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(54) **METHODS AND SYSTEMS FOR UTILIZING
GLOBAL POSITIONING INFORMATION
WITH AN ONLINE GAME**

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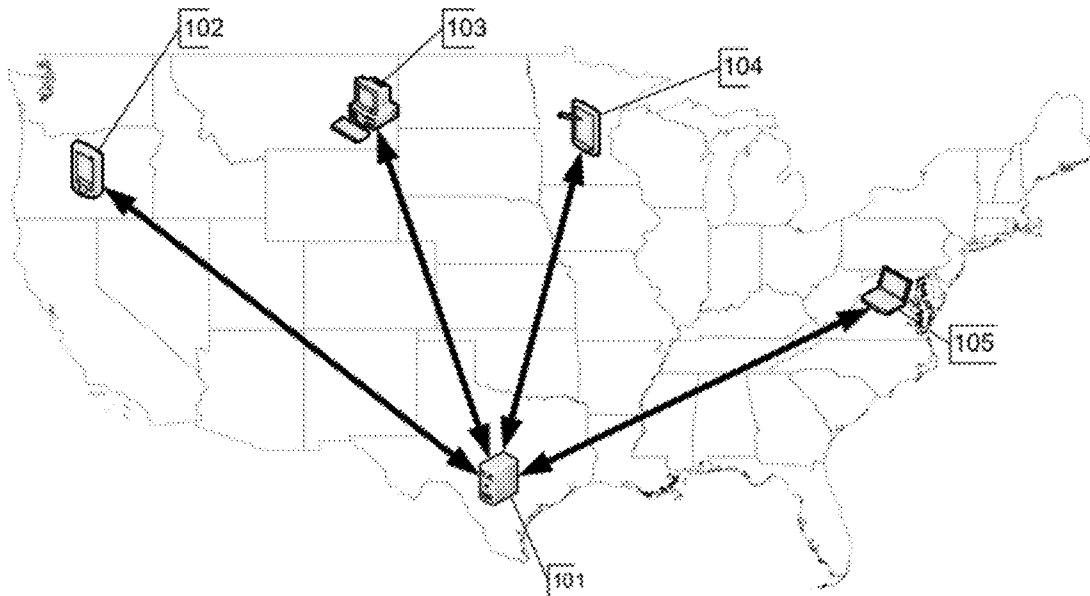
(57) **ABSTRACT**

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(US)**

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We present a system and method for incorporating geolocation information into an online game to enhance the enjoyment of the online game. The geolocation of a player is communicated to the online game servers which modify the gaming environment of the player based on the player's current geolocation. If the player changes geolocation, the online game may modify the player's gaming experience as the player's geolocation changes.



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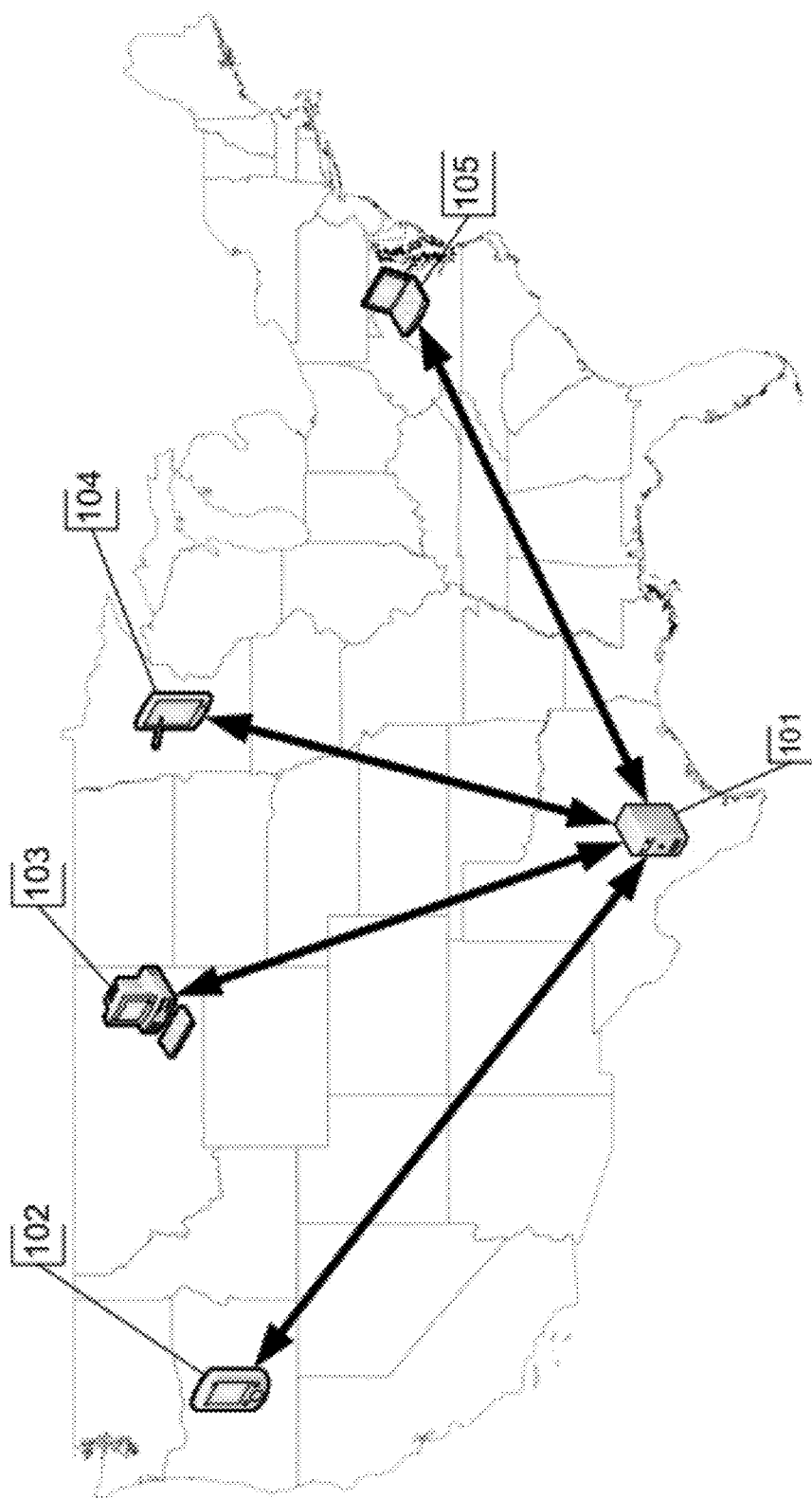


Figure 1

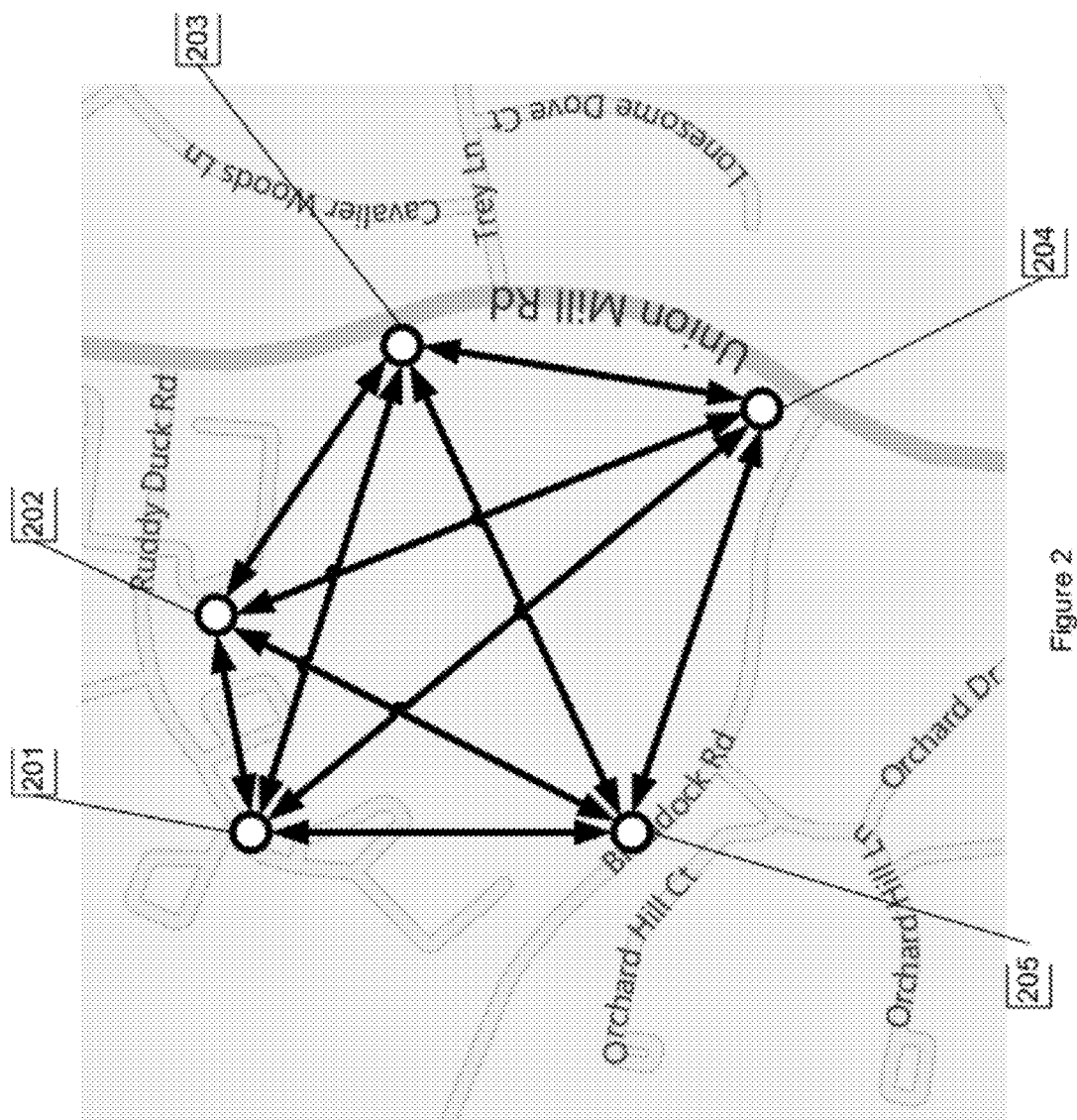


Figure 2

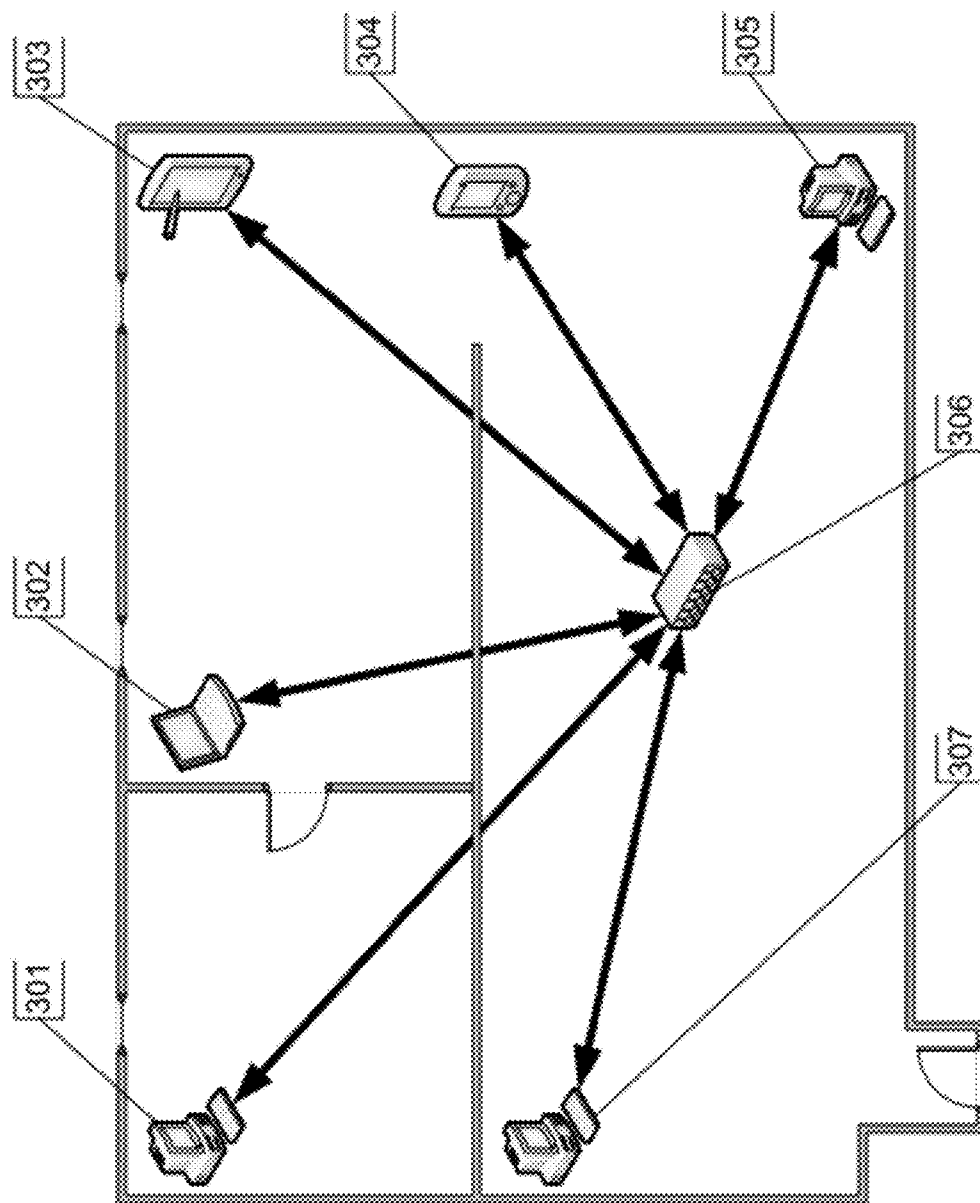
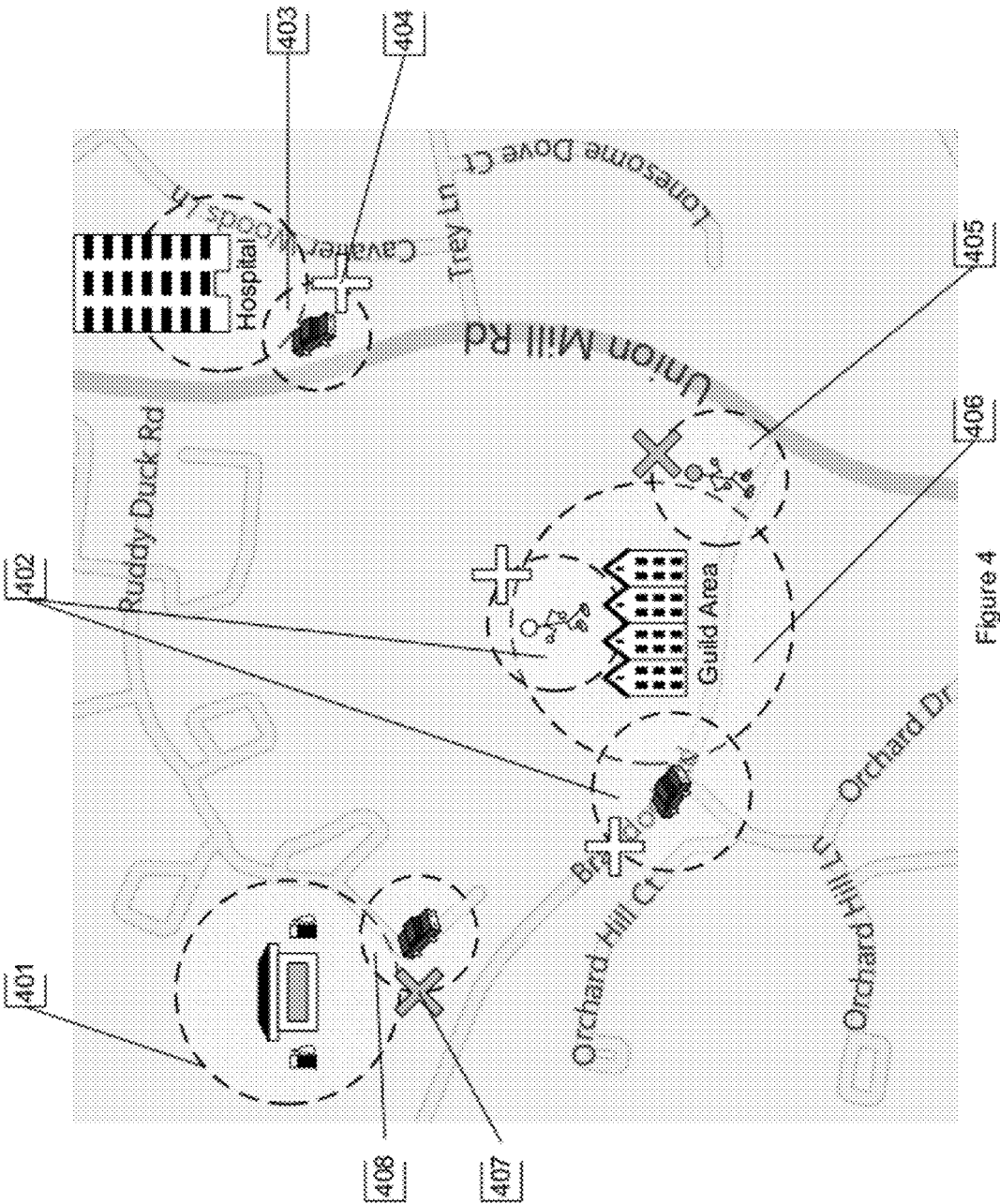


