

## PATENT ASSIGNMENT COVER SHEET

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<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT	
<b>CONVEYING PARTY DATA</b>		
	<b>Name</b>	<b>Execution Date</b>
	GOOGLE INC.	10/06/2015
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<b>PROPERTY NUMBERS Total: 1</b>		
	<b>Property Type</b>	<b>Number</b>
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<b>DATE SIGNED:</b>	02/27/2017	
<b>Total Attachments: 9</b>		
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## ASSIGNMENT

WHEREAS, GOOGLE INC., a corporation organized under the laws of the State of Delaware, having a place of business at 1600 Amphitheatre Parkway, Mountain View, CA 94043 ("ASSIGNOR"), is the owner of the entire right, title and interest in and to the patents and/or patent applications listed in the attached Exhibit A ("PATENTS AND PATENT APPLICATIONS").

WHEREAS, Niantic, Inc., a corporation organized under the laws of the State of Delaware, having a place of business at 2 Bryant Street, Suite 220, San Francisco, CA 94105 ("ASSIGNEE"), desires to obtain the entire right, title and interest in and to the PATENTS AND PATENT APPLICATIONS.

NOW, THEREFORE, in consideration of the good and valuable consideration received by ASSIGNOR from ASSIGNEE, the receipt and sufficiency of which is hereby acknowledged, ASSIGNOR hereby assigns and transfers to ASSIGNEE the entire right, title and interest in and to the PATENTS AND PATENT APPLICATIONS, and all rights of enforcement thereto, including all rights to sue or recover for the past infringement thereof, and further including the right to file and prosecute in its own name, wherever so permitted by law, patent applications, including corresponding applications, based on any of the PATENTS AND PATENT APPLICATIONS, and to claim priority to any of the PATENTS AND PATENT APPLICATIONS pursuant to the International Convention for the Protection of Industrial Property, the Patent Cooperation Treaty, the European Patent Convention, and all other treaties of like purposes. ASSIGNEE may apply for and receive patents in its own name wherever so permitted by law and ASSIGNOR shall, when requested by ASSIGNEE, execute or cause to be executed all rightful oaths, assignments, and powers of attorney to ASSIGNEE or to agents and legal representatives of ASSIGNEE, and all other papers necessary and proper to carry out the intent and purpose of this Assignment, and ASSIGNOR further agrees:

a. to execute all papers necessary in connection with the PATENTS AND PATENT APPLICATIONS, and any continuing, divisional, reissue, reexamination or other corresponding application thereof and to execute any separate Assignment in connection with such application as ASSIGNEE may deem necessary or expedient; and

b. to perform all affirmative acts which may be necessary to obtain a grant of a valid patent to ASSIGNEE on any of the PATENTS AND PATENT APPLICATIONS and on any continuation, division, reissue or reexamination of any of the PATENTS AND PATENT APPLICATIONS.

*[Signature pages follow]*

IN WITNESS WHEREOF, ASSIGNOR has caused this Assignment to be executed by its duly authorized representative on this Oct. 6, 2015

Google Inc.

By:   
Allen Lo

Title: Assistant Secretary & Deputy  
General Counsel

Date: Oct. 6, 2015

State of California

County of Santa Clara

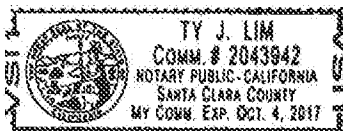
A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

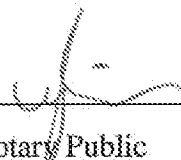
On October 6, 2015, before me personally appeared Allen Lo, who proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instrument and acknowledged to me that he/she executed the same in his/her authorized capacity, and that by his/her signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

(Seal)



  
Notary Public

ASSIGNEE hereby accepts receipt of the entire right, title and interest in and to the  
PATENTS AND PATENT APPLICATIONS.

