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(54) **EXPANDING THE GAMING SOCIAL NETWORK WITH UNRELATED PLAYERS**

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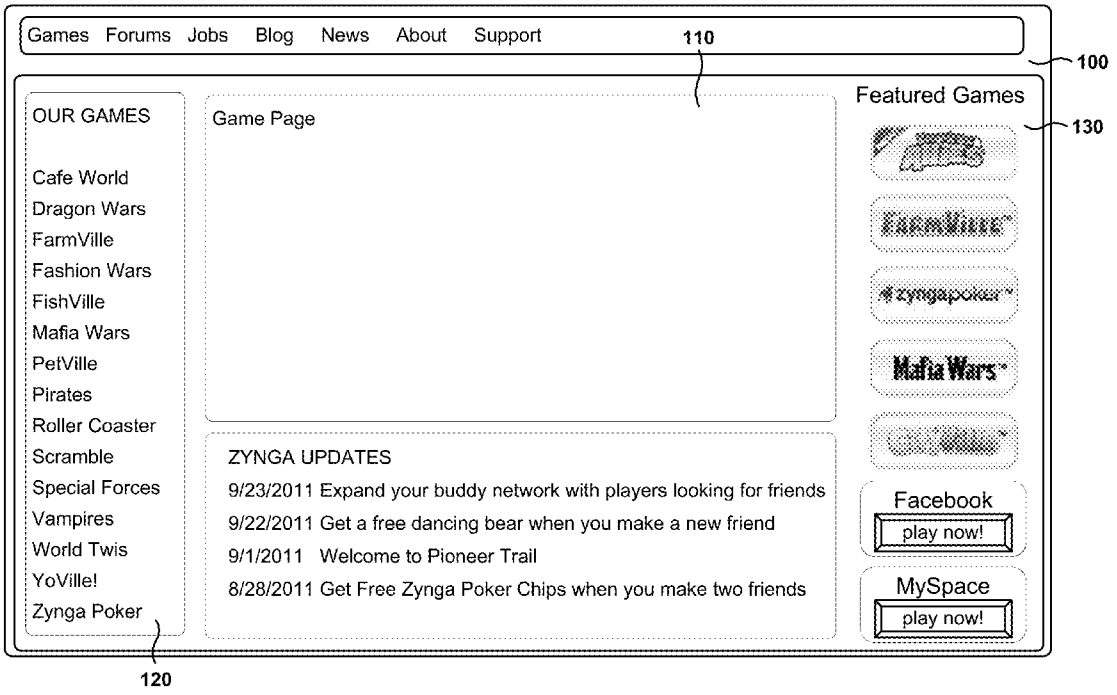
(57) **ABSTRACT**

Methods, systems, and computer programs are presented for expanding gaming social networks with players having no existing social relationships with other players. One method includes an operation for identifying first filters selected by a first user, the first filters identifying a first criteria for desired new friends. Another operation identifies second filters selected by a plurality of users in the network, where the second filters are entered by each user to identify second criteria for being added as a friend in the network. A plurality of candidates to be added as friends for the first user are determined, where each candidate conforms to the first criteria and where the first user conforms to the second criteria set by each candidate. Additionally, friendship requests are sent to one or more of the candidates or candidates are added as friends when the candidates have chosen automatic addition of friends.



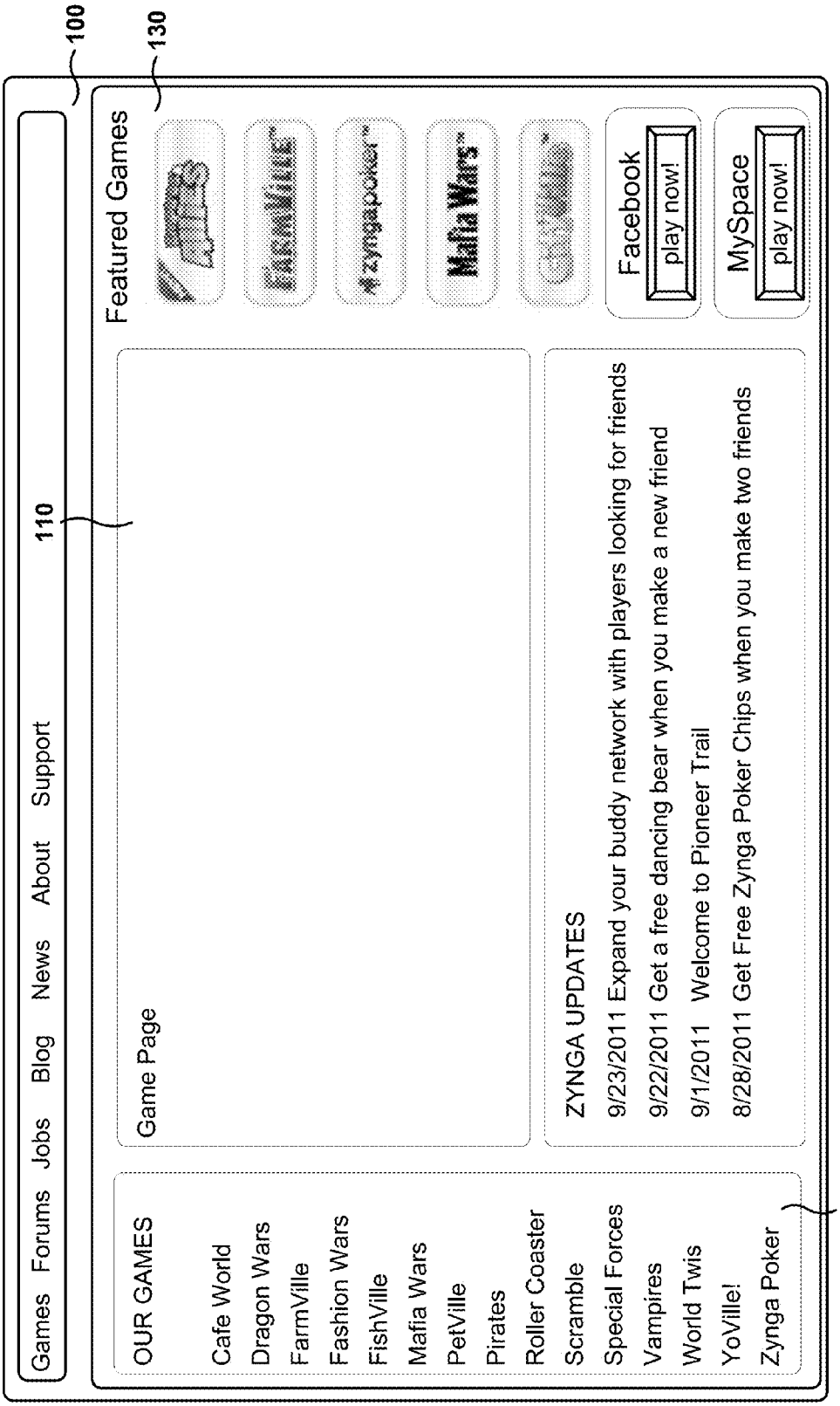

100
Games Forums Jobs Blog News About Support
110
130
Featured Games
FarmVille
zyngapoker
Mafia Wars
Facebook
play now!
MySpace
play now!
Game Page
ZYNGA UPDATES
9/23/2011 Expand your buddy network with players looking for friends
9/22/2011 Get a free dancing bear when you make a new friend
9/1/2011 Welcome to Pioneer Trail
8/28/2011 Get Free Zynga Poker Chips when you make two friends
OUR GAMES
Cafe World
Dragon Wars
FarmVille
Fashion Wars
FishVille
Mafia Wars
PetVille
Pirates
Roller Coaster
Scramble
Special Forces
Vampires
World Twis
YoVille!
Zynga Poker
120

