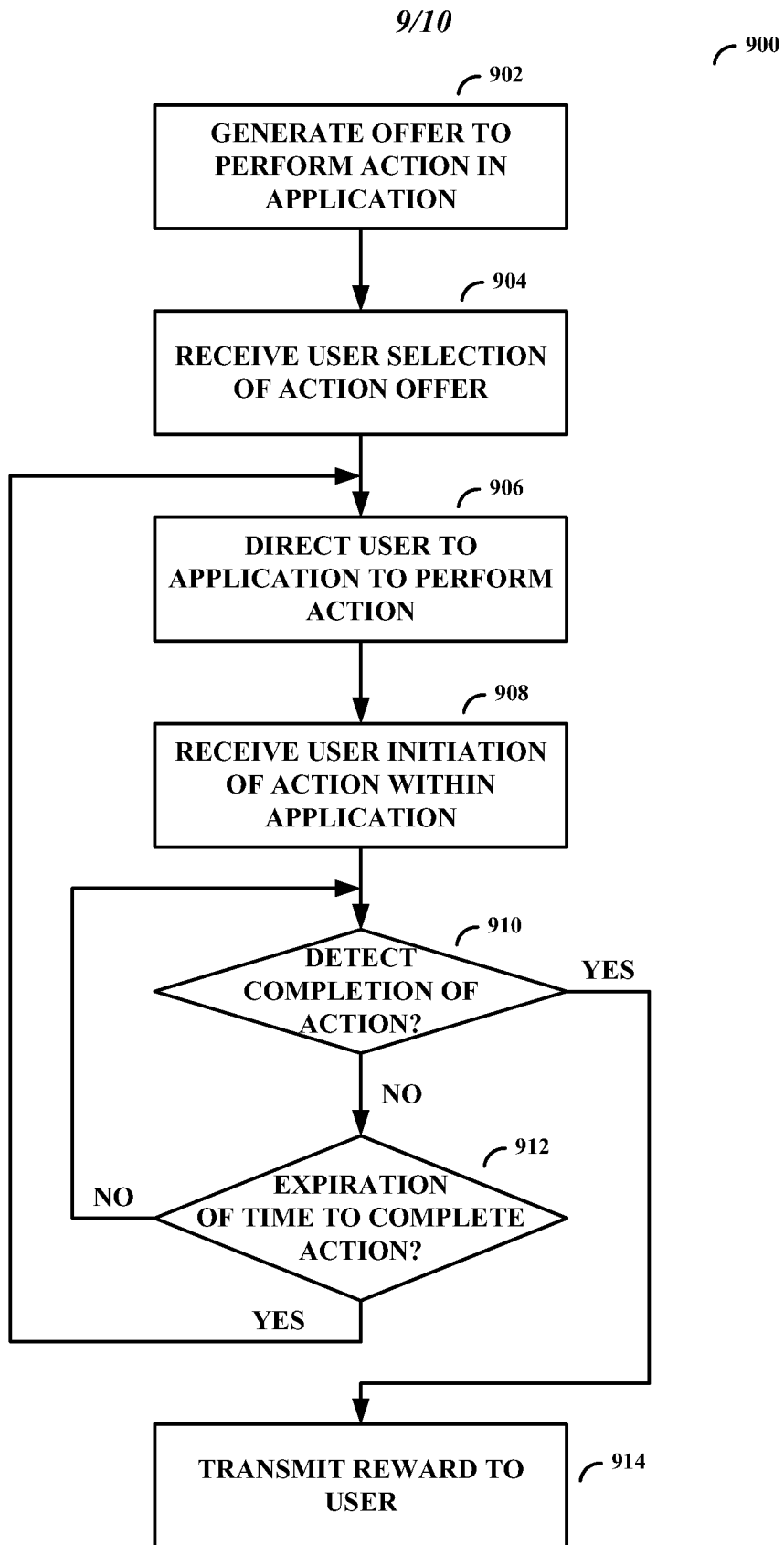


FIG. 9

10/10

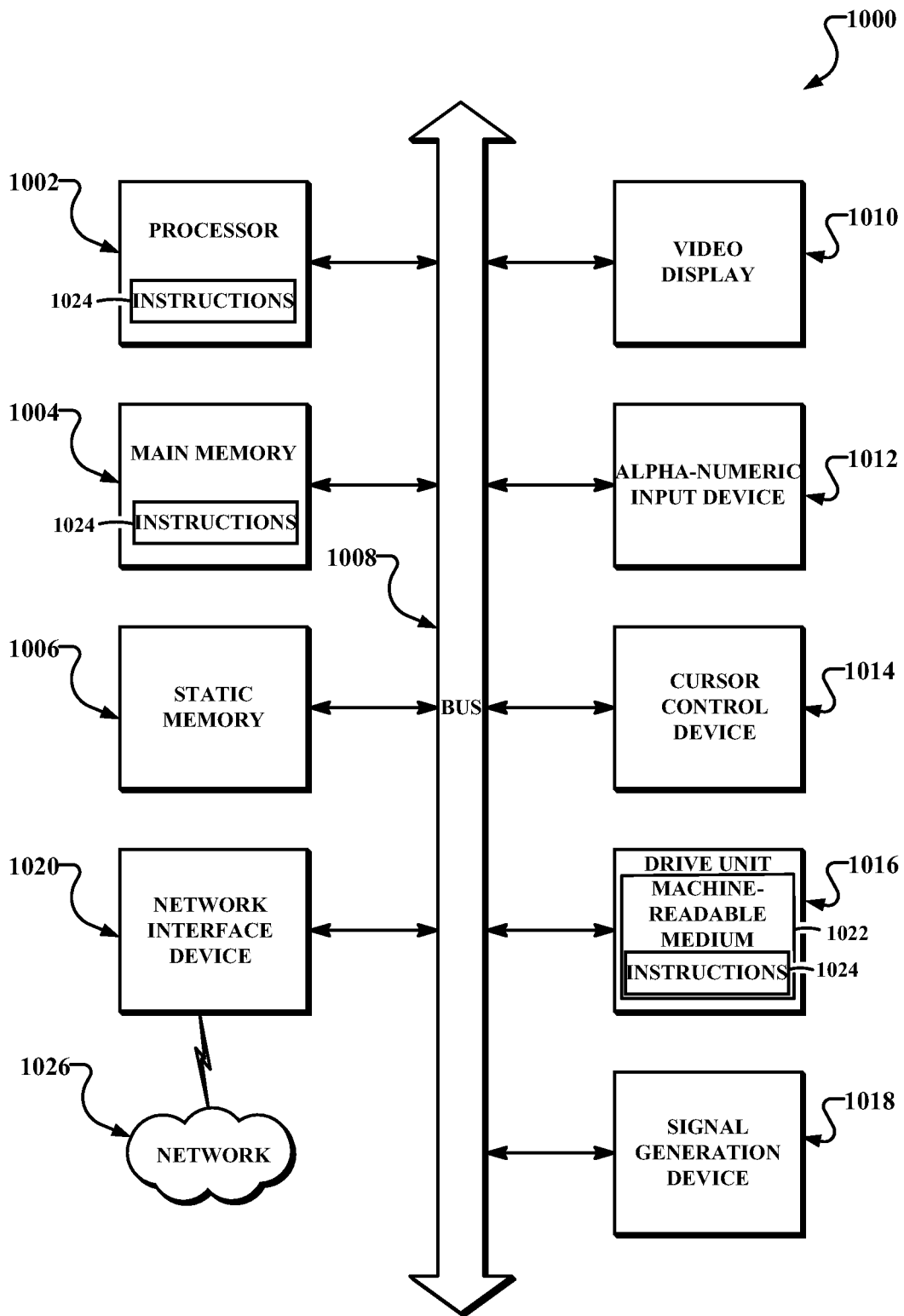


FIG. 10

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 11/46696

A. CLASSIFICATION OF SUBJECT MATTER
 IPC(8) - G06Q 30/00 (2011.01)
 USPC - 705/26.1
 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(8)- G06Q 30/00 (2011.01);
 USPC- 705/26.1

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
 USPC- 705/1.1, 14.13, 14.16, 14.39, 14.73; 706/47; 709/224;
 Patents and NPL (classification, keyword; search terms below)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
 PubWest (US Pat, PgPub, EPO, JPO), GoogleScholar (PL, NPL), FreePatentsOnline (US Pat, PgPub, EPO, JPO, WIPO, NPL);
 search terms: reward, incentive, action, click, event, ping, conversion, detect, select, link, refer, offer, virtual, currency, payment, good, device, identifier, transaction, expiration, map, store

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X -- Y	US 2009/0210392 A1 (ARGANOFF et al.) 20 August 2009 (20.08.2009) entire document, especially Abstract; para [0007], [0010], [0013], [0028]-[0031], [0034], [0036]-[0048], [0052], [0053],	1-4, 7, 10-12, 15, 18-20, 23 ----- 5, 6, 8, 9, 13, 14, 16, 17, 21, 22, 24, 25