\_\_\_\_\_  
By: \_\_\_\_\_

[INSERT]

Title: \_\_\_\_\_

Date: \_\_\_\_\_

State of California

County of Santa Clara

On \_\_\_\_\_, before me personally appeared  
\_\_\_\_\_, who proved to me on the basis of satisfactory  
evidence to be the person whose name is subscribed to the within instrument and  
acknowledged to me that he/she executed the same in his/her authorized capacity, and  
that by his/her signature on the instrument the person, or the entity upon behalf of which  
the person acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California  
that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

(Seal)

\_\_\_\_\_  
Notary Public

Exhibit A

Privileged and Confidential						
App Number	Title	Case Type	Filing Date	PTO Status	Abstract	Example Claim
61/677,513	System and Method for Game Data Validation	Provisional	7/31/12	Expired	N/A	N/A
13/955,077	Game Data Validation	Utility (claiming priority to provisional)	07/31/2013	Pending	Methods and systems for verifying and/or modifying game data for a location-based game, such as a parallel reality game, are provided. Game data for the location-based game can be verified and/or modified by establishing one or more mini-games to be played within the location-based game. Players can be encouraged to play the mini-game by providing a reward, such as a virtual reward that can be used in the location-based game or by providing another suitable reward. Mini-game data received from a plurality of players of the mini-game can be aggregated and used to update game data for the location-based game. In this manner, game elements, game objectives, and/or game play for all players in the location-based game (even players that do not play in the mini-game) can be adjusted based on the aggregated responses to the mini-game.	A computer-implemented method of modifying game data for a location-based game, the method comprising: receiving, at a computing device, mini-game data indicative of player actions for a plurality of players in a mini-game associated with the location-based game, the mini-game having a mini-game objective requiring player actions useful for modifying or verifying game data for the location-based game; aggregating with the computing device the mini-game data indicative of player actions for the plurality of players in the mini-game; and adjusting game data stored in a game database associated with the location-based game based at least in part on the aggregated mini-game data.
61/677,522	System and Method for Linking Real World Activities with a Parallel Reality Game	Provisional	07/31/2012	Expired	N/A	N/A
13/955,080	Linking Real World Activities with a Parallel Reality Game	Utility (claiming priority to provisional)	07/31/2013	Pending	Systems and methods for linking real world activity, such as real world commercial activity or real world data collection activity, with a location-based parallel reality game are provided. In particular, a game server hosting a parallel reality game can modify, update, or add to game data stored in a game database associated with the parallel reality game to include certain game features in the parallel reality game linked with real world activity in the real world. The game features can be linked with activities in the real world such that player actions associated with the game features in the virtual world can lead to or encourage activity in the real world, such as commercial activity and/or data collection activity in the real world.	A computer-implemented method of providing a parallel reality game, comprising: hosting, at a game server, a parallel reality game, the parallel reality game having a virtual world with a geography that parallels at least a portion of the geography of the real world such that a player can navigate the virtual world by moving to different geographic locations in the real world; modifying game data to include a game feature in the parallel reality game, the game feature being linked with a real world activity in the real world; receiving data associated with a player interaction with the game feature; and modifying one or more game elements associated with the virtual world based on the player interaction.
61/677,615	Systems and Methods for Verifying Player Proximity Within a Location-Based Game	Provisional	07/31/2012	Expired	N/A	N/A
13/955,110	Systems and Methods for Verifying Player Proximity Within a Location-Based Game	Utility (claiming priority to provisional)	07/31/2013	Pending	Systems and methods for verifying player proximity within a location-based game are disclosed. In one aspect, a method for verifying player proximity may include receiving a request associated with verifying the proximity of a first player of the location-based game relative to a second player of the location-based game and transmitting a visual indicator to a first client of the first player, wherein the visual indicator is associated with a data record configured to expire within a predetermined time period. In addition, the method may include receiving a copy of the visual indicator from a second client of the second player and determining whether the copy of the visual indicator was received prior to the expiration of the data record.	1. A computer-implemented method for verifying player proximity within a location-based game, the method comprising: receiving, by one or more computing devices, a request associated with verifying the proximity of a first player of the location-based game relative to a second player of the location-based game; transmitting, by the one or more computing devices, a visual indicator to a first client of the first player, the visual indicator being associated with a data record configured to expire within a predetermined time period; receiving, by the one or more computing devices, a copy of the visual indicator from a second client of the second player, the copy of the visual indicator being an image captured by the second client of the visual indicator transmitted to the first client and displayed on a screen of the first client; and verifying, by the one or more computing devices, the proximity of the first player to the second player when the copy of the visual indicator is received from the second client prior to the expiration of the data record.
61/677,822	Systems and Methods for Filtering Communication Within a Location-Based Game	Provisional	07/31/2012	Expired	N/A	N/A

