

The Sixth Annual Game Design Think Tank Project Horseshoe 2011



Group Report: Location-Based Games

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Abstract

To present a working understanding of the variety of considerations for the design and development of location-based games by industry professionals. Our purpose is to help this field of development become commercially successful because we believe that this type of game needs a "killer app" to establish its mass appeal.

Definition

Using an interactive technology-based position-finding system in conjunction with an application on the same device which entertains the user in the form of an engaging and intuitive game that is directly affected by the user's location.

Mission Statement

To expand the audience for and popularity of location-based gaming using the player's location as a compelling mechanic to attract players to the game and promote an understanding of the advantages and disadvantages of location-based game development.

Location-Based Gaming

Practical Development Considerations

What you need to know to plan the development of your game and consider when determining the scope of the design.

- **Development Tools:** Platform-specific APIs, Unity, Google Map API, and others are low-cost or free and easily available through each platform's SDK or the developer website. APIs require some technical integration to use effectively.
- **Hardware:** Mobile platforms including iPhone, Android, and others. Applications can be created in C++/Objective C, Java, HTML5, Cocoa, and Javascript, depending on the target platform. A webserver is required for any persistent multiplayer gameplay.
- **Location Information:** Open Street Map (www.openstreetmap.org) provides points of interest, street data, and location type and is the only free option available at this time.
- **Scale:** The Earth is 148,940,000 km²; Azeroth is 113 km². Unless you are making a locale-specific game, you will need to consider the potentially global scope of the gameplay area, or ignore scale in its entirety (and consequently real maps).
- **Procedural Generation:** Due to the scale issues mentioned, content for persistent world-spanning games must be generated procedurally based on commonalities rather than customized for the player.
- **Market Research:** There are a lot of unknowns as this market has not been developed commercially with great success and remains niche. Barriers to entry and development are low but poorly defined.
- **Monetization:** Inclusion of sponsored locations (e.g., retail or restaurant chains), related equipment (such as exercise gear or clothing), and advertising games (made specifically for locations like Disney) are all valid non-consumer ways to generate revenue, in addition to models like retail, freemium, and subscription.

Obstacles to Game Design

Large-scale issues to consider when designing location-based games.

- **Unfamiliarity:** Lack of understanding by game developers of the game development concepts specific to location-based games.
- **Interface:** Lack of knowledge about how the location of the device allows the player to interact with the game.
- **2D:** Lack of a third dimension (altitude / vertical space) in what would seem to be an otherwise three-dimensional world (the real world).
- **Legal Issues:** Distraction, danger (driving, running, walking, etc.), risks related to push notifications (stalking, robbery, etc.).
 - Be prepared for potential litigation (particularly if you are first in this space) by having a comprehensive EULA written by a lawyer.
- **Discovery:** Since the market doesn't yet exist, it works against new games by making it difficult for players to find the game.

Obstacles to Gameplay

Issues that interfere with the player's ability to play location-based games.

- **Unfamiliarity:** Lack of knowledge of location-based games leaves the user with no basis for understanding the integrated game environment.
- **Movement:** Players don't realize initially that their movement affects the gameplay, leaving the user confused and increasing the barrier to entry.
- **Distraction:** The player's attention is split between the real world and game activity, degrading their ability to participate fully in both the real and virtual worlds. Solutions may include having separate movement and activity phases or specific time for planning strategy in which the player does not move.
- **Disabilities:** Lack of applicability of location-based games to persons with certain movement-related disabilities (although this brings up the further opportunity to create location-based games

specifically for those with movement disabilities).

- **Shyness:** The natural resistance of people to meeting strangers in person; a means of social acceptance is needed to counteract this.

Designing Parallel Experiences

Factors to understand in planning for games in which reality is a primary contributor to the player's experience.

- **Player:** The player is the controller, cursor, and avatar in the game.
- **Interactions:** The real and virtual spaces must interact on some level.
- **Complexity:** Managing complexity of integration and level of detail so that the player can balance their attention to the real and virtual worlds.
- **Meta:** Meta-experiences can be derived from an integrated reality (for example, text drafting, in which a person follows closely behind another person in a crowd so they can focus on texting rather than moving through the group).

Player Motivation

Why we might want to play location-based games.

- **Fitness:** Games focusing on exercise for health improvement.
- **Social Interaction:** In theory, games can be designed to promote interaction between players who may or may not know each other personally.
- **Competition:** Comparing achievements/scores between players to reward success and grade players against live opponents.
- **Exploration:** Games that involve travel, discovery, or movement around a region without another additional or more important gameplay purpose.
- **Serious Games:** Training simulations for teaching specific, practical skills to groups of professionals working in the same field.
- **Entertainment:** Location-based games as fun and interesting.
- **Novelty:** Location-based games as a new experience.