Fig. 1

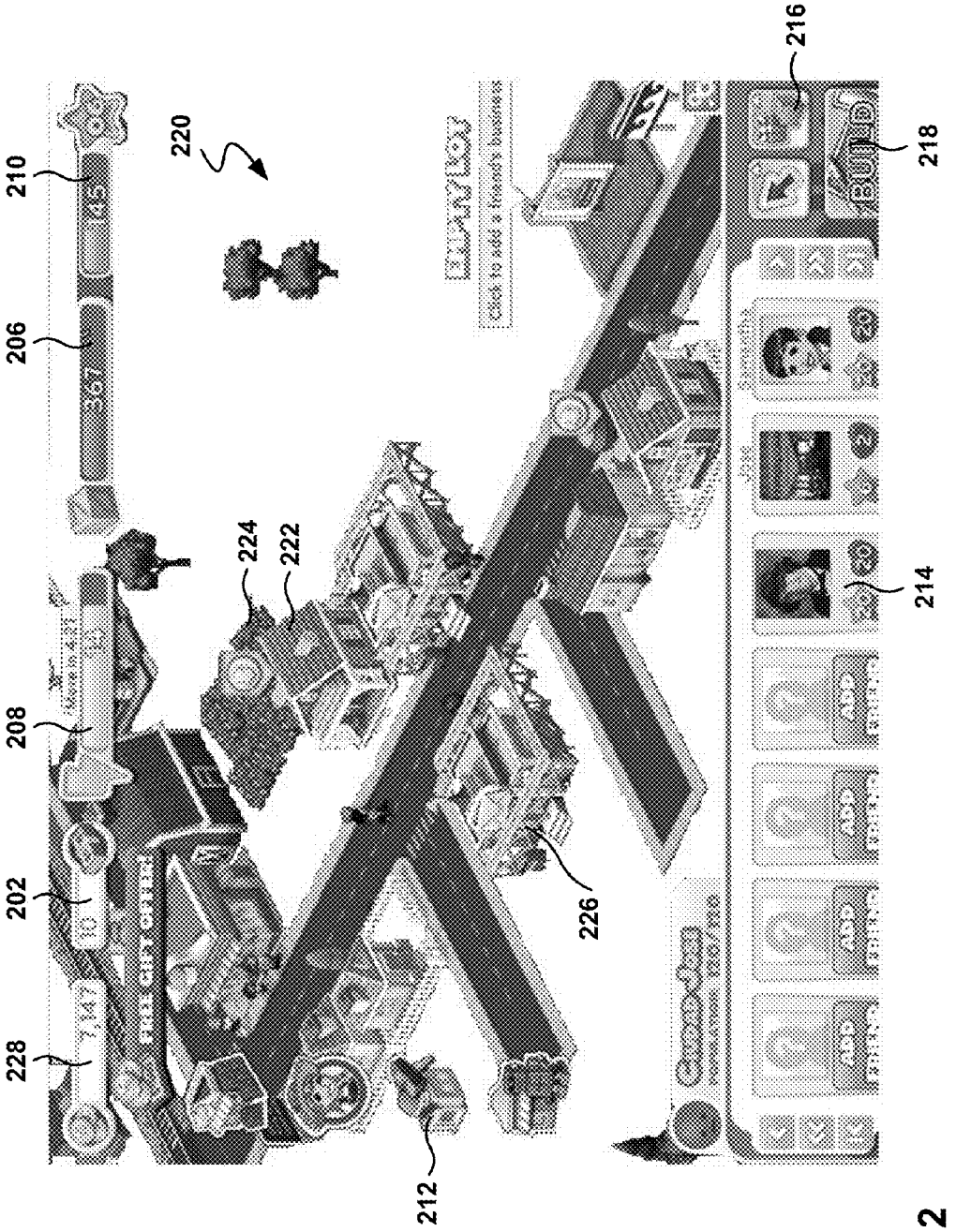


Fig. 2

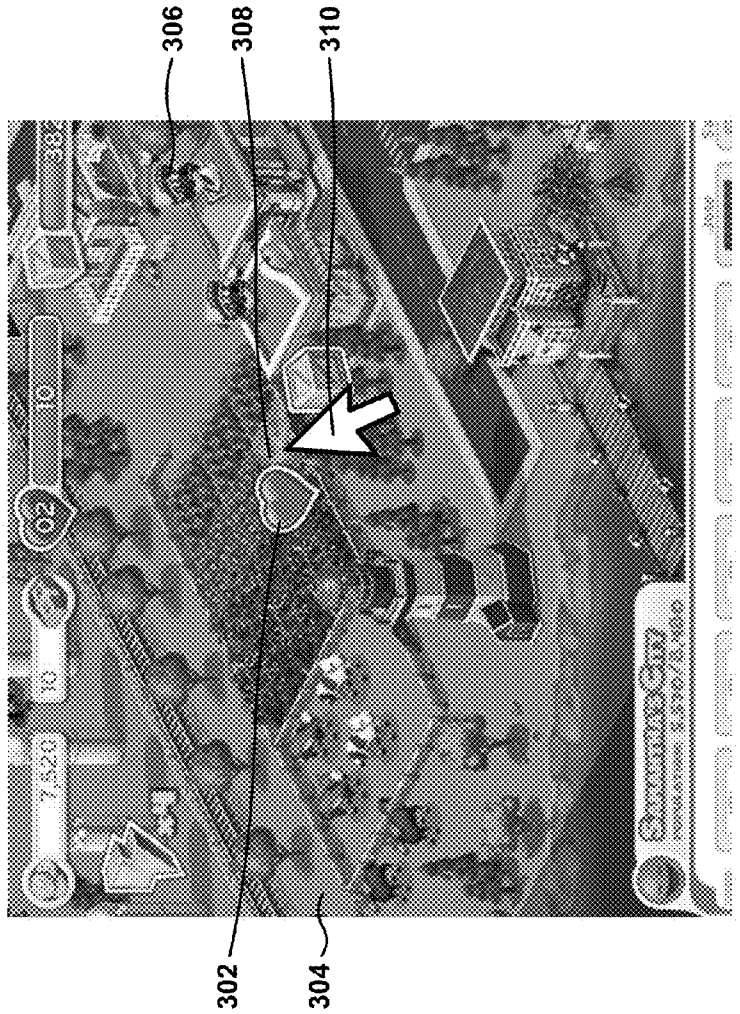


Fig. 3

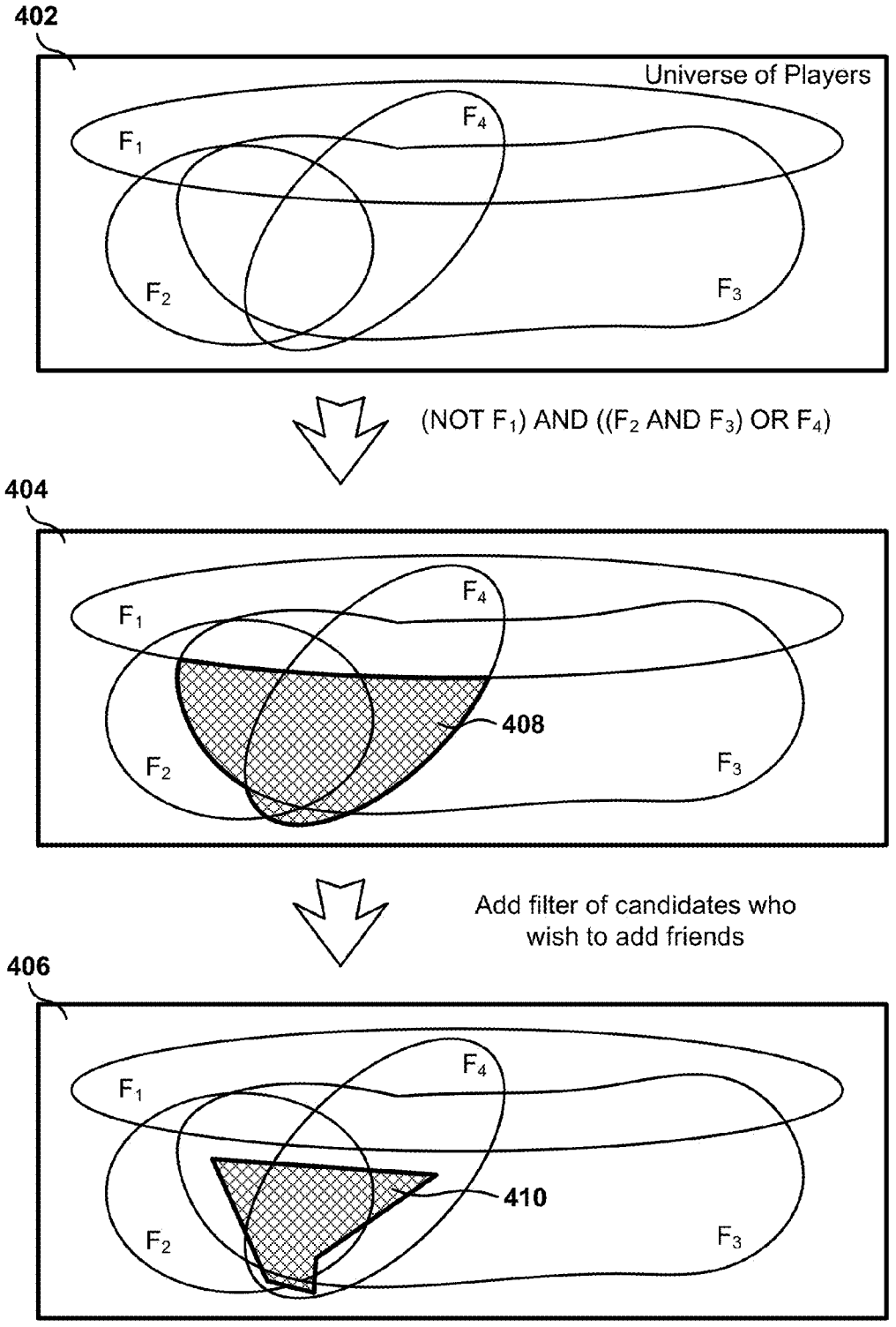

402
Universe of Players
F1
F2
F3
F4
(NOT F1) AND ((F2 AND F3) OR F4)
404
F1
F2
F3
F4
408
Add filter of candidates who wish to add friends
406
F1
F2
F3
F4
410

Fig. 4

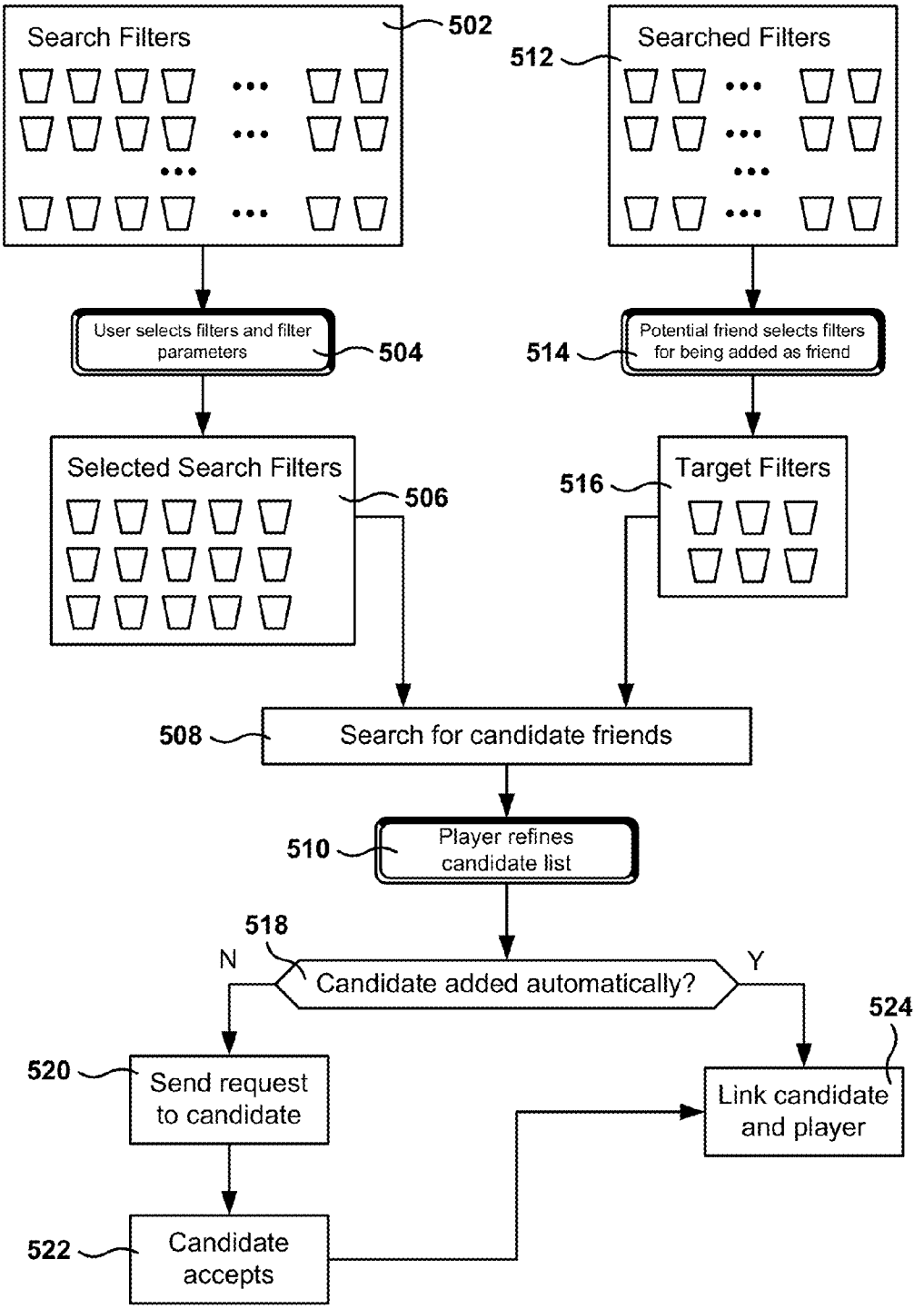

Search Filters
502
Searched Filters
512
User selects filters and filter parameters
504
Potential friend selects filters for being added as friend
514
Selected Search Filters
506
Target Filters
516
508
Search for candidate friends
510
Player refines candidate list
518
N
Candidate added automatically?
Y
524
520
Send request to candidate
Link candidate and player
522
Candidate accepts

Fig. 5

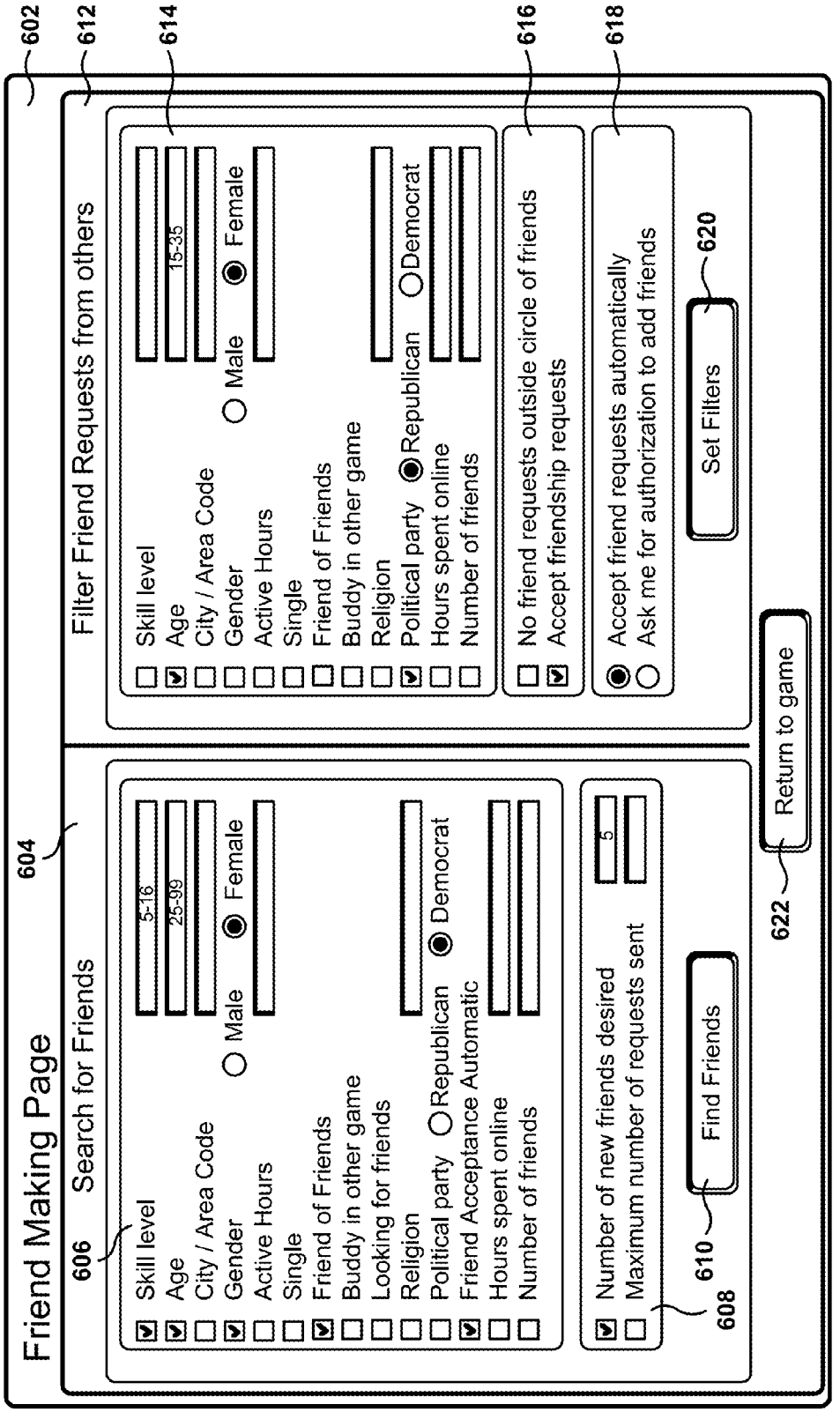

602
612
614
616
618
Friend Making Page
604
Search for Friends
606
Skill level
Age
City / Area Code
Gender
Active Hours
Single
Friend of Friends
Buddy in other game
Looking for friends
Religion
Political party
Friend Acceptance Automatic
Hours spent online
Number of friends
5-16
25-99
Male
Female
Republican
Democrat
Number of new friends desired
Maximum number of requests sent
5
608
610
Find Friends
622
Return to game
Filter Friend Requests from others
Skill level
Age
City / Area Code
Gender
Active Hours
Single
Friend of Friends
Buddy in other game
Religion
Political party
Hours spent online
Number of friends
15-35
Male
Female
Republican
Democrat
No friend requests outside circle of friends
Accept friendship requests
Accept friend requests automatically
Ask me for authorization to add friends
Set Filters
620