Privileged and Confidential						
App Number	Title	Case Type	Filing Date	PTO Status	Abstract	Example Claim
13/955,171	Systems and Methods for Filtering Communication Within a Location-Based Game	Utility (claiming priority to provisional)	07/31/2013	Allowed	Systems and methods for filtering communication within a location-based game are disclosed. In one aspect, a method of filtering communication for a location-based game is disclosed. The method includes receiving, at a computing device, communication data for a plurality of players associated with the location based-game. The method further includes filtering the communication data for each player based on one or more signals associated with the respective player.	A computer-implemented method of filtering communication for a location-based game, the method comprising: receiving, one or more computing devices, communication data for a plurality of players associated with the location based-game, the location based game comprising a virtual world that parallels at least a portion of the real world such that the plurality of players can continuously navigate the virtual world as the play continuously navigates the real world; and filtering, by the one or more computing devices, the communication data for each player based on one or more signals associated with the respective player, the communication data comprising one or more messages between the plurality of players associated with the location-based game; wherein the one or more signals associated with the respective player comprise one or more of location data, player level data, real world contacts data, custom team data, game social graph data, potential portal capture team members data, portal subscription data, following a player data, game mode data, game territory data, portal linking data, distress data, game actions data, target acquisition call data, game entity message data, game character message data, spy mode data, stealth mode
61/677,529	Placement of Virtual Elements in a Virtual World Associated with a Location-Based Parallel Reality Game	Provisional	07/31/2012	Expired	N/A	N/A
13/955,089	Placement of Virtual Elements in a Virtual World Associated with a Location-Based Parallel Reality Game	Utility (claiming priority to provisional)	07/31/2013	Pending	Computer implemented methods and systems for locating virtual elements that can be used or collected by players of a parallel reality game having a virtual world that parallels at least a portion of the real world are provided. In particular, the location of virtual elements in the virtual world is determined based on data associated with one or more real world conditions. Virtual elements can be located in the virtual world at locations corresponding to locations in the real world that encourage safe and effective game play. Locating virtual elements in the virtual world based on data associated with real world conditions improves the link between the parallel virtual world and the real world, enhancing the illusion that the virtual world is another dimension of the real world that the player can interact with through the parallel reality game.	A computer implemented method of locating virtual elements in a parallel reality game, the method comprising: hosting, at a computing device, the parallel reality game, the parallel reality game associated with the virtual world, the virtual world having a geography that parallels at least a portion of the geography of the real world such that a player can navigate the virtual world by moving to different geographic locations in the real world; accessing a data source storing data associated with one or more real world conditions; determining a location for a virtual element in the virtual world based at least in part on the data associated with one or more real world conditions; and modifying game data associated with the parallel reality game to locate the virtual element at the location in the virtual world determined based at least in part on the data associated with the one or more real world conditions.
13/666,045	System and Method for Transporting Virtual Objects in a Parallel Reality Game	Utility (no priority claim)	11/01/2012	Issued as 8,968,099	Systems and methods of transporting virtual objects through a virtual world associated with a parallel reality game are provided. The virtual world has a geography that parallels at least a portion of the geography of the real world. A method includes accessing at least one data source storing or providing data associated with the location of a real world carrier. The method further includes modifying game data associated with the parallel reality to transport at least one virtual object through the virtual world, such that the position of the virtual object in the virtual world is based, at least in part, on the data associated with the location of the real world carrier. Other implementations are directed to systems, apparatus, non-transitory computer-readable media, devices, and user interfaces for transporting virtual objects in a location based parallel reality game.	A computer-implemented method of transporting virtual objects in a virtual world associated with a parallel reality game, the virtual world having a geography that parallels at least a portion of the geography of the real world, the method comprising: receiving, by one or more computing devices, a first request to transfer a virtual object from a first player of the parallel reality game to a virtual counterpart of a real world carrier; in response to the first request, transferring, by the one or more computing devices, the virtual object from the first player to the virtual counterpart of the real world carrier; after transferring the virtual object from the first player to the virtual counterpart of the real world carrier, accessing, by the one or more computing devices, at least one data source storing or providing data associated with the location of the real world carrier, wherein the real world carrier comprises a real world vehicle; modifying, by the one or more computing devices, game data associated with the parallel reality game to transport the virtual object through the virtual world such that the position of the virtual object in the virtual world is based at least in part on the data associated with the location of the real world carrier and such that
61/677,556	Using Side Channels in Remote Procedure Calls to Return Information in an Interactive Environment	Provisional	07/31/2012	Expired	N/A	N/A