Figure 3



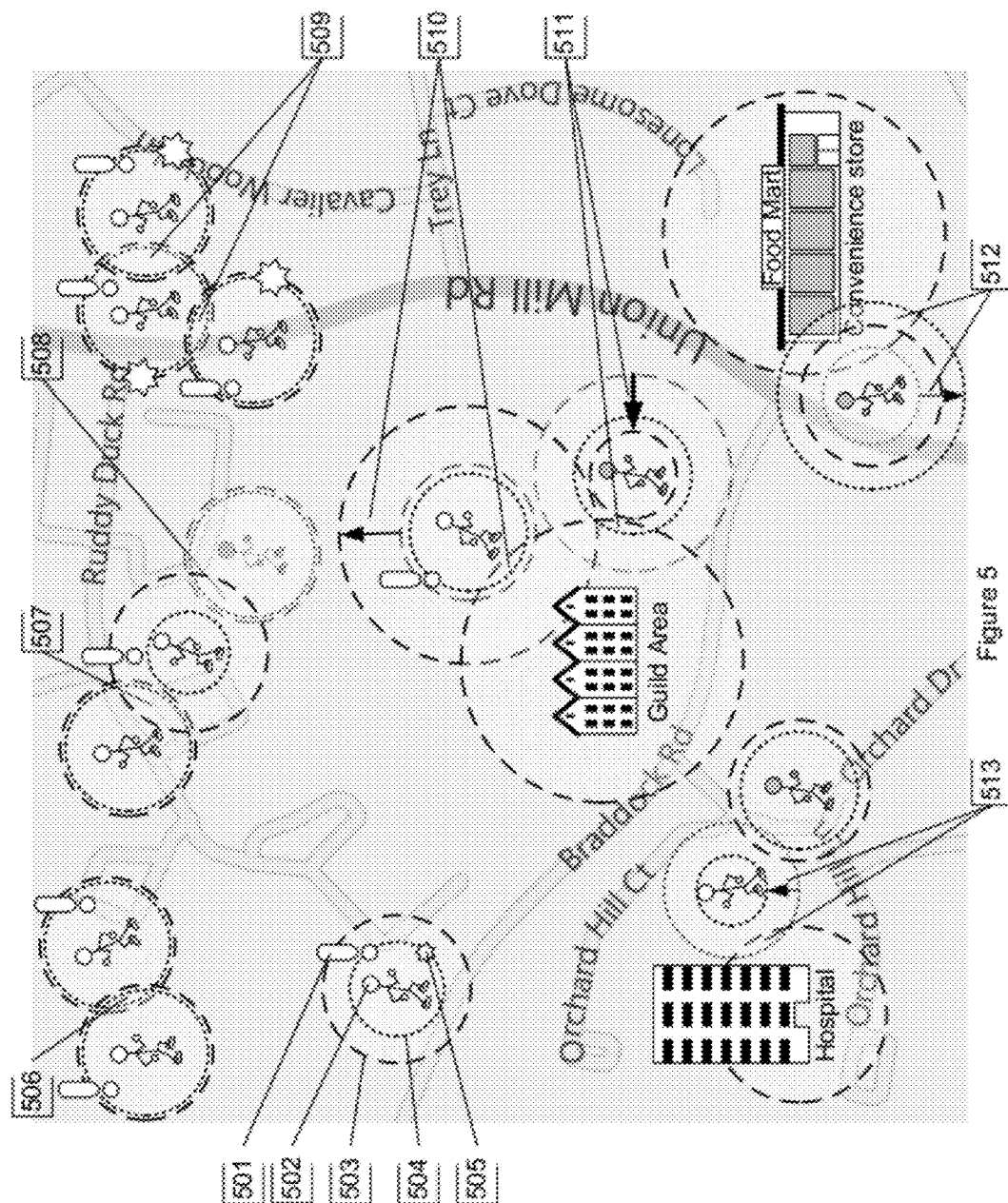


Figure 5

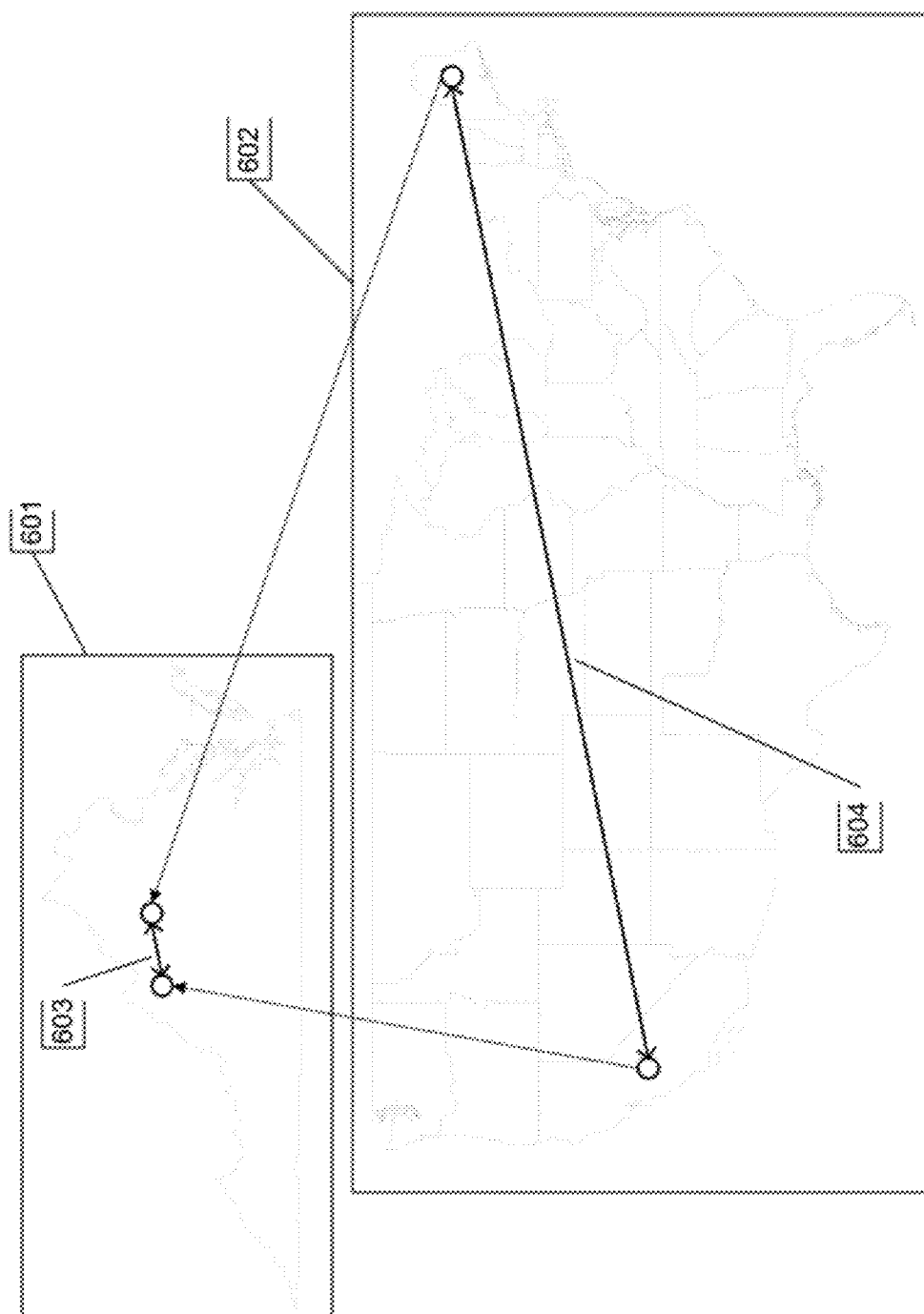


Figure 6

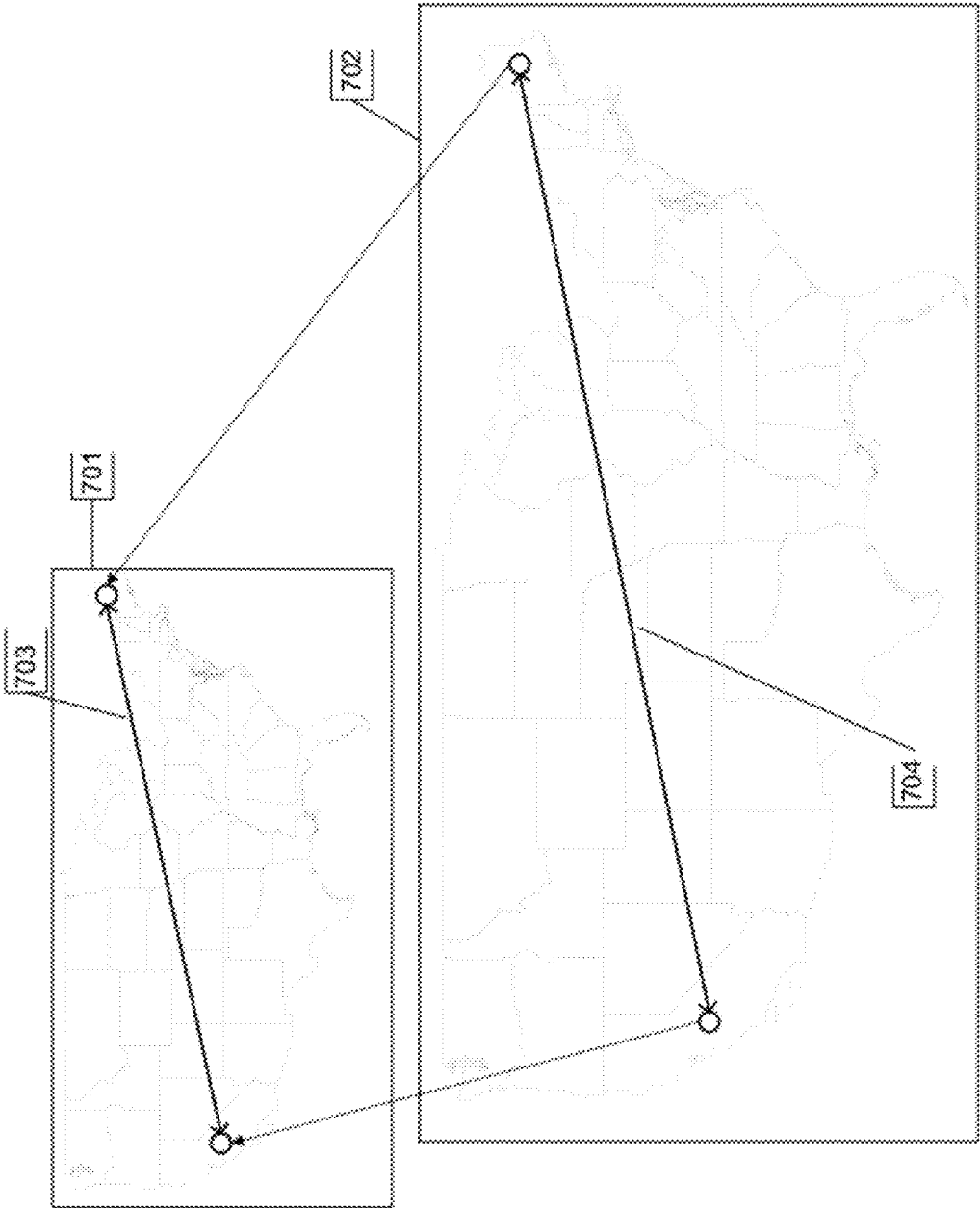
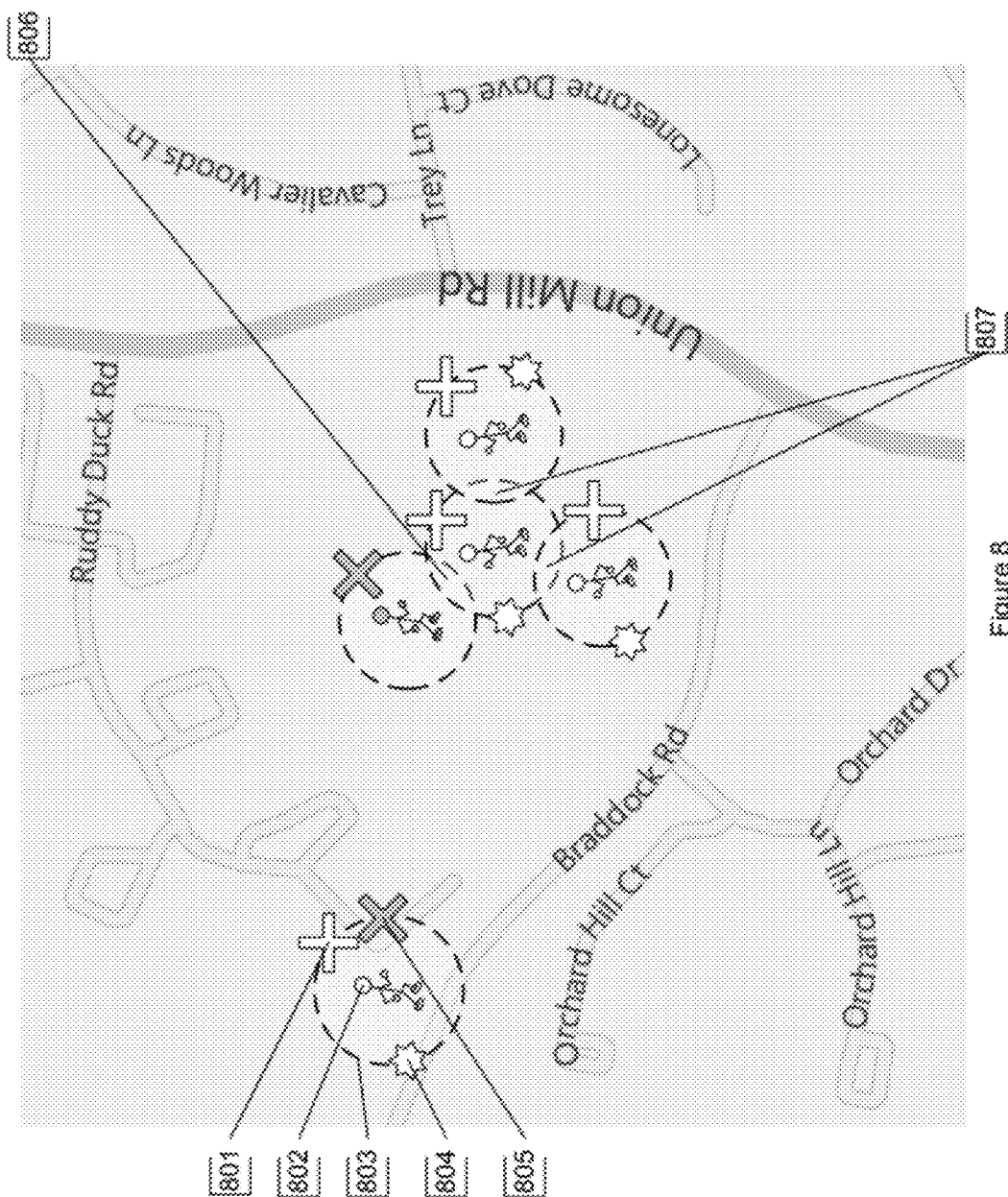
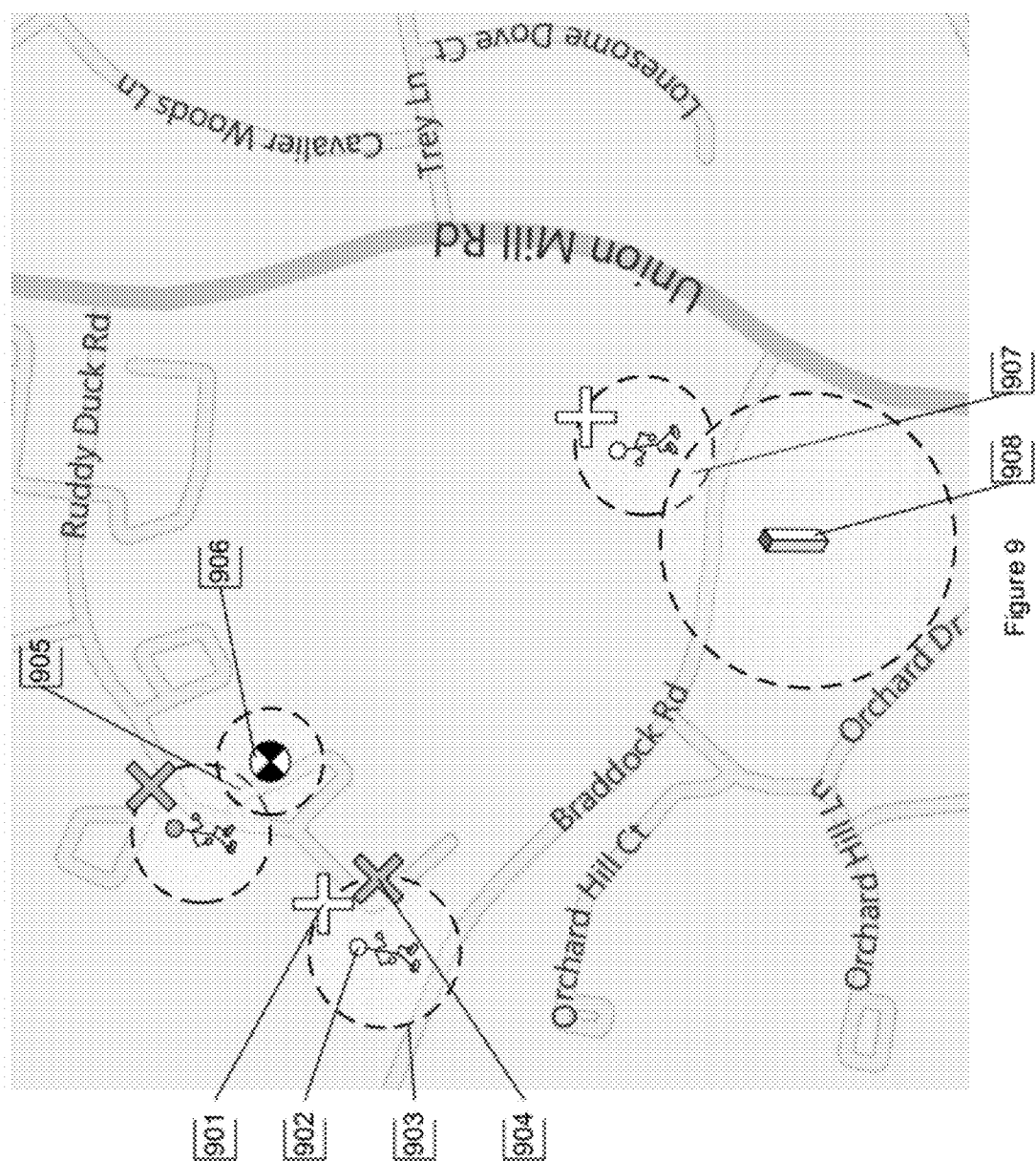


