REXplorer: A Pervasive Spell-Casting Game for Tourists as Social Software

Rafael "Tico" Ballagas
RWTH Aachen University
ballagas@cs.rwth-aachen.de

Steffen P. Walz
Swiss Federal Institute of
Technolgy Zurich (ETH)
walz@arch.ethz.ch

Jan Borchers
RWTH Aachen University
borchers@cs.rwth-aachen.de

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Abstract
REXplorer is a pervasive and mobile spell-casting game designed for tourists of Regensburg, Germany. The game platform blends location services, mobile photo and video blogging, and phonecam-based interactions to create a fantasy world that brings the history and culture of Regensburg to light. REXplorer applies mobile social software concepts to enhance the game and tourist experience.

Keywords
Pervasive game, mobile phone, moblogs, location services

Introduction
Mobile social software is emerging as a powerful tool to coordinate and manage our lives and relationships with others. In this paper, we examine from a system and interface design perspective how social elements can be applied to a pervasive and mobile game for tourists.

REXplorer is an interactive pervasive and mobile game designed to enhance the tourist experience for young adults as a part of the Regensburg Experience (REX) [1] visitor center, which will open in the fall of 2006. The well-preserved medieval German city of Regensburg – which is likely to be announced a UNESCO World Heritage site in 2006 - serves as the backdrop for the game. The basic

premise of the game is that the historic buildings of Regensburg have magical spirits, secrets, and treasures locked inside of them that can be unleashed with the proper magical spell. The game is still in the design phase, but we have plans to incorporate several mobile social software elements to enhance the game and tourist experience.

Mobile Social Software and Tourists

Tourist applications have special characteristics that are necessary to consider in the design of mobile social software:

- **Unfamiliar Place:** Typically tourists are unfamiliar with the destination they are visiting. This makes location services, especially navigation and recommendation services, more appealing.
- **Privacy:** The utility of location services in unfamiliar settings may tilt the utility-privacy tradeoff such that tourists are willing to give up more personal information in return for better services. The potential privacy concerns of the visitors may also be eased by the temporary nature of the visit (and associated privacy invasion). These hypotheses need to be explored in further research. Naturally, minimizing the necessity of privacy invasions should be vigorously pursued.
- **Personal Device Suitability:** Focusing on mobile phone technologies, many tourists may be reluctant or unable to use their own mobile phones because of roaming charges or network compatibility issues, or they may simply not have a mobile phone with them on the trip. Additionally, many people may be reluctant to download special 3rd party software to their personal mobile phone, possibly because they don't know how, or because they are aware of potential malware threats. These hypotheses need to be explored in further research.

Mobile Social Software and Pervasive Games

Pervasive games also have characteristics that influence how mobile social software elements can be used:

- **Who's playing?:** Many pervasive and mobile games require users to identify, locate, and communicate with other players. These activities can be assisted using mobile social software.
- **Is this part of the game?:** The location services have the added benefit of assisting participants in understanding the games physical boundaries, and helping them locate elements and landmarks relevant to the game in the real world.
- **Is this part of the game, too?** Previous pervasive games have shown that uncertainty about whether a certain event or encounter is part of the game can add excitement to the experience.

REXplorer Details

REXplorer is targeted at young adults between the ages of 13 - 30. Our target group stays an average day in the city – we are assuming day-trippers, who will have limited time, will want to commit to a game experience, primarily because the game experience will cover their prior expectation of "seeing the sights". Participants will begin by renting their "magic wand" (actually a smartphone loaded with custom software and data necessary for the game) from the visitor center. The phones can be used in small groups or individually. Along with the wand they receive a magic map (printed on paper) with basic spell gestures. Before they leave

the museum, players have to pass a "magic license test", which involves learning core mechanics and functionalities in a playful fashion and, potentially, with the help of museum staff.

As they move throughout the city, players can attempt to cast spells at historic buildings using the Sweep technique [2] that performs motion estimation by the way of the phone camera, and gesture recognition in (x, y, theta) dimensions. In response, players hear voices from magical spirits trapped inside the buildings through their magic wand (the loudspeaker on the smartphone). If they cast the spell incorrectly, the spirits will be disgruntled and uncooperative. If they cast the spell correctly, the spirits will open up to the participants and divulge stories from the past that contain elements to help lead them on their path to master wizard. Participants may also need to duel against other participants in a spell-casting battle to achieve their goals. In addition, and more importantly, players can "cellcast" cooperatively to solve challenges: At a given site, a spirit asks a single player to return with more convincing, "stronger powers", meaning a second player.

Since the spirits have been trapped, they naturally long to be outside in the beautiful city they once lived. They ask the participants to record video, audio, and photographic content of the city's sacred places [3] in exchange for information or virtual artifacts. Users obtain this content using their magic wand (camera and microphone on the smartphone).

Social Software Elements in REXplorer

REXplorer blends location-based services and mobile web logging (moblogging). The location-based services will provide participants with basic navigation functionality, but will also help participants identify, locate and communicate with other active game participants to accomplish certain game goals such as a duel, or a cooperative task. Players will be able to communicate at a distance using the traditional telephone voice communication to coordinate a meeting and use the location-service to monitor and track other participants.

As visitors are capturing media of the city in the game, the Regensburg application servers are automatically cataloging the media content they create to generate a website to show where they've gone and what they've done. During the game, this blog can be used to monitor the current game status by getting an overview of the teams' progress. In addition, visitors will be encouraged to capture sights and sounds unrelated to the game to add a more personalized touch to their blogs. After the game is complete, the blogs will be automatically emailed to the participants and can be used as a souvenir journal that can be easily shared with family and friends through the Internet. This provides a unique threefold tourist advantage with the visitor space, the city space, and the online space with access from home and for friends.

Open Questions and Future Work

The REXplorer game incorporates several elements of mobile social software in its design. Will these social elements enhance the game experience? Will they enhance the tourist experience? Can we predict or measure the impact of social software elements? How? We plan to pursue these questions as a part of our ongoing research.

References

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