Privileged and Confidential						
App Number	Title	Case Type	Filing Date	PTO Status	Abstract	Example Claim
13/955,216	Using Side Channels in Remote Procedure Calls to Return Information in an Interactive Environment	Utility (claiming priority to provisional)	07/31/2013	Pending	Systems and methods for exchanging information in a distributed computing system implementing an interactive application, such as a location-based parallel reality game, are provided. In particular, the subject matter of the present disclosure provides an alternative approach for providing and processing return results from a remote procedure call (RPC) by which remote computing systems (e.g. a game server and a remote client) send requests and responses to one another. Rather than providing a single return result in response to a single request as in typical remote procedure calls, information about updates to the state of the interactive application, such as updates to game status, can be returned via side channels which are handled generically while passing the main return result of the invoked service directly back to the caller.	A computer-implemented method for exchanging information in a distributed computing system implementing an interactive application, comprising: receiving, at a server, a request to invoke a service at the server; processing the request at the server to generate a return result for the request; populating a side channel class to instantiate a side channel data object, the side channel data object comprising one or more updates for the interactive system, at least one of the one or more updates being non-responsive to the request; and wrapping the return result and the side channel class data object in a return result data object, the return result data object comprising the return result and the side channel data object.
61/677,562	Executing Cross-Cutting Concerns for Client Server Remote Procedure Calls	Provisional	07/31/2012	Expired	N/A	N/A
13/955,255	Executing Cross-Cutting Concerns for Client Server Remote Procedure Calls	Utility (claiming priority to provisional)	07/31/2013	Allowed - to be issued as 9,128,789	Systems and methods for implementing cross-cutting actions that cut across many remote procedure calls (RPCs) in an interactive application, such as location-based parallel reality game are provided. In particular, one or more decorators can be associated in a source file, such as a Java source file, with a remote procedure call class defining a plurality of RPC methods for the interactive application. Each decorator can be a set of instructions that gets executed before and after an RPC method and addresses concerns that cut across a plurality of RPC methods for the interactive application.	A computer-implemented method of executing cross-cutting actions across a plurality of remote procedure calls in an interactive application, comprising: processing a source file defining a remote procedure call class specifying a plurality of remote procedure call methods, the source file comprising a decorator annotation annotating the remote procedure call class with one or more decorators such that each of the one or more decorators applies to each of a plurality of remote procedure call methods specified in the remote procedure call class, each of the one or more decorators specifying a cross-cutting action for the interactive application; and executing the cross-cutting actions specified in each of the decorators in conjunction with executing at least one of the plurality of remote procedure call methods specified in the remote procedure call class; wherein the decorators are specified in the source file in the decorator annotation annotating the remote procedure call class.
14/820,689	Executing Cross-Cutting Concerns for Client Server Remote Procedure Calls	Utility	8/7/15	Pending	Systems and methods for implementing cross-cutting actions that cut across many remote procedure calls (RPCs) in an interactive application, such as location-based parallel reality game are provided. In particular, one or more decorators can be associated in a source file, such as a Java source file, with a remote procedure call class defining a plurality of RPC methods for the interactive application. Each decorator can be a set of instructions that gets executed before and after an RPC method and addresses concerns that cut across a plurality of RPC methods for the interactive application.	A computer-implemented method of executing cross-cutting actions across a plurality of remote procedure calls in an interactive application, comprising: processing a source file defining a remote procedure call class specifying a plurality of remote procedure call methods, the source file comprising a decorator annotation annotating the remote procedure call class with one or more decorators such that each of the one or more decorators applies to each of a plurality of remote procedure call methods specified in the remote procedure call class, each of the one or more decorators specifying a cross-cutting action for the interactive application; and executing the cross-cutting actions specified in each of the decorators in conjunction with executing at least one of the plurality of remote procedure call methods specified in the remote procedure call class.
61/677,836	Mapping Real World Actions to a Virtual World Associated with a Location-Based Game	Provisional	07/31/2012	Expired	N/A	N/A