Figure 7





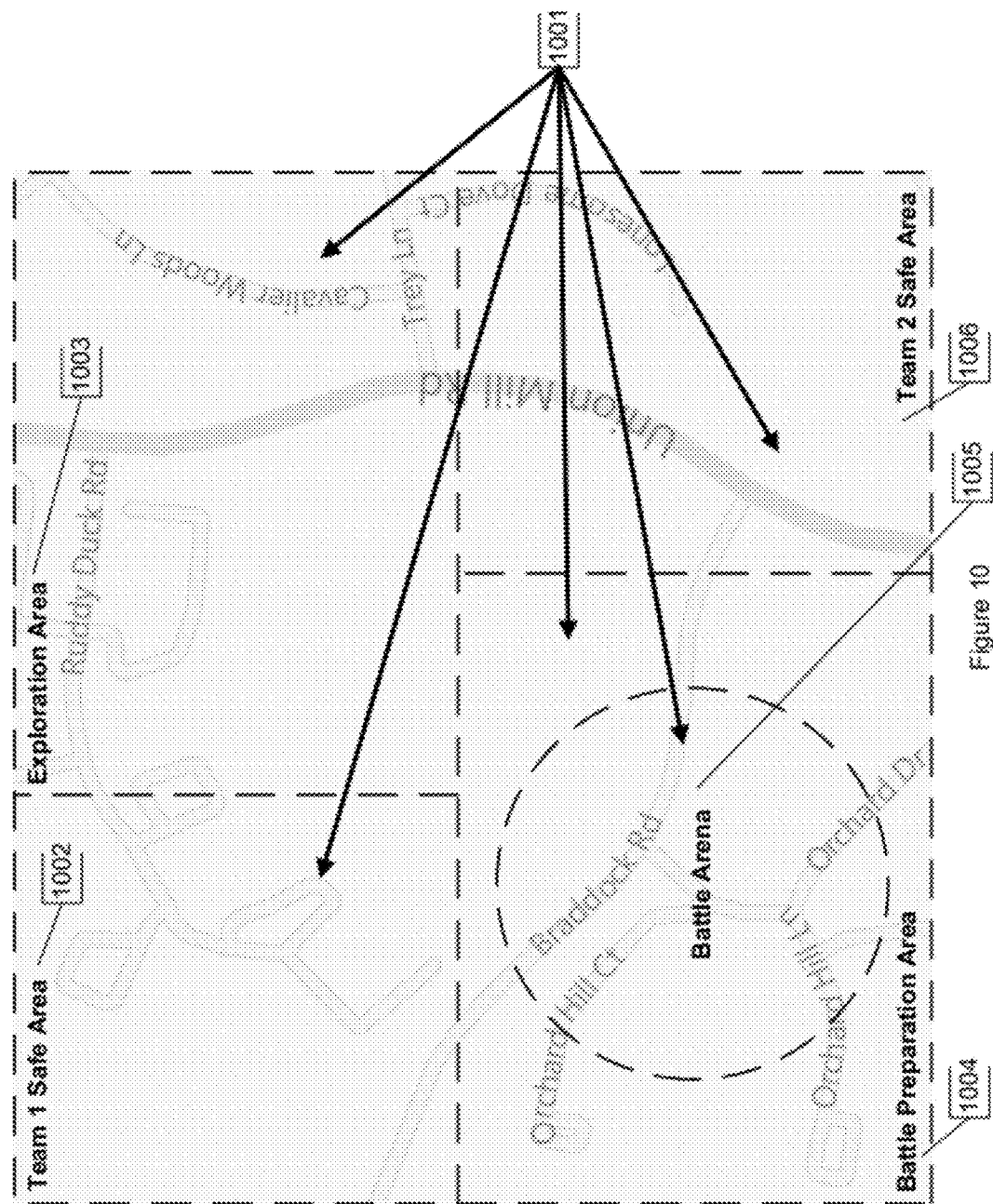


Figure 10

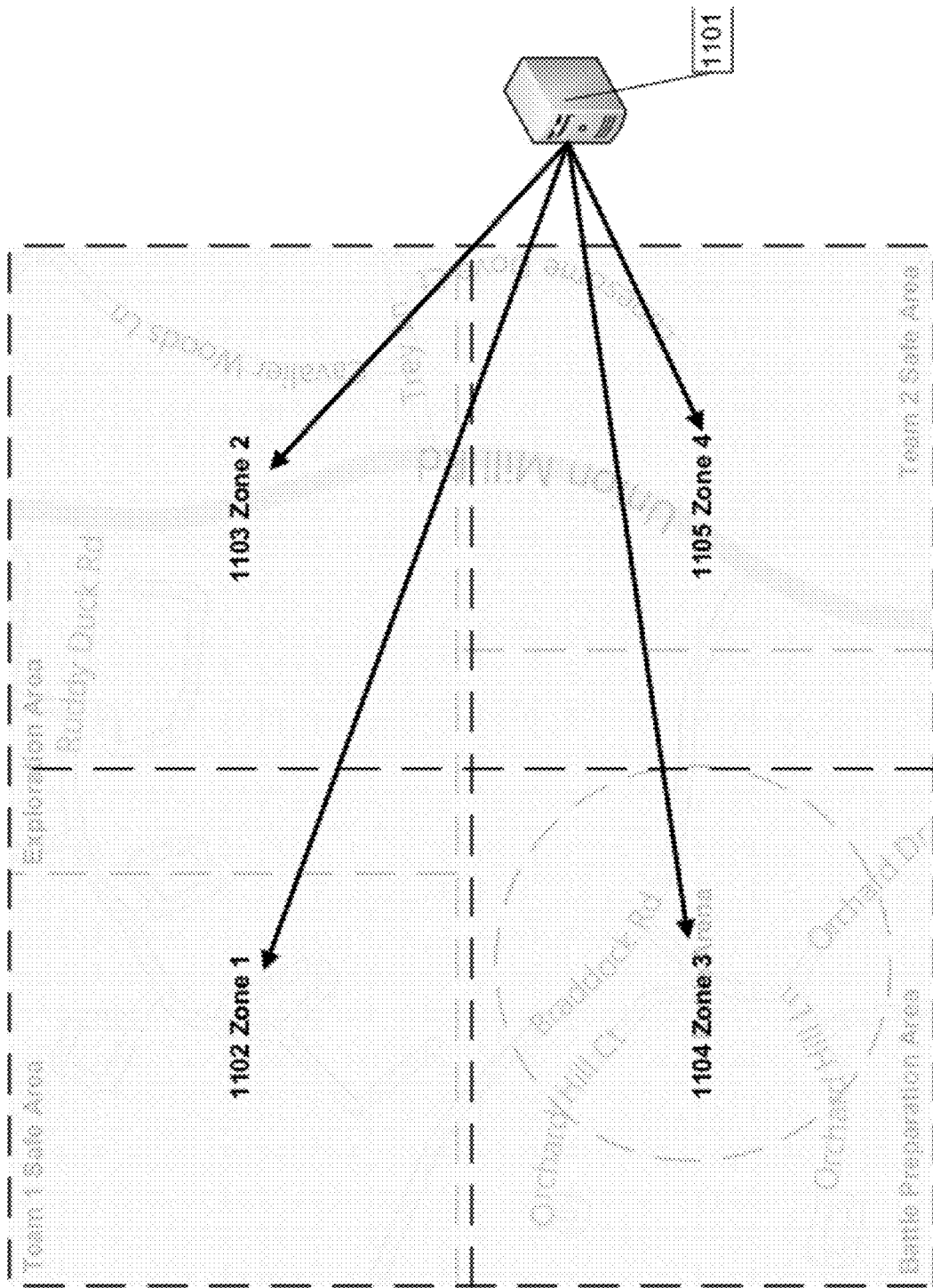


Figure 11

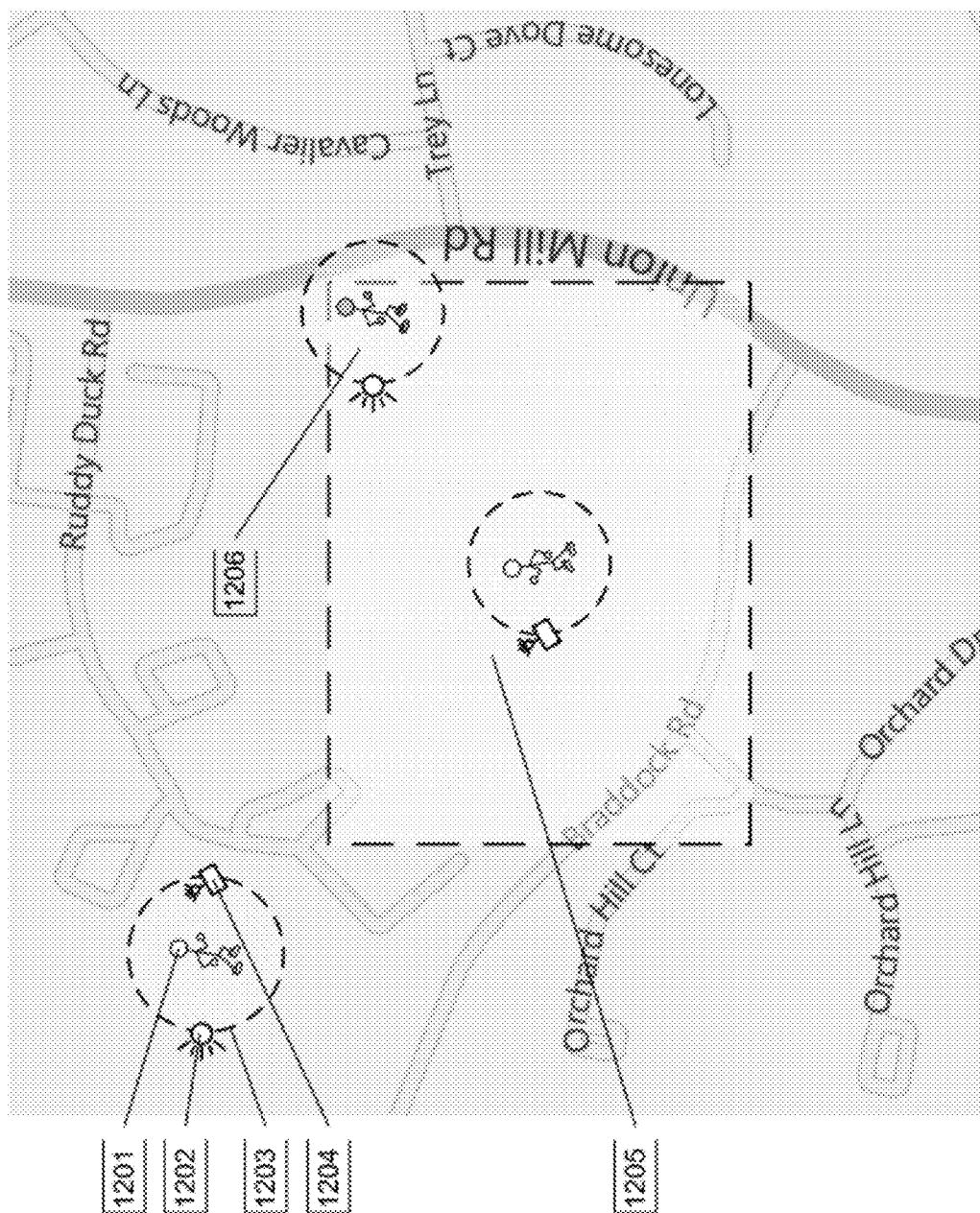


Figure 12

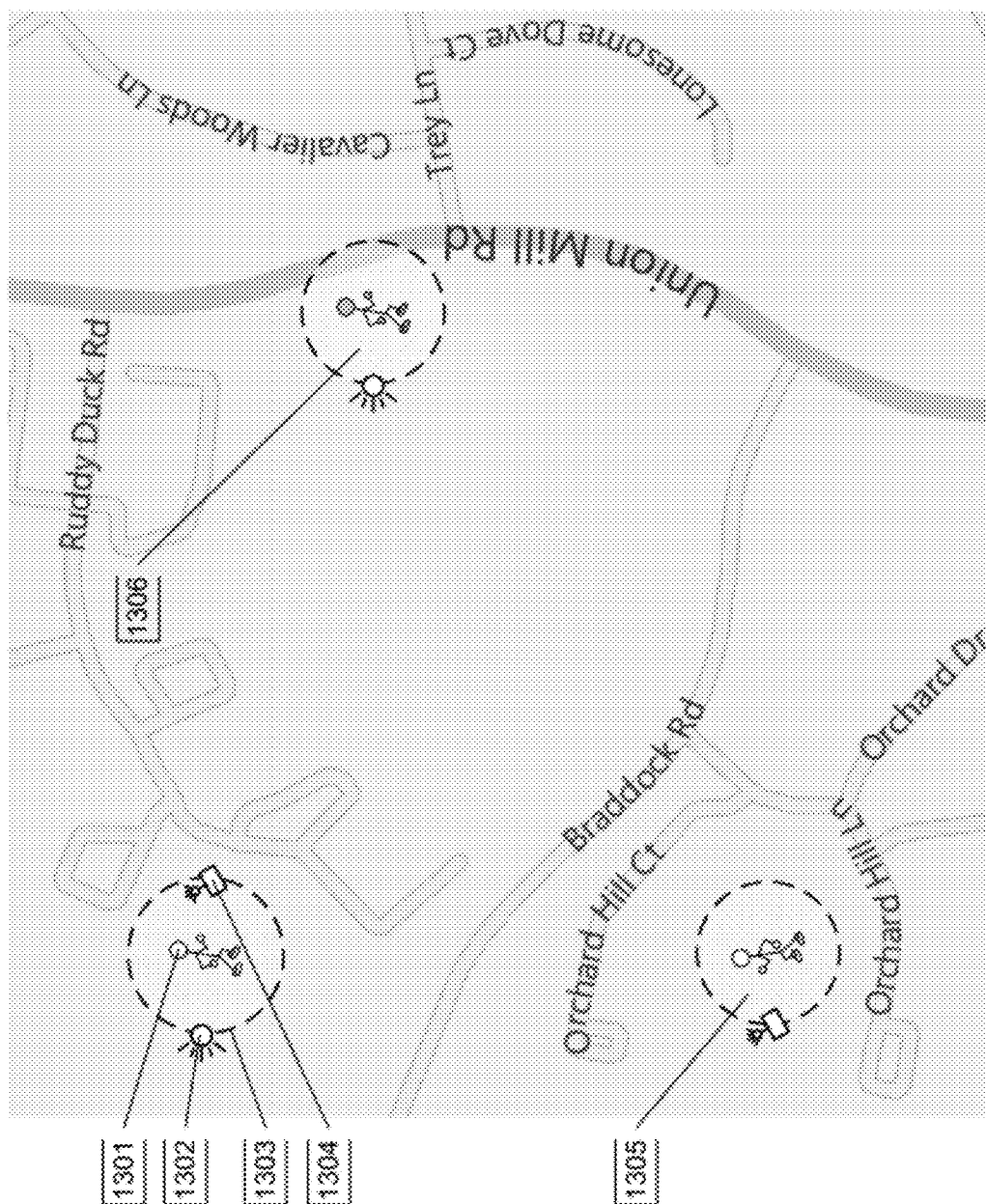


Figure 13

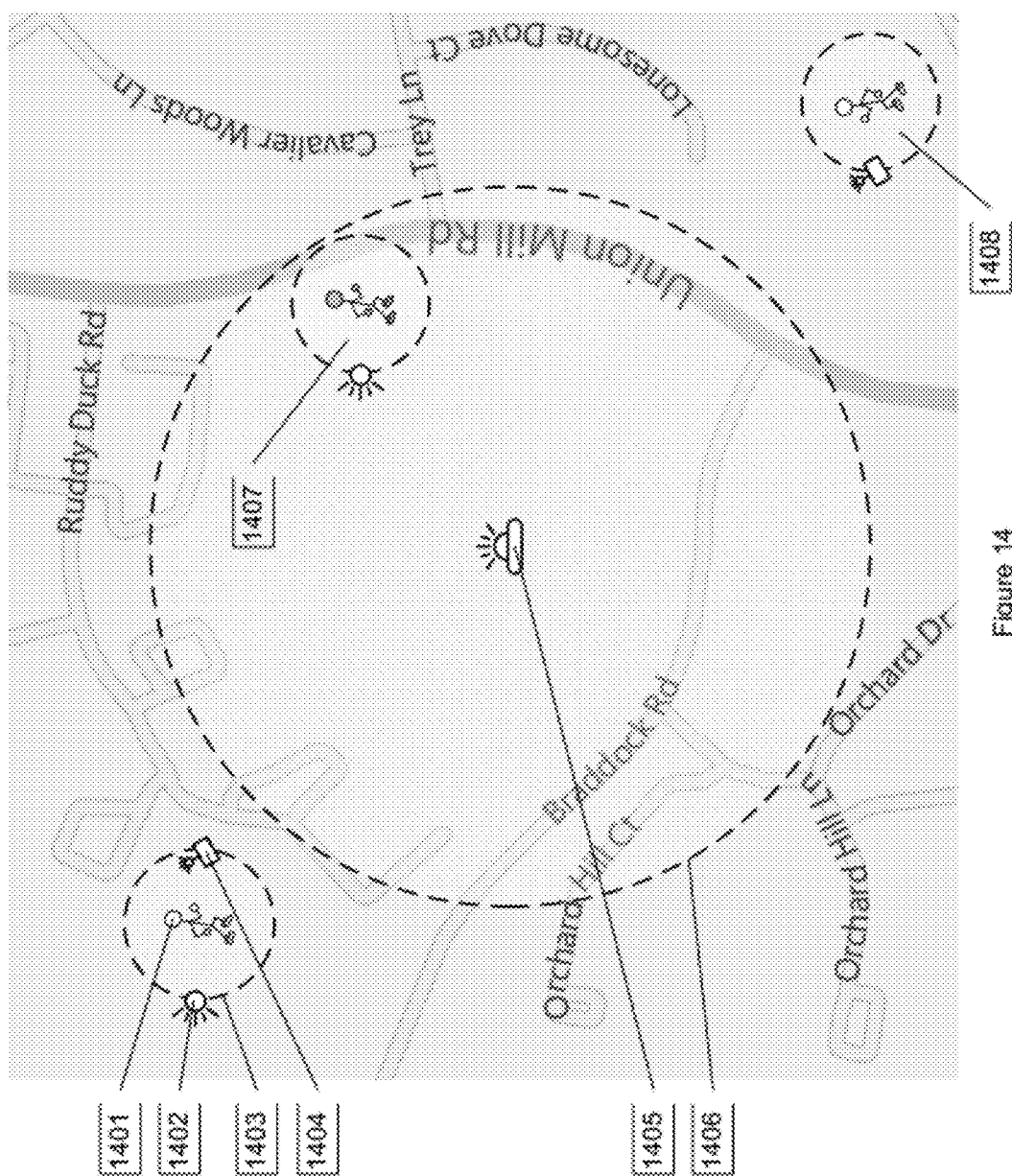
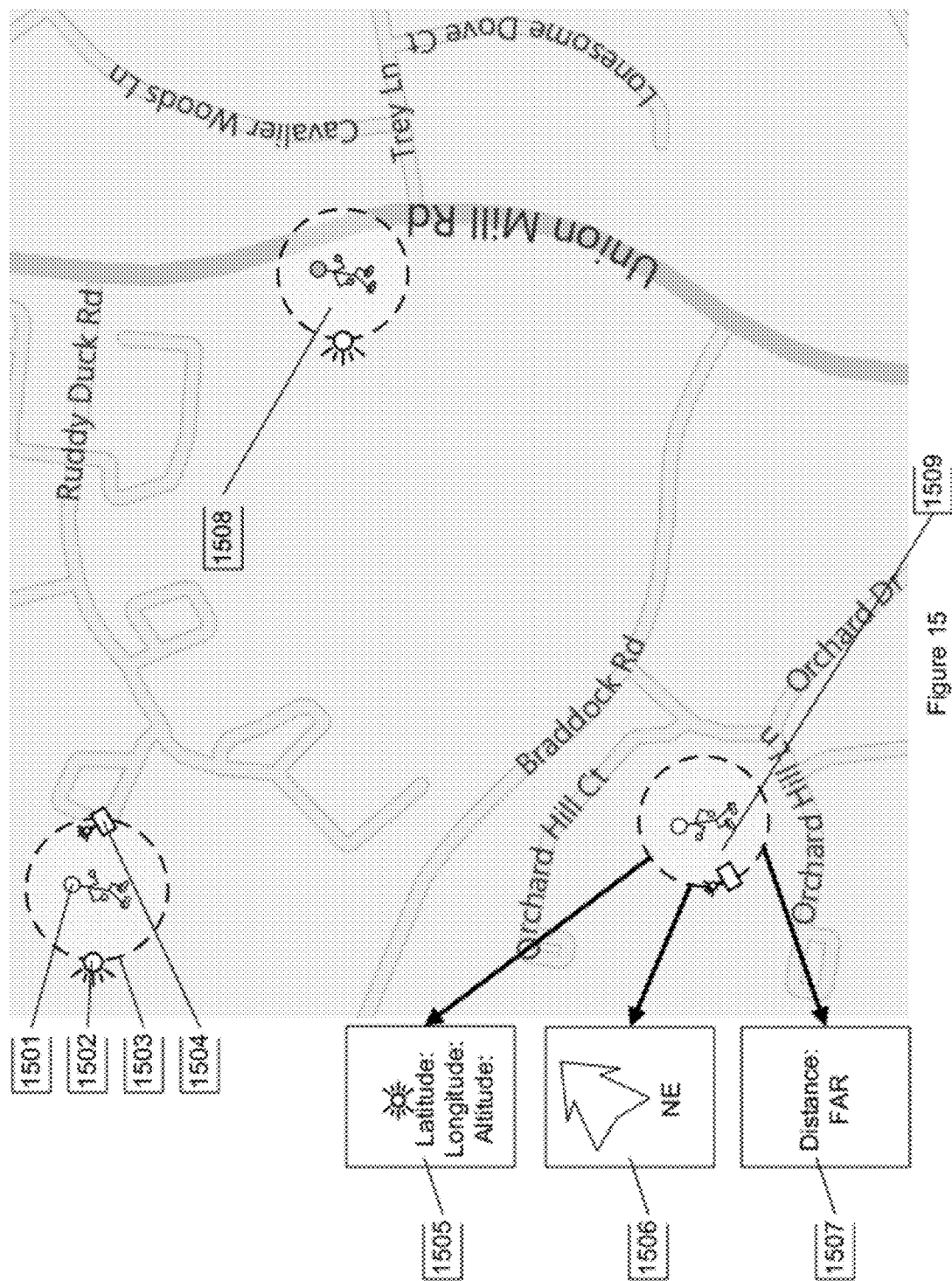


Figure 14



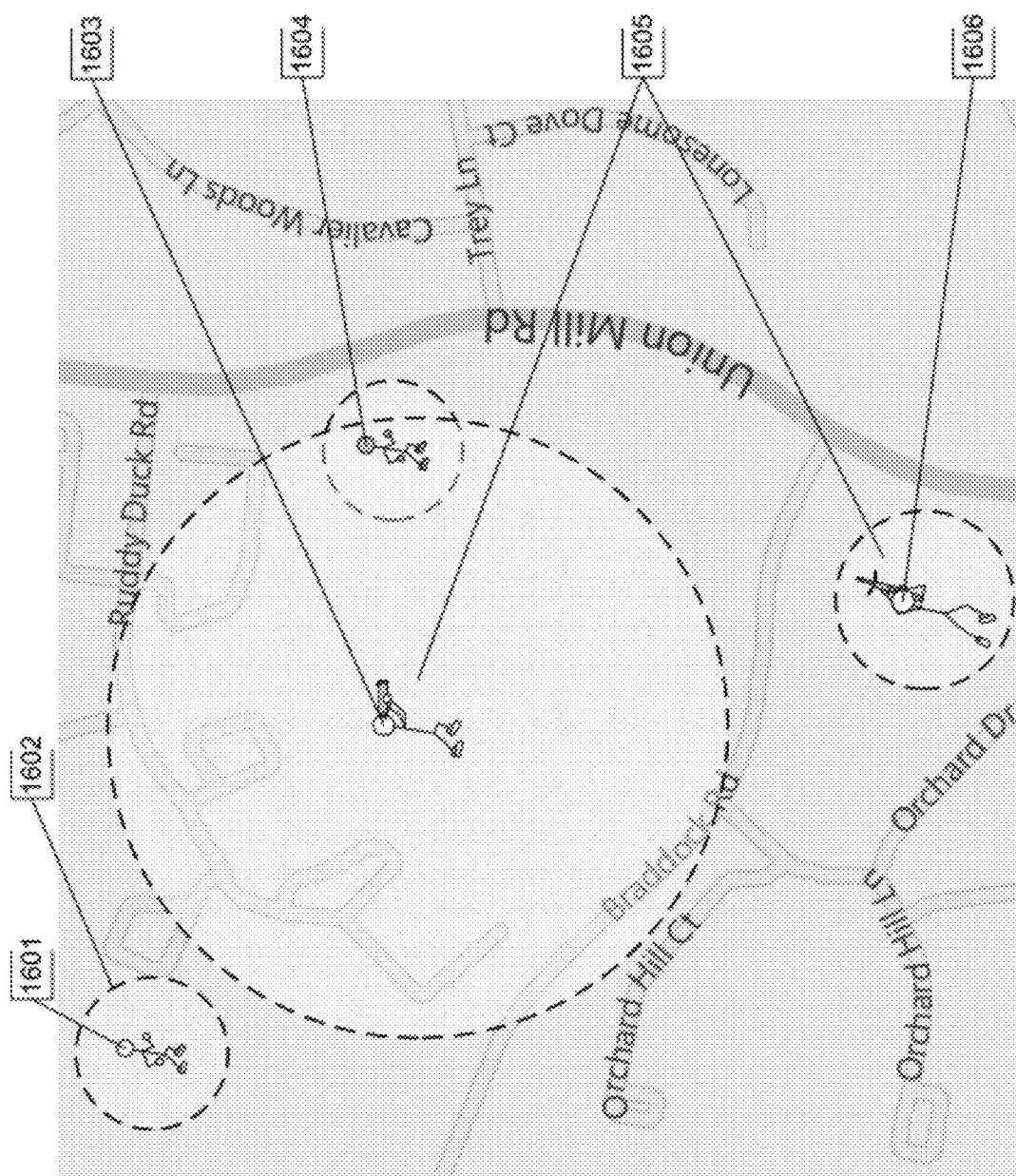


Figure 16

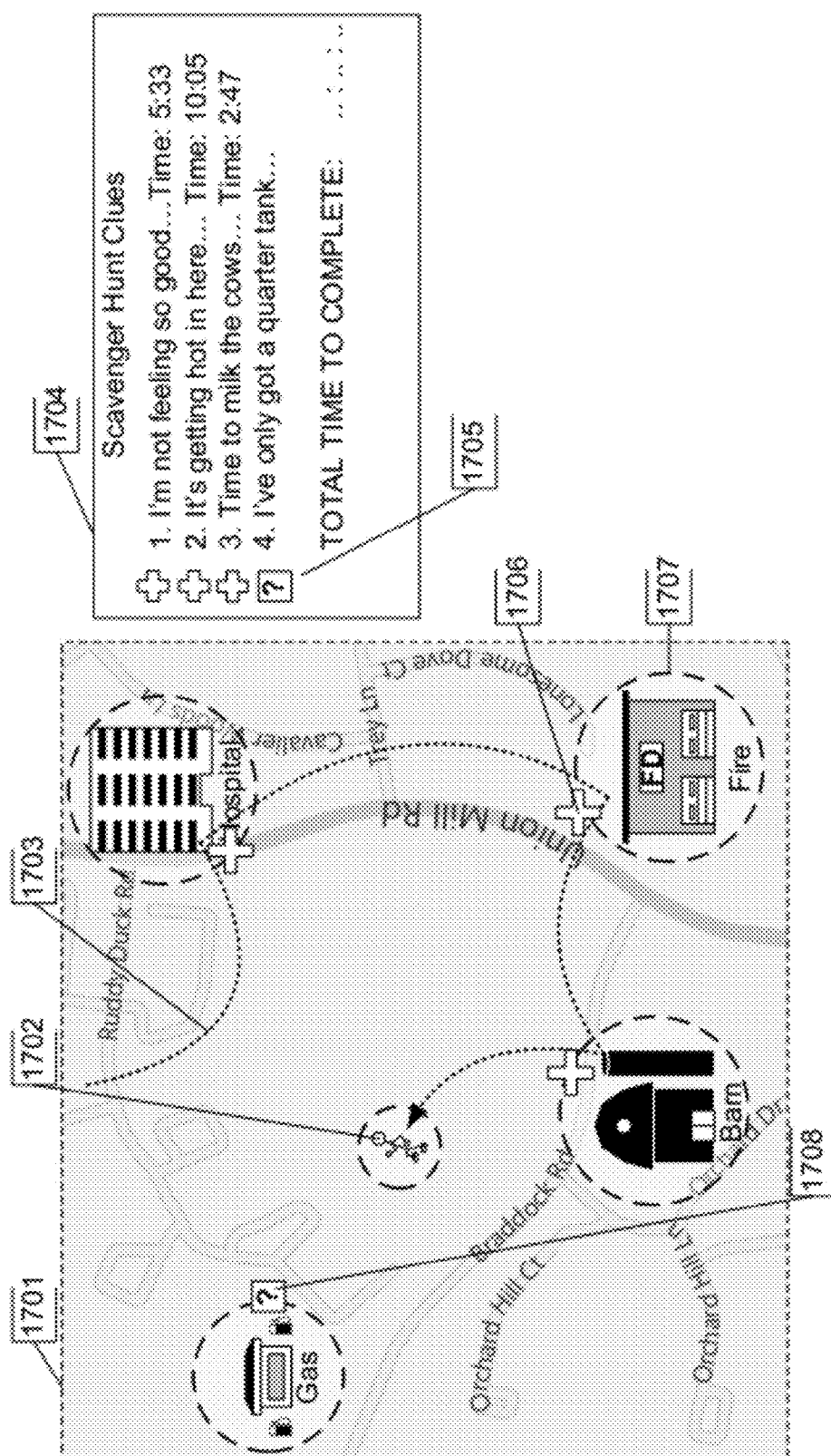
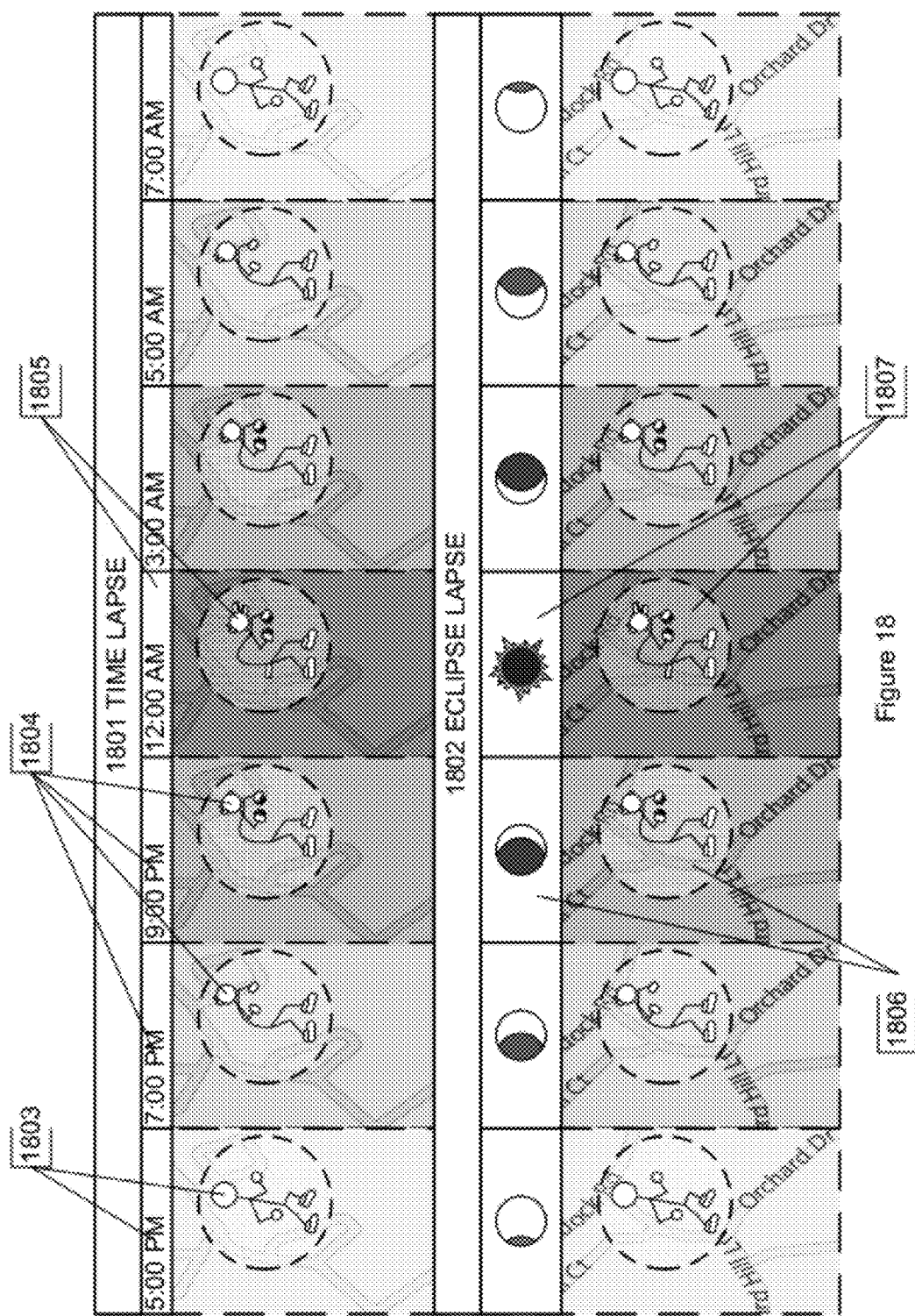