Genres

Some categories of games that focus on location-based parameters.

- **Trekking:** Move from one point to another, possibly bringing and/or taking something from locations or moving on to another location.
- **Active:** Physical activity is integral to gameplay and a part of the experience.
 - **Exercise:** Constant physical activity is the goal of gameplay.
 - **Race:** Time, movement, and speed are integral to gameplay.
- **Territory:** Gameplay includes capturing, fighting over, or occupying a physical location in virtual space.
- **Sim:** A game of complex creation with other players, such as a garden, farm,, castle, minefield, etc. in real space using virtual tools.

Mechanics

The game's way of convincing the player to do what it wants you to do.

- **Location:** Distance from game resources and relative positions of objects, players, and goals within

the game structure.

- **Aiming:** Includes aspects of facing, firing, range, and location of target.
- **Movement:** Going to and from objects, goals, and players; may use a map, compass, or a virtual overlay of the physical space for guidance.
- **Placement:** Finding, caching, hiding, collecting, and storing objects in ways like farming, mining, espionage, archaeology, etc.
- **Socialization:** Reward players for collocated play (synchronous / asynchronous).
 - **Matchmaking:** Creating cooperation, competition, lobbies, informal (dynamic) queuing, drop in/out, distance as a modifier.
- **Economy:** Transferring objects, points, or money between local players and/or the game's economic structure.

Metrics

Various tidbits of information that can be gathered and analyzed to determine achievements, player activities, and pain points that can be used to iterate design.

- Distance traveled
- Speed (average / top)
- Calories used
- Players interacted with
- Locations visited
- Objects collected
- Points scored
- Time played

References

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	Game Space	Relationship Vector	Real Space
Cache Size (Main Interaction)			
Mechanic	Container (Nano-Large)	RA>GM	Volume of hiding place
Dynamic	Obfuscate		Effort/challenge
Aesthetic	Blip on the map		Exchange Objective, log...replace volume
Locating			
Mechanic	Distance to X		Terrain, distance
Dynamic	Achievement	RD<>GD	Reward
Aesthetic	Difficulty (1...5)		Commitment (Determination)
Information - micro (hint)			
Mechanic	Text		Sensoral
Dynamic	Personal description	GD>RA	Setting/Ambiance
Aesthetic	Device		Environmental
Challenge			
Mechanic	Value Scale (Number)	RM>GA	Sensoral/Accessibility
Dynamic	Boolean		Status (started...completed)
Aesthetic	Information		Physical
Todo			
Mechanic	Check-in/log-in	GM<>RM	Puzzle Solve
Dynamic	Publishing Status		Expectations
Aesthetic	Device list		Goal Engagement
Exchange (presence, stamps, gift, trace) Placing			
Mechanic	Written note		Acquisition
Dynamic	Vote/Update/log	RA>GM	Satisfaction
Aesthetic	Device message		Reward
Motive			
Mechanic	Community Interaction		Motion
Dynamic	Play/Participate	GM>RD	Quest
Aesthetic	Global XY Quest		Personal Experience
Social Feedback/Rating			
Mechanic	Community Stature/history		Permission
Dynamic	Personal Retention	GM>RD	Network Community
Aesthetic	Device Presentation		(Highly Private...Highly Public)

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Meatspace Invasion

Outdoors Realworld hunting location based game

Players are in charge of protecting a real world location from virtual invaders by attacking them through their gps enabled device.

	Game Space	Relationship Vector	Real Space
NPC	Mechanic Enemy Attributes		Player Modification
	Dynamic Abilities	GM>RA	Player Placing
	Aesthetic Visual		N/A
PC	Mechanic Distance to Target, Aiming		Body Mobility, aiming
	Dynamic Pixel occupation	Convergent	Personal Ability
	Aesthetic Visual		People, Locale
Locating - Need granularity	Mechanic Distance to Target Range	GM>	Terrain, distance, public
	Dynamic Achievement		Spacial Orientation/familiarity, Device interaction
	Aesthetic Object/item attributes		N/A, linked to POI
Information	Mechanic Text		Device ability
	Dynamic Level Description		Setting/Ambiance
	Aesthetic Game Device		Device type, quality
Challenge	Mechanic Value Scale (Number)		Mobility Impairment
	Dynamic Scale: player level, player #		Play session Allotment
	Aesthetic info: Number of kills		Distance to traverse
Todo	Mechanic Check-in/log-in		Move
	Dynamic Publishing Status		Manage inventory
	Aesthetic Device list		Interact with device
Motive	Mechanic Community Interaction		Exercise
	Dynamic Play/Participate		Coopetition
	Aesthetic N/A - weak		Personal Experience
Social Feedback/Rating	Mechanic Community Stature/history		Gather with friends
	Dynamic Personal Retention		Outdoor activity
	Aesthetic Device Presentation		Social