Y	US 2010/0106569 (GRIMES) 29 April 2010 (29.04.2010) entire document, especially Abstract; para [0019], [0065], [0072], [0073], [0131], [0135], [0139], [0146], [0180], [0196], [0202], [0221], [0247], [0252], [0265], [0287], [0293]	5, 6, 8, 9, 13, 14, 16, 17, 21, 22, 24, 25
Y, E	US 2011/0217681 A1 (KREJCAREK) 08 September 2011 (08.09.2011) entire document	1-25
Y	WO 2009/126316 A1 (CERBINI) 15 October 2009 (15.10.2009) entire document, especially pg 4-18	1-25
Y	US 2009/0248519 A1 (GHASSABIAN) 01 October 2009 (01.10.2009) entire document, especially para [0009], [0013]-[0064]	1-25
Y	US 2008/0082419 A1 (RANDALL) 03 April 2008 (03.04.2008) entire document, especially para [0007]-[0010], [0028]-[0048]	1-25

Further documents are listed in the continuation of Box C.

* Special categories of cited documents:	"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
"A" document defining the general state of the art which is not considered to be of particular relevance	"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
"E" earlier application or patent but published on or after the international filing date	"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
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"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	

Date of the actual completion of the international search 03 December 2011 (03.12.2011)	Date of mailing of the international search report 14 DEC 2011
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774