Figure 17



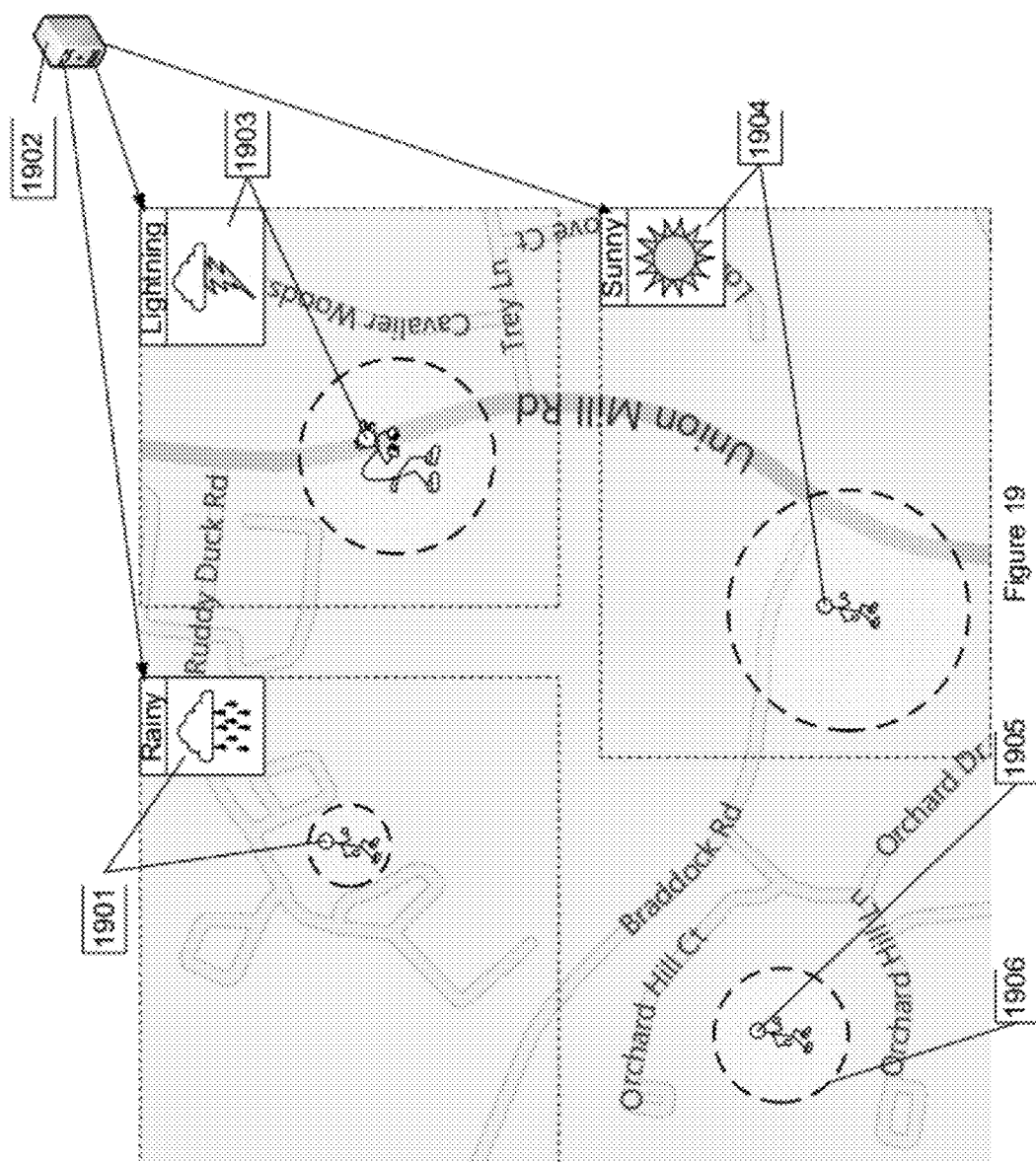


Figure 19

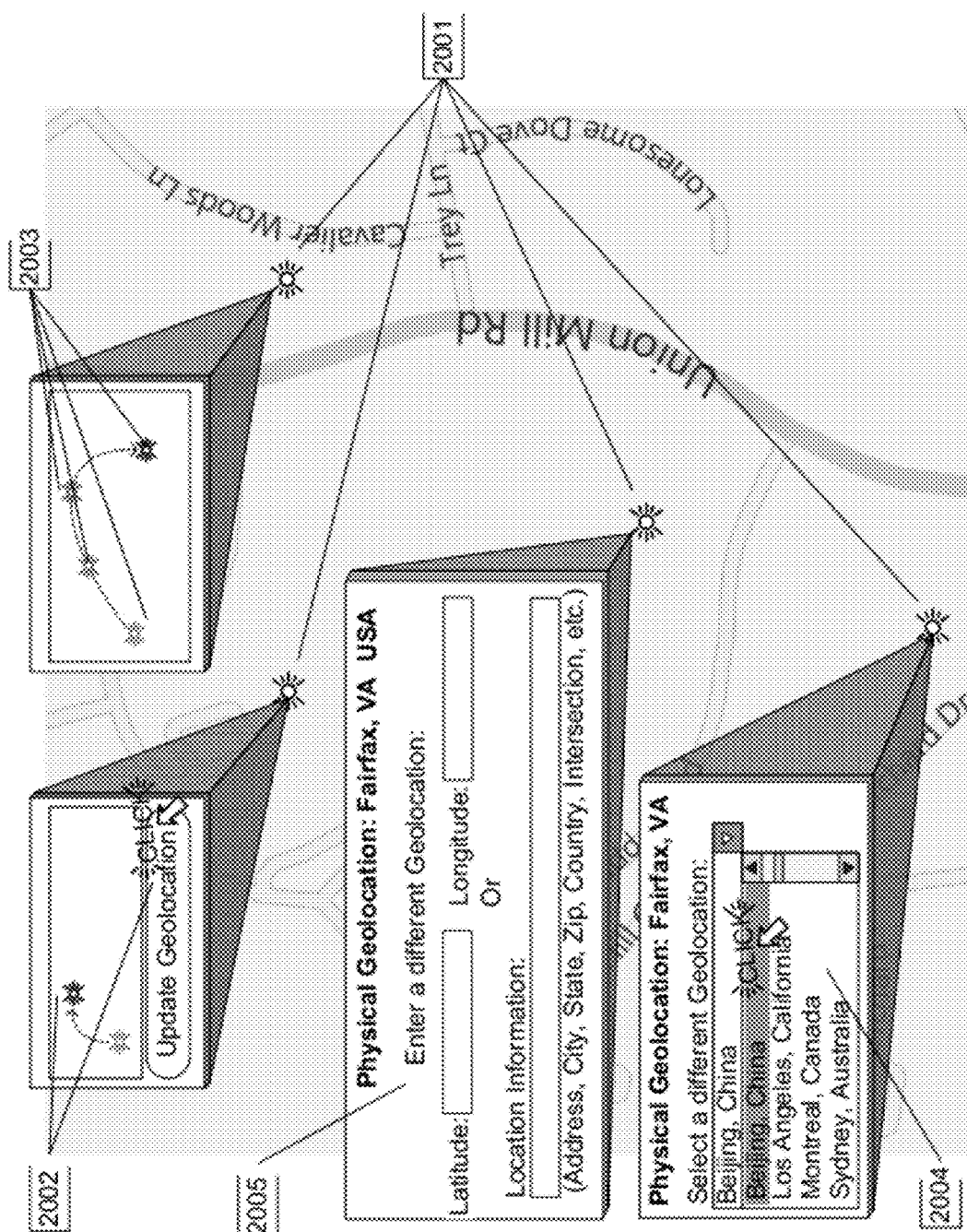
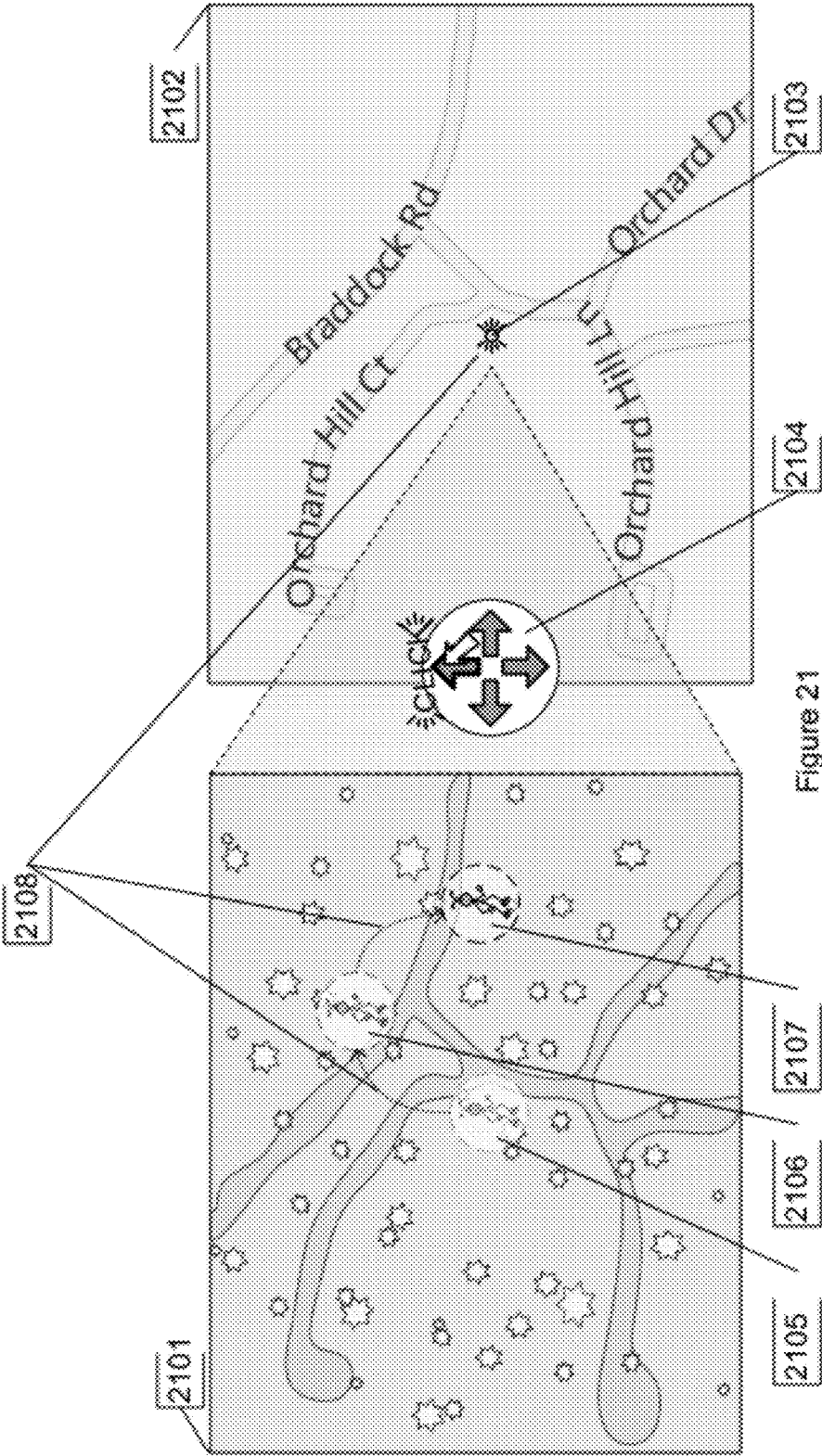


Figure 20



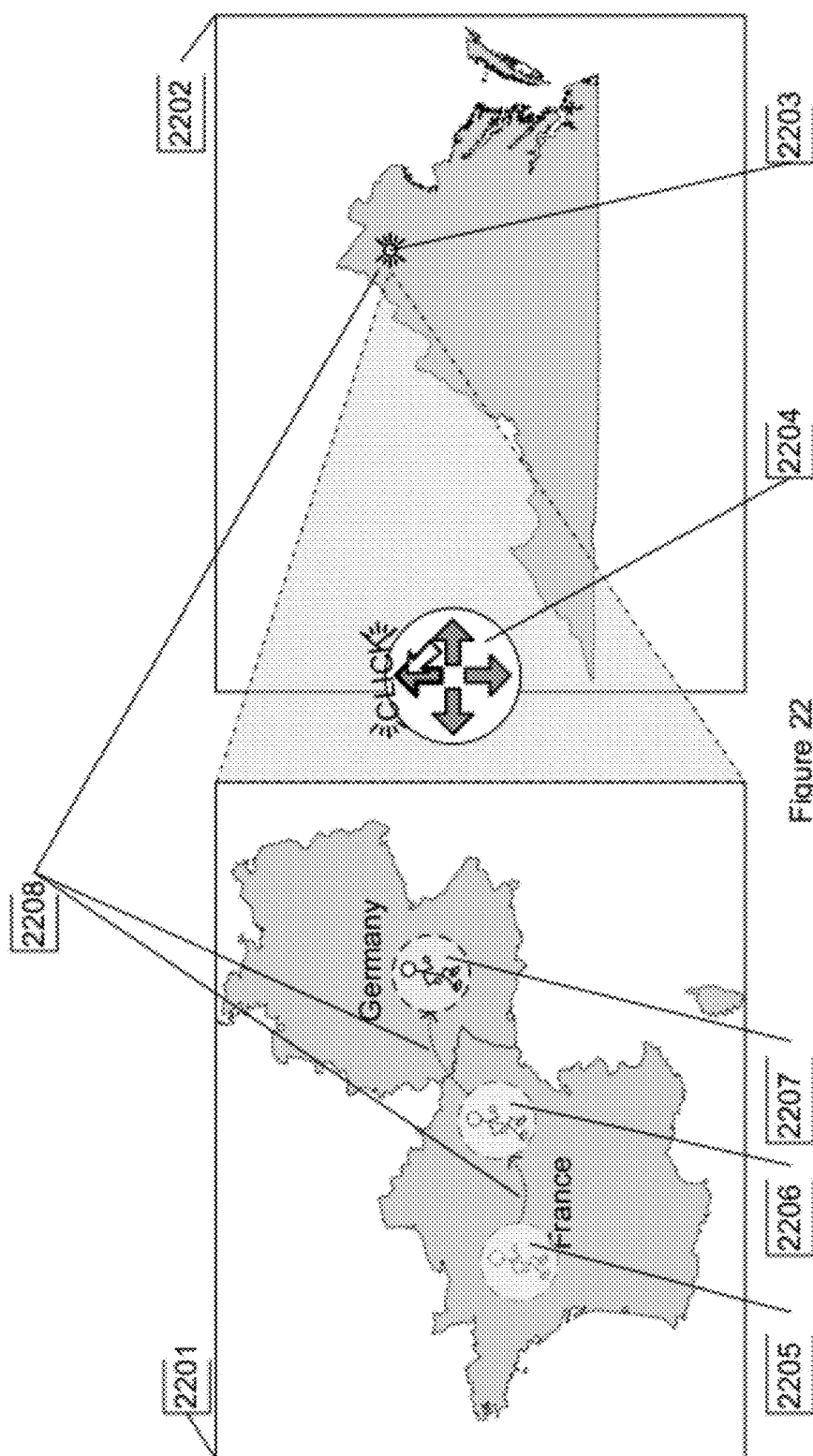
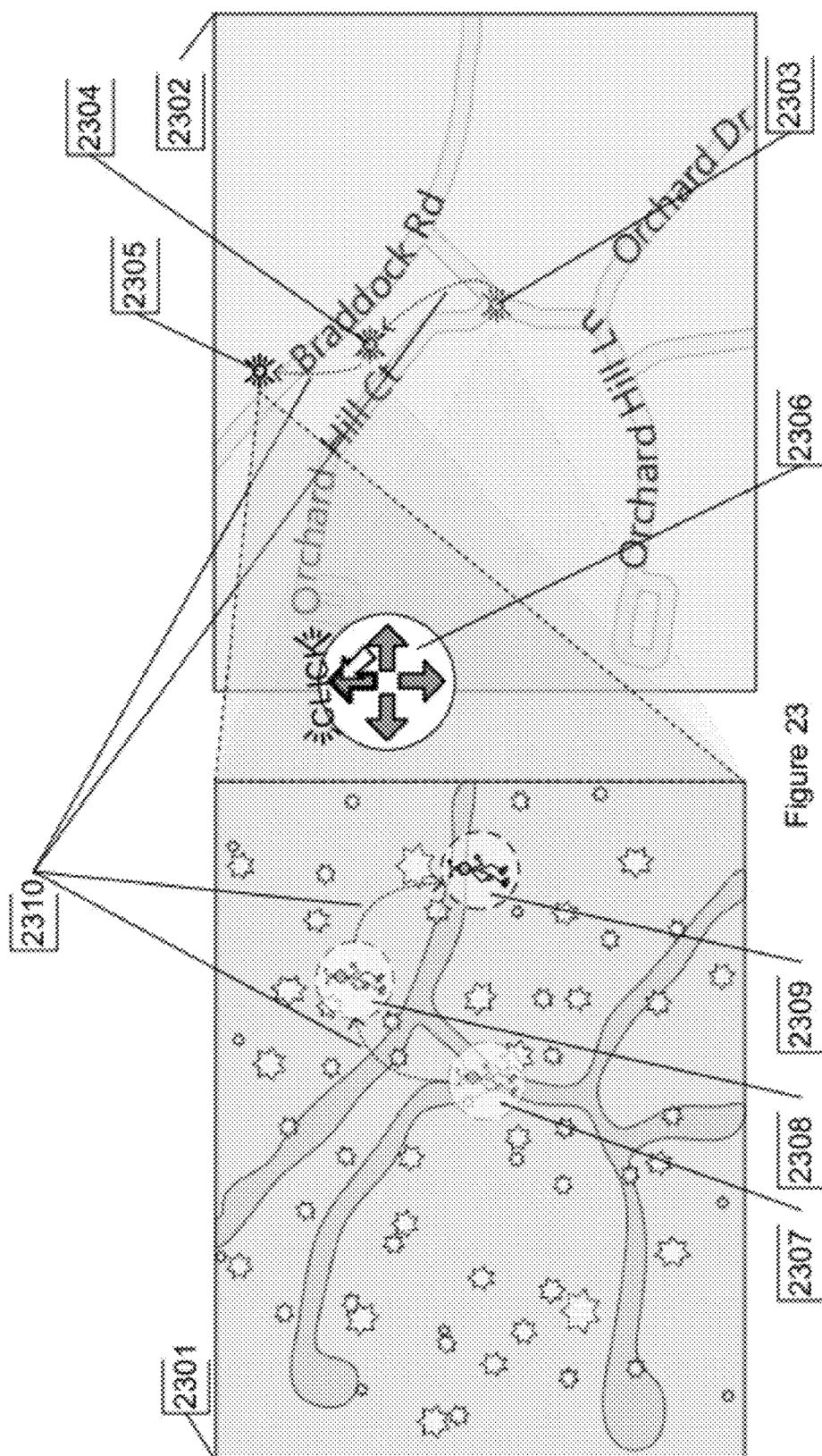


Figure 22



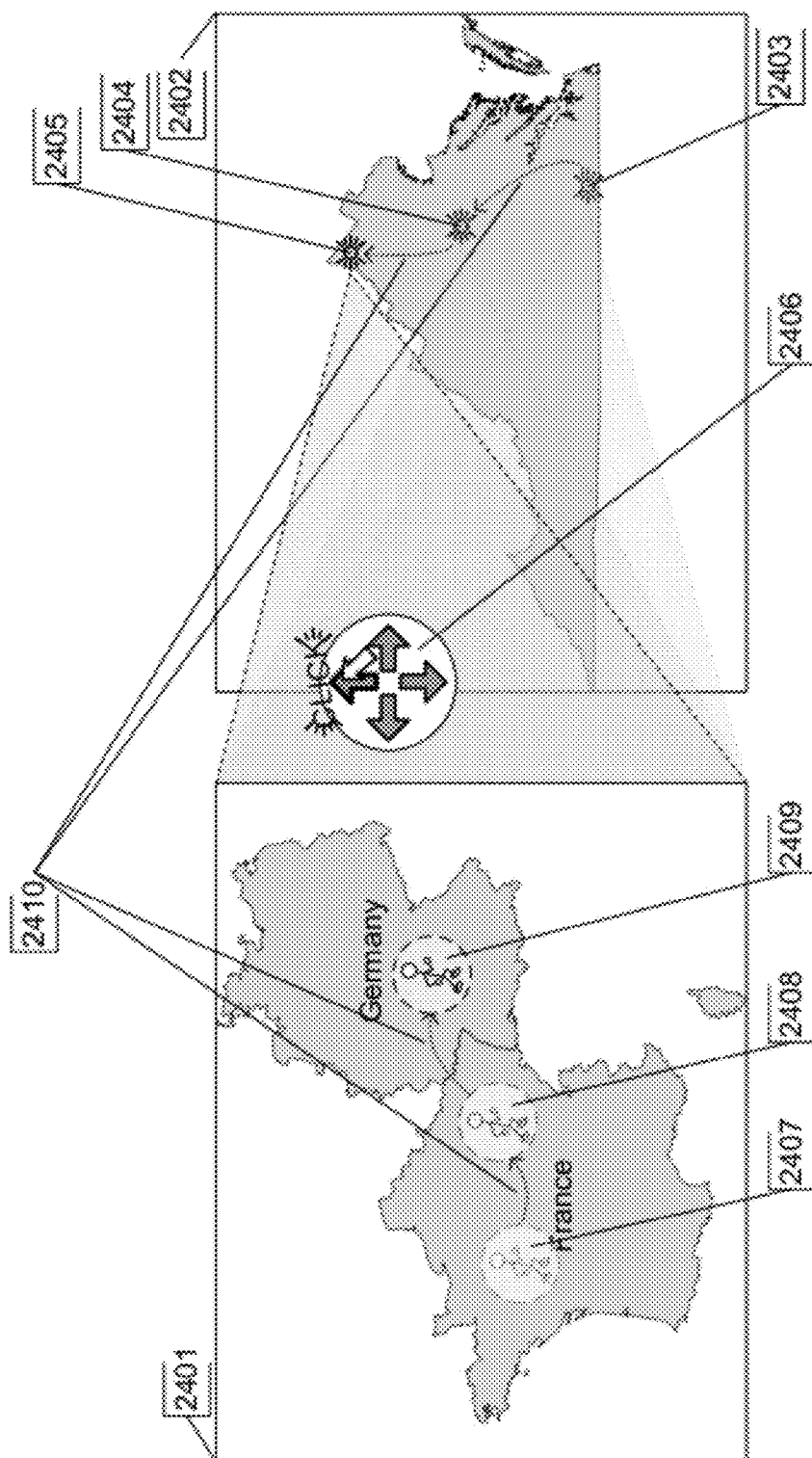
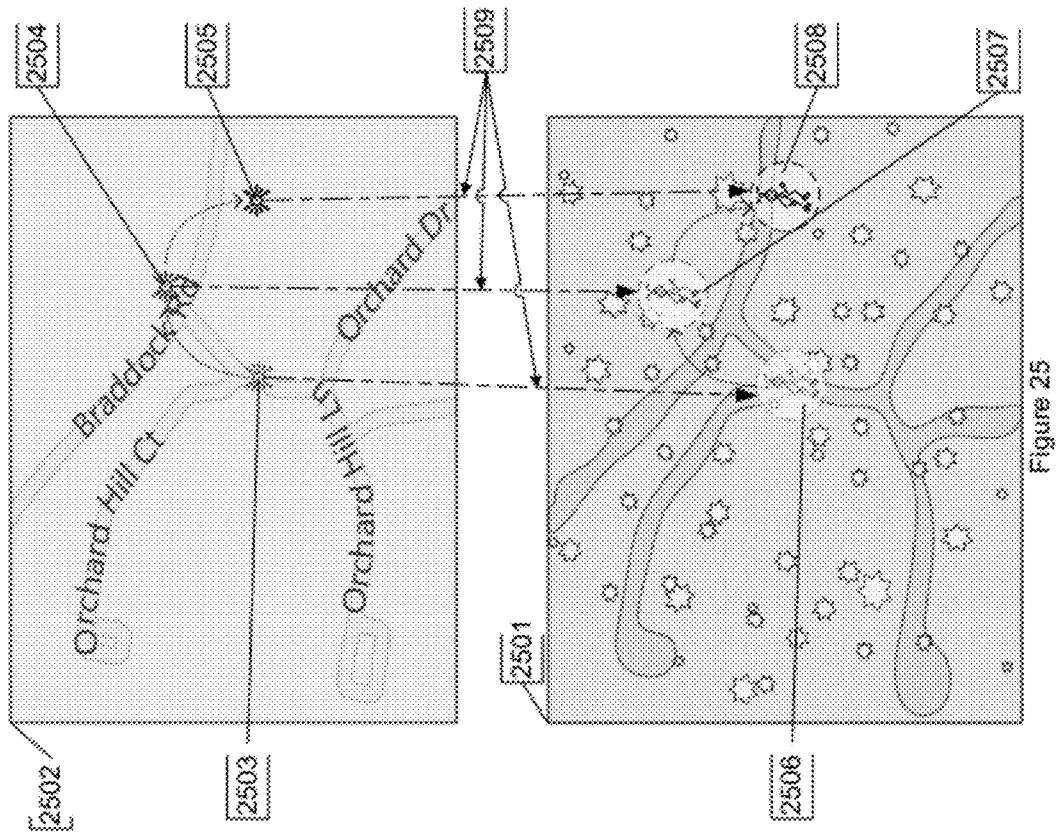