Fig. 6

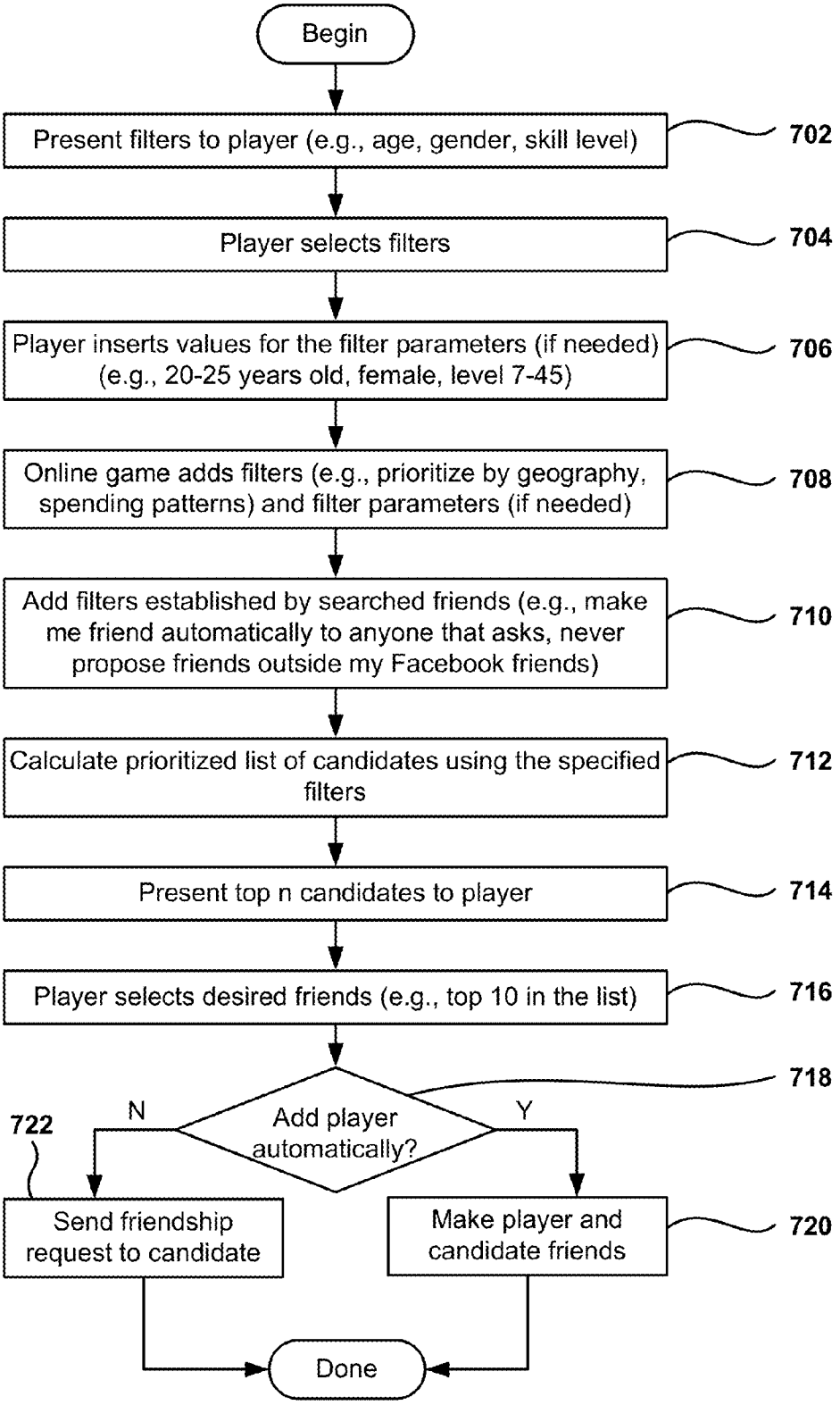

Begin
Present filters to player (e.g., age, gender, skill level)
702
Player selects filters
704
Player inserts values for the filter parameters (if needed) (e.g., 20-25 years old, female, level 7-45)
706
Online game adds filters (e.g., prioritize by geography, spending patterns) and filter parameters (if needed)
708
Add filters established by searched friends (e.g., make me friend automatically to anyone that asks, never propose friends outside my Facebook friends)
710
Calculate prioritized list of candidates using the specified filters
712
Present top n candidates to player
714
Player selects desired friends (e.g., top 10 in the list)
716
Add player automatically?
718
N
Y
722
Send friendship request to candidate
Make player and candidate friends
720
Done

Fig. 7

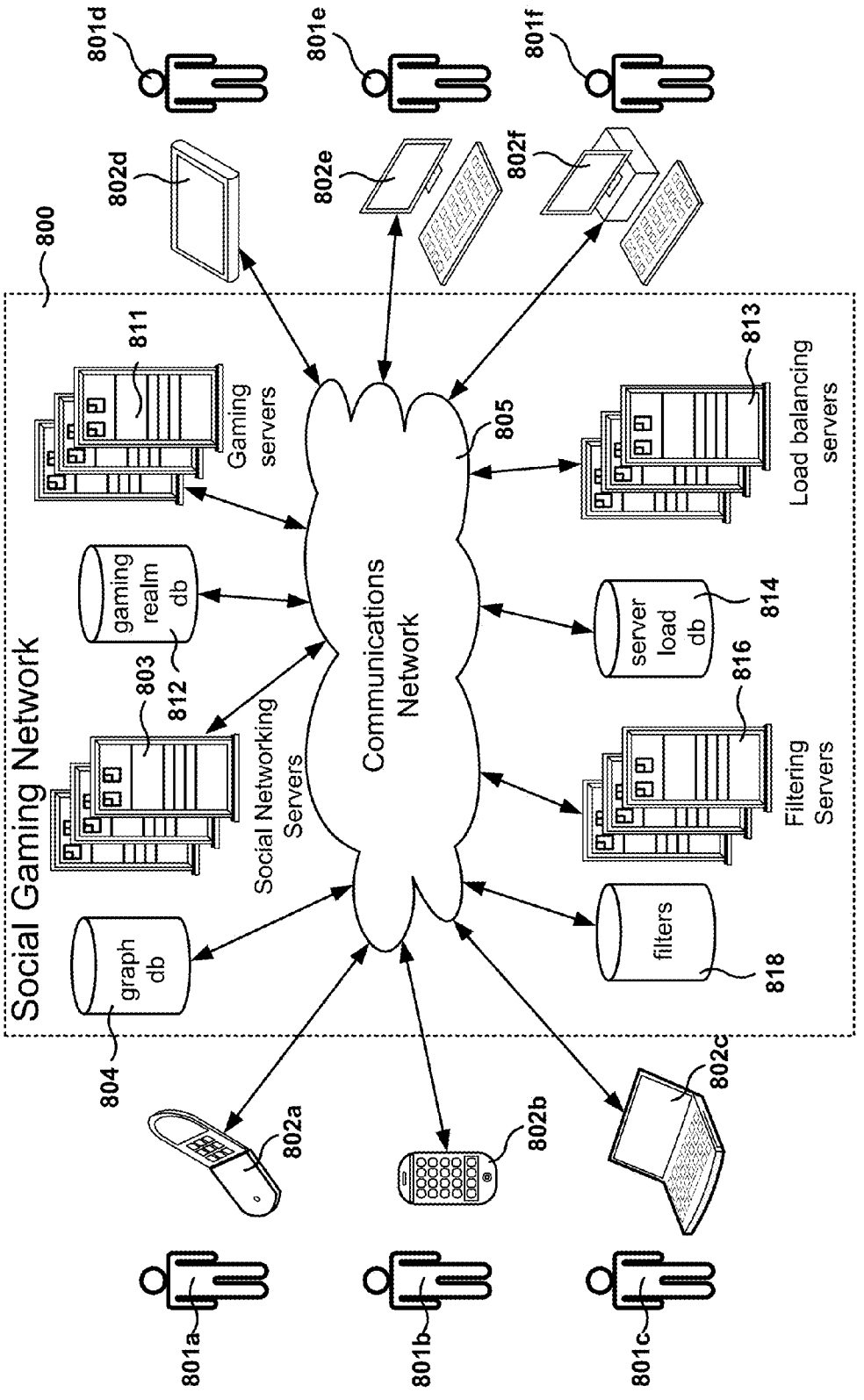

Social Gaming Network
800
Communications Network
805
Gaming servers
811
gaming realm db
812
Social Networking Servers
803
graph db
804
Load balancing servers
813
server load db
814
Filtering Servers
816
filters
818
801a
801b
801c
801d
801e
801f
802a
802b
802c
802d
802e
802f

Fig. 8

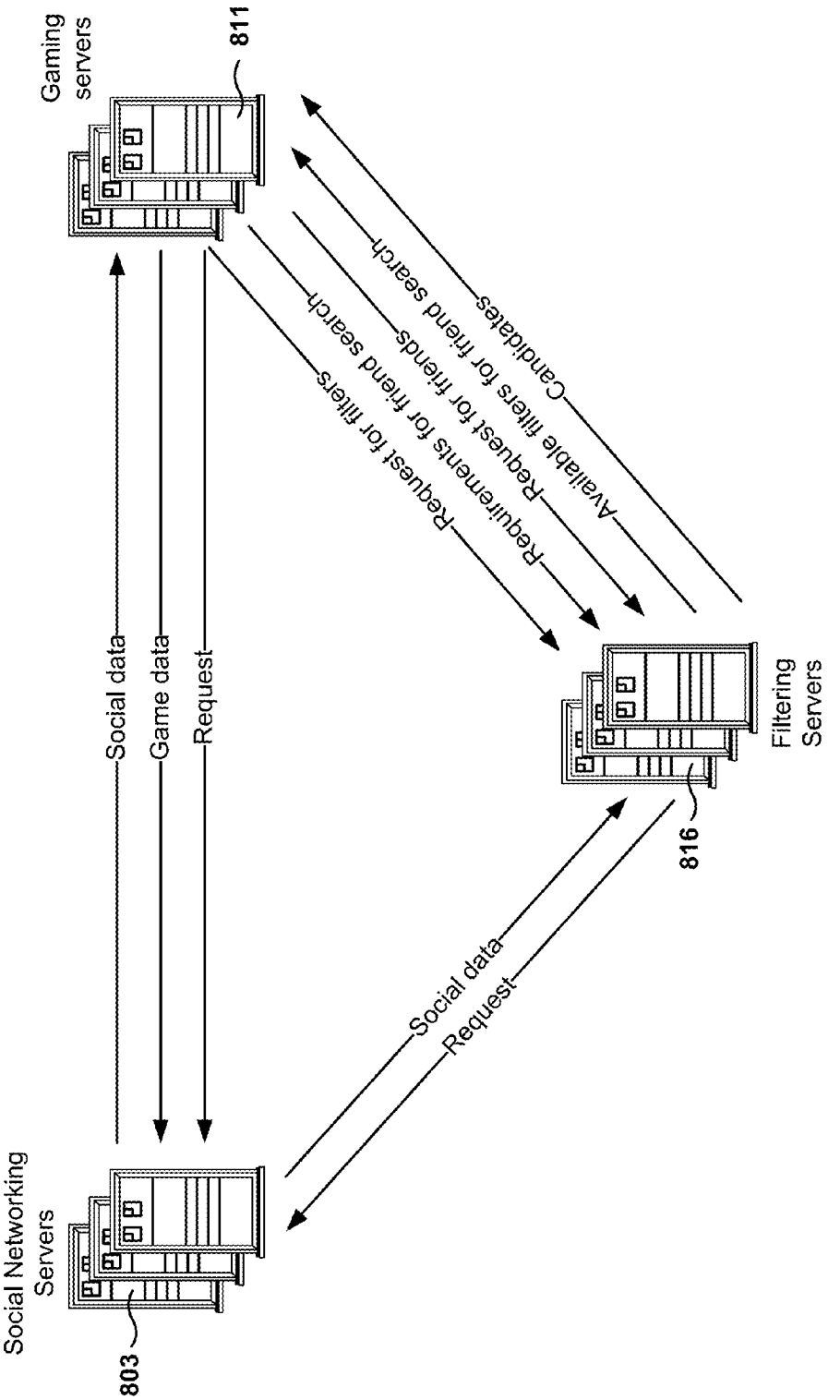

Gaming servers
811
Social Networking Servers
803
Filtering Servers
816
Social data
Game data
Request
Requirements for friend search
Request for friends
Available filters for friend search
Candidates
Social data
Request

