See It: A Scalable Location-Based Game for Promoting Physical Activity

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Abstract

See It is a location-based treasure hunt game designed to promote physical activity amongst players.   In the game, players use ambiguous visual clues in the form of images and video clips to find locations containing a hidden container. Players can also create and hide game content in order to help promote long-term engagement and an increasing numbers of players.

Keywords

Location-based games, geocaching, pervasive games

ACM Classification Keywords

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

General Terms

Design, Human Factors

Introduction

Location-based games (LBGs) represent a new genre of game that takes place in the everyday locations we inhabit where the experience of playing is tied to these locations. LBGs have been designed and studied to investigate a range of research topics. This has included technological issues such as wireless connectivity [1,3], social issues such as trust [5],

childhood education [4], navigation [2], etc. Despite their success, many LBGs are designed in a way that makes them difficult to duplicate in various locations or sustain long-term participation [6]. This makes it challenging to understand the effects of repeated or long-term participation [1,10]. One of the LBGs that has managed to sustain long-term growth and player engagement is Geocaching, a GPS-based treasure hunt [8,9]. Since its inception in 2000, Geocaching has grown to include over 4 million players worldwide with over 1.5 million geocaches hidden and available to find [7].

The goal of our research was twofold. First, we wanted to understand how we could design a LBG to increase physical activity amongst players in order to promote more healthy lifestyles. Second, we wanted to investigate how we could, at the same time, design a location-based game to be 'scalable' such that it could support a large amount of players (e.g., hundreds or thousands) and maintain players' interests in the game for long periods of time.

To achieve this, we designed a multimedia treasure hunt called See It where players use media in the form of images or videos to find hidden physical containers called "spots" or caches. Our intention was to provide ambiguous clues to the location of the containers so that players would hunt within a large area and gain increased physical activity. We also structured See It around the idea that players could create a range of content themselves. This element has been suggested as one of the reasons for Geocaching's large volume of game content, long-term growth, and continued player engagement [8].
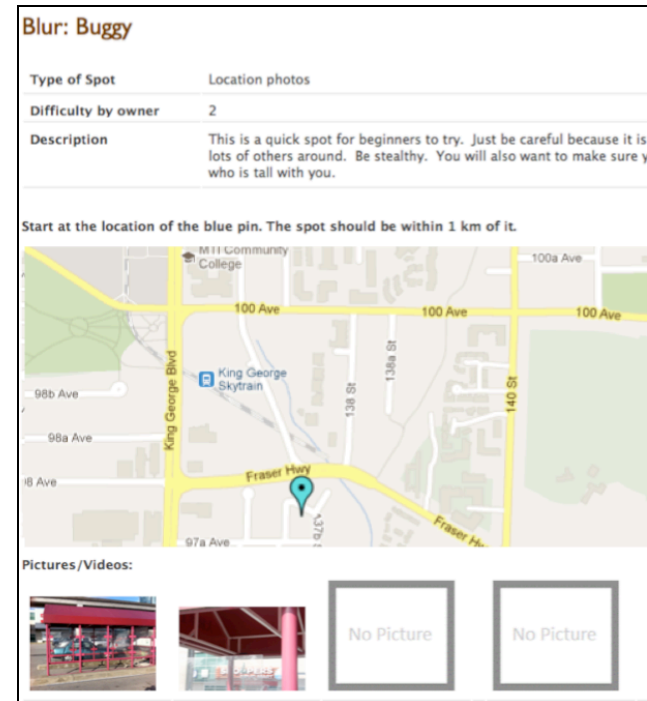

Figure 1. The See It user interface showing a hidden 'spot' and clues for finding it.

The Design of 'See It'

See It is a location-based treasure hunt game that we designed in order to explore physical activity and scalable location-based games (http://seeitgame.com). In See It, players utilize media in the form of images or video clips to find a hidden physical container. Inside the container is a paper logbook that players sign when they find the "spot." We describe basic play through an example:

Kaitlyn goes to the game website and sees a map showing the start location of "spots" in her area. She selects one called "Blur: Buggy" and views its web page, shown in Figure 1. Kaitlyn reads a short description about the spot and is given a "start location" illustrated by a blue balloon on a map. She is told that the hidden container is within 1 kilometer (0.6 miles) of this start location. Kaitlyn is also given two images, shown at the bottom of Figure 1. In the left image is a red shopping cart vestibule and on the right is a close-up of the interior of the vestibule with the spot container visible—a black magnetic key holder, which is a common geocache container [8,9]. Further down the page (not shown), Kaitlyn can read posts by other players who have also looked for the spot. Kaitlyn goes to the start location and sees it is near a mall parking lot. She walks around the parking lot while looking for the red shopping cart vestibule. She spots it and then quickly finds the hidden container. Kaitlyn signs the logbook and then records her find on the spot's web page.

As is illustrated in the example, the media—in this case, two images—provides ambiguous clues that cause a player to look around a given physical area in order to find the hidden "treasure." Media clues could also certainly be more complex, thereby increasing the amount of searching that is required. In any case, the goal is to cause players to physically move through an environment as they hunt, in the hope that this will increase their physical activity.

Our goal was to support a range of hunting methods. The See It site is accessible from any Internet-enabled mobile device, but works best on smartphones. Players can also access the site via a computer and print

images or frames of video clips and then hunt with only paper. They could also simply hunt by memory.

Player Creation of Spots
One of the core elements to help facilitate See It's scalability is *player creation* of game elements. Like Geocaching, players can create spots for others to find. See It was also designed such that spot creation could be quite flexible. By flexible, we mean that it would be possible for players to create a variety of different spots in order to have a large number of different play experiences. This in turn would hopefully cause the game to grow to include large volumes of content and players.

To create a spot, players hide a container, capture media as clues for finding it, and post this information to the See It web site. Game administrators review the web pages for new spots to ensure they meet the game's rules. This involves looking at an online map to ensure the location is reasonably safe for game play and verifying that the media is suitable for public viewing (e.g., no pornography, bullying, or violence). There are no rules as to what the physical containers can look like (as long as they contain a paper logbook). This means that spots can be easily created or one could go to great efforts to construct elaborate containers and media items describing the location. Spots do have to conform to one of several media types, which were designed to provide a degree of structure while still being flexible.

1. **Location Photo Spots** are the most basic and contain a series of one to five images that depict a location. Images are shown online at the resolution

chosen by the spot creator. Kaitlyn's spot hunt illustrates this type.

2. **Eye Spy Spots** are similar to Location Photos, but all images must be captured from the viewpoint of the hidden spot as it "looks" outwards into the world.

3. **Location Video Spots** use short video clips as opposed to images to show the location of the spot.

4. **360 Spots** use video clips that rotate 360 degrees around the hidden container. This shows the container's viewpoint.

5. **Path Spots** use a series of images that progressively bring you closer to the hidden container's location.

User Studies

We are currently studying See It's ability to promote physical activity while also supporting the usage of player-generated content. Early analysis of game play suggests that it can be challenging for players to create content that adequately supports physical activity because not all players know how to create such content well. Player motivations for creating spots also vary, which is desirable for a scalable location-based game, but can be problematic for games focused on addressing particular research topics (e.g., physical activity).

Acknowledgements

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