Figure 24



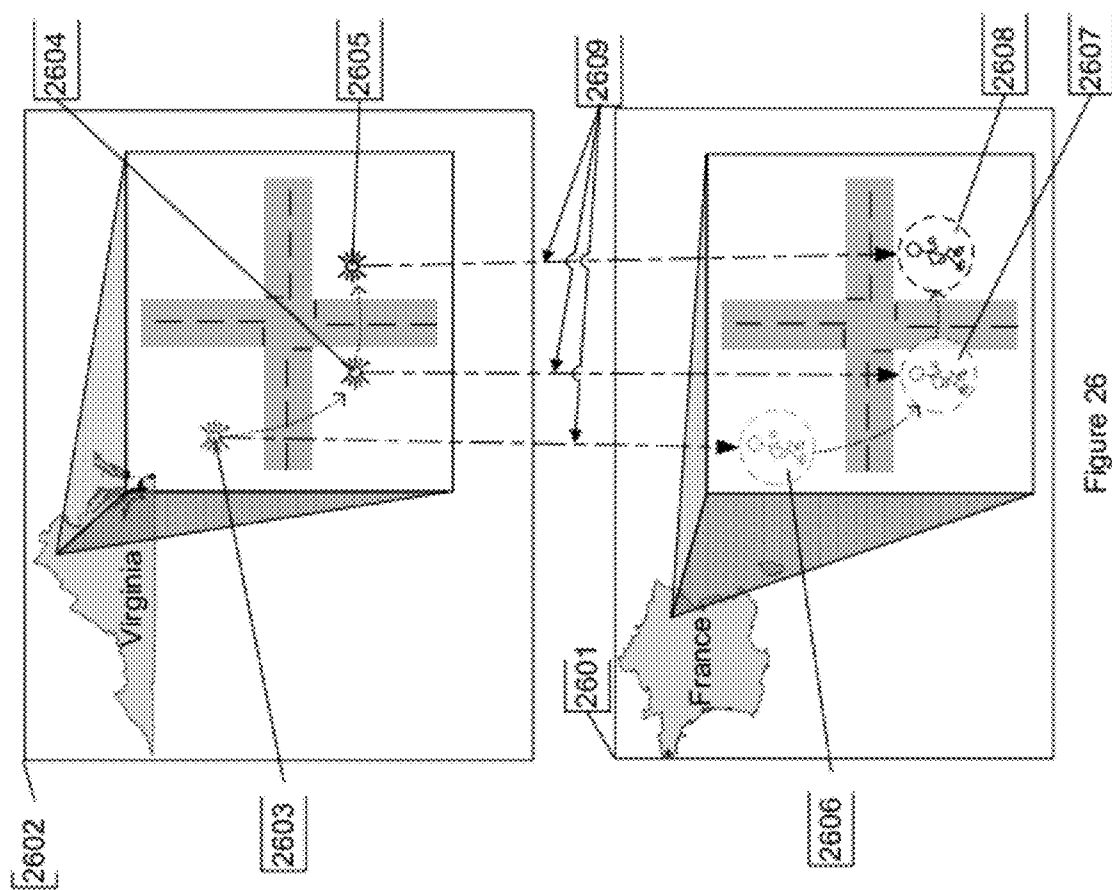


Figure 26

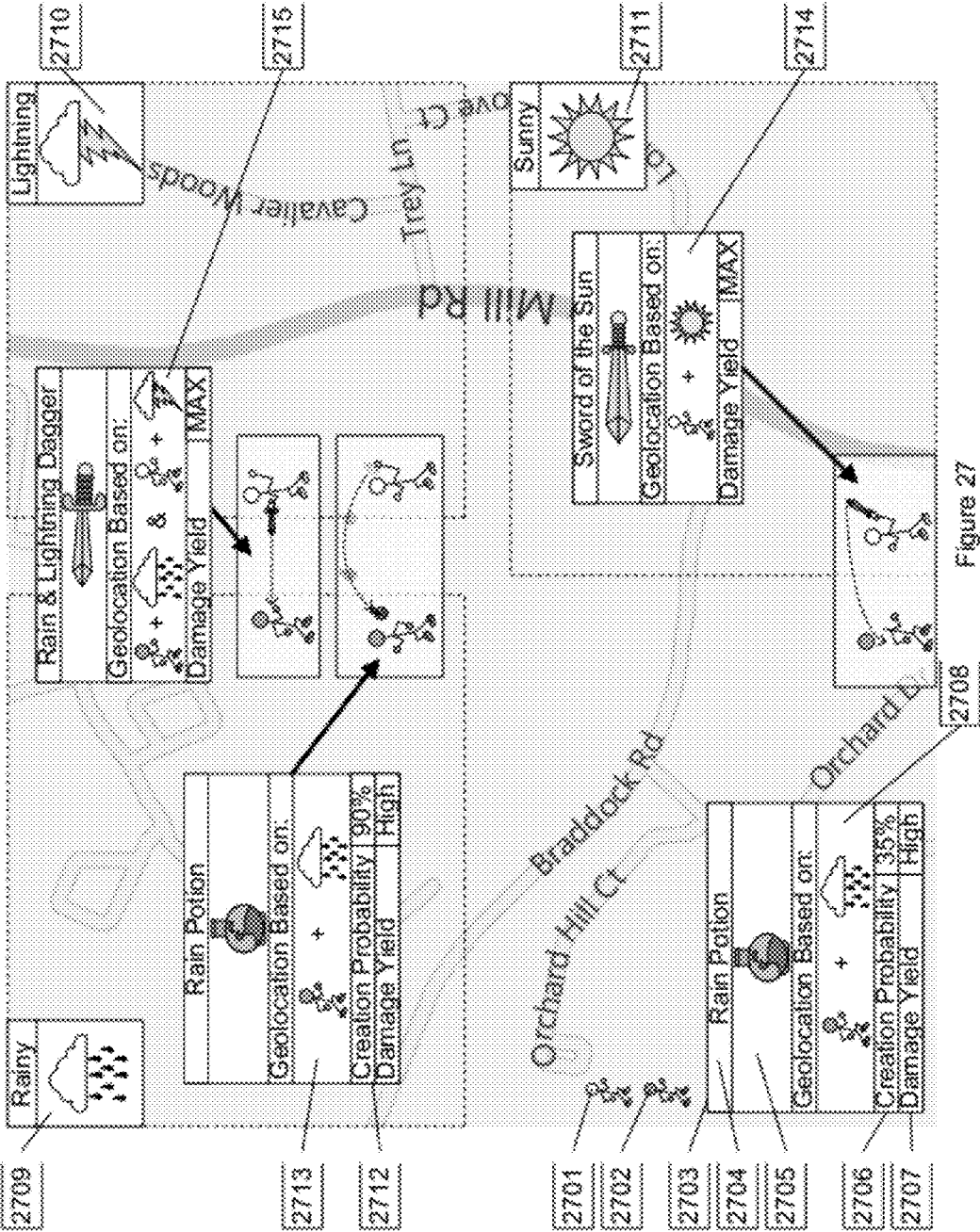


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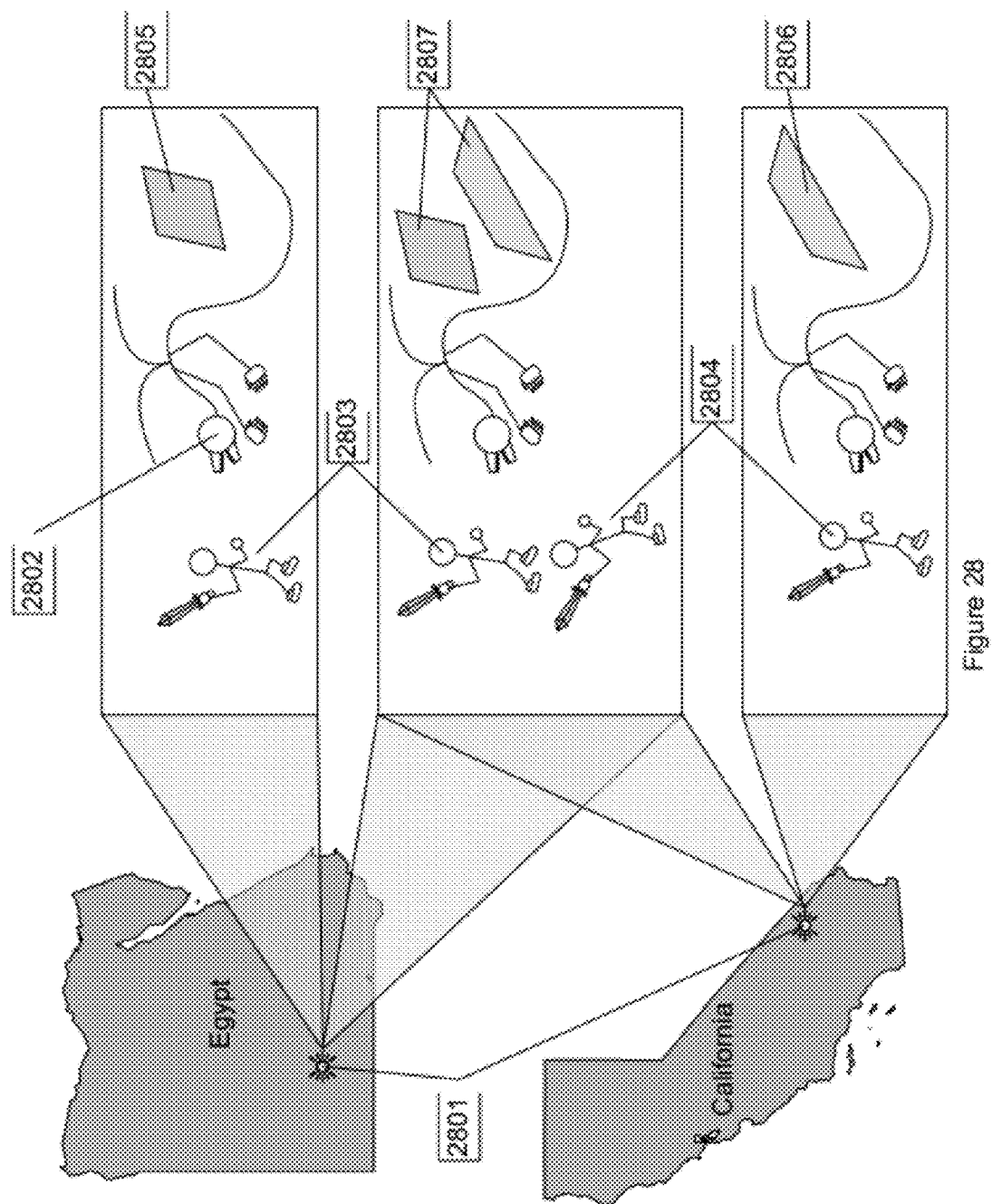


Figure 28

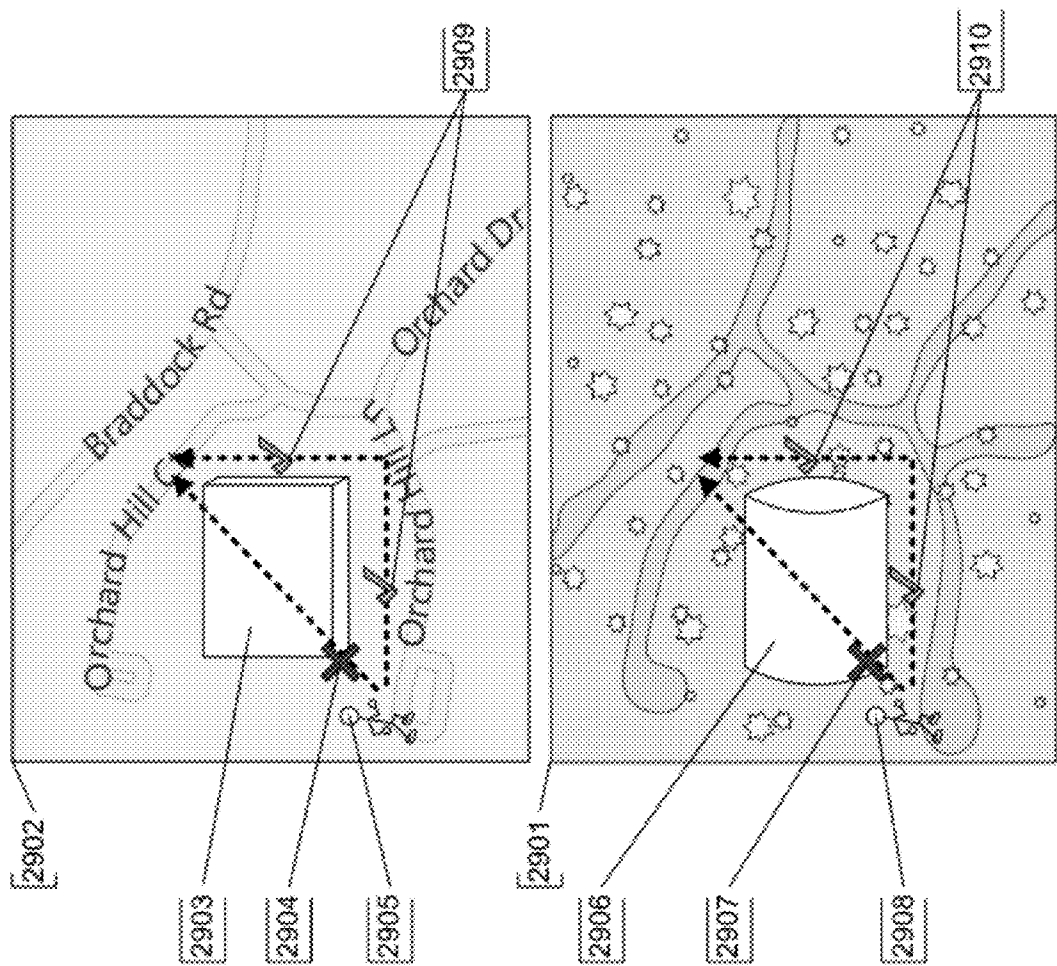
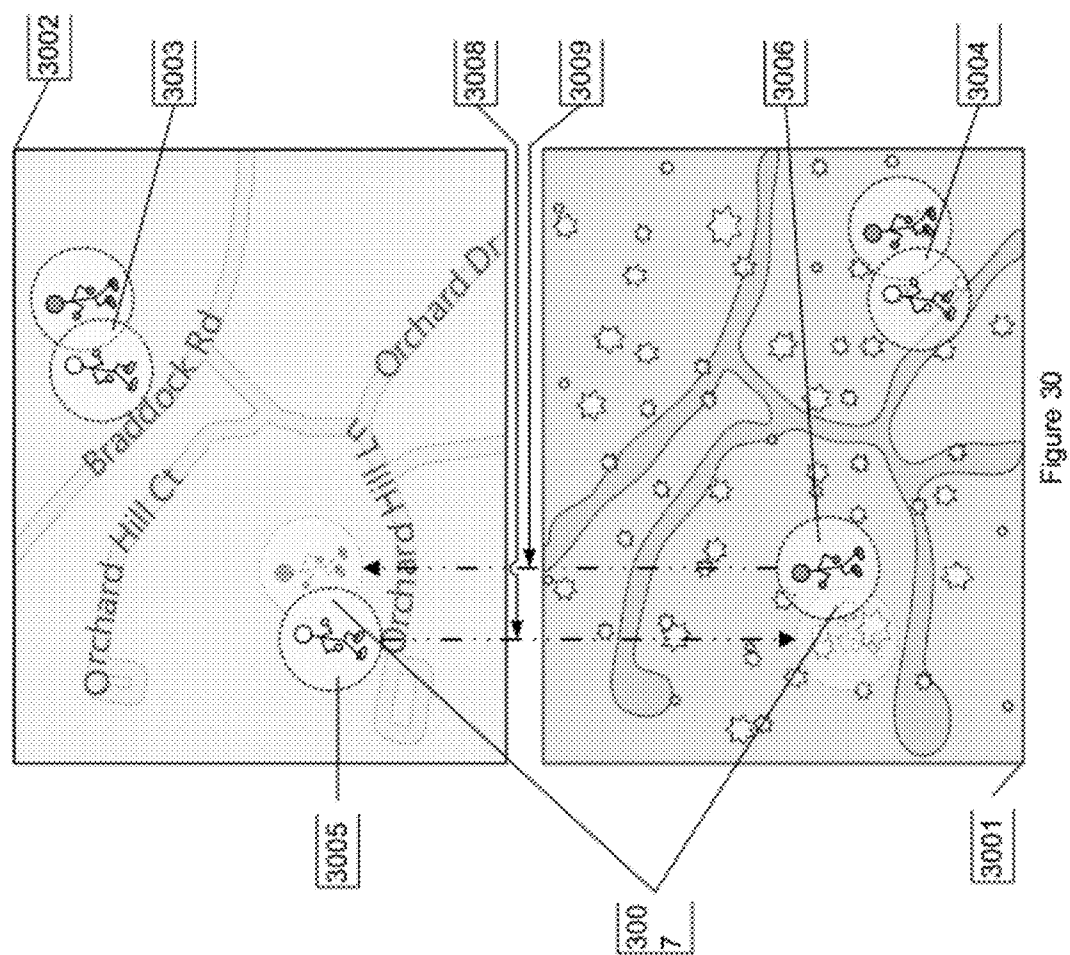


Figure 29



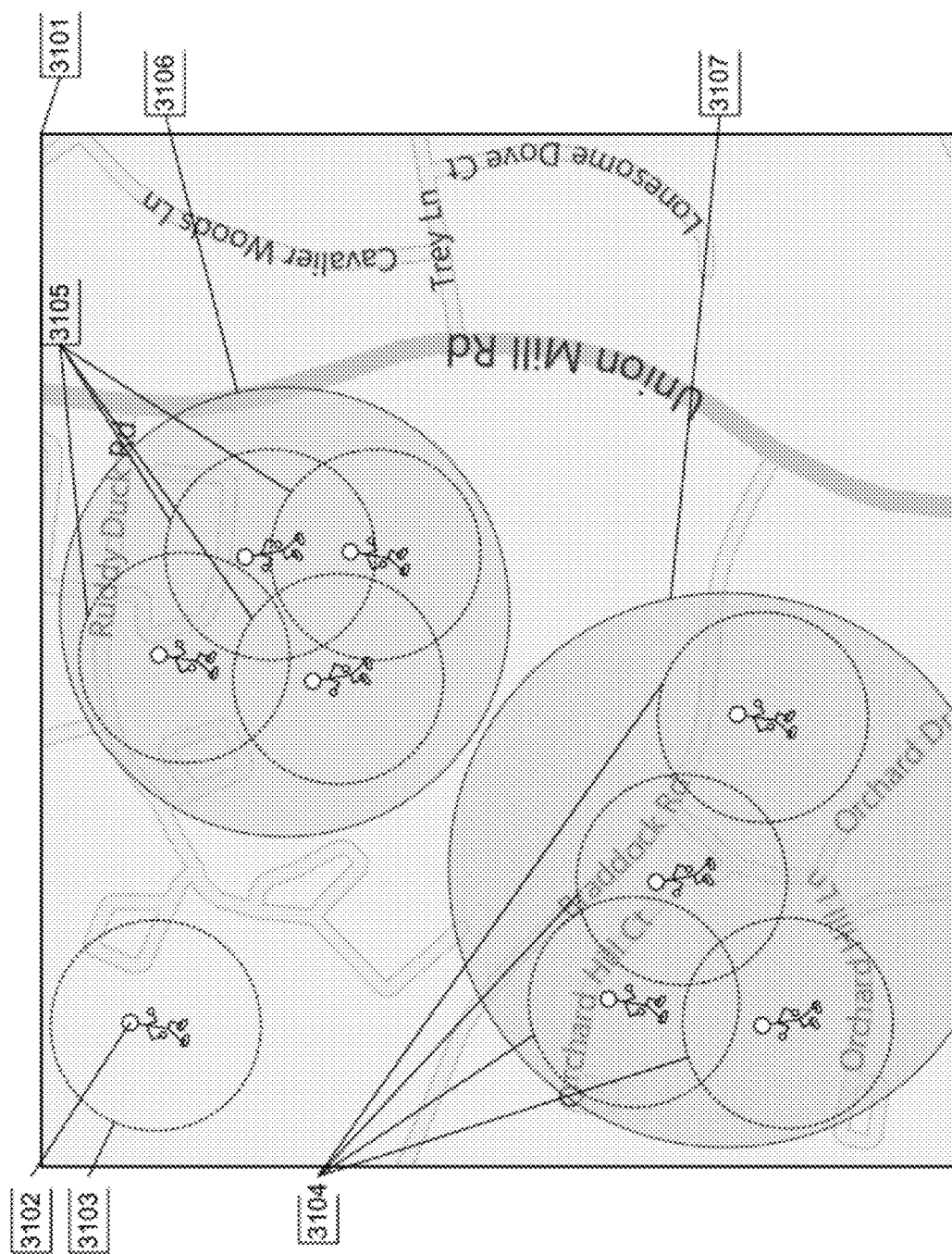


Figure 31

METHODS AND SYSTEMS FOR UTILIZING GLOBAL POSITIONING INFORMATION WITH AN ONLINE GAME

BOOKS OF REFERENCE

[0001] The following books are hereby incorporated by reference in their entirety:

- [0002] Adventurer's Vault: A 4th Edition D&D Supplement, Wizards of the Coast, 4th Edition
- [0003] Adventurer's Vault 2: A 4th Edition D&D Supplement, Wizards of the Coast, 4th Edition
- [0004] Arcane Power: A 4th Edition D&D Supplement, Wizards of the Coast, 4th Edition
- [0005] Divine Power: A 4th Edition D&D Supplement, Wizards of the Coast, 4th Edition
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- [0007] Draconomicon: Chromatic Dragons, Wizards of the Coast, 4th Edition
- [0008] Player's Handbook Races: Dragonborn, Wizards of the Coast, 4th Edition
- [0009] Demoniomicon: A 4th Edition D&D Supplement, Wizards of the Coast, 4th Edition
- [0010] Dungeon Master's Guide—Deluxe Edition, Wizards of the Coast, 4th Edition
- [0011] Dungeon Master's Guide 2: A 4th Edition Core Rulebook, Wizards of the Coast, 4th Edition
- [0012] Heroes of the Fallen Lands (4th Edition D&D), Wizards of the Coast, 4th Edition
- [0013] Heroes of the Forgotten Kingdoms (4th Edition D&D), Wizards of the Coast, 4th Edition
- [0014] Manual of the Planes (4th Edition D&D), Wizards of the Coast, 4th Edition
- [0015] Martial Power: A 4th Edition D&D Supplement, Wizards of the Coast, 4th Edition
- [0016] Martial Power 2: A 4th Edition D&D Supplement, Wizards of the Coast, 4th Edition
- [0017] Monster Manual—Deluxe Edition, Wizards of the Coast, 4th Edition
- [0018] Monster Manual 2: A 4th Edition Core Rulebook, Wizards of the Coast, 4th Edition
- [0019] Monster Manual 3: A 4th Edition Core Rulebook, Wizards of the Coast, 4th Edition
- [0020] Monster Vault (4th Edition D&D), Wizards of the Coast, 4th Edition
- [0021] Open Grave Secrets of the Undead, Wizards of the Coast, 4th Edition
- [0022] Player's Handbook—Deluxe Edition, Wizards of the Coast, 4th Edition
- [0023] Player's Handbook 2: A 4th Edition Core Rulebook, Wizards of the Coast, 4th Edition
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- [0025] Player's Handbook Races: Tieflings (4th Edition D&D), Wizards of the Coast, 4th Edition
- [0026] Primal Power: A 4th Edition D&D Supplement, Wizards of the Coast, 4th Edition
- [0027] Psionic Power: A 4th Edition D&D Supplement, Wizards of the Coast, 4th Edition
- [0028] Rules Compendium (4th Edition D&D), Wizards of the Coast, 4th Edition
- [0029] The Plane Above: Secrets of the Astral Sea, Wizards of the Coast, 4th Edition

- [0030] The Plane Below: Secrets of the Elemental Chaos, Wizards of the Coast, 4th Edition
- [0031] Underdark: A 4th Edition Supplement, Wizards of the Coast, 4th Edition
- [0032] Rolemaster Fantasy Role Playing, Iron Crown Enterprises
- [0033] Arms Law (Rolemaster Companion), Iron Crown Enterprises, 2nd Edition
- [0034] Character Law (Rolemaster Companion), Iron Crown Enterprises
- [0035] Rolemaster Standard Rules (Rolemaster Companion), Iron Crown Enterprises
- [0036] Creatures & Monsters (Rolemaster), Iron Crown Enterprises, 2nd Revised Edition
- [0037] Talent Law (Rolemaster Companion), Iron Crown Enterprises
- [0038] Of Mentalism (Rolemaster Companion), Iron Crown Enterprises
- [0039] Of Channeling (Rolemaster Companion), Iron Crown Enterprises
- [0040] Of Essence (Rolemaster Companion), Iron Crown Enterprises
- [0041] Spell Law (Rolemaster Companion), Iron Crown Enterprises, 3rd Edition
- [0042] Rolemaster Companion, Iron Crown Enterprises
- [0043] Rolemaster Companion II, Iron Crown Enterprises
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- [0052] Arms Law (Rolemaster Classic), Iron Crown Enterprises
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- [0056] Rolemaster Treasure Companion, Iron Crown Enterprises, 2nd Edition
- [0057] Rolemaster Annual 1997 (Rolemaster Standard System), Iron Crown Enterprises
- [0058] War Law, Iron Crown Enterprises
- [0059] Castles & Ruins (Rolemaster: The Standard System), Iron Crown Enterprises
- [0060] Essence Companion (Rolemaster Standard System), Iron Crown Enterprises
- [0061] Martial Arts Companion (Rolemaster), Iron Crown Enterprises
- [0062] Elemental Companion (Rolemaster), Iron Crown Enterprises
- [0063] Races & Cultures: Underground Races (Rolemaster), Iron Crown Enterprises
- [0064] Arcane Companion (Rolemaster), Iron Crown Enterprises
- [0065] Alchemy Companion (Rolemaster), Iron Crown Enterprises
- [0066] Sea Law, Iron Crown Enterprises
- [0067] Races & Cultures (Rolemaster), Iron Crown Enterprises

BACKGROUND

[0068] Computers are rapidly growing in their uses and complexities. As computers have become increasingly more powerful in their functionalities and more affordable, they are becoming a regular commodity for not just productivity in business, but even most entertainment in households.

[0069] Online games have become a much more popular pastime for home computing users over the past decade. Online games span from a basic single user online card game, to massively multiplayer online games of over a million players. These games allow for both independent playing for the more solitary player, as well as large online communities allowing for players to intermingle in the vast virtual worlds.

[0070] Since the advent of the Global Positioning System (GPS) in 1994, the use of personal devices to determine a person's physical location on the surface of the earth has increased in popularity. No longer are maps required when driving to a location, or directions needed to walk through a city, the GPS navigation allows a person to know their location with incredible accuracy.

[0071] As personal computers are becoming smaller and more regularly used by business travelers across multitudes of locations, the ability to determine the geolocation of a laptop user through a user's IP address has proven useful in allowing a person to get directions by determining their current location without the use of a system such as GPS. An IP address is an identifier unique to a person when they are connected across a network of computers and, when the locations of the servers that issue IP addresses is known, the IP address can be mapped to within a reasonable range of the physical location of a user.

SUMMARY

[0072] The preset invention combines geolocation of players playing an online game with the online gaming experience. Geolocation information for a computer may be obtained using several different methods such as from GPS devices, IP address, or from user input.

[0073] Online games may be enhanced by using a player's geolocation to modify the gaming experience. For example, a player may receive additional health benefits when the player is geolocated near a hospital or health food store. Alternatively, a player may receive a strength bonus when located near a gym.

[0074] Moreover, by modifying the players gaming experience based on the geolocation of the player, online games may incorporate advertising means into a game. For example, a player playing a game from a coffee shop may receive a health benefit or even a coupon to the coffee shop. By accepting such advertising, an online game may increase its revenue. In fact, an online game may choose to allow players to play for free and support itself financially based on advertising revenue.

[0075] The present invention details several embodiments where geolocation information for a player is incorporated into a game so that the players online experience is modified based on the geolocation of the player. This enhances the experience of the player, provides advertisers a means to market themselves, and gives online games an opportunity to both increase the appeal of their games while increasing their revenue from advertisements.

DEFINITIONS

[0076] The following terms are used frequently throughout the instant specification and are defined in this section for convenience.

Avatar—An avatar is often representation of a player used in an online or local game. A single player may have a plurality of avatars. Alternatively, an avatar may be any in-game character, even characters that are played by computers rather than characters played by physical players. Any in-game character may be considered an avatar.

Central Server—A central server is one or more computers working together that provide an online game by running one or more software programs.

Gaming Environment—The gaming environment is any part of the extended set of computing devices that are playing or supporting an online or local game.

Geolocation—A geolocation is a point or region on or near the surface of the Earth (within 100 miles of the Earth's surface). A geolocation may be represented as: a latitude and longitude (for a point), a set of latitudes and longitudes that define a region, a set of latitude and longitude that define the boundary of a region, postal codes, census grid numbers, state, city, country, or any other geographic reference that may be used to designate a point or region on or near the surface of the Earth.

Geolocations may be extended to include a height coordinate in addition to a latitude and longitude. In this situation, there may exist more than one distinct geolocation with the same latitude and longitude because the height component has a different value.

Geoproximity—Two geolocations are in geoproximity of each other when the minimum distance between the geolocations is less than some threshold. The threshold may be a fixed, predetermined value, or the threshold may be computed based on the geolocations and the properties of one or more objects associated with the geolocation.

Local Device—A local device is a device with an embedded computer chip that runs one or more programs providing a player access to an online or local game.

Local Game—A computer program that utilizes a limited computer network computer program is capable of allowing one or more participants to interact with each other and affecting the experience of other participants. Local games are capable of hosting up to 128 players. Computer programs that utilize a computer network with one or more players are classified as either 'online games' or 'local games'.

Online Entertainment Game—An online game wherein the players are primarily participating in the game for entertainment purposes.

Online Game—A computer program that utilizes a computer network wherein the computer program is capable of allowing a one or more participants to interact with each other and affecting the experience of other participants. Online games are capable of hosting in excess of 128 players. Computer programs that utilize a computer network with one or more players are classified as either 'online games' or 'local games'.

Physical—When used as an adjective, the term physical generally relates to tangible, real-world items.

Physical Environment—A physical environment is the setting within geoproximity of a player's geolocation.

Players—Players are people that play online or local games. A person may be a player in a game even when the person is not presently participating in the game.

Player's Geolocation—A player's geolocation is a geolocation associated with the player. The Player's Geolocation is not necessarily the physical location of the player.

Simultaneously—Simultaneously as used in this specification is not strictly limited to events that happen at precisely the same moment in time. Per the theory of special relativity, simultaneity is subjective to the observer. In this specification, two events are considered simultaneous when an observer commoving in the frame of the Earth measures the events to occur within 1 second of one another. In this sense, events may be considered simultaneous even though they are separated by a time-like interval.

Virtual—When used as an adjective, the term virtual generally related to in-game concepts (i.e. a virtual item is an item in-game, not a real-world item).

Virtual Environment—A virtual environment is the setting used in an online or local game. A virtual environment may be a computerized version of a physical environment (real locations on or near the Earth's surface), or a virtual environment may be a fantastical environment created by game developers.

Virtual Location—A virtual location is the location of an avatar within a virtual environment.

Virtual Proximity—Two virtual locations are in virtual proximity of each other when the minimum distance between the virtual locations is less than some threshold. The threshold may be a fixed, predetermined value, or the threshold may be computed based on the virtual locations and the properties of one or more objects associated with the virtual location.

BRIEF DESCRIPTION OF THE DRAWINGS

[0077] FIG. 1 is an illustration of an online game involving players using local computing devices that transmit geolocation and game information to a central server.

[0078] FIG. 2 is an illustration of a local game involving players using various local computing devices that transmit geolocation and game information amongst the players without interacting with a central server.

[0079] FIG. 3 is an illustration of a game involving players using various local computing devices that transmit geolocation and game information through a local network connection.

[0080] FIG. 4 is an illustration of players receiving benefits or detriments when within geoproximity of established geolocations.