Fig. 9

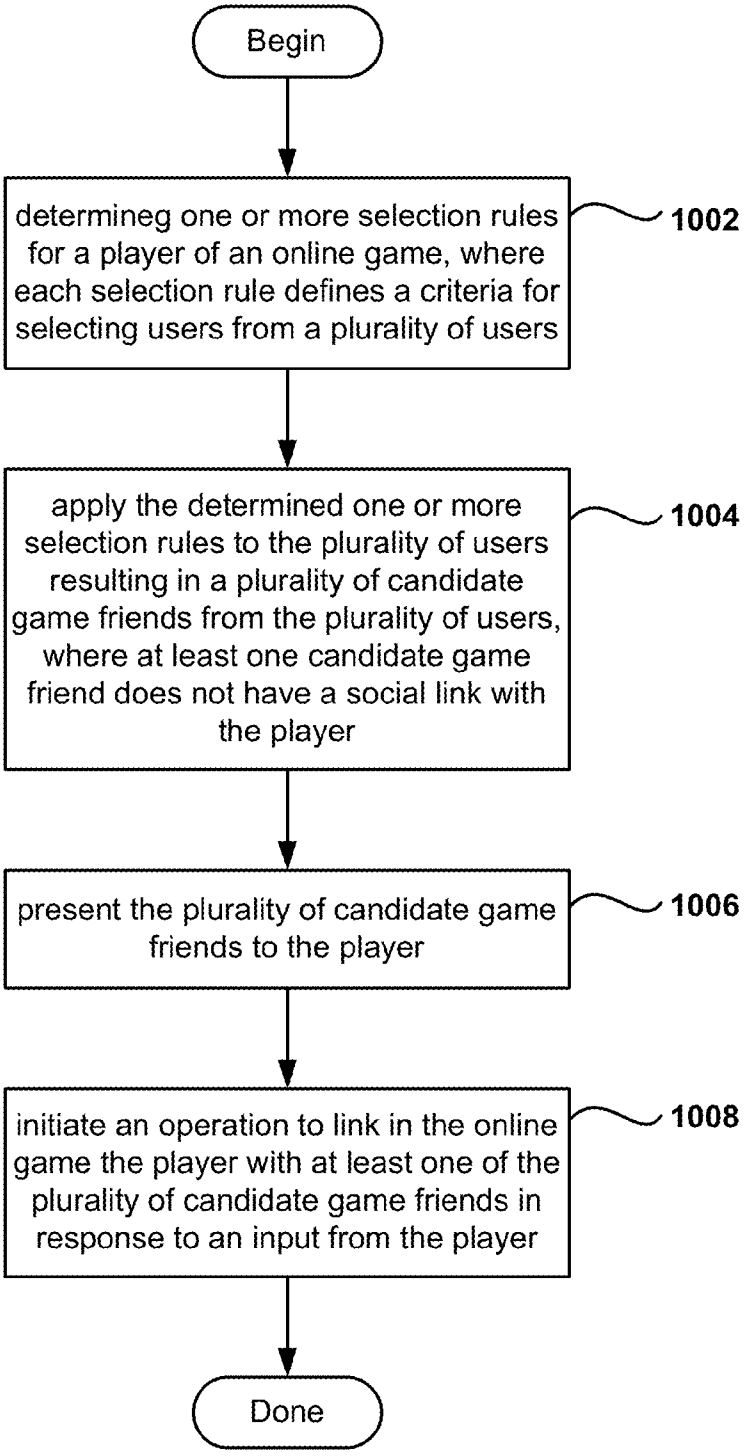

Begin
determineg one or more selection rules for a player of an online game, where each selection rule defines a criteria for selecting users from a plurality of users
1002
apply the determined one or more selection rules to the plurality of users resulting in a plurality of candidate game friends from the plurality of users, where at least one candidate game friend does not have a social link with the player
1004
present the plurality of candidate game friends to the player
1006
initiate an operation to link in the online game the player with at least one of the plurality of candidate game friends in response to an input from the player
1008
Done

Fig. 10

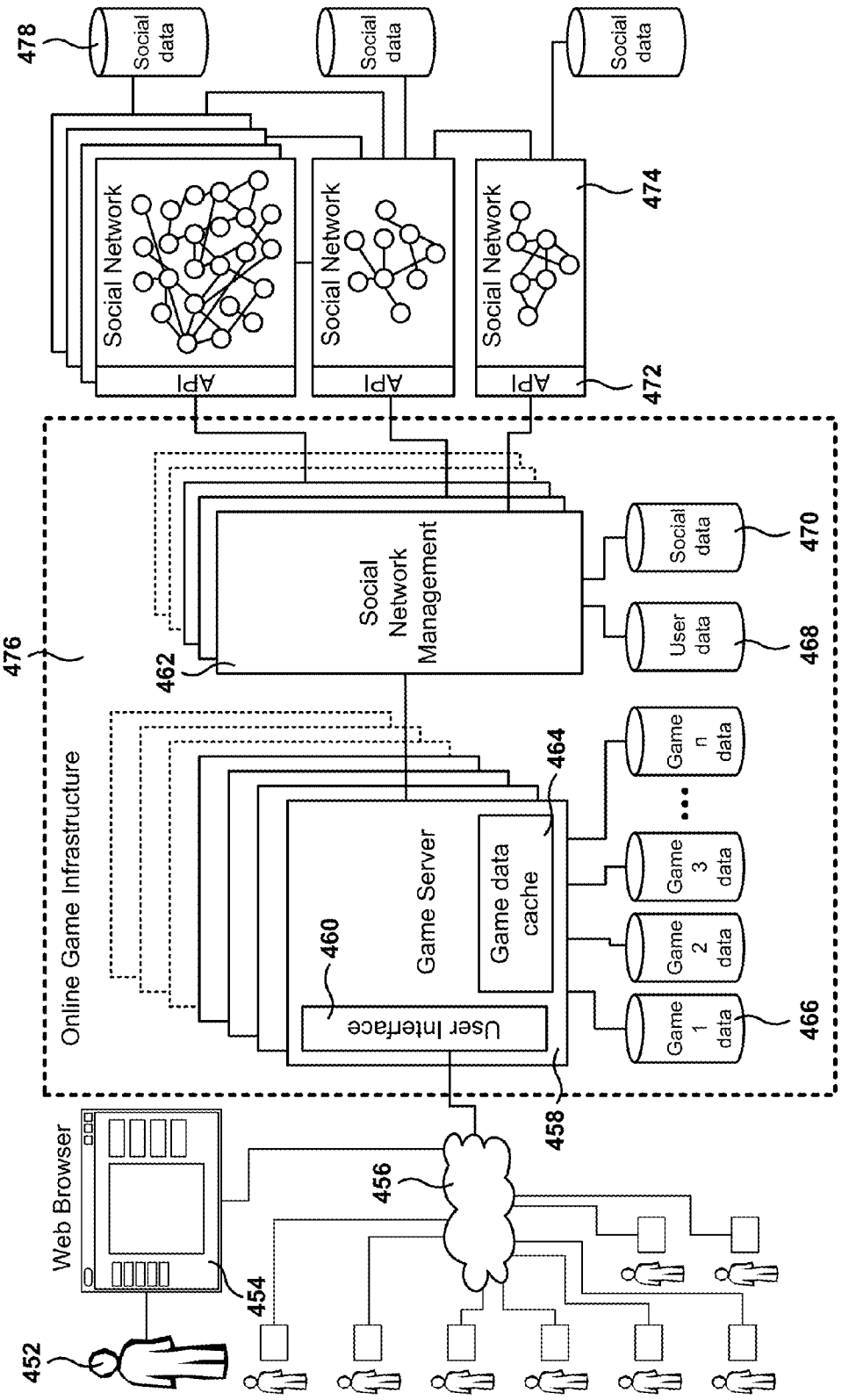

478
Social data
Social data
Social data
Social Network
Social Network
Social Network
API
API
API
474
472
476
Online Game Infrastructure
462
Social Network Management
Social data
470
User data
468
464
Game Server
Game data cache
460
User Interface
Game n data
Game 3 data
Game 2 data
Game 1 data
466
458
456
Web Browser
454
452

Fig. 11

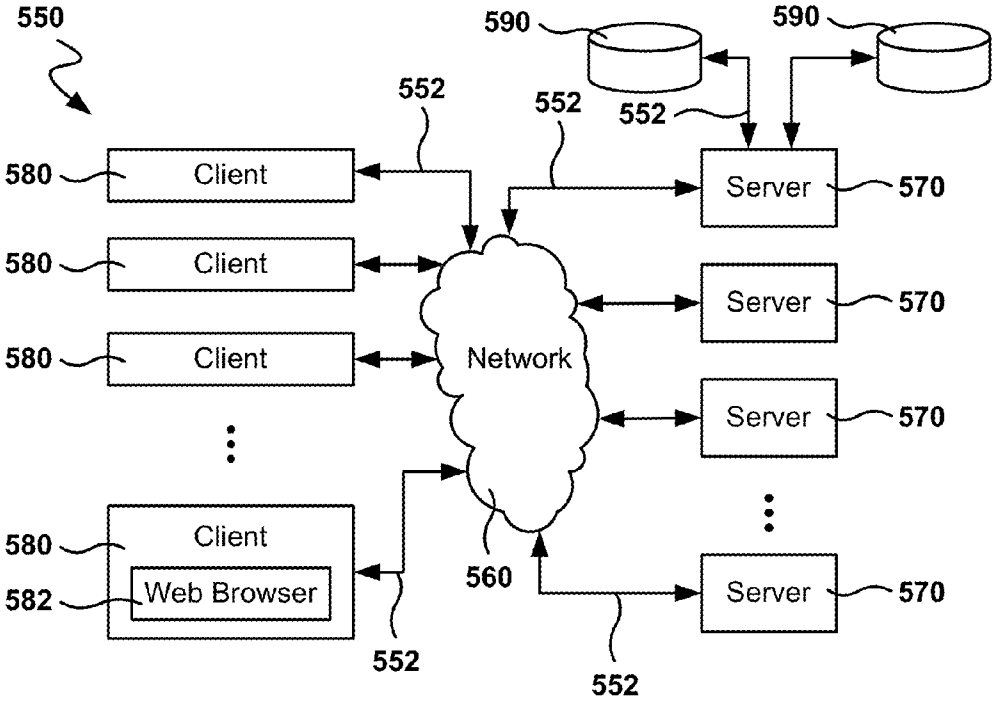

550
590
590
552
552
552
580
Client
580
Client
580
Client
580
Client
582
Web Browser
Network
560
Server
570
Server
570
Server
570
Server
570
552
552

