Digital Street Game: Location-Based Game as Research Probe

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ABSTRACT
Digital Street Game (DSG) is a location based street game that is played both on a website and on the city streets. In the current socio-technical landscape, mediated interaction occurs within a variety of contexts presenting design opportunities, as well as challenges for Ubicomp. With DSG, the authors propose a hybrid game as a research tool to explore new approaches to computing in public space while bringing the challenges inherent to designing for online/offline experience to the forefront.

Author Keywords
Design research, Game design, Location-based experience, Social mapping, User interface design

INTRODUCTION
Ubicomp honors the complexity of human relationships, the fact that we have bodies, are mobile.

(Mark Weiser [5])

Weiser's comment proposes an approach for Ubicomp – one that considers the physicality and emotionality of being human, while hinting at the challenges inherent to designing effective interactive systems. Digital Street Game (DSG) is a game-based research project focusing on 'complexity' in the urban realm, where interactions between a dense population and a multitude of devices and communications infrastructures provide a rich context for inquiry.

As part of an ongoing initiative at Intel Research collectively referred to as Urban Atmospheres, DSG's interest in the city is twofold: 1) to draw new modes of urban experience from existing social practices and 2) to explicitly use these modes as open-ended probes motivating development of ubiquitous computing applications.

MOTIVATION
There is no one "killer tool" that mobile city dwellers use to coordinate their social relationships and daily activities across an urban landscape that is always in flux. What we see instead is the continuous maintenance of social contact through a diverse set of modes and tools – voice, text messaging, email, instant messages and even paper notes. This maintenance is the result of an interdependent series of actions based on available connectivity, social pressures, and temporal exigencies. These actions are always taken not just in the user's immediate context – but also in light of upcoming and past contexts [1]. In designing for a highly mobile population, much can be gained in learning not just about user's immediate environment, but also the constellation of activities and motivations that propels people from point 'a' to point 'b.'

Figure 1. Detail of DSG online gameboard reflecting player activity along geographic and social dimensions

GAME/PROBE DESIGN
DSG is an Internet enabled game played on city intersections. Players stage and document small social interventions or 'stunts' on the streets of New York in order to claim turf on a virtual map of the city. The goal of the game is to take over the city, intersection by intersection. Players generate stunts online, coordinate them however they choose, stage and document them on the streets, and then return to a website to claim territory.

Built to probe the social and emotional aspects of location-based activity, DSG is a deliberately light-weight application. Requiring only an Internet connection and a digital camera, it can be played by relatively large numbers of people with little technical expertise or special equipment. Instead of focusing on an interface or a platform, DSG begins with the human factors that constrain and motivate situated technology use.

The game design intentionally targets social and physical aspects of computing; critical issues for the development of compelling and usable ubiquitous technologies. Unlike its virtual counterparts, location-based play is necessarily temporally and spatially bound. Traveling to the site, gathering props, and managing the onlookers (ranging from rowdy passersby to even the police) are challenges we face not just in games but also in our everyday lives.

Played in teams, DSG is also a highly social experience requiring players to leverage their existing social networks. The game's social aspects are further amplified through the central online game board. It provides an up-to-date snapshot of physical player activity in terms of location (where stunts happen) and social ties (with whom). By merging the physical and the social, DSG provides a window through which we can view relationship formation around hybrid digital-physical experience as well as the technologies that might support pervasive play.

Furthermore, DSG highlights the importance of emotional attachments to 'territory.' Not all locations are created equal. One player's remark: "about to…get my turf (L Train access is mine... ALL MINE!)" illustrates the importance of territories – and ownership – in the way we imagine cities. By visualizing an emergent emotional landscape of the city, the game may hint at ways to integrate the fullness of human emotional experience into conventional maps and location-based applications.

RELATED WORK

Contrasting the "real life" of public spaces with the imaginative world of play has proved a rich area for exploration. Iacucci, Kuutti, and Ranta's "magic things" generate requirements for mobile applications by way of theatre games [3]. Underdogs & Superheroes [4] suggests that games can spur the communication of previously unarticulated needs within a design process for mediated urban experience. Unlike these projects, DSG is designed to explore neither specific design requirements nor users' needs. Rather, it exposes the complicated relationship between virtual and physical in light of pressures that a game system exerts on the real world and vice versa.

As with the work of Gaver, whose 'domestic probes' challenge users to create coherent narratives around ambiguous systems [2] much of DSG is left undetermined to foster interpretation in users. The game provides a number of variables with which the users can rearrange to their own liking, allowing for flexibility of use while underscoring the interrelationships between people and the place they engage with.

RESEARCH ACTIVITIES

The game is currently in 'friendly' trials. Play is restricted to a small group of users (under 10) in order to ready the application for a larger public launch in July. Trials will continue through the end of the summer.

The project has two tracks: one focused on deploying a location-based game, the other on research activities. The friendly trial is a period not only for debugging the application, but 'debugging' the research process as well. With play now underway, new social and technical challenges have reinforced prior concerns about the general "usability" of "anytime, anywhere" gaming as well as identifying unanticipated research questions.

The linkage between application deployment and social research allows us as researchers to use field observations to inform our research plan. Interviews, an online survey, and a suite of design exercises will be used to expose the intricacies of social and place-based play.

CONCLUSION

By using a location-based game as a research probe, DSG is an experimental approach to designing with Ubicomp's complexities in mind. DSG exists within a feedback loop in which the game functions not just as a product of research or as finite step in the research process, but in dialogue with HCI's traditional forms of social inquiry.

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