[0081] FIG. 5 is an illustration of player notification of other players' geolocations when within a sensory range of each other, showing how these sensory ranges may act differently depending on player types, special abilities, or based on the players' geolocations being in geoproximity of another geolocation.

[0082] FIG. 6 is an illustration of how players may be aware of other players across the virtual environment, perceiving each other as within close virtual proximity in the virtual environment while being much further distances from each other in the physical environment.

[0083] FIG. 7 is an illustration of how Players may be aware of other players across the virtual environment, perceiving each other as a proportional distance from one another in the virtual environment as in the physical environment.

[0084] FIG. 8 is an illustration of how players may receive benefits or detriments when in geoproximity of another player or players.

[0085] FIG. 9 is an illustration of how players may receive benefits or detriments when in geoproximity of items.

[0086] FIG. 10 is an illustration of how geolocations may be used to establish different game zones, allowing specific behaviors in each zone.

[0087] FIG. 11 is an illustration of how the central server may split the game into different zones in order to optimize processing of game mechanics.

[0088] FIG. 12 is an illustration of how players may track other players based on geolocation where when a player is tracking another player, they may have a limited range that they can track the other player.

[0089] FIG. 13 is an illustration of how players may track other players based on geolocation where when a player is tracking another player, they may have an unlimited range that they can track the other player.

[0090] FIG. 14 is an illustration of how players may track other players based on geolocation where when a player is tracking another player, they may have the ability to place a tracking beacon at a geolocation that will notify the tracking player of the tracked player's geolocation when the tracked player is within range of the tracking beacon.

[0091] FIG. 15 is an illustration of how players may track other players based on geolocation where when a player is tracking another player, they may be presented with the tracked player's geolocation, general direction (i.e. N, S, E, W, etc.), or distance (i.e. near, far, etc.).

[0092] FIG. 16 is an illustration of how two or more players may work as a team where one team member maintains a geolocation in a specific geoproximity while another team member performs a specific task.

[0093] FIG. 17 is an illustration of how two or more players may participate in a scavenger hunt where clues may be given to geolocations that the players have to discover and "collect".

[0094] FIG. 18 is an illustration of how a player's in-game experience may change based on the time in a player's geolocation as well as any environmental conditions in a player's geolocation.

[0095] FIG. 19 is an illustration of how a player's in-game experience may change based on weather conditions in a player's geolocation.

[0096] FIG. 20 is an illustration of how a player may update their geolocation manually and/or passively.

[0097] FIG. 21 is an illustration of how when a player's avatar has a virtual location corresponding to the player's geolocation, the player may freely move their avatar's virtual location even though the player's geolocation remains constant.

[0098] FIG. 22 is an illustration of how when a player's avatar has a virtual location mapped to a geolocation that is non-representative of the player's physical geolocation, the player may freely move their avatar's virtual location even though the player's geolocation remains constant.

[0099] FIG. 23 is an illustration of how when a player's avatar has a virtual location corresponding to the player's geolocation, the player may freely move their avatar's virtual location even though the player's geolocation may move in a different direction.

[0100] FIG. 24 is an illustration of how when a player's avatar has a virtual location mapped to a geolocation that is non-representative of the player's physical geolocation, the

player may freely move their avatar's virtual location even though the player's geolocation may move in a different direction.

[0101] FIG. 25 is an illustration of how when a player's avatar has a virtual location corresponding to the player's geolocation, the player may move from their initial geolocation, causing the avatar's virtual location to change in coordination with the changes in the player's geolocation.

[0102] FIG. 26 is an illustration of how when a player's avatar has a virtual location mapped to a geolocation that is non-representative of the player's physical geolocation, the player may move from their initial geolocation, causing the avatar's virtual location to change in coordination with the changes in the player's geolocation.

[0103] FIG. 27 is an illustration of how items may have different effects depending on the geolocation of one or more players.

[0104] FIG. 28 is an illustration of how loot tables of non-player characters may present different items based on one or more players' geolocations.

[0105] FIG. 29 is an illustration of how collision detection in the physical environment may cause a player's avatar to not be able to pass through certain objects and/or areas in the virtual environment that map to objects and/or areas that are not passable in the physical environment.

[0106] FIG. 30 is an illustration of how collisions may occur between a player's physical geolocation and another player's avatar's virtual location that may be mapped to a geolocation that its player is not physically located at.

[0107] FIG. 31 is an illustration of how users may share communication with other players when they are within geoproximity of each other.

DETAILED DESCRIPTION OF ILLUSTRATIVE EMBODIMENTS

[0108] In the following detailed description of the illustrative embodiments, reference is made to the accompanying drawings that form a part hereof. These embodiments are described in sufficient detail to enable those skilled in the art to practice the invention, and it is understood that other embodiments may be utilized and that logical structural, mechanical, electrical, and chemical changes may be made without departing from the spirit or scope of the invention. To avoid detail not necessary to enable those skilled in the art to practice the embodiments described herein, the description may omit certain information known to those skilled in the art. The following detailed description is, therefore, not to be taken in a limiting sense, and the scope of the illustrative embodiments are defined only by the appended claims.

[0109] The invention generally is to methods and systems for using the Global Positioning System (GPS) in conjunction with online gaming. Combining GPS information with online gaming creates an interactive framework that may be used to integrate the virtual gaming environment with real world entertainment experiences.

[0110] An online game may be played by a single player or by a plurality of players simultaneously. Online games that allow many people to simultaneously play in real time are called Massively Multiplayer Online games or MMOs. The instant invention may be incorporated with any type of online game from single player turn based games to MMOs.

[0111] In the preferred embodiment of the invention, players participating in an online game provide a geolocation to the gaming environment. The gaming experience is modified in some manner based on the geolocation of the player.

[0112] The geolocation may be provided as a latitude and longitude pair that specifies the player's physical location on the surface of the Earth. Moreover, the geolocation may contain an additional elevation coordinate. Alternatively, the geolocation may be a city, state, postal code, census tract, IP address or any other means that may be used to directly or indirectly specify a physical location.

[0113] The geolocation may be the physical location of the player, or may be a location different than the physical location of the player. For example, a player may be present in Washington D.C., but may report a geolocation for Los Angeles, Calif. The gaming environment may use the physical geolocation (Washington) or the logical geolocation (Los Angeles) or both in modifying the gaming experience for the player. In either case, the geolocation is an actual location, not a virtual location within the game.

[0114] The geolocation may be updated during the player's interaction with the game. For example, if the player is playing the game while traveling, the player's geolocation may be updated as the player's physical location changes.

[0115] There are many methods that may be used to modify the gaming environment based on a player's geolocation. The following sections detail some of the methods that may be employed in an online game. However, it should be appreciated that not every method is required to practice the invention. Moreover, these methods may be combined together in a wide variety of ways to create different embodiments of the invention.

[0116] Global-Local Interactions

[0117] In this embodiment, players participate in an online gaming experience that is administrated using a central server. Players use a local computing device to interact with the game and this local device transmits information on a regular basis to a central server. This information may be used to update the player's gaming experience with respect to the central server.

[0118] A second player connects to the central server using a second local computing device. This device may be a device similar to the first player's, or may be a different type of computing device. For instance, one player may be using a mobile phone device, while the second player may be using a laptop computer.

[0119] If the two players' geolocations converge within a predefined radius, the central server may notify the players that they are within a critical distance of each other. The players may then engage each other in a local version of the game.

[0120] In the local version of the game, the players play the game using only their local devices and do not need to transmit regular information to the central server. This relieves the central server of the burden of relaying data between the two players and reduces network activity.

[0121] The preferred embodiment of the local version is one where the players engage in the game using a network connection that directly connects their local devices. No central server is required and the players resolve game mechanics using only their local devices and the direct network connections between the devices. The direct network connections may include wireless LAN capabilities, physical cable-con-

nected devices, local switches, routers, hubs, or any other mechanism that transmits or relays information between the local devices.

[0122] In another embodiment of the local version, the players are connected using mobile phone towers or other publically available network connections. In this embodiment, the players do not have dedicated network connections that are available only to the players, rather, the players are using publically available network connections to connect their local devices.

[0123] In either embodiment of the local version, the central server may not be required, or the central server may maintain communication with the players. In a first embodiment, the players do not communicate with the central server, the game mechanics are resolved using only the players' local devices, and the central server is not notified of the resolution of the game mechanics, even after the players have completed their local game.

[0124] In a second embodiment of the local version, the players' local devices update the central server with the resolution of the game mechanics once the local game is complete. In this respect, the central server is able to store information on the resolution of the local game and incorporate any modifications that occurred during the local game and update the game databases accordingly.

[0125] However, the central server is not used to continually relay messages between the players. These messages are communicated directly between the players.

[0126] In a third embodiment of the local version, the players' local devices regularly communicate with the central server during the play of the local game. This embodiment is preferred because the central server is able to determine when one or more players drop from the game. In some situations, a player may choose to intentionally disconnect their local device from the network (local or central) in order to quickly end a game in the hope of preventing negative in-game consequences (a player is about to lose a game). If all players are regularly communicating with the central server, and each player is notifying the central server about which other players they are currently connected to, if a player intentionally drops connection the central server will be able to detect that only one of the players has lost connection. This is because one player stops communicating with the central server while the other players continue communication. Furthermore, the other players may notify the central server that they too have lost communication with the dropped player. Thus the central server may determine that the dropped player has intentionally disconnected from the game and resolve the game mechanics unfavorably for the dropped player.

[0127] Once the players are finished with the local game, data relating to the local game may be uploaded to the central server. The central server may then modify the player's experience based on the data uploaded.

[0128] In this embodiment, control of the game experience for the players may be initially governed in part by the central server, then control transferred to the local computing devices operated by the players. Control is transferred from the central server to the local computers based in part on the geolocation of the players.

[0129] It should be appreciated that this embodiment may involve more than two players. Any number of players may participate in a local game due to the geoproximity of each other according to geolocation.

[0130] In-Game Benefits Based on Geolocation

[0131] In this embodiment, a player may receive in-game benefits based on the geolocation of the player. For example, a player's avatar may receive an increase in health when the player's geolocation is within a predetermined geoproximity of a hospital. This health increase may also take into account a specific franchise of a physical corporation to determine certain speeds of health increase, allowing corporate advertising in the virtual environment.

[0132] As an example of this game experience, a player may be traveling and updating their geolocation as they travel. If a player engages in virtual combat in the game and becomes injured, the player may choose to move their geolocation to the geoproximity of a hospital. Once in the geoproximity of a hospital, the player's health may recover more quickly and/or injuries healed.

[0133] There are many possible variants of in-game benefits based on geolocation. As another example, specific geolocations may be programmed to provide in-game benefits to a particular group of players. For example, several players may form an in-game association such as a guild. A guild may designate a certain geolocation as a guild house or guild area. Players within geoproximity of the guild area for their guild may receive combat or healing advantages. In this example, not all players benefit from the geoproximity to the guild area. Only players that are part of the guild receive the benefit.

[0134] In a similar embodiment, players in geoproximity to a guild area may receive a detriment if they are not members of the guild. In this embodiment, players entering combat in the geoproximity of a guild area may be at a disadvantage if they are not members of the guild.

[0135] Alternatively, players in geoproximity to a guild area may receive some benefit, even if they are not members of the guild. For example, player avatars may receive increased damage when playing non-player character monsters while the players are in geoproximity to a guild area. This encourages players to participate in playing the game in the geoproximity of the guild, allowing these players to meet and interact with the guild members, encouraging them to join the guild.

[0136] Player Awareness of Other Players Using Geolocation

[0137] In this embodiment, a player is notified of the geolocations of other players. In the preferred embodiment, a player has a sensory range whereby the player is made aware of other players within a predetermined geolocation of the player.

[0138] For example, a player may have a special ability to sense players of a certain type. Each player's geolocation is updated to a central server. When players of the certain type are within a predetermined geoproximity of the sensing player, the central server notifies the sensing player of the geolocation of the players with the certain type. This may update the player's local gaming device to show the approximate geolocations of these players relative to the sensing player.

[0139] Alternatively, players may form groups or teams and play the game together. In this case, the central server may notify the members of the team as to the geolocations of the other team members.

[0140] In another embodiment, a team or group of players may transfer to a local gaming environment whereby their local computing devices are networked together. In this

embodiment, the geolocations of the team members may be shared directly using the local network rather than updating a central server.

[0141] Furthermore, the ability of a player to sense other players may be increased or decreased due to the geolocation of the sensing player. Here, a player within geoproximity to a specific geolocation (a restaurant, guild area, or other geolocation) may have their sensing skills increased or decreased.

[0142] Alternatively, the ability of a sensing player to locate another player may be increased or decreased due to the geolocation of the sensed player. Here, a player may be located in geoproximity to a geolocation that inhibits sensing. In this case, a sensing player may not be able to detect the sensed player due to the geolocation of the sensed player.

[0143] Player Awareness of Other Players Across Virtual Environment

[0144] In this embodiment, a player is notified of one or more geolocations from one or more players. In the preferred embodiment, a player's avatar may see other players' avatars across entire areas of the virtual environment. Here, the virtual environment is the logical space for the game as opposed to the physical environment of the player playing the game.

[0145] For example, a player may play a space game where the virtual environment is a region of outer space, while the player is physically located on Earth. This example game desires to have people from distant regions working together as teams to facilitate inter-cultural communication between different physical cultures. Thus, the game may show a player the virtual locations of other players who are from geolocations that are physically remote from the player. This will enable the player to choose teammates from remote geolocations even though the teammate's avatars may be nearby in the virtual space.

[0146] Player Awareness of Other Players Across Physical Environment

[0147] In this embodiment, a player is notified of one or more geolocations from one or more players. In the preferred embodiment, a player's avatar may become aware of the geolocations of other players across entire areas of the physical environment. As an example of the embodiment, a player may want to see the players that have a special ability or status in the game across a region such as the entire the United States. Each player's geolocation is updated to a central server. A player may then see a map of the United States (physical environment) with all the players of a certain ability or status showing on the map based on their geolocation.

[0148] Players Receive Benefits Due to Geoproximity of Other Players

[0149] In this embodiment, players receive in-game benefits due to the geoproximity in geolocation to other players. For example, when a number of players from the same guild are geolocated within geoproximity of each other, some or all of the players may receive some in-game benefit.

[0150] Alternatively, players may receive a detriment due to the geoproximity of other players. Here, a player may receive a negative benefit because the player is nearby a group of enemy players.

[0151] Players Receive Benefits Due to Geoproximity of Items

[0152] In this embodiment, players receive a benefit or detriment due to the geoproximity of a physical or virtual item. A physical item may be placed in a game using the

geolocation of the item. Alternatively, a virtual item may be entered into the game as existing at a geolocation even though there is no actual item at the geolocation.

[0153] In either case, when a player is in geoproximity to the item, the player may receive a benefit or detriment. For example, the game may have artifacts that enhance certain players' abilities in combat. Here, a player's combat attributes may be increased when the player is in the geoproximity of the item.

[0154] Alternatively, a player may receive a detriment when in the geoproximity of a cursed item. Here a player's abilities may be reduced due to the geoproximity of the player to the geolocation of the cursed item.

[0155] Geolocations as Game Zones

[0156] In this embodiment, regions in geoproximity to a geolocation may be considered game zones with special characteristics. For example, certain game zones may allow combat between opposing players while other game zones may not.

[0157] Alternatively, geolocations may be considered guild areas or provide special benefits (see In-Game Benefits Based on Geolocation). However, the gaming software may treat game zones differently than the simple application of these benefits. For example, the central server may divide the game world into zones, and handle the game mechanics of each zone separately. This allows the game software the ability to compartmentalize the game into different regions rather than needing to handle the participation of all players simultaneously.

[0158] When the central server is able to divide the game into zones based on geolocation, the central server may handle the game mechanics of each zone separately. This allows the zone to be sequestered from other zones allowing a server to handle only the mechanics specific to a single zone. This effectively reduces the computation required to manage the mechanics of the game.

[0159] Tracking Devices

[0160] In this embodiment, a player may have the ability to plant a tracking device on another player. A tracker places a virtual device on a tracked player. The tracker is then able to see the geolocation of the tracked player as the tracked player moves.

[0161] Here, the tracker receives geolocation information on the tracked player from the central server or from a local network connection. The tracked player's geolocation may appear on the gaming device of the tracker.

[0162] The tracker may have an unlimited range of tracking, or a limited range. When the range is limited, the tracker may not be able to obtain the geolocation of the tracked player when the tracked player is outside the geoproximity of the tracker.

[0163] Alternatively, as opposed to showing the geolocation of the tracked player to the tracker, the gaming system may show some indication of the geolocation of the tracked player. For example, the general direction of the tracked player may be shown (i.e. North, South, East, West, etc.), or the tracker may receive a notification that the tracked player is 'nearby' without specifying the geolocation or direction.

[0164] In another embodiment, a player may have the ability to plant a virtual tracking device in-game on another player's avatar in-game where the tracker is made aware of the virtual location of the tracked player whenever the tracked player enters the geoproximity of a geolocation. For example, if the tracking player places a virtual tracking device on

another player's avatar in-game and then marks a geolocation as a tracking beacon, whenever the tracked player's geolocation is in geoproximity of the tracking beacon, the tracker will be made aware of the tracked player's avatar's virtual location, allowing the tracker to know the virtual location of the tracked player's avatar as long as the tracked player remains in geoproximity to the tracking beacon.

[0165] Alternatively, as opposed to showing the virtual location of the tracked player's avatar to the tracker, the gaming system may show some indication of the virtual location of the tracked player's avatar. For example, the general direction of the tracked player's avatar may be shown (i.e. North, South, East, West, etc.), or the tracker may receive a notification that the tracked player's avatar is 'nearby' without specifying the virtual location or direction.

[0166] Geolocations in Tandem

[0167] In this embodiment, two or more players work together as a team where one player must maintain geolocation in a specific geoproximity, while the other team member performs some in-game task. Here, the task may only be performed by the second player while the first player maintains geoproximity to a geolocation.

[0168] For example, in a sniper game, one player may act as a spotter, while the other player acts as a sniper. In this case, the sniper maintains position at a geolocation while the spotter is allowed to change geolocation. The spotter's avatar is not able to attack other player's avatars, but the sniper's avatar can. However, the sniper's avatar has limited ability to attack without the spotter's avatar's input. Once the spotter is in geoproximity of a target, the sniper's avatar is able to attack.

[0169] Alternatively, in a capture-the-flag game, the flag may only be captured when one player is in the geoproximity of the flag, while another player is in geoproximity of another geolocation. Here, the players must work as a team in order to capture the flag and win the game. In this example, the players must be in geoproximity of specific geolocations in order for their in-game avatars to perform the task of capturing the flag.

[0170] Advertising Themes

[0171] Theme based advertising may be incorporated with the online game in conjunction with GPS. Here, an advertising theme for a business or movie may create a themed online game that incorporated GPS information.

[0172] In this embodiment, advertising revenue is collected for the construction, implementation, maintenance, or administration of an online game using GPS information. This allows the attraction of a targeted group of players interested in the advertising theme of the particular game.

[0173] Advertisers may use the online game to promote the theme to the players. For example, a movie company may create an online game that incorporates GPS information based on the theme of a movie. Promotions may be delivered using a central server to the players of the game. Here, an upcoming movie may be promoted by delivering advertising content to game players.

[0174] Graphics Change by Geolocation

[0175] In this embodiment, a player's avatar may have a different graphical model appearance in the virtual environment based on the player's geolocation. In many online games, graphical models may be stored in a database or plurality of databases for selection to display independently or in combination with other graphical models in a virtual environment. This graphical model may be seen by other avatars within virtual proximity to this player's avatar. For example, a player may walk into a coffee shop and as the

player is geolocated in that coffee shop, the player's avatar may have the coffee shop's logo on their armor in the virtual environment. This logo may be applied to the model using a texture map of the physical corporation's logo and may incorporate a registered trademark associated with the corporation, in this case a coffee shop, to be used to advertise for the corporation.

[0176] Similarly, the player's avatar may retain a virtual item associated with at least one graphical model specific to the player's geolocation. For example, a player may walk into a coffee shop and as the player is geolocated in that coffee shop, the player's avatar may appear to be holding a cup of coffee with the corporation's logo on it in the virtual environment in such a manner as to advertise for the corporation. This logo may be applied to the model using a texture map of the physical corporation's logo and may incorporate a registered trademark associated with the corporation, in this case a coffee shop, to be used to advertise for the corporation.

[0177] Physical Reward for Virtual Performance

[0178] In this embodiment, a player may receive a reward in the physical environment for some performance by the player's avatar in the virtual environment when the player is in a specific geolocation. For example, if the player is geolocated in a coffee shop and the player's avatar defeats a specific monster, the player may receive a free coffee from that coffee shop for successfully defeating the monster in the virtual environment.

[0179] Alternatively, if a player reaches a new high score, they may be rewarded with a coupon to a store in geoproximity to the player. This encourages players to play the game nearby participating stores, increasing the stores' customer base and revenue, while encouraging players to patronage the store.

[0180] Alternatively, if a player achieves a new level for their character (many online games have levels associated with each player and as players gain experience, they achieve new levels), the player may receive a coupon to a store in geoproximity to the player. The same advertising rationales as stated above apply to this embodiment as well.

[0181] Scavenger Hunt

[0182] In this embodiment, players receive a list of clues that lead them to certain geolocations. When a player enters geoproximity to a geolocation, the player is marked as collecting the item or fulfilling the clue. The player or team that collects the most clues is considered the winner.

[0183] A scavenger hunt game may be conducted using a central server or using a local network of players. Furthermore, players in the scavenger hunt game may work together as a team whereby a player moves to a geolocation, logs into the game, the team is marked as collecting an item, then logs out, allowing another player to log in at a different geolocation and allowing the team to collect another item.

[0184] Alternatively, the scavenger hunt game may be played with a team whereby a stationary player remains at a geolocation and uses team members to collect items. Here, a player may resolve clues to geolocations, then instruct others to move to that geolocation. Once the other person arrives at the geolocation, the other person logs into the game causing the player to be marked as collecting the item. Here, the stationary player may never move from the geoproximity of a geolocation, but is able to collect the scavenger hunt items.

[0185] Space-Time Geolocations

[0186] Any embodiment based on geolocations may be extended to include a temporal component. Here, geoproximity is not merely geoproximity of a geolocation in space. Geoproximity is determined using a time component as well.

[0187] This embodiment replaces a geoproximity with space-time geoproximity. In this case, geoproximity is required during a specific interval of time.

[0188] For example, in a werewolf game, players may become werewolves when the player is in geoproximity to a geolocation and during a full moon. Simply being present at a geolocation is not sufficient to transform the player into a werewolf. A specific time interval is also required, namely the time interval when the moon is full.

[0189] Weather Geoproximity

[0190] Geoproximity may be combined with other attributes to create other geoproximity types. For example, a player's in game experience may be altered when the player is in geoproximity of a specific geolocation, and when the current weather is rainy.

[0191] In this embodiment, the central server receives current weather information from a weather source. Alternatively, the weather information may be virtual weather rather than physical weather. Here, the central server may identify the specific weather conditions, and when the weather conditions match predetermined characteristics, and when a player is in geoproximity to a specific geolocation, the player's in game experience is modified.

[0192] This geoproximity measure may be coupled with attributes other than weather. Other attributes may include geoproximity to a solar eclipse, geoproximity to an ocean or lake, geoproximity to an erupting volcano, or other geotemporal attribute. Alternatively, this may be coupled with the space-time geoproximity from the previous section.

[0193] Updating a Player's Geolocation

[0194] There are several approaches that may be employed to update a player's geolocation. The player may notify the game of the change in geolocation, or the game may automatically detect the change. The player may actively update their geolocation by instructing the game software to make an update. Alternatively, the geolocation may be updated passively by the gaming software by reading the current geolocation and transmitting this information to a central server.

[0195] A player may notify the game of the change of geolocation by clicking a button which causes the players current geolocation to be uploaded to a central server. In this case, the player's local gaming device may have a GPS module incorporated into the device. By clicking a button, the local gaming software may identify the current GPS geolocation from the GPS module, and then transmit this information to the central server.

[0196] Alternatively, the player may choose a geolocation from a list and then instruct the gaming software to update their geolocation. In this embodiment, a predetermined list of geolocation choices is presented to the player. The player selects one of these geolocations, then clicks a button instructing their geolocation to be updated.

[0197] In another embodiment, a player may type in a geolocation and instruct the central server to make an update. For example, the player may input a zip code and click a button to update the central server. Here, there is not a predetermined list of geolocations. Rather, the player is allowed to input a geolocation in a free-form manner. Moreover, the player may input information other than a zip code. For

example, a player may input a city name, state name, country name, street name, intersection of two streets, or some other information that the central server may use to determine the geolocation of the player.

[0198] In an alternative embodiment, the gaming software may be used to regularly update the player's geolocation without the requirement of active involvement of the player. A GPS module is located in the local gaming device used by the player. Software may be run on this local device that regularly queries the GPS module to determine the current geolocation. The local software may transmit this information to a central server causing the players geolocation to be passively updated.

[0199] Player's Virtual Location vs. Physical Geolocation

[0200] In this embodiment a player may freely move their virtual location while their physical geolocation remains constant. Although the player may start at a virtual location that corresponds to the person's initial physical geolocation, the player may then change their virtual location without changing their physical geolocation.

[0201] In one embodiment, a player may start at a virtual location that corresponds to their physical geolocation. The player may then move from this initial virtual location without physically moving from the initial physical geolocation. For example, a player may be physically located in a restaurant but may then choose to walk their in-game avatar from the restaurant across the street to a movie theater without physically leaving the restaurant.