Fig. 12

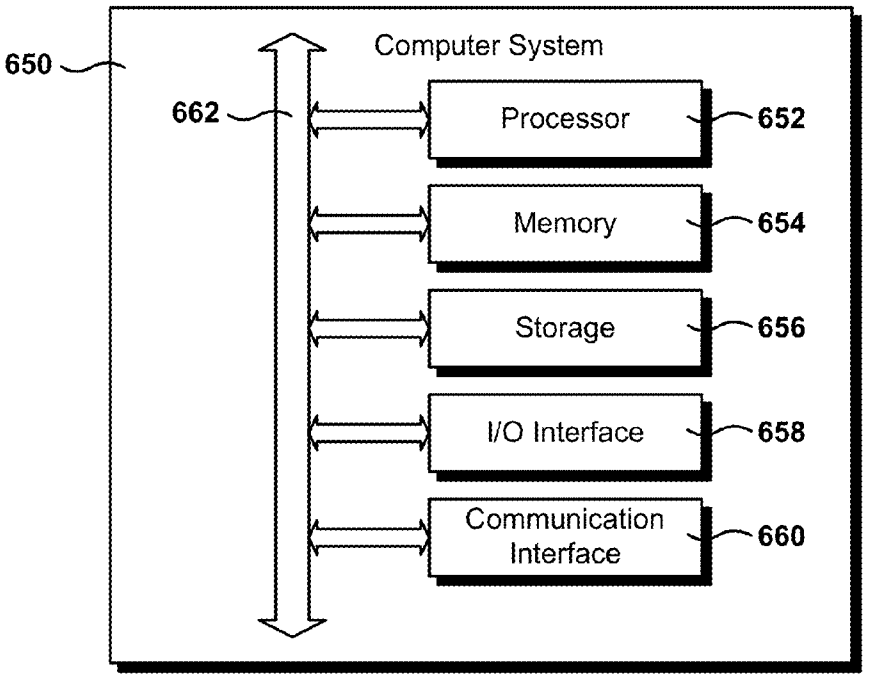

650
Computer System
662
Processor
652
Memory
654
Storage
656
I/O Interface
658
Communication Interface
660

Fig. 13

EXPANDING THE GAMING SOCIAL NETWORK WITH UNRELATED PLAYERS

CLAIM OF PRIORITY

[0001] This application is a Continuation application under 35 USC §120 and claims priority from U.S. application Ser. No. 13/244,708, entitled "EXPANDING THE GAMING SOCIAL NETWORK WITH UNRELATED PLAYERS", and filed on Sep. 26, 2011, and is herein incorporated by reference.

BACKGROUND

[0002] 1. Field of the Invention

[0003] The present invention relates to methods for playing online social games, and more particularly, methods, systems, and computer programs for expanding gaming social networks with players that do not have an existing social relationship with other players.

[0004] 2. Description of the Related Art

[0005] Online games that allow players to interact with other players have become popular. Some online games, such as chess or bridge, have a small number of players that play together at the same time. Other online games, such as Massively Multiplayer Online (MMO) games, can have a large number of players playing simultaneously. Online game operators, also referred to as social game operators, harness the power of online social networks, to design games that closely integrate the players' social graph data with their existing friendship connections.

[0006] In social MMO games, players collaborate in order to play the game and make progress. In some games, the more the players collaborate in the game, the faster that progress is made in the online the game. However, some players have few friends, and some of the friends may not be playing the same game. For example, a player may need four neighbors to form a crew to complete a mission in the game, but only one friend is available for the crew, making it hard for the player to complete the game mission without a crew. Thus, many players get frustrated with the game, because they cannot get the help from other players to progress in the game. This may cause some players to abandon the game and search for other games, where progress is easier without the need of friends.

[0007] It is in this context that embodiments arise.

SUMMARY

[0008] Methods, systems, and computer programs are presented for expanding gaming social networks with players that do not have an existing social relationship with other players. In one embodiment, a method includes an operation for determining one or more selection rules for a player of an online game, where each selection rule defines a criterion for selecting users from a plurality of users. The determined one or more selection rules are applied to the plurality of users resulting in a plurality of candidate game friends from the plurality of users. At least one of the candidate game friends does not have a social link with the player. In addition, the method includes an operation for presenting the plurality of candidate game friends. An operation to link, in the online game, the player with at least one of the plurality of candidate game friends is initiated in response to an input from the player.

[0009] In another embodiment, a system for processing game operations during execution an online game includes a filtering server, which is operable to determine one or more selection rules for a player of an online game. Each selection rule defines a criterion for selecting users from a plurality of users. The filtering server is further operable to apply the determined one or more selection rules to the plurality of users, resulting in a plurality of candidate game friends from the plurality of users. At least one candidate game friend does not have a social link with the player, and a game server is operable to receive the plurality of candidate game friends from the filtering server and present the plurality of candidate game friends. The game server is further operable to initiate an operation to link, in the online game, the player with at least one of the plurality of candidate game friends in response to an input from the player.

[0010] In yet another embodiment, a method, for processing game operations during execution an online game, includes an operation for presenting one or more possible rules to a player of an online game, each possible rule defining a criterion for selecting users from a plurality of users. One or more selection rules and associated parameter values are determined in response to an input from the player. The method includes another operation for applying the determined one or more selection rules to the plurality of users, resulting in a plurality of candidate game friends from the plurality of users, where at least one candidate game friend does not have a social link with the player. The candidate game friends are sorted according to a score for each of the candidate game friends, the score being obtained by applying the one or more selection rules to each of the candidate game friends. In addition, an operation to link, in the online game, the player with at least one of the plurality of candidate game friends, is then initiated, where at least one operation of the method is executed through a processor.

[0011] In another embodiment, a method includes an operation for identifying first filters selected by a first user, the first filters identifying a first criteria for desired new friends. Another operation identifies second filters selected by a plurality of users in the network, where the second filters are entered by each user to identify second criteria for being added as a friend in the network. A plurality of candidates to be added as friends for the first user are determined, where each candidate conforms to the first criteria and where the first user conforms to the second criteria set by each candidate. Additionally, friendship requests are sent to one or more of the candidates or candidates are added as friends when the candidates have chosen automatic addition of friends.

[0012] The present disclosure is now described in detail with reference to a few embodiments thereof as illustrated in the accompanying drawings. In the following description, numerous specific details are set forth in order to provide a thorough understanding of the present disclosure. It is apparent, however, to one skilled in the art, that the present disclosure may be practiced without some or all of these specific details. In other instances, well known process operations and structures have not been described in detail in order not to unnecessarily obscure the present disclosure. In addition, while the disclosure is described in conjunction with the particular embodiments, it should be understood that this description is not intended to limit the disclosure to the described embodiments. To the contrary, the description is intended to cover alternatives, modifications, and equivalents as may be included within the spirit and scope of the disclosure as defined by the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] The invention may best be understood by reference to the following description taken in conjunction with the accompanying drawings.

[0014] FIG. **1** illustrates an embodiment of a web page for playing an online game.

[0015] FIG. **2** shows the stage of an online game, according to one embodiment.

[0016] FIG. **3** shows a user visiting the game board of another user, according to one embodiment.

[0017] FIG. **4** illustrates a filtering method for finding candidate friends, according to one embodiment.

[0018] FIG. **5** illustrates the process for finding friend candidates that takes into account the filters set by players on both ends of the friendship-establishment transaction, according to one embodiment.

[0019] FIG. **6** shows a Graphical User Interface (GUI) for setting filters, according to one embodiment.

[0020] FIG. **7** shows a flowchart for expanding a player's social network utilizing a plurality of filters, according to one embodiment.

[0021] FIG. **8** shows a block diagram illustrating a social gaming network architecture, according to one embodiment.

[0022] FIG. **9** illustrates the interactions between the servers of FIG. **8**, in accordance with one embodiment of the invention.

[0023] FIG. **10** shows a flowchart illustrating an algorithm for expanding a player's gaming social network, in accordance with one embodiment of the invention.

[0024] FIG. **11** illustrates an implementation of a Massively Multiplayer Online (MMO) infrastructure, according to one embodiment.

[0025] FIG. **12** illustrates an example network environment suitable for implementing embodiments of the invention.

[0026] FIG. **13** illustrates an example computer system for implementing embodiments of the invention.

DETAILED DESCRIPTION

[0027] Methods, systems, and computer programs for expanding gaming social networks with players that do not have an existing social relationship with other players are presented. Embodiments of the invention allow a player to add new friends or neighbors in the online game, where the new friends are outside the social network of the player (e.g., Facebook® friends). It will be apparent, that the present embodiments may be practiced without some or all of these specific details. In other instances, well known process operations have not been described in detail in order not to unnecessarily obscure the present embodiments.

[0028] FIG. **1** illustrates an embodiment of a web page **100** for playing an online game. A web page is a structured document or resource of information that is suitable for a computer network, such as the World Wide Web, the Internet, or an Intranet. A web page is identified by a unique Uniform Resource Locator (URL) and may be accessed through a web browser and displayed on the screen of a network device. Some web pages are dynamic and are constructed at the time the web page is requested by a network user. As a result, the actual content included in dynamic web pages may vary over time. In addition, web pages may include multimedia content (e.g., image, video, or audio), or embedded references thereto, as well as text content.

[0029] Web page **100** is one embodiment of a page designed for playing games online via web browsers. In this embodiment, a list of games **120** is presented for selection by the player, and a list of featured games **130** identifies popular games. In one embodiment, the game is played in game area **110** as an embedded component that may use any technology for presenting multimedia dynamic content, such as Hyper Text Markup Language 5 (HTML5), Adobe Flash®, etc.

[0030] Adobe Flash (formerly known as Macromedia Flash) is a multimedia platform for adding animation and interactivity to web pages. A Flash component (e.g., game area **110**) may be embedded in a web page (e.g., web page **100**) to create animation, advertisements, or games and to integrate video into the web page. Adobe Flash can manipulate vector and raster graphics and support bidirectional streaming of audio and video. In one embodiment, Adobe Flash libraries are used with the Extensible Markup Language (XML) capabilities of the web browsers to render rich content in the browsers. This technology is known as Asynchronous Flash and XML.

[0031] Another technology for displaying dynamic content in a web page is HTML5. HTML5's features include media playback and offline storage. With a predecessor version to HTML5, named HTML4, sites have to reach for Adobe Flash (or Silverlight) to show a video or play music. However, HTML5 lets sites directly embed media using Hyper Text Markup Language (HTML) tags (e.g., "<video>" and "<audio>"), and plugins are not required.

[0032] In one embodiment, games include objects, such as characters, currencies, tools, assets, social relations, etc. For example, in a war game, the characters may be the soldiers fighting on respective sides of the war. In addition, there may be weapons used by the soldiers and objects around the battlefield (e.g., buildings, trees, animals, mountains, rivers, and so on). Each game object may be defined according to a predetermined syntax. For example, the definition of a game object may include shape, texture, physical capabilities, connection or relationship with other game objects, etc.

[0033] In another embodiment, a game application is embedded in a web page (e.g., web page **100**) and the players play the game via web browsers. The display of a game is sometimes referred to as the "stage" of the game. Thus, the stage of the game may be implemented as Adobe Flash or HTML5 component embedded in the web page. For example, the stage is essentially a data structure that defines some of the basic elements of the game, such as aspect ratio and display size. At any given time, a game scene may be rendered and displayed on the stage by attaching one or more game objects to the stage.

[0034] FIG. **2** shows the stage of an online game, according to one embodiment. The online game of FIG. **2** can be played in game area **110** of FIG. **1**, but the online game can also be played in other environments. In one embodiment, the game includes a three-dimensional view **220** of a city that evolves as the player makes progress in the game. As the player advances in the game, the player acquires assets, which can take multiple forms. In one embodiment, assets include first virtual currency asset **202**, second virtual currency **228**, goods **206**, energy asset **208**, sheep building **222**, crop asset **224**, community building asset **226**, badges, badge collections, temporally tiered levels, bonuses, promotions, penalties, digital content (e.g., image files, icons, audio files, video files), gifts, tokens, honor title, rewards, invitation permissions, avatars, rally points, diaries, footprints, trophies, com-

petitions, engagement modes, user difficulty modes (e.g., novice, intermediate, expert), stars, medals, gems, pets, exploration quests, etc. Each asset can be used for one or more purposes. For example, first virtual currency **202** can be used during the game to make progress, also referred to herein as advancement. The first virtual currency **202** can be used to acquire assets (e.g., buildings or decorations), to remove an obstacle in the game (e.g., enabling progress that would otherwise be blocked), or to complete a task (e.g., finish decorating a house).

[0035] In particular embodiments, the first and the second virtual currencies are used for different purposes, although some assets may be bought with either of the currencies. The first virtual currency has higher purchasing value than the second virtual currency. For example the first virtual currency can unblock some obstacles in the game that the second virtual currency cannot. Although a small amount of first virtual currency may be given to the player as the game starts, a player needs to purchase more first virtual currency with real currency, also referred to herein as legal currency, real-world currency, or real cash. This provides a revenue stream for the online game provider.