Privileged and Confidential						
App Number	Title	Case Type	Filing Date	PTO Status	Abstract	Example Claim
13/955,600	Mapping Real World Actions to a Virtual World Associated with a Location-Based Game	Utility (claiming priority to provisional)	07/31/2013	Pending	Computer-implemented methods and systems for mapping real world actions to a virtual world associated with a parallel reality game are provided. The virtual world has experiences that relate to real world actions. The method includes accessing a data source associated with one or more real world actions; and modifying game data associated with the parallel reality game to generate experiences in the virtual world based at least in part on the data associated with the one or more real world actions. Generating experiences in the virtual world based on data associated with real world actions improves the link between the parallel virtual world and the real world, enhancing illusion that the virtual world is another dimension of the real world that the player can interact with through the parallel reality game.	A computer-implemented method of mapping real world actions to a virtual world associated with a parallel reality game, the virtual world having experiences that are impacted by real world actions, the method comprising: accessing, by one or more computing devices, game data associated with the parallel reality game, the game data providing a virtual world that is different from the real world and parallels at least a portion of the real world, wherein the parallel reality game is configured to allow one or more players to navigate a range of coordinates defining a virtual space in the virtual world by navigating a range of geographic coordinates in the real world; accessing, by the one or more computing devices, a data source associated with one or more real world actions; modifying, by the one or more computing devices, game data associated with the parallel reality game in the virtual world based at least in part on the data associated with the one or more real world actions; wherein the data associated with the one or more real world actions comprises data associated with a naturally occurring event, the game data being modified to adjust the virtual world at a location corresponding to the naturally occurring event.
61/856,933	Systems and Methods for Detecting and Preventing Cheating in a Location-Based Game	Provisional	07/22/2013	Expired	N/A	N/A
14/336,552	Detecting and Preventing Cheating in a Location-Based Game	Utility (claiming priority to provisional)	07/21/2014	Pending	Systems and methods for detecting and preventing cheating in a location-based game are provided. In particular, a server-side statistical cheat detection algorithm can be implemented upon receiving a player request to perform a game action. A given dataset describing the respective times and locations of previous game events performed by the player can be analyzed to determine a probability that such game events represent legitimate gameplay. The determined probability can affect whether the player-requested game action is effectuated or can influence a number of points awarded for completion of the game action. An example system includes a host server and a client device in communication over a network.	A game server for hosting a location-based game, the game server comprising: a processor; a memory; and a network interface for receiving data from a client device over a network; wherein the game server is configured to perform operations, the operations comprising maintaining a database describing an event location and an event time for each of a plurality of game events; determining a plurality of inter-event velocities based on the event locations and the event times, each inter-event velocity describing a change in location and a change in time; and determining a dataset probability based on the plurality of inter-event velocities.
14/068,704	Regulating and Scoring Player Interactions within a Virtual World Associated with a Location-Based Parallel Reality Game	Utility (no priority claim)	10/31/2013	Pending	In one aspect, various computer-implemented methods are disclosed for regulating and/or scoring player interactions within a virtual world associated with a location-based parallel reality game.	A computer-implemented method for regulating player interactions within a location-based parallel reality game, the parallel reality game having a virtual world that parallels at least a portion of the real world, the method comprising receiving, with one or more computing devices, an interaction request from a player of the parallel reality game, the interaction request being associated with using a virtual item to interact with a virtual element located within the virtual world; identifying a power level associated with the virtual item; identifying a predetermined use limit associated with the power level, the predetermined use limit corresponding to an allowable number of virtual items that can be used by the player to interact with the virtual element at each power level; and determining whether the virtual item can be used by the player to interact with the virtual element based on the predetermined use limit.