[0202] In another embodiment, a player may start at a virtual location that corresponds to a geolocation that is not representative of their physical geolocation. The player may then move from this initial virtual location without physically moving from their initial physical geolocation. For example, a player may be physically located in Virginia, while their in-game avatar is geolocated in France. The player may then choose to drive their in-game avatar from France to Germany without the player physically moving from their physical geolocation in Virginia.

[0203] In another embodiment, a player's avatar may start at a virtual location that corresponds to the player's physical geolocation. The player may then move from this initial physical geolocation, and while they do this they can move their avatar's virtual location in directions different from the player's physical movements. For example, a player may be physically geolocated in a restaurant and when the player physically walks across a street moving east from the restaurant, their avatar may be moving west from the restaurant.

[0204] In another embodiment, a player's avatar may start at a virtual location that corresponds to a geolocation that is not representative of the player's physical geolocation. The player may then move from this initial physical geolocation, and while they do this they can move their avatar's virtual location in directions different from the player's physical movements. For example, a player may be physically geolocated in Virginia and their avatar's virtual location is mapped to a geolocation in France. The player may then choose to walk across a street in Virginia headed east while their avatar may be moving west in France.

[0205] In another embodiment, a player may start at a virtual location that corresponds to their physical geolocation. The player may then move from this initial physical geolocation causing a change in their virtual location. For example, a

player may be physically located in a restaurant and when the player physically walks across a street, their in-game avatar also walks across a street.

[0206] In another embodiment, a player may start at a virtual location that corresponds to a geolocation that is not representative of the player's physical geolocation. The player may then move from this initial physical geolocation, and while they do this causes a corresponding movement for their in-game avatar. For example, a player may be physically located in Virginia and their in-game avatar geolocated in France. The player may then choose to walk across a street in Virginia which causes their in-game avatar to walk across a street in France.

[0207] It should be appreciated that in the above embodiments, when the physical motion of a player causes a movement of the player's in-game avatar, the in-game movement is not necessarily equivalent to the physical movement. For example, it may be the case that a movement of 10 feet at a physical geolocation might correspond to a movement of a mile in the game environment, or vice-versa.

[0208] Item Customization Based on Geolocation

[0209] In this embodiment, players may create custom in-game items that are created based on one or more players' geolocation. Here, a custom item may require one or more players to collect one or more in-game resources while in one or more geolocations to create an in-game item that provides one or more special abilities that may then be used, traded, or sold to other players.

[0210] In one embodiment, custom in-game items may have constraints on their construction based on a player's geolocation and the conditions at their geolocation. For example, a potion may have a higher probability of being successfully constructed if the player constructing it is doing so while it is snowing at their geolocation.

[0211] In another embodiment, custom items that are created may have restrictions as to the manner in which the item operates in-game based on the operating player's geolocation. For example, if a player were to make a potion item that would yield high damage to an opponent, the potion may have a restriction that it yields high damage only when it is raining at the player's geolocation but would not yield any damage if it is not raining.

[0212] Alternatively, a player's in-game sword may have the characteristic that the damage dealt by the sword is based on the weather at the player's geolocation. In this example, the player's local device transmits the player's geolocation to the central server. The central server has access to data sources which specify the weather at various geolocations around the world. The central server then uses this data to determine the weather at the player's present geolocation and modifies the damage dealt by the sword accordingly.

[0213] In another embodiment, an in-game combat situation may be influenced by the geolocation of the participants in the combat. For example, one player may have a sword whose damage is dependent on the weather at the geolocation of the victim of the sword blows.

[0214] In another embodiment, an in-game combat situation may be influenced by the geolocations of the participants in the combat. For example, one player may have a sword whose damage is dependent on the weather at the geolocation of the victim of the sword blows and the weather at the geolocation of sword wielder. For instance, a sword may

cause maximal damage when the sword wielder is at a geolocation that is sunny, and when the victim of the sword blows is at a geolocation that is raining.

[0215] It should be appreciated that a geolocation mentioned in this section is not necessarily the physical geolocation of a player or the players' local device. The geolocation may be a geolocation chosen by the player and reported to the server that is a physical geolocation distinct from the physical geolocation of the player.

[0216] Loot Tables Based on Geolocation

[0217] In this embodiment, one or more players may collect special items from in-game characters based on their geolocation.

[0218] In one embodiment, special items may be available to a player that is in a specific geolocation fighting an in-game character. For example, if a player's geolocation is in Africa and they are fighting a dragon, the dragon may yield diamonds as loot upon it being killed whereas a player whose geolocation is in California may fight a similar dragon that yields gold as loot upon it being killed.

[0219] In another embodiment, special items may be available to a group of players fighting an in-game character based on the geolocations of the individual players. For example, if one player fighting a dragon has a geolocation in Africa (diamonds) and another player fighting the same dragon has a geolocation in Japan (throwing stars), then the dragon may yield diamond throwing stars as loot upon it being killed.

[0220] In another embodiment, special items may be sold or traded by an in-game character vendor to players based on their geolocations. For example if a player's geolocation is in Mexico, the vendor may offer Tequila as a healing potion whereas a player whose geolocation is in Russia, the vendor may offer Vodka as a healing potion, or in France, Champagne, or in Italy, Wine, or in Japan, Sake, or in Germany, beer.

[0221] It should be appreciated that a geolocation mentioned in this section is not necessarily the physical geolocation of a player or the players' local device. The geolocation may be a geolocation chosen by the player and reported to the server that is a physical geolocation distinct from the physical geolocation of the player.

[0222] Purchasing Items Based on Geolocation

[0223] In this embodiment, players may purchase one or more in-game items based on their geolocation. Items would be available for purchase through an in-game store that players could purchase for use in the game.

[0224] In one embodiment, special items may be available to a player that is in a specific geolocation. For example, a player may be able to purchase a magical guitar in-game when the player is in geoproximity of Tennessee while a player with a geolocation in California may be able to purchase an in-game mystical movie camera.

[0225] In another embodiment, special in-game items may be available to a group of players based on the geolocations of the individual players. For example, two players may be able to collectively purchase throwing stars made of diamonds based on one player's geolocation in Japan (the throwing star component) and the other player's geolocation in Africa (the diamond component).

[0226] It should be appreciated that a geolocation mentioned in this section is not necessarily the physical geolocation of a player or the players' local device. The geolocation may be a geolocation chosen by the player and reported to the server that is a physical geolocation distinct from the physical geolocation of the player.

[0227] Spell/Item Creation

[0228] In a Proximity Multiplayer Online Role Playing Game (PMO or PMORPG), a player's avatar may be allowed to create new in-game spells. In this embodiment, the player is presented with options for the characteristics of a spell to create. For example, in creating a direct damage spell, the player may have the option of specifying the amount of damage dealt, the casting time for the spell, the amount of mana required, and/or the presence of zero or more special items.

[0229] Based on the characteristics of the spell requested and the player's attributes (avatar level, attributes, game currency paid, etc.), the central server or local device computes a time required and a probability of success. The time may be specified in physical time or in-game time.

[0230] If the player accepts, the central server records the requested characteristics and begins the waiting period. The player may engage in other aspects of the game while waiting for this process to complete.

[0231] Once the time duration is complete, the central server uses the associated probability to determine if the process was successful. The central server uses a random number generator to compute a number on the range [0, 1) and checks this number against the success probability. If the random number generated is less than or equal to the specified probability, the process is determined to be a success. If the random number is greater than the specified probability, the process is determined to be a failure.

[0232] If the process is successful, the player is granted access to this new spell. The player may use the spell themselves, or may sell the spell to another player for use. In this respect, the player's actions may become incorporated into the in-game economy.

[0233] In another embodiment, a similar process may be used to create magical items. Again, the player specifies a set of characteristics for the item, and a duration and probability is computed. If the player accepts, the player waits for the duration period to expire, then the central server computes whether the process was successful using a random number generator. If the process is successful, the player is granted the item.

[0234] The above embodiments may be extended using factors to influence the duration period or probability of success. For example, if the player possesses an in-game item(s), the duration period or probability may be modified. Alternatively, if a player kills particular monsters in-game, the duration or probability may be modified. Alternatively, if the player is in geoproximity to a particular geolocation, this may affect the duration or probability of success. Moreover, if the player is in a geolocation at a particular time (solar eclipse, lunar eclipse, full moon, etc.) or if the geolocation has particular characteristics (sunny, rainy, cold, wind, dry, hot, wet, etc.), these may also affect the duration period or probability of success.

[0235] Mapping Virtual Environments to Physical Environments

[0236] In this embodiment, virtual environments may be mapped to physical environments, allowing virtual locations to correspond with geolocations. For example, an in-game tequila bar in the middle of outer space may be mapped to the geolocation of a coffee shop in the physical environment. As shown in this example in which a virtual tequila bar is being mapped to a physical coffee shop, the virtual environment may not necessarily be representative of the physical environment that it is mapped to.

[0237] It should be appreciated that in mapping a virtual environment to a physical environment that the virtual dimensions, structures, or objects of the virtual environment may not be proportional to the physical dimensions, structures or objects of the physical environment. For example, an in-game constellation of stars may be mapped to the physical environment the size of a restaurant.

[0238] Collision Detection Between a Virtual Location and a Geolocation

[0239] In this embodiment, a player's geolocation may collide with a player's avatar's virtual location. This is possible when there exists a locally continuous map from the physical environment to the virtual environment or when a virtual environment is mapped to a physical environment (see Mapping Virtual Environments to Physical Environments). For example, if a virtual town is mapped to a physical shopping center and a player's avatar is walking through the virtual town, the avatar's virtual location may collide with another player's geolocation if the other player is walking through the physical shopping center, or visa-versa.

[0240] Collision Detection of Geolocations

[0241] In this embodiment, a player's avatar may be limited to where it can move based on potential collisions of virtual locations that are mapped to physical geolocations. This may occur in the case that a virtual environment is mapped to a physical environment (see Mapping Virtual Environments to Physical Environments). For example, a player's avatar may not be able to walk through a virtual terrain in-game due to the virtual terrain being mapped to a fenced-off building in the physical environment.

[0242] Communicating with Players within a Geolocation

[0243] In this embodiment, players within a specified geoproximity of each other may be able to communicate with each other. For example, when a player walks into a store to buy a piece of clothing, the player may communicate using text messaging on their mobile phone to ask other players that are within geoproximity if they know of any sale items in the store. Other players within geoproximity may answer that player's question and/or converse amongst the other players.

[0244] Alternatively, players whose avatars are within a specified virtual proximity of each other may be able to communicate with each other. For example, when a player's avatar is in a virtual town, the player may chat with other players whose avatars are also within virtual proximity of the virtual town.

[0245] In another embodiment, when a virtual environment is mapped to a physical environment (see Mapping Virtual Environments to Physical Environments) players may be able to communicate with each other when their avatar's virtual location and/or geolocation are within virtual proximity and/or geoproximity respectively of other players' avatar virtual locations and/or geolocations. For example, if the virtual town is mapped to a physical shopping center, then any players who are within geoproximity of the shopping center may be able to communicate with each other as well as any players whose avatars are within virtual proximity of the virtual town, and visa-versa.

EXAMPLES OF METHODS

Proximity Multiplayer Online Role Playing Game

[0246] An MMORPG (Massively Multiplayer Online Role Playing Game) may be enhanced with geolocation information to create a Proximity Multiplayer Online Role Playing Game (PMORPG). This section provides an example of one such embodiment. It should be understood by one skilled in the art that this example is intended as a demonstration of the incorporation of geolocation into a MMORPG, and that PMORPGs are not limited exclusively to this example and may be enhanced using other embodiments of the instant invention not mentioned in this section, combining embodiments together to create additional features, or by employing the embodiments mentioned in this section in other ways to create alternative gaming experiences.

[0247] In this example, a player participating in a PMORPG creates an account on a gaming server. Using this account, the player creates an avatar. In this section, character is used as a generalization of a group of avatars and does not relates to a specific avatar used by a player.

[0248] The player's character may be customized in many ways, but two important customization choices are race and class. Race relates to the culture that the players' avatar is from in the game. Class relates to the specific abilities available to the character.

[0249] Armor

[0250] A player's character may have a verity of armor that may be worn. Armor pieces often cover the head, chest, back, legs, arms, hands, and/or feet. Additional pieces may be used as well including shields, bracers, anklets, rings, and/or bracelets.

[0251] Each armor piece has one or more defense attributes. For example, an armor piece may have a defense rating in general, or a particular rating against wooden, metal, bladed, or magical weapons.

[0252] The various armor pieces are combined together to compute an overall defense rating for the player. This is often computed by simply summing the defense ratings of each individual piece, or may be computed using more complicated formulae.

[0253] Weapons

[0254] A player's character may use one or more weapons. Each weapon is provided an attack value depending on the nature, character, and special attributes of the weapon.

[0255] Typical characteristics for weapons are the attack value and the speed. The attack value may be provided as a number of may be a damage range. When provided as a damage range, each time the weapon hits an enemy, the weapon's damage is computed using the range. This damage may be reduced based on the armor value of the victim. Alternatively, the damage may be reduced using only the characteristics of the individual piece of armor struck by the weapon.

[0256] Weapon speed is how long the player must wait between attacks with the weapon. This is typically provided in terms of a duration of time. For example, a dagger may have a short attack speed such as 0.5 s, while a long sword may have a longer duration such as 4 s.

[0257] Spells

[0258] Certain classes or races have the ability to cast spells (or similar effects such as Bard songs). Spells may have a wide-verity of in-game effects from direct damage to opponent forces through conjuring an in-game pet.

[0259] One common spell type is a damage spell used to harm opponents. This type of spell has characteristics such as the damage done by the spell, the time required to cast the spell, and the amount mana (magic energy) required.

[0260] Attributes

[0261] Player characters have a plurality of attributes including Strength, Dexterity, Wisdom, Intelligence, Charisma, Hit Points, and Mana. Some of these attributes may be computed based on others. For example, Mana may be computed based on the player character's Wisdom and/or Intelligence. Hit points may be computed based on Strength and/or Dexterity.

[0262] Attributed may be altered by magic spells, armor, or weapons. Certain players may be able to cast spells on friends or foes causing the attributes of the targeted player to change.

[0263] PMORPG Scenario 1

[0264] One embodiment for a PMORPG is the attributes for a certain class may increase when several players of the same class are geolocated in geoproximity to one another. For example, if several players are playing clerics in a geolocation within a predetermined geoproximity to each other, the central server may detect this and increase the ability of these clerics by increasing the amount the clerics heal. The clerics may not be grouped together in-game, and may not be located in geoproximity to one another by virtual location.

[0265] PMORPG Scenario 2

[0266] A player may desire to imbue an in-game item with special powers. The game may require that the player have a geolocation at a place on Earth that is experiencing a solar eclipse. The central server detects the geolocation of the player, and if the player is in fact in geoproximity to the solar eclipse at the time of the eclipse, and the player performs specific tasks in-game (go to a specific virtual location or geolocation, cast a spell, perform a ritual), then the central server updates the item with the special powers.

[0267] PMORPG Scenario 3

[0268] A player's character may have a special ability to transform into a werewolf. However, the central server may check the player is in a geolocation with visibility of a full moon. This, the player's in-game character is only allowed to transform into a werewolf when the player is in a geolocation with a full moon.

[0269] PMORPG Scenario 4

[0270] A monster in the game can only be damaged by a group of players when at least one player is geolocated in the United States, and at least one player is in China. Here, the player team must assure that players are located in specific geolocations in order to combat this monster.

[0271] Scavenger Hunt

[0272] Another example game is a scavenger hunt. Here, players are provided a set of clues and may access the game using a local device connected online. The clues relate to specific geolocations in the players general area (town or local region).

[0273] The players use to clues to determine the geolocation related to the clue. The player may then travel to the geolocation. The player's local device maintains connection to a central server and updated the central server with the geolocation of the player. When the central server detects that a player is in geoproximity related to a clue, the central server notifies the player and scores the player as satisfying the clue.

[0274] The scavenger hunt continues for a predetermined amount of time. When the designated time is up, the player or team with the most points is awarded as the winner(s).

[0275] Zombie Game

[0276] Another example game is a zombie game. Here, players start as either a zombie or a human and may access the game using a local device connected online. The virtual location of a player's zombie or human corresponds to either the player's geolocation or a geolocation the player chooses to be located.

[0277] When playing a zombie, a player can "infect" other players when in geoproximity to other players that are playing human players. Once a zombie avatar infects other human player's avatars, those avatars become zombies within a predetermined time. Similarly, when playing a human, a player's human avatar can "cure" other player's avatars when in geoproximity to the other players that are playing zombie avatars. Once a human player's avatar cures a zombie player's avatar, that zombie player's avatar becomes a human avatar within a predetermined time.

[0278] When an in-game combat situation between a zombie and a human ensues, players may have special abilities or items that may help them in the battle to convert the opposing party.

[0279] Items or special abilities to further the cause of a zombie or human may be purchased or possibly found in predetermined geolocations or in geolocations where other players have "dropped" or placed items. Items may be tracking devices to track other players, medication to cure zombies, guns, chainsaws and other weapons. Special abilities may increase sensing geoproximity to be able to sense another player before they can sense your presence, increased strength, speed, etc. Items may run out and special abilities may weaken and ultimately end as well.

[0280] This example would be an ongoing game without necessarily having an ultimate winner or loser. Awards could be collected with individual player achievements such as the zombie player with the most infected at one time or in one geolocation, the largest or smallest group zombie attack, and for the human players, achievements such as the most zombies cured at one time or in one geolocation, or the longest time while surviving uninfected.

[0281] Players could see a map of as close as their immediate area to as far as the entire world to be able to see the number of zombies and/or humans in any area.

[0282] Variations—Werewolves

[0283] This game could be constructed to include werewolves or even a separate game of only werewolves. A werewolf game could introduce the element of player's changing into werewolves only when there is a full moon in their geolocation.

[0284] Variations—Vampires

[0285] This game could be constructed to include vampires or even a separate game of only vampires. A vampire game could introduce the element of players only being able to attack their human opponents at night. A bat travelling mode may be introduced to allow a vampire player to "fly" around town with little to no detection. A vampire game could also have a smaller attacking radius, requiring vampire players to get much closer to their opponents before they can "bite" them.

[0286] Variations—Witches

[0287] This game could be constructed to include witches or even a separate game of only witches. A witch game could introduce the element of team play with witches in "covens." Witches may be able to purchase or scavenge for exotic items to create potions and/or spells that give special benefits or

detriments to players. A broom flying mode may be introduced to allow a witch player to "fly" around town with little to no detection.

[0288] Assassin Game

[0289] Another example game is an assassin game. Here, players act as assassins with specific targets and may access the game using a local device connected online. The virtual location of a player's assassin corresponds to either the player's geolocation or a geolocation the player chooses to be located.

[0290] A player may initially start as a junior assassin with limited weaponry. The player is regularly given "targets" in their region and must seek out the other players that they must "assassinate." As the player assassinates other players, there may be players that are also after this player to assassinate.

[0291] A player assassinates other players by getting within a certain geoproximity of their target and pressing a button on their local device to "take the shot." Shots may be successful based on the type of weaponry, the experience of the player (levels gained the more a player plays the game), and/or an element of randomness or "luck."

[0292] Players may work as a team in assassination attempts, allowing a player to track other players, use a spotter to get a target in geoproximity to snipe, and/or arrange explosive items to blow up their target.

[0293] Players may be able to purchase upgraded weaponry or new weaponry in their efforts to become a more effective assassin. A player may even be able to collect weapons from their targets as they assassinate them.

[0294] As a player assassinates their targets, the player may get the target list of the players they assassinate, making the ultimate end goal to assassinate the player or players that have this player's name as their target.

[0295] Angels, Demons, Ghosts Game

[0296] Another example game is a game involving angels, demons, and/or ghosts. Here, players act as angels, demons, and/or ghosts with specific goals to "possess" other players or non-player characters. The virtual location of a player's angel, demon, and/or ghost corresponds to either the player's geolocation or a geolocation the player chooses to be located.

[0297] A player may freely move around the world possessing other players to accomplish goals such as converting to good or converting to evil. A player may even act as their central "possessed player" to carry out tasks that are specific to the player. This possession would happen when the player moves their angel, demon, and/or ghost to the geolocation that the player physically resides. When this happens, the player is now the possessed individual that may allow the player to accomplish additional goals of peace or havoc.

[0298] This example would be an ongoing game without necessarily having an ultimate winner or loser. Awards could be collected with individual player achievements such as the angel, demon, and/or ghost player with the most possessions at one time or in one geolocation, the largest or smallest group possession, the most players converted, etc.

[0299] Players could see a map of as close as their immediate area to as far as the entire world to be able to see the number of angels, demons, and/or ghosts in any area.

DETAILED DESCRIPTION OF THE DRAWINGS

[0300] FIG. 1 details an online game involving players using local computing device that transmit geolocation and game information to a central server. The central server (101) is the central point for communication of players. Players

using various local computing devices may transmit their geolocation information as well as game information to the central server. The central server may transmit game information to the players' local computing devices as well. Mobile devices (102) may transmit their geolocation using built-in geopositioning mechanisms such as GPS units. Desktop computers (103) may transmit their geolocation using applications such as web browsers that are geoposition-enabled or even computer hardware that transmits geopotential information such as a GPS unit. Tablet devices (104) such as an iPad or tablet PC may have built-in geopotential mechanisms such as GPS units or may use applications that are geoposition-enabled to transmit their geolocation. Laptop computers (105) may transmit their geolocation through applications such as web browsers that are geoposition-enabled or even computer hardware that transmits geopotential information such as a GPS unit.

[0301] FIG. 2 details a local game involving players using various local computing devices that transmit geolocation and game information amongst the players without interacting with a central server. In local game play, players may communicate with other locally situated players to play a local version of the game without the requirement of a central server. Players (201, 202, 203, 204, and 205) use their local computing devices to store, process and communicate game-play to other players in the local game. Geolocations may be transmitted in a peer-to-peer connection amongst the players to determine the geolocations of the players involved without the need of a central server.

[0302] FIG. 3 details a game involving players using various local computing devices that transmit geolocation and game information through a local network connection. In this local game configuration, players may use various local computing devices (301, 302, 303, 304, 305, and 307) to communicate and play the game with other locally connected users through a central network connection (306). This local network connection may be used for a local version of gameplay with the central network connection being a device such as a hub, switch, router, etc. This central network connection may then be used to not only relay information amongst the players locally, but to relay the information to a central server across a wide-area network (see FIG. 1).

[0303] FIG. 4 details players receiving benefits or detriments when within geoproximity of established geolocations. A player's geolocation as well as established geolocations may have predetermined proximities around them (401). When a player's geoproximity is within another established geolocation's geoproximity (403), the player may receive a benefit (404). Alternatively, when a player's geoproximity is within another established geolocation's geoproximity (408), the player may receive a detriment (407).

[0304] One or more players may designate geolocations to favor members of a particular group when in geoproximity of the designated geolocation (406). Players that are members of the designated group (402) may receive a benefit when within geoproximity of the designated geolocation's geoproximity, while players that are not members of the designated group (405) may receive a detriment when within geoproximity of the designated geolocation's geoproximity.

[0305] FIG. 5 details player notification of other players' geolocations when within a sensory range of each other, showing how these sensory ranges may act differently depending on player types, special abilities, or based on the players' geolocations being in geoproximity of another

geolocation. Examples in this diagram detail a player (502) that may have been made aware of another player in geoproximity to them (501). A player may have an ability to sense other players within geoproximity (503) and/or an ability to be sensed by other players within geoproximity (504). The ability to sense other players as well as the ability to be sensed may coincide with the same geoproximity around the player. Alternatively, these proximities may have different ranges around the player as shown in the proximities 503 and 504 around player 502. A player may belong to another group of players as signified in the diagrams with the star symbol 505.

[0306] Players may be notified of their geolocations when within a sensory range of each other (506). A player may have a special ability to sense another player of a certain type when in geoproximity (507), while being unable to sense another player of a different type (508).

[0307] When players are members of a particular group, players may be aware of other players within that established group of players (509).

[0308] The geoproximity of a player's ability to sense other players may be increased when in geoproximity of another geolocation (510) as shown with this player being within geoproximity of their guild area. Here, the player's ability to sense other players is increased when near the guild area, allowing the player to sense another player from a greater distance.

[0309] Alternatively, the geoproximity of a player's ability to sense other players may be decreased when in geoproximity of another geolocation (511). Here, the player's ability to sense other players is decreased when near the guild area, reducing the player's ability to sense another player unless they are closer.

[0310] The geoproximity of a player's ability to be sensed by other players may be increased when in geoproximity of another geolocation (512). Here, the player is able to be sensed from further away when in geoproximity to the Convenience store. This may pose a potential threat to the player since they may be able to be sensed before the player has a chance to sense the incoming player.

[0311] Alternatively, the geoproximity of a player's ability to be sensed by other players may be decreased when in geoproximity of another geolocation (513). Here, the player is only able to be sensed if another player is very close to the player. This may give the player an advantage since they may be able to sense an incoming player before the incoming player senses them.

[0312] FIG. 6 details how players may be aware of other players across the virtual environment, perceiving each other as within close virtual proximity in the virtual environment while being much further distances from each other in the physical environment. The physical environment (602) is where the actual physical geolocations of the players are on the Earth. The virtual environment (601) is where the players are located in the game. In the physical environment, the players may be physically located at one distance from each other (604) while in the virtual environment the players are located at a different distance from each other (603). In this example, the players are physically located on opposite sides of the country while in the virtual environment they are playing in geolocations within a single state.

[0313] FIG. 7 details how Players may be aware of other players across the virtual environment, perceiving each other as a proportional distance from one another in the virtual environment as in the physical environment. The physical

environment (702) is geolocations of the players are on the Earth. The virtual environment (701) is where the player's avatars are located in the game. In the physical environment, the players may be physically located at one distance from each other (704) which is proportional to the distance from each other in the virtual environment (703). In this example, the players are physically located on opposite sides of the country while in the virtual environment they perceived as the same distance apart in-game as in the physical environment.