[0036] In one embodiment, the online game includes missions **212**, which identify one or more tasks that the player must complete before the mission is considered satisfied or finished. For example, a mission may require three tasks: chopping down a tree, feeding an animal, and planting an apple tree. Upon completion of the mission, the player is rewarded in some fashion, such as providing a new asset, increasing the amount of energy, getting more virtual currency, etc. As the player completes tasks and missions, the game score **210** is increased, and as the game score increases the experience level may also increase.

[0037] Clicking on inventory icon **216** causes the online game to display a list of all the items or assets owned by the player. In addition, clicking on build icon **218** takes the player to a virtual marketplace where assets (e.g., buildings) can be acquired. As described above, assets can be from within different categories such as buildings, decorations, housing, businesses, crops, trees, animals, energy, special items, weapons, etc. Each category includes a plurality of assets within the category. For example, the housing category includes a cottage, a town house, a family house, a suburban house, a country house, an apartment building, a ranch, etc. Some of the items within a category can be freely acquired by the player, while purchasing of some items can be blocked until certain game condition is met, such as reaching some score, finishing a mission, purchasing the ability to unblock the blocked item, etc.

[0038] In one embodiment, the online game is an online social game, which leverages social relationships between the player and other online game players socially linked to the player. For example, the player may add a neighbor **214** to the game by inviting a friend from a social networking site. A neighbor of a first player, as referred to herein, is a second player that has established a social relationship (i.e., a social link) in the online game with the first player. The social relationship is typically established by having one player inviting the other player to become a neighbor, and then the other player accepting the invitation. Once the invitation is accepted, both players are "neighbors." A neighbor may also be referred to as a friend, a crew member, a "buddy," a partner, an ally, etc.

[0039] There are many types of online social networks run and maintained by various companies, and any one of these companies can provide access to social graph data. Some examples of companies, without limitation to others, may include Facebook, Google+®, Yahoo!® Groups, Linkedin®, etc. Once a friend accepts being a neighbor, a social relationship is established in the game where the game played by the player and the game played by the neighbor can interact with each other. For example, the player may visit the game board (e.g., city) of the neighbor and perform some game activities therein, and will be rewarded for doing so. Some of the missions in the game may include social activities that promote the interaction between players. For example, one mission may include planting tomatoes in the neighbor's farm. Therefore, the social interaction can provide advancement for the player and for the neighbor.

[0040] In one embodiment, a game board is created the first time the player plays the online game. The game board can be a city, a farm, a forest, an island, etc., and the game board may also be referred to as the player's world, environment, playground, etc. As the player makes progress in the game, the game board changes by adding assets (e.g., adding buildings, shops, clearing trees, land, etc.), or by removing obstacles (e.g., cutting down a tree). Each player manages her own game board, although other players linked to the player (e.g., neighbors) in the online game may help by visiting and performing activities in the neighbor's game board. In one embodiment, only the players socially linked to the owner of the game board can visit to perform game activities therein.

[0041] It is noted that the embodiments illustrated in FIG. **2** are exemplary. Other embodiments may utilize different assets, missions, social interactions, etc. The embodiments illustrated in FIG. **2** should therefore not be interpreted to be exclusive or limiting, but rather exemplary or illustrative.

[0042] FIG. **3** shows a player visiting the game board of another player, according to one embodiment. When a player wishes to visit the game board of a neighbor, the player selects an option in the game to visit the neighbor. For example, clicking on the "visit" button next to the icon of player **214** in FIG. **2**. The game loads the game board **304** of the neighbor, and the player is given certain options to interact with the game within the game board of the player. Typically, the interaction will create a benefit for the player and a benefit for the neighbor. In the embodiment of FIG. **3**, the player is given the option of harvesting a crop, sending a bus tour **306**, feeding an animal, etc. For example, if the player clicks **310** on crop **308**, the crop is harvested and the player gets a reward **302**.

[0043] It should be noted that the activities that player can perform while visiting a neighbor's game board may be similar to the activities that the friend may perform in her own game board. However, there may be some activities that the friend may perform while visiting and that the player cannot perform in her own game board, and vice versa.

[0044] FIG. **4** illustrates a filtering method for finding candidate friends, according to one embodiment. Embodiments of the invention enable users to find new friends for the online game, where the new friends can be inside or outside their social network. An option is presented to a player that enables the player to find new friends for the online game. In one embodiment, the potential new friends are limited to those players that are not currently part of the player's social network, i.e., friends that are outside the social network of the player. Thus, if a first player establishes a link with a second

player, which is outside the first player's social network, then the first layer and the second player will be able to play together (i.e., cooperate) in the online game, without having to establish a social link in a social network. Of course, if there is currently a social link between a player and a potential friend, but the system is not aware of this current social link, it is possible that the system recommends potential new friends that already have social links with the player.

[0045] In one embodiment, the system specifies the social networks to be considered when defining social links. The online game system interfaces with the specified social networks to obtain social data, including friendship relations. This way, the user knows that, although he may have a friend in Yahoo Groups, the online game is not accessing data from Yahoo Groups, and the online game will not consider the two friends in Yahoo Groups to be socially linked.

[0046] As described in more detail below with reference to FIGS. **5-7**, a player is offered options to search for new friends that have a current social link with the player, search for new friends that do not have a current social link with the player, or search for new friends with disregard to whether there is a current social link or not.

[0047] Some examples of social networks may include, without limitation to others, Facebook, Google+, Yahoo! Groups, Linkedin, Twitter®, etc. In addition, a social link may also be defined in other types of websites, such as users that are registered, and have a login, in a particular website (e.g., a website for alumni of a university). In some social networks, it is possible for the user to follow a certain user of a social network, without the user being necessarily a "friend" of the other user. For example, a user of my "like" a soccer club that regularly posts news in a Facebook page. In one embodiment, a user is able to select another user that shares an interest. For example, a user may search for friends for the online game that like the same rock group. In one embodiment, the interest of a user is found in the user's profile in one of the social networks.

[0048] In addition, as used in herein, a social link exists between two persons, when there is a direct link between the two persons, i.e., the two persons are friends or somehow directly connected in a social network. Two persons may have a shared friend in a social network, therefore, they have an indirect social relationship, but this is not considered a social link, as used herein, unless otherwise specified. As described below with reference to FIG. **6**, an option is available for the user to select friend-of-a-friend as a potential criteria for the search. However, it is noted that if a user were to select an option to search for friends outside her existing social network, friends of friends would be possible candidates for this type of search, because a direct relationship does not exist between both players.

[0049] In one embodiment, the user has an option to define which social networks to use in order to define what constitutes a social link, at least for the purpose of searching for new friends. For example, a user may specify that only Facebook friends are to be considered as friends of the searching user (i.e., they have a current social link in Facebook), in the context of the search for game friends. Therefore, if another person has a link established in another group (e.g., Linkedin), this link in the other group would not be considered a social link in that particular search. In another embodiment, the user selects which are the social networks that contain social links for this user. This way, a user may define that this user has social links in Google+ and Zynga Poker, for example. In this case, the online game will only consider social links in this two social networks when performing searches for this user.

[0050] There may be different criteria to select possible friends. For example, a player may wish to befriend a player based on gender, skill level, geographic location, playing hours, etc. Embodiments of the invention, allow the player to select the filtering criteria to find new friends. In addition, the online game may also provide additional filtering criteria, such as linking together players with similar spending patterns. Further yet, additional filters may be sent for accepting friends and requests. For example, a player may decide to accept requests only from female players.

[0051] FIG. **4** illustrates the process for filtering potential friends. The universe of players **402** includes all the players that are currently subscribed to play the online game. F_1-F_4 are filters that, when applied, produce a subset of players from the universe of players **402**. Each filter is represented as a geometric figure, were players selected by the filter are situated inside the geometric figure, and players not selected by the filter are situated outside the geometric figure. Of course, a player may select one or more filters when looking for friends, and not all filters must be utilized. The filters may also be combined using any logical operation, such as Boolean AND, OR, NOT, etc. Furthermore, the filters may be assigned weights, and the results prioritized according to a score, which is based on the weights of the selected filters.

[0052] In the environment shown in FIG. **4**, a player has selected four filters F_1-F_4, using a Graphical User Interface (GUI), such as the one described below with reference to FIG. **6**. In addition, the player has defined a logical expression to combine the filters. The logical expression is as follows:

[0053] Candidate Friends=(NOT F_1) AND ((F_2 AND F_3) OR F_4).

[0054] Below are other examples of logical expressions:

[0055] Candidate Friends=F_1 AND (F_2 OR F_3).

[0056] Candidate Friends=IF (F1) THEN (F_2 AND F_3) ELSE F_4.

[0057] Candidate Friends=((NOT F_1) AND F_2) OR (F_1 AND F_4).

[0058] Once the logical expression is applied to the universe of players **402**, the result is a set of players **408** represented by the players inside the resulting geometric figure. Afterwards, the online game applies an acceptance filter defined by one or more of the players in the online game. The acceptance filter defines which players, from the universe of players, may request to become friends of the player setting the acceptance filter. In the embodiment of FIG. **4**, the online game filters out those players that have indicated that they do not want to receive friend requests from players outside their social network. Once the acceptance filter is applied to the set of players **408**, a subset of players **410** is obtained. One or more of the subset of players **410** may be presented to the player for sending a friendship request.

[0059] As a result, players are matched with other players that may have similar gaming interests, or similar social interests. Players are not limited to play only with friends from their social network. In one embodiment, the universe of players **402** is not limited to the players from the online game, and the universe of players **402** may also include other players engaged in other online games.

[0060] FIG. **5** illustrates the process for finding friend candidates that takes into account the filters set by players on both ends of the friendship-establishment transaction, according

to one embodiment. A plurality of filters is provided by the online game to enable users to find friends (filters **502**), or to be found by people looking for friends (filters **512**). In addition, other filters (not shown) are used by the online game to fine-tune the friend searches using criteria defined by the online game. More details on the filters utilized by the online game are given below with reference to FIG. **7**.

[0061] In operation **504**, a user looking for friends selects one or more search filters **502** for the search, as well as parameters associated with each of the filters, if the parameters are needed or wanted for each of the filters. For example, a user may select an age filter and enter a parameter of "between 15 and 25 years old." The result of operation **504** is one or more selected filters, with the corresponding parameters for each of the filters, if entered by the user.

[0062] For description for process, it is referred to herein as a "searched friend" to a user or player that is a candidate for becoming a friend of a player searching for friends. In addition, it is referred to herein as a "searched filter" to a filter set by a "searched friend" defining which players may establish, or request to establish, a friendship relationship with the searched friend.

[0063] In operation **514**, the searched friend selects from the searched filters **512** to limit the type of players that may become friends of the searched friend. The result is a set of searched filters, also referred to as target filters **516**. Of course, it is possible that either the player looking for a friend, or the searched friend do not select any of the filters available, which would mean that the whole universe of players would be available to complete the friendship request.

[0064] In operation **508**, the online game searches for candidate friends by taking into account the selected search filters **506** and target filters **516**. The result is a list of candidate game friends. In one embodiment, the list, or a portion of the list, is presented to the player looking for friends, in order to give the player a chance to further refine the list of candidate friends, such as by selecting directly from the presented list, or by modifying the filters in order to repeat the search operation with new filters. In one embodiment, a matching score is provided for each of the candidate game friends. In another embodiment, the player is not given the chance to review the list, and the online game proceeds to add new friends or send requests to candidate new friends for becoming friends.

[0065] In operation **510**, the player refines the candidate list, if so desired, and then, for each of the candidates left in the list, the online game determines **518** if the candidate is to be added automatically as a friend. If the candidate is to be added automatically as a friend, the online game establishes a social link between the player and the candidate, in operation **524**. In one embodiment, the candidate is automatically added as a friend of a requesting player when the candidate has established a universal acceptance filter, that specifies that friendship requests are always accepted, without having to request permission from the searched friend.

[0066] On the other hand, if the candidate is not to be added automatically as a friend, the online game sends a request **520** to the candidate. If the candidate accepts to become a friend upon receipt of the friendship request, in operation **522**, then the accepting candidate and the friend are socially linked in operation **524**. In one embodiment, once the player and the candidate are linked in the online game (i.e., the player and the candidate become friends in the online game), the candidate can provide help to the player in the online game, and vice versa.

[0067] FIG. **6** shows a Graphical User Interface (GUI) for setting filters, according to one embodiment. FIG. **6** illustrates an embodiment of a sample GUI that includes a friend-making webpage **602**. The friend-making webpage **602** includes a first search area **604** for setting filters when searching for new friends, a second area **612** with searched filters defining when players allow requests to become friends, and a button **622** for leaving webpage **602**, such as by returning to the online game.

[0068] The first search area **604** for setting filters includes a plurality of filters **606** that can be optionally set when searching for friends. The filters limit the candidates that can become friends of the player. Each filter includes a checkbox that enables the user to select the particular filter. Some filters (e.g. skill level) include a field for a entering a value associated with the filter. For example, the field associated with the skill level filter can be filled with the desired skill level or skill-level range. In one embodiment, the skill level can be defined as 5, >5, <25, 5-99 (5 to 99), etc. Some filters include radio buttons that enable the user to select one from a plurality of options. For example, the gender filter can be set as male or female. Of course, if both genders are desired, then the player would not select the checkbox associated with the gender filter.

[0069] The embodiment presented in FIG. **6** includes the following filters for the searched friend:

[0070] Skill level—defines the skill level in the online game achieved by the searched friend;

[0071] Age—defines the age or age range;

[0072] City/Area Code—defines the geographic location;

[0073] Active Hours—defines the time of the day were the searched friend is more likely to be found playing the online game;

[0074] Single—defines that the searched friend has to be single;

[0075] Friend of Friends—defines that only friends of friends can be searched friends;

[0076] Buddy in other game—defines that the searched friend must already be a friend in another online game;

[0077] Looking for friends—defines that the searched friend has indicated a desire to add new friends;

[0078] Religion—defines the religion;

[0079] Political party—defines the political affiliation;

[0080] Friend Acceptance Automatic—defines that only players that want to become friend's automatically are to be identified (i.e., a request for friendship is not required to become friends);

[0081] Hours spent online—defines the amount of time that the searched friend spends on average playing the online game; and

[0082] Number of friends—defines how many current friends the searched friend has (e.g., 20-30).

[0083] Other filters may include skill level in other games, players belonging to a same online group (e.g., are registered as users in the same website), players belonging (or not) to a specific social network or social networks (e.g., a player having a Facebook account), players having a higher game skill level, players having a lower skill level, players with a same skill level, school, neighborhood, occupation, etc.

[0084] In addition, the first search area **604** includes a selection area **608** to specify the number of friends desired, and the maximum number of requests sent for friendship. For example, a user may be searching for 3 friends and does not want the system to add more than 3 friends. Since some

friendship requests may not be accepted, the user may wish to set the number of requests that are sent out (e.g., 10 requests). In one embodiment, once the number of new friends desired has been reach, the outstanding requests are canceled. When the user selects button **610** "find friends," the system proceeds to generate the list of candidate friends, as described above. In one embodiment, the player is given the option (not shown) to weight the different filters, and to prioritize the filters.

[0085] The second area **612** includes a filter selection area **614**, an acceptance selection area **616**, an automatic acceptance setting area **618**, and an option button for setting the filters **620**. The filter selection area **614** includes a list of filters defining the criteria for accepting friendship requests. These filters are similar, or the same, as the filters described above in area **606** with reference to filters for searching friends, except that they work in the opposite direction.

[0086] The acceptance selection area **616** allows the user to specify that no friendship requests are to be accepted outside the current circle of friends, as specified in one or more social networks, and an option to accept, or not, friendship requests from strangers. The automatic acceptance setting area **618** allows the player to specify that requests are to be accepted automatically (i.e., without requiring an express acceptance), or to specify that previous authorization is required.

[0087] It is noted that the embodiment illustrated in FIG. **6** is exemplary. Other embodiments may utilize different filters, present the filters in a different way, allow the introduction of logical expressions to link the filters, weights, etc. The embodiment illustrated in FIG. **6** should therefore not be interpreted to be exclusive or limiting, but rather exemplary or illustrative.

[0088] In one embodiment, the online game provides default values for the filters. For example, the online game may set, by default, searching for players of a different gender than the searching player, and that all players will accept friendship requests outside their social network. The default settings may be changed by the players.

[0089] In yet another embodiment, the online game does not present the filters to the player. When the player is looking for a friend, the player selects an option asking the online game to find friends. The online game uses its own internal filters to determine which players to recommend or to link with the player looking for friends. For example, if the player is at level **62**, the online game may recommend somebody at level **64**, because a player at level **64** can help the player with the lower skill level to advance in the game. In this case, the player sees the result of the filtering done by the online game, and not the filters themselves.

[0090] FIG. **7** shows a flowchart for expanding a player's social network utilizing a plurality of filters, according to one embodiment. In operation **702**, the online game presents a plurality of filters to the player (e.g., age, gender, skill level). See for example the GUI presented in FIG. **6**, although other GUIs for presenting the filters are possible, such as GUIs that allow the player to select filters, assign weights to the filters, prioritize the filters, etc. In operation **704**, the player selects which filters to be used in the search for friends, and in operation **706**, the player inserts values associated with the selected filters (e.g., age range from 20 to 25), if needed.

[0091] In one embodiment, the online game adds filters (i.e., players in the same city) in operation **708**, and filter parameters, if needed. Additionally, in operation **710**, the online game adds the filters established by the searched friends. For example, some players may wish to become friends of anyone who asks, while other players may not wish to receive invitations from players outside their social network.

[0092] In operation **712**, the online game calculates prioritized list of candidates using the filters described above. In one embodiment, a matching score is assigned to the candidates, and the list is prioritized according to the respective matching scores. In operation **714**, the candidates are presented to the player. In one embodiment, the number of candidates presented is limited to a predetermined maximum number, since the list of candidates could be in the thousands. For example, the online game may present 10, 20, or maybe even 100 candidates, although other numbers are also possible. In one embodiment, a profile picture and/or profile information is presented for each of the candidates.

[0093] In one embodiment, the candidates are not presented to the player, as indicated in operation **714**, and the game automatically sends a request to become friends to a predetermined number of candidate game friends with the highest matching score.

[0094] In operation **716**, the player selects one or more players from the list of candidates (e.g., the top 10 in the list, or the ones that look more interesting from their profile picture). Once the desired players are selected, the online game checks, in operation **718**, if each of the selected players are to be added as friends automatically (i.e., without requiring acceptance by the searched friend), or if acceptance by the searched friend is required.

[0095] Further, if a player is to be added automatically, the method continues to operation **710**, and the player and the candidate are linked in the online game, that is, the player and the candidate become friends in the online game. If the candidate is not to be added automatically, the method continues to operation **722** and a request to become friends is sent to the candidate. If the candidate accepts the request (not shown) the online game will link both players in the online game.

[0096] FIG. **8** shows a block diagram illustrating a social gaming network architecture, according to one embodiment. In some implementations, a plurality of players (e.g., **801***a*-**801***f*) may be utilizing a social gaming network **800**. Each player interacts with the social gaming network via one or more client devices (e.g., client devices **802***a*-**802***f*). The clients may communicate with each other and with other entities affiliated with the gaming platform via communications network **805**. Further, the players may be utilizing a social networking service provided by a social networking server (e.g., social networking servers **803**) to interact with each other.

[0097] When a player provides an input into the player's client device, the client device may in response send a message via the communications network to the social networking server. The social networking server may update the player profile, save the message to a database, send messages to other players, etc. The social gaming network may include a social graph database **808**, which stores player relationships, social player profiles, player messages, and player social data.

[0098] The gaming servers **811** host one or more gaming applications, and perform the computations necessary to provide the gaming features to the players and clients. One or more gaming realm databases **812** store data related to the gaming services, such as the gaming applications and modules, virtual gaming environment ("realm") data, player gaming session data, player scores, player virtual gaming profiles, game stage levels, etc. The gaming servers may utilize the

data from the gaming realm databases to perform the computations related to providing gaming services for the players. In some implementations, a server load database **814** stores gaming server load statistics, such as computational load, server responses times, etc.

[0099] The social gaming network may include one or more load balancing servers **813**, and one or more filtering servers **816**. The filtering servers **816** assist players in obtaining new friends, by providing a plurality of filters, that are configurable by players looking for players, and configurable by the players themselves to provide rules regarding which players can send requests to become friends. In one embodiment, a filter database **818** stores filter related information, such as available filters for searching, available filters for accepting requests, filters added by the online game, search history, past friendship requests, pending friendship requests, etc.

[0100] FIG. **9** illustrates the interactions between the servers of FIG. **8**, in accordance with one embodiment of the invention. As described above, social networking servers **803** collect social data regarding the players. This social data is made available to gaming servers **811** and filtering servers **816**. The social data may be sent periodically, without a request for data, or may be sent as the result of a request sent from the gaming servers **811** or the filtering servers **816**.

[0101] The gaming servers **811** are used to execute the online games and hold the gaming data, which can be shared with social networking servers **803** and filtering servers **816**. When a player in the online game is searching for friends, gaming servers **811** sends a request to filtering servers **816** for the filters available for searching friends. In response, filtering servers **816** sends the available filters to gaming servers **811**.

[0102] Gaming servers **811** then presents the filters to the player, such as, for example, by using the GUI described with reference to FIG. **6**. After the player makes her selection, gaming servers **811** sends the requirements for the friend search to filtering servers **816**. The filtering servers **816** then perform the search for candidate friends according to the filters received. Filtering servers **816** utilize the social data received from social networking servers **803** for the search, and data regarding friendship relations within the online game received from gaming servers **811**. Afterwards, the results of the search, which include the candidates, are sent to gaming servers **811**.

[0103] It is noted that the embodiments illustrated in FIG. **9** are exemplary. Other embodiments may utilize different server configurations, divide the tasks differently among the servers, or exchange information between servers in different forms. The embodiments illustrated in FIG. **9** should therefore not be interpreted to be exclusive or limiting, but rather exemplary or illustrative.

[0104] FIG. **10** shows a flowchart illustrating an algorithm for expanding a player's gaming social network, in accordance with one embodiment of the invention. In operation **1002**, one or more selection rules are determined for a player of an online game, each selection rule defining a criterion for selecting users from a plurality of users. From operation **1002**, the method continues to operation **1004**, where the determined one or more selection rules are applied to the plurality of users, which results in a plurality of candidate game friends from the plurality of users. It is noted, that at least one candidate game friend does not have a social link with the player.

[0105] From operation **1004**, the method continues to operation **1006**, where the plurality of candidate game friends is presented to the player. An operation to link, in the online game, the player with at least one of the plurality of candidate game friends is initiated, in operation **1008**, in response to an input from the player. At least one operation of the method of FIG. **10** is executed through a processor.

[0106] FIG. **11** illustrates an implementation of an online game infrastructure, according to one embodiment. The online game infrastructure **476** includes one or more game servers **458**, web servers (not shown), one or more social network management servers **462**, and databases to store game related information. In one embodiment, game server **458** provides a user interface **460** for players **452** to play the online game. In one embodiment, game server **458** includes a Web server for players **452** to access the game via web browser **454**, but the Web server may also be hosted in a server different from game server **458**. Network **456** interconnects players **452** with the one or more game servers **458**.

[0107] Each game server **458** has access to one or more game databases **466** for keeping game data. In addition, a single database can store game data for one or more online games. Each game server **458** may also includes one or more levels of caching. Game data cache **464** is a game data cache for the game data stored in game databases **466**. For increased performance, caching may be performed in several levels of caching. For instance, data more frequently used is stored in a high priority cache, while data requiring less access during a session will be cached and updated less frequently.

[0108] The number of game servers **458** changes over time, as the gaming platform is an extensible platform that changes the number of game servers according to the load on the gaming infrastructure. As a result, the number of game servers will be higher during peak playing times, and the number of game servers will be lower during off-peak hours. In one embodiment, the increase or decrease of bandwidth is executed automatically, based on current line usage or based on historical data.

[0109] One or more social network management servers **462** provide support for the social features incorporated into the online games. The social network management servers **462** access social data **478** from one or more social networks **474** via Application Programming Interfaces (API) **472** made available by the social network providers. Each social network **474** includes social data **478**, and this social data **478**, or a fraction of the social data, is made available via API **472**. As in the case of the game servers, the number of social network management servers **462** that are active at a point in time changes according to the load on the infrastructure. As the demand for social data increases, the number of social network management servers **462** increases. Social network management servers **462** cache user data in database **468**, and social data in database **470**. The social data may include the social networks where a player is present, the social relationships for the player, the frequency of interaction of the player with the social network and with other players, etc. Additionally, the user data kept in database **468** may include the player's name, demographics, e-mail, games played, frequency of access to the game infrastructure, etc.

[0110] It is noted that the embodiment illustrated in FIG. **11** is an exemplary online gaming infrastructure. Other embodiments may utilize different types of servers, databases, APIs, etc., and the functionality of several servers can be provided by a single server, or the functionality can be spread across a

plurality of distributed servers. The embodiment illustrated in FIG. **11** should therefore not be interpreted to be exclusive or limiting, but rather exemplary or illustrative.