[0314] FIG. 8 details how players may receive benefits or detriments when in geoproximity of another player or players. Examples in this diagram detail a player (802) that may have ability to sense and/or be sensed by other players within geoproximity of this player (803). A player may belong to another group of players as signified in the diagram with the star symbol (804).

[0315] A player may receive a benefit as signified in the diagram with a cross (801). A player may receive a detriment as signified in the diagram with an 'X' (805). A player or players may receive a detriment when within geoproximity of another player or players (806). Alternatively, a player or players may receive a benefit when within geoproximity of another player or players (807). Here, there is a group of players that receive benefits due to their geoproximity of each other while an opposing player receives a detriment from being within geoproximity to one of the group members.

[0316] FIG. 9 details how players may receive benefits or detriments when in geoproximity of items. Examples in this diagram detail a player (902) that may have ability to sense and/or be sensed by other players within geoproximity of this player (903). A player may receive a benefit as signified in the diagram with a cross (901). A player may receive a detriment as signified in the diagram with an 'X' (904).

[0317] An in-game item may be assigned a geolocation. This geolocation may be used to determine geoproximity of a player to the in-game item.

[0318] When a player is within geoproximity of an item (906) geolocation, the player may receive a detriment (905). Here, the player is within geoproximity of a nuclear item and therefore receives a detriment for being too close to the nuclear item.

[0319] Alternatively, when a player is within geoproximity of an item (908) geolocation, the player may receive a benefit (907). Here the player is within geoproximity of a magical obelisk and therefore receives a benefit for being within its mighty presence.

[0320] FIG. 10 details how geolocations may be used to establish different game zones, allowing specific behaviors in each zone. Here, the game area is split up into different game zones (1001). Each of these game zones may have different behaviors.

[0321] For example, the Team 1 Safe Area (1002) may be a zone established where players on Team 1 are safe from attack from another team, whereas the Team 2 Safe Area (1006) may be a zone established where players on Team 2 are safe from attack from another team. Furthermore, this example shows an Exploration Area (1003) which may be a zone established for players to explore or cultivate resources. Finally there is a zone for preparing for a battle (1004) and a zone for battling (1005). These zones are just examples and the game zones may serve many different purposes other than what is described here.

[0322] FIG. 11 details how the central server may split the game into different zones in order to optimize processing of game mechanics. The central server (1101) may split the game world into different zones to allow for optimizing the processing across single zones as opposed to needing to process across the entire game world. Here, the central server has split the game world into 4 different zones (1102, 1103, 1104 and 1105). These zones may split a single large world or may even split based on each zone or combination of zones into different worlds of the game.

[0323] FIG. 12 details how players may track other players based on geolocation where when a player is tracking another player, they may have a limited range that they can track the other player. Examples in this diagram detail a player (1201) that may have ability to sense and/or be sensed by other players within geoproximity of this player (1203). A player that is being tracked by another player is signified in the diagram with a blinking light icon (1202). This tracking device that is placed on the tracked player's avatar may be a virtual device, meaning it may not be a physical device on the player, but a device planted on the player's avatar in-game. A player may be a player that is tracking another player as signified in the diagram with a transmitter icon (1204).

[0324] Here, the tracking player is given a range in which the tracking player may be able to know the geolocation of the tracked player (1205) as long as the tracked player remains in that range and as long as the tracked player keeps the tracking device on them. In this example, the tracked player is within range of the tracking player (1206).

[0325] FIG. 13 details how players may track other players based on geolocation where when a player is tracking another player, they may have an unlimited range that they can track the other player. Examples in this diagram detail a player (1301) that may have ability to sense and/or be sensed by other players within geoproximity of this player (1303). A player may be a player that is being tracked by another player as signified in the diagram with a blinking light icon (1302). This tracking device that is planted on the tracked player may be a virtual device, meaning it may not be a physical device on the player, but a device planted on the player's avatar in-game. A player may be a player that is tracking another player as signified in the diagram with a transmitter icon (1304).

[0326] Here, the tracking player (1305) is given an unlimited range in which the tracking player may be able to know the geolocation of the tracked player (1306), therefore, the tracking player may always know the geolocation of the tracked player regardless of where the tracked player is located in the game as long as the tracked player keeps the tracking device on them.

[0327] FIG. 14 details how players may track other players based on geolocation where when a player is tracking another player, they may have the ability to place a tracking beacon at a geolocation that will notify the tracking player of the tracked player's geolocation when the tracked player is within range of the tracking beacon. Examples in this diagram detail a player (1401) that may have ability to sense and/or be sensed by other players within geoproximity of this player (1403). When a player is being tracked by another player this may be indicated by a blinking light icon (1402). This tracking device that is planted on the tracked player may be a virtual device, meaning it may not be a physical device on the player, but a device planted on the player's avatar in-game. A player may be a player that is tracking another player as signified in the diagram with a transmitter icon (1404).

[0328] Here, there has been a tracking beacon planted in the middle of the game world (1405). The tracking beacon is assigned a geolocation and has its own geoproximity in which any tracked players may be identified when within geoproximity to the beacon (1406). Since the tracked player is within the geoproximity of the tracking beacon (1407), the tracking player may know the geolocation of the tracked player, even though the tracking player may not be within geoproximity of the tracking beacon (1408).

[0329] FIG. 15 details how players may track other players based on geolocation where when a player is tracking another player, they may be presented with the tracked player's geolocation, general direction (i.e. N, S, E, W, etc.), or distance (i.e. near, far, etc.). Examples in this diagram detail a player (1501) that may have ability to sense and/or be sensed by other players within geoproximity of this player (1503). A player may be a player that is being tracked by another player as signified in the diagram with a blinking light icon (1502). This tracking device that is planted on the tracked player may be a virtual device, meaning it may not be a physical device on the player, but a device planted on the player's avatar in-game. A player may be a player that is tracking another player as signified in the diagram with a transmitter icon (1504).

[0330] Here, the tracking player (1509) may see the tracked player's (1508) geolocation in raw geolocation information (1505) such as latitude, longitude, altitude, address, intersection, etc. Alternatively, the tracking player may see the tracked player's geolocation as a general direction information (1506) from the tracking player such as North, South, East, West, etc. Alternatively, the tracking player may see the tracked player's geolocation as distance information (1507) such as Near, Far, a number of feet away, etc. These different methods of reporting the geolocation of a tracked player to a tracking player may be interchangeably used throughout a game.

[0331] FIG. 16 details how two or more players may work as a team where one team member maintains a geolocation in a specific geoproximity while another team member performs a specific task. Examples in this diagram detail a player (1601) that may have ability to sense and/or be sensed by other players within geoproximity of this player (1602).

[0332] In this diagram, two players work together (1605), a spotter (1603) that must keep in geoproximity to a victim player (1604), and a sniper player (1606) that remains stationary to snipe the victim. Here, the sniper player may only successfully snipe the victim player while the spotter player is within geoproximity of the victim player.

[0333] FIG. 17 details how two or more players may participate in a scavenger hunt where clues may be given to geolocations that the players have to discover and "collect". This diagram shows the player walking through the physical environment to go to geolocations that answer the clues given to the player in the virtual environment. The physical environment (1701) is where the actual physical geolocation of the player is on the Earth whereas the virtual environment (1704) is where the player is located in the game. In the physical environment, there are geolocations that the player (1702) must visit based on clues (1708) given to him in the scavenger hunt game. The player in this diagram is walking a path (1703) to geolocations that may correspond to the clues in the scavenger hunt game. When the player is within the geoproximity of a geolocation (1707), the player will complete or find an answer (1706) to the clue that the geolocation responds to. As the player finds the geolocations that corre-

spond to the clues, the virtual environment may track which clues have been found along with other statistical information (1705) such as time to complete each clue, overall time, etc.

[0334] FIG. 18 details how a player's in-game experience may change based on the time in a player's geolocation as well as any environmental conditions in a player's geolocation. This diagram shows a time lapse scenario (1801) and an environmental lapse (1802), in this case an eclipse.

[0335] In the time lapse scenario, a player may have one in-game experience at one point in time at their geolocation (1803), in this case a normal player state, and a different in-game experience at another point in time at their geolocation (1805), in this case, a werewolf player state. Changes to the player's in-game experience may be gradual across a span of time as well (1804), in this case the player transitions to a werewolf from 5:00 PM to 12:00 AM in the player's geolocation.

[0336] In the environmental lapse scenario, a player may have one in-game experience at one point during the environmental lapse (1806), and a different in-game experience at another point in the environmental lapse at their geolocation (1807). In this scenario, the normal player transitions to a werewolf during an eclipse. Changes to the player's in-game experience may be gradual across the span of an environmental event as shown in this diagram where the player transitions from normal to werewolf and back across the entire duration of the eclipse.

[0337] A central server may collect environmental conditions such as an eclipse to determine virtual environment changes to a player or items based on their geolocation. The central server may collect this environmental information from various sources such as websites or online feeds that then may be processed against the player's geolocation to determine the environmental conditions at that player's geolocation.

[0338] FIG. 19 details how a player's in-game experience may change based on weather conditions in a player's geolocation. A central server may collect environmental conditions such as weather to determine virtual environment changes to a player or items based on their geolocation (1902). The central server may collect this weather information from various weather sources such as websites or online feeds that then may be processed against the player's geolocation to determine the weather at that player's geolocation.

[0339] In this diagram, a player's (1905) sensing geoproximity (1906), as an example, may change based on the weather conditions. When the weather is sunny at the player's geolocation, their sensing geoproximity may increase (1904), whereas when the weather is rainy at the player's geolocation their sensing geoproximity may decrease (1901).

[0340] Different changes may take effect on the player's in-game experience due to the weather conditions as well. For example, a player may transform into a monster when it is lightning outside (1903).

[0341] FIG. 20 details how a player may update their geolocation manually and/or passively. The players' geolocations are signified with a blinking light icon (2001) with a callout box for each showing the different methods a player may update their geolocation.

[0342] The first example shows the player actively selecting to update their geolocation (2002). In this example, the player clicks a button to update their geolocation to the server in order for their current geolocation to be recorded and used for gameplay.

[0343] The second example shows the player's geolocation being passively updated (2003). In this example, the player's geolocation is automatically updated to the server in order for their current geolocation to be recorded and regularly used for gameplay.

[0344] The third example shows the player actively selecting a geolocation to use from a list of predetermined geolocations (2004). In this example, the player's geolocation is selected by the player and updated to the server in order for the selected geolocation to be recorded and used for gameplay.

[0345] The last example shows the player actively entering in a geolocation to use by specifying the desired geolocation information (2005). In this example, the player's geolocation is specified by the player entering the desired geolocation they would like their player to be geolocated. This specified geolocation is updated to the server to be recorded and used for gameplay.

[0346] FIG. 21 details how when a player's avatar has a virtual location corresponding to the player's geolocation, the player may freely move their avatar's virtual location even though the player's geolocation remains constant. The physical environment (2102) is where the actual physical geolocation of the player is on the Earth whereas the virtual environment (2101) is where the player is located in the game. In the physical environment, the player's geolocation may remain constant (2103). The player's initial geolocation may map to the player's avatar's initial virtual location (2105). As the player's geolocation remains constant, the player may freely move their in-game avatar's virtual location through some movement control mechanism (2104). In this example, the player's avatar is able to be moved from the initial virtual location that corresponds to the player's geolocation to new virtual locations (2106, 2107) and although the player maintains a constant geolocation, the player may freely move their avatar's virtual location in-game (2108).

[0347] FIG. 22 details how when a player's avatar has a virtual location mapped to a geolocation that is non-representative of the player's physical geolocation, the player may freely move their avatar's virtual location even though the player's geolocation remains constant. The physical environment (2202) is where the actual physical geolocation of the player is on the Earth whereas the virtual environment (2201) is where the player is located in the game. In this diagram, the player's initial geolocation (2203) and the initial virtual location of the avatar (2205) do not correspond to the same geolocation. The player may still however move their in-game avatar's virtual location through some movement control mechanism (2204) while the player's geolocation remains constant. As shown, the player's avatar is able to be moved from the initial virtual location that does not correspond to the player's initial geolocation, to new virtual locations (2206, 2207) and although the player maintains a constant geolocation, the player may freely move their avatar's virtual location in-game (2208).

[0348] FIG. 23 details how when a player's avatar has a virtual location corresponding to the player's geolocation, the player may freely move their avatar's virtual location even though the player's geolocation may move in a different direction. The physical environment (2302) is where the actual physical geolocation of the player is on the Earth whereas the virtual environment (2301) is where the player is located in the game. The player's initial geolocation (2303) may correspond to the player's avatar's initial virtual location

(2307). As the player's geolocation may change (2304, 2305), the player may freely move their in-game avatar's virtual location through some movement control mechanism (2306). In this example, the player's avatar is able to be moved from the initial virtual location that corresponds to the player's initial geolocation to new virtual locations (2308, 2309) and although the player may change geolocations, the player may freely move their avatar's virtual location in-game differently than the player's physical movements (2310).

[0349] FIG. 24 details how when a player's avatar has a virtual location mapped to a geolocation that is non-representative of the player's physical geolocation, the player may freely move their avatar's virtual location even though the player's geolocation may move in a different direction. The physical environment (2402) is where the actual physical geolocation of the player is on the Earth whereas the virtual environment (2401) is where the player is located in the game. The player's initial geolocation (2403) may not correspond to the geolocation of the player's avatar's initial virtual location (2407). As the player's geolocation may change (2404, 2405), the player may freely move their in-game avatar's virtual location through some movement control mechanism (2406). In this example, the player's avatar is able to be moved from the initial virtual location that corresponds to a geolocation different than the player's initial geolocation to new virtual locations (2408, 2409) and although the player may change geolocations, the player may freely move their avatar's virtual location in-game differently than the player's physical movements (2410).

[0350] FIG. 25 details how when a player's avatar has a virtual location corresponding to the player's geolocation, the player may move from their initial geolocation, causing the avatar's virtual location to change in coordination with the changes in the player's geolocation. The physical environment (2502) is where the actual physical geolocation of the player is on the Earth whereas the virtual environment (2501) is where the player is located in the game. The player's initial geolocation (2503) may correspond to the player's avatar's initial virtual location (2506). As the player's geolocation changes (2504, 2505), the player's avatar may change virtual locations (2507, 2508) in coordination to the player's geolocation changes. In this example, the player's avatar changes movement in-game in coordination with the player's updated geolocations (2509).

[0351] FIG. 26 details how when a player's avatar has a virtual location mapped to a geolocation that is non-representative of the player's physical geolocation, the player may move from their initial geolocation, causing the avatar's virtual location to change in coordination with the changes in the player's geolocation. The physical environment (2602) is where the actual physical geolocation of the player is on the Earth whereas the virtual environment (2601) is where the player is located in the game. The player's initial geolocation (2603) may not correspond to the geolocation of the player's avatar's initial virtual location (2606). As the player's geolocation changes (2604, 2605), the player's avatar may change virtual locations (2607, 2608) in coordination to the player's geolocation changes. In this example, the player's avatar changes movement in-game in coordination with the player's updated geolocations (2609). As shown, when the player physically crosses a street in the physical environment, the avatar crosses a virtual street in the virtual environment.

[0352] FIG. 27 details how items may have different effects depending on the geolocation of one or more players. Examples in this diagram may involve a player wielding an item (2701), a player who is the victim of the player wielding the item (2702), and item boxes (2703) explaining the item's effects. An item box may have an item name (2704), an item graphic (2705), a probability of creating the item based on the geolocation and/or environmental conditions of the geolocation where the item is created (2706), an effect of the item upon meeting certain geolocation and environmental conditions (2707), a box signifying what conditions are needed for the item to be created and/or perform its effect (2708).

[0353] The first example uses a rain potion that requires the player creating the potion to be at a geolocation that is rainy (2709) in order to have a higher probability of successfully creating the potion (2712). Next, in order for the wielding player to use the potion with the maximum effectiveness, the victim player needs to be in a geolocation that is rainy in order for the rain potion to yield a high amount of damage (2713). This example shows the limitations of creating the item based on the geolocation as well as the limitations of using the item based on a geolocation of the victim player.

[0354] The second example uses a Sword of the Sun that requires the wielding player to be at a geolocation that is sunny (2711) in order for the sword to yield the maximum amount of damage (2714). This example shows the limitations of using an item based on a geolocation of the wielding player.

[0355] The last example uses a Rain & Lightning Dagger that requires the wielding player to be at a geolocation that is lightning (2710) and the victim player to be at a geolocation that is raining (2710) in order for the dagger to yield the maximum amount of damage (2715). This example shows the limitations of using an item based on a geolocation of the wielding player as well as the geolocation of the victim player.

[0356] FIG. 28 details how loot tables of non-player characters may present different items based on one or more players' geolocations. A non-player character (2802) is an in-game character controlled by the game and not necessarily controlled by a human. A loot table is the table of items that a non-player character may give a player or players upon defeating the non-player character such as a dragon, or by purchasing from a non-player character such as a vendor. The items in the loot tables of non-player characters may be based on the geolocations of the players (2801) interacting with the non-player characters.

[0357] The first example shows a player geolocated in Egypt (2803) fighting a non-player character dragon that, upon defeating the dragon, the player will be given diamonds from the dragon's loot table (2805). This example shows that the dragon's loot table yields diamonds for a player geolocated in Africa, specifically in this case, Egypt.

[0358] Another example shows a player geolocated in California (2804) fighting a similar non-player character dragon that, upon defeating the dragon, the player will be given gold from the dragon's loot table (2806). This example shows that the dragon's loot table yields gold for a player geolocated in California.

[0359] The last example shows two players, one geolocated in Egypt (2803) and another player geolocated in California (2804), both fighting a non-player character dragon that, upon defeating the dragon, the players will be given a mixture of diamonds and/or gold from the dragon's loot table (2807).

This example shows that the dragon's loot table yields items based on both players' geolocations, in this case, Egypt and California.

[0360] These examples would work in a similar case for non-player characters that are vendors where, as opposed to fighting the non-player character vendor, the player would be trading or buying the items that are based on the player's geolocation.

[0361] FIG. 29 details how collision detection in the physical environment may cause a player's avatar to not be able to pass through certain objects and/or areas in the virtual environment that map to objects and/or areas that are not passable in the physical environment. The physical environment (2902) is where the actual physical geolocation of the player is on the Earth whereas the virtual environment (2901) is where the player is located in the game.

[0362] In the physical environment, physical objects (2903) may impede the ability to travel on a path through geolocations (2904) such as a building or a fenced area. The player in this case is limited or restricted in their ability to move through these geolocations (2905).

[0363] Thus in the virtual environment, a virtual object (2906) may be placed in the virtual environment that corresponds to the blocking objects' geolocations in the physical environment. These virtual objects would impede the ability for the player's avatar (2908) to travel on a path through the virtual locations in the virtual environment (2907) that correspond to the restricted geolocations in the physical environment.

[0364] This collision detection of objects in the physical environment may still allow the player to travel around objects that block their path (2909). Similarly, the player's avatar in the virtual environment may be able to travel around the objects that block their path (2910).

[0365] FIG. 30 details how collisions may occur between a player's physical geolocation and another player's avatar's virtual location that may be mapped to a geolocation that its player is not physically located at. The physical environment (3002) is where the actual physical geolocation of the player is on the Earth whereas the virtual environment (3001) is where the player is located in the game.

[0366] In the physical environment, two players that may not have virtual locations that correspond to their players' geolocations may have colliding geolocations in which both players are physically located within collision geoproximity (3003). This is an example of two players who collide geolocations in the physical environment but may not necessarily collide their avatars' virtual locations in the virtual environment.

[0367] Alternatively, in the virtual environment two avatars that may not have virtual locations that correspond to their players' geolocations may have colliding virtual locations (3004). This is an example of two avatars that collide in the virtual environment but may not have players that collide geolocations in the physical environment.

[0368] Finally, there may be the case in which one player has a geolocation in the physical environment that may not correspond with the player's avatar's virtual location in the virtual environment (3005), and another player's avatar with a virtual location mapped to a geolocation in the physical environment that its player is not physically located (3006). This case may cause no definitive collision in the physical environment or the virtual environment, however a collision may exist when mapping the physical player's geolocation to

where the physical player would be in the virtual environment (3008) and mapping the avatar's virtual location to the geolocation the avatar would be in the physical environment (3009). As shown in the diagram, there may exist a collision between the two players even when there is no explicit collision in either environment (3007).

[0369] FIG. 31 details how users may share communication with other players when they are within geoproximity of each other. This diagram shows examples of the communication in the physical environment through local devices. The physical environment (3101) is where the actual physical geolocation of the player is on the Earth. This diagram shows several users (3102) with proximities around their geolocations (3103).

[0370] When two or more users are within geoproximity of each other, all users within the geoproximity may communicate with each other through their local devices such as a mobile phone (3104). Similarly, a different group of users are within geoproximity of each other, they too may communicate with each other through their local devices (3105).

[0371] The methods of communication amongst the group may be mass text messaging, a chat-style application, a web page, etc.

[0372] While one group of users (3106) may be able to communicate amongst the other users within geoproximity, their communication may be kept separate and exclusive to that group, whereas another group of users (3107) at a different geolocation may have their own separate communication amongst the users within their geoproximity exclusively.

We claim:

1. An Online Game comprising:
 - a. A Central Server capable of interacting with a plurality of Local Devices wherein the Central Server utilizes software for the purpose of providing an Online Game;
 - b. At least one Avatar that is played by a Player using a Local Device;
 - c. Where the Central Server software administrates the Online Game and determines the outcome of competitions between Avatars;
 - d. Where the Central Server software determines that an Avatar is eligible to receive a Virtual item based in part on the Avatar successfully completing one or more in-game tasks;
 - e. A method of determining the Geolocation of at least one of the Local Devices;
 - f. Wherein the Virtual item eligible to an Avatar is determined by the Central Server software in part based on the Geolocation of the Local Device played by the Player associated with the Avatar;
 - g. Wherein the Virtual item is associated with a graphical model so that when an Avatar is using the Virtual item the associated graphical model is presented in visual form to other Players in Virtual Proximity to the Avatar;
 - h. And where the graphical model is associated with a Physical corporation in such a manner as to advertise the corporation.
2. The method of claim 1 wherein the method of determining the Geolocation is based in part on the IP address of the Local Device.
3. The method of claim 1 where the method of determining the Geolocation is based in part on a Geolocation provided by the Player of the Local Device.
4. The method of claim 1 where the graphical model that advertises the corporation comprises a registered trademark associated with the corporation.

5. The method of claim 4 where the association between the graphical model and the Physical corporation comprises applying a texture map to the model where the texture map comprises the registered trademark.

6. An Online Game comprising:

- a. A Central Server capable of interacting with a plurality of Local Devices wherein the Central Server utilizes software for the purpose of providing an Online Game;
- b. At least one Avatar that is played by a Player using a Local Device;
- c. Where the Central Server software administrates the Online Game and determines the outcome of competitions between Avatars;
- d. A method of determining the Geolocation of at least one of the Local Devices;
- e. Where the Central Server utilizes at least one database wherein the database contains one or more graphical models that may be presented to Players as part of the in-game environment for the Online Game;
- f. Where the Avatar is associated with one or more graphical models from the database;
- g. Wherein a Virtual item is associated with an Avatar;
- h. Wherein the Virtual item is associated with at least one graphical model;
- i. Wherein the graphical model is selected from the database or modified in part based on the Geolocation of the Player associated with the Avatar;
- j. And wherein the selection or modification of the graphical model incorporates one or more features for the purpose of advertising a Physical corporation.

7. The method of claim 6 wherein the method of determining the Geolocation is based in part on the IP address of the Local Device.

8. The method of claim 6 where the method of determining the Geolocation is based in part on a Geolocation provided by the Player of the Local Device.

9. The method of claim 6 where the graphical model that advertises the corporation comprises a registered trademark associated with the corporation.

10. The method of claim 9 where the association between the graphical model and the Physical corporation comprises applying a texture map to the model where the texture map comprises the registered trademark.

11. An Online Game comprising:

- a. A Central Server capable of interacting with a plurality of Local Devices wherein the Central Server utilizes software for the purpose of providing an Online Game;
- b. At least one Avatar that is played by a Player using a Local Device;
- c. Where the Central Server software administrates the Online Game and determines the outcome of competitions between Avatars;
- d. Where the Central Server software determines that an Avatar is eligible to receive a Virtual item based in part on the outcome of a competition between Avatars;
- e. A method of determining the Geolocation of at least one of the Local Devices;
- f. Where the Central Server provides one or more benefits to at least one Player or Player controlled Avatar wherein the benefits are determined in part based on the Player's Geoproximity to a predetermined Geolocation;
- g. And where the predetermined Geolocation is associated with a Physical corporation.

12. The method of claim **11** wherein the method of determining the Geolocation is based in part on the IP address of the Local Device.

13. The method of claim **11** where the method of determining the Geolocation is based in part on a Geolocation provided by the Player of the Local Device.

14. The method of claim **11** wherein the Online Game comprises a health associated with at least one Avatar.

15. The method of claim **14** wherein the health associated with the Avatar increases at a faster rate when the Player is in Geoproximity to a franchise of the Physical corporation.

16. The method of claim **11** wherein the predetermined Geolocation comprises a space-time Geolocation comprising a beginning and ending time interval.

17. The method of claim **16** where the benefits comprises a store coupon to a store associated with the Physical corporation, and is provided to the Player when the Player is in Geoproximity to the predetermined Geolocation and when the Player is located in this Geoproximity during the time interval.

18. The method of claim **17** where the online game is a massively multiplayer online role playing game.

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