[0111] FIG. **12** illustrates an example network environment **550** suitable for implementing embodiments of the invention. Network environment **550** includes a network **560** coupling one or more servers **570** and one or more clients **580** to each other. In particular embodiments, network **560** is an intranet, an extranet, a virtual private network (VPN), a local area network (LAN), a wireless LAN (WLAN), a wide area network (WAN), a metropolitan area network (MAN), a portion of the Internet, another network, or a combination of two or more such networks **560**.

[0112] One or more links **552** couple a server **570** or a client **580** to network **560**. In particular embodiments, one or more links **552** each includes one or more wireline, wireless, or optical links **552**. In particular embodiments, one or more links **552** each includes an intranet, an extranet, a VPN, a LAN, a WLAN, a WAN, a MAN, a portion of the Internet, or another link **552** or a combination of two or more such links **552**.

[0113] Each server **570** may be a stand-alone server or may be a distributed server spanning multiple computers or multiple datacenters. Servers **570** may be of various types, such as, for example and without limitation, web server, news server, mail server, message server, advertising server, file server, application server, exchange server, database server, or proxy server. Each server **570** may include hardware, software, embedded logic components, or a combination of two or more such components for carrying out the appropriate functionalities implemented or supported by server **570**. For example, a web server is generally capable of hosting websites containing web pages or particular elements of web pages. More specifically, a web server may host HTML files or other file types, or may dynamically create or constitute files upon a request, and communicate them to clients **580** in response to HTTP or other requests from clients **580**. A mail server is generally capable of providing electronic mail services to various clients **580**. A database server is generally capable of providing an interface for managing data stored in one or more data stores.

[0114] In particular embodiments, one or more data storages **590** may be communicatively linked to one or more severs **570** via one or more links **552**. Data storages **590** may be used to store various types of information. The information stored in data storages **590** may be organized according to specific data structures. In particular embodiments, each data storage **590** may be a relational database. Particular embodiments may provide interfaces that enable servers **570** or clients **580** to manage, e.g., retrieve, modify, add, or delete, the information stored in data storage **590**.

[0115] In particular embodiments, each client **580** may be an electronic device including hardware, software, or embedded logic components or a combination of two or more such components and capable of carrying out the appropriate functionalities implemented or supported by client **580**. For example and without limitation, a client **580** may be a desktop computer system, a notebook computer system, a netbook computer system, a handheld electronic device, or a mobile telephone. A client **580** may enable a network player at client **580** to access network **580**. A client **580** may enable its player to communicate with other players at other clients **580**. Further, each client **580** may be a computing device, such as a desktop computer or a work station, or a mobile device, such as a notebook computer, a network computer, or a smart telephone.

[0116] In particular embodiments, a client **580** may have a web browser **582**, such as MICROSOFT INTERNET EXPLORER, GOOGLE CHROME, or MOZILLA FIREFOX, and may have one or more add-ons, plug-ins, or other extensions. A player at client **580** may enter a Uniform Resource Locator (URL) or other address directing the web browser **582** to a server **570**, and the web browser **582** may generate a Hyper Text Transfer Protocol (HTTP) request and communicate the HTTP request to server **570**. Server **570** may accept the HTTP request and communicate to client **580** one or more Hyper Text Markup Language (HTML) files responsive to the HTTP request. Client **580** may render a web page based on the HTML files from server **570** for presentation to the user. The present disclosure contemplates any suitable web page files. As an example and not by way of limitation, web pages may render from HTML files, Extensible Hyper Text Markup Language (XHTML) files, or Extensible Markup Language (XML) files, according to particular needs. Such pages may also execute scripts such as, for example and without limitation, those written in JAVASCRIPT, JAVA, MICROSOFT SILVERLIGHT, combinations of markup language and scripts such as AJAX (Asynchronous JAVASCRIPT and XML), and the like. Herein, reference to a web page encompasses one or more corresponding web page files (which a browser may use to render the web page) and vice versa, where appropriate.

[0117] Web browser **582** may be adapted for the type of client **580** where the web browser executes. For example, a web browser residing on a desktop computer may differ (e.g., in functionalities) from a web browser residing on a mobile device. A user of a social networking system may access the website via web browser **582**.

[0118] FIG. **13** illustrates an example computer system **650** for implementing embodiments of the invention. In particular embodiments, software running on one or more computer systems **650** performs one or more operations of one or more methods described or illustrated herein or provides functionality described or illustrated herein. Although methods for implementing embodiments were described with a particular sequence of operations, it is noted that the method operations may be performed in different order, or the timing for the execution of operations may be adjusted, or the operations may be performed in a distributed system by several entities, as long as the processing of the operations are performed in the desired way.

[0119] As example and not by way of limitation, computer system **650** 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, or a combination of two or more of these. Where appropriate, computer system **650** may include one or more computer systems **650**; be stand-alone or distributed; span multiple locations; span multiple machines; or reside in a cloud, which may include one or more cloud components in one or more networks. The one or more computer systems **650** may perform in real time or in batch mode one or more operations of one or more methods described or illustrated herein.

[0120] In particular embodiments, computer system **650** includes a processor **652**, memory **654**, storage **656**, an input/output (I/O) interface **658**, a communication interface **660**, and a bus **662**. Although this disclosure describes and illustrates a particular computer system having a particular number of particular components in a particular arrangement, embodiments of the invention may be implemented with any suitable computer system having any suitable number of any suitable components in any suitable arrangement.

[0121] In particular embodiments, processor **652** 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 **652** may retrieve (or fetch) the instructions from an internal register, an internal cache, memory **654**, or storage **656**; decode and execute them; and then write one or more results to an internal register, an internal cache, memory **654**, or storage **656**. The present disclosure contemplates processor **652** including any suitable number of any suitable internal registers, where appropriate. Where appropriate, processor **652** may include one or more arithmetic logic units (ALUs); be a multi-core processor; or include one or more processors **652**. Although this disclosure describes and illustrates a particular processor, this disclosure contemplates any suitable processor.

[0122] In particular embodiments, memory **654** includes main memory for storing instructions for processor **652** to execute, or data that can be manipulated by processor **652**. As an example and not by way of limitation, computer system **650** may load instructions from storage **656** or another source (such as, for example, another computer system **650**) to memory **654**. Processor **652** may then load the instructions from memory **654** to an internal register or internal cache. During or after execution of the instructions, processor **652** may write one or more results (which may be intermediate or final results) to the internal register or internal cache. Processor **652** may then write one or more of those results to memory **654**. One or more memory buses (which may each include an address bus and a data bus) may couple processor **652** to memory **654**. Bus **662** may include one or more memory buses, as described below. One or more memory management units (MMUs) reside between processor **652** and memory **654** and facilitate accesses to memory **654** requested by processor **652**. Memory **654** includes random access memory (RAM).

[0123] As an example and not by way of limitation, storage **656** 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 **656** may include removable or non-removable (or fixed) media, where appropriate. In particular embodiments, storage **656** 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.

[0124] In particular embodiments, I/O interface **658** includes hardware, software, or both providing one or more interfaces for communication between computer system **650** and one or more I/O devices. One or more of these I/O devices may enable communication between a person and computer system **650**. 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, touch screen, trackball, video camera, another suitable I/O device or a combination of two or more of these.

[0125] Communication interface **660** includes hardware, software, or both providing one or more interfaces for communication between computer system **650** and one or more other computer systems **650** on one or more networks. As an example and not by way of limitation, communication interface **660** 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. As an example, computer system **650** 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.

[0126] In particular embodiments, bus **662** includes hardware, software, or both coupling components of computer system **650** to each other. As an example and not by way of limitation, bus **662** 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 **662** may include one or more buses **662**, where appropriate. Although this disclosure describes and illustrates a particular bus, this disclosure contemplates any suitable bus or interconnect.

[0127] Herein, reference to a computer-readable storage medium encompasses one or more non-transitory, tangible computer-readable storage media possessing structure that may store a computer program or data. 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.

[0128] One or more embodiments of the present invention can also be fabricated as computer readable code on a non-transitory computer readable medium. 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.

[0129] The present 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.

What is claimed is:

1. A method for processing game operations during execution an online game, the method comprising:

identifying first filters selected by a first user, the first filters identifying first criteria for desired new friends in a network;

identifying second filters selected by a plurality of users in the network, the second filters being entered by each user to identify second criteria for being added as a friend in the network;

determining a plurality of candidates to be added as friends for the first user, wherein each candidate conforms to the first criteria and wherein the first user conforms to the second criteria set by each candidate; and

sending friendship requests to one or more of the candidates or adding one or more friends from the candidates without sending a friendship request, wherein operations of the method are executed by a processor.

2. The method as recited in claim **1** further including:

presenting one or more of the determined candidates to the first user; and

providing a user interface to refine the presented candidates.

3. The method as recited in claim **1** further including:

adding third filters selected by the online game; and

eliminating from the plurality of candidates those candidates that do not conform to a third criteria defined in the third filters.

4. The method as recited in claim **1** further including:

receiving a selection of a first candidate before the sending of friendship requests.

5. The method as recited in claim **4**, wherein sending friendship requests further includes:

sending a friendship request to the first candidate.

6. The method as recited in claim **4**, wherein sending friendship requests further includes:

adding the first candidate as a friend without sending the friendship request when the second filters for the first candidate allow adding a friend without requiring express permission.

7. The method as recited in claim **1**, wherein the first filters include one or more of skill level, age, geography, gender, active hours online, marriage status, friend of friends, looking for friends, friend acceptance automatic, hours spent online, or number of friends.

8. The method as recited in claim **1**, wherein the second filters include one or more of skill level, age, geography, gender, active hours online, marriage status, friend of friends, hours spent online, or number of friends, or automatically accept friendship requests.

9. The method as recited in claim **1**, wherein operations of the method are performed by a computer program when executed by one or more processors, the computer program being embedded in a non-transitory computer-readable storage medium.

10. A computer program embedded in a non-transitory computer-readable storage medium, when executed by one or more processors, for processing game operations during execution an online game, the computer program comprising:

program instructions for identifying first filters selected by a first user, the first filters identifying first criteria for desired new friends in a network;

program instructions for identifying second filters selected by a plurality of users in the network, the second filters being entered by each user to identify second criteria for being added as a friend in the network;

program instructions for determining a plurality of candidates to be added as friends for the first user, wherein each candidate conforms to the first criteria and wherein the first user conforms to the second criteria set by each candidate; and

program instructions for sending friendship requests to one or more of the candidates or adding one or more friends from the candidates without sending a friendship request.

11. The computer program as recited in claim **10** further including:

program instructions for presenting one or more of the determined candidates to the first user; and

program instructions for providing a user interface to refine the presented candidates.

12. The computer program as recited in claim **10** further including:

program instructions for adding third filters selected by the online game; and

program instructions for eliminating from the plurality of candidates those candidates that do not conform to a third criteria defined in the third filters.

13. The computer program as recited in claim **10** further including:

program instructions for receiving a selection of a first candidate before the sending of friendship requests.

14. The computer program as recited in claim **13**, wherein sending friendship requests further includes:

sending a friendship request to the first candidate.

15. The computer program as recited in claim **13**, wherein sending friendship requests further includes:

adding the first candidate as a friend without sending the friendship request when the second filters for the first candidate allow adding a friend without requiring express permission.

16. The computer program as recited in claim **10**, wherein the first filters include one or more of skill level, age, geography, gender, active hours online, marriage status, friend of friends, looking for friends, friend acceptance automatic, hours spent online, or number of friends.

17. The computer program as recited in claim **10**, wherein the second filters include one or more of skill level, age, geography, gender, active hours online, marriage status, friend of friends, hours spent online, or number of friends, or automatically accept friendship requests.

18. The computer program as recited in claim **10** further including:

providing a graphical user interface for entering first filters and second filters.

19. A method for processing game operations during execution an online game, the method comprising:

presenting first filters to a first user, the first filters identifying criteria for desired new friends in a network;

receiving first filter values selected by the first user;

identifying second filters selected by a plurality of users in the network, the second filters being entered by each user to identify criteria for being added as a friend in the network;

identifying third filters selected by the online game;

determining a plurality of candidates for new friends for the first user based on the first filter values, the second filters, and the third filters;

presenting top candidates from the plurality of candidates;

receiving a selection of desire friends from the top candidates;

sending a friendship requests to a first candidate when the first candidate requires authorization to add a friend; and

linking the first user and the first candidate when the first candidate accepts friends without requiring authorization, wherein operations of the method are executed by a processor.

20. The method as recited in claim **19**, wherein the first filters include one or more of skill level, age, geography, gender, active hours online, marriage status, friend of friends, looking for friends, friend acceptance automatic, hours spent online, or number of friends.

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