

# REXplorer: A mobile, pervasive game for tourists

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**Abstract.** REXplorer is an interactive scavenger hunt that combines mobile phones, mobile blogging, location technologies, and interactions with large public displays to provide an interactive scavenger hunt for tourists of Regensburg. This paper outlines the preliminary design of the game, and explores it's potential as a research platform for computer supported cooperative work.

## Introduction

REXplorer is a rich interactive scavenger hunt designed to enhance the tourist experience for young adults through the fun and excitement of a public game using mobile technologies as a part of the Regensburg Experience<sup>1</sup> (REX) Museum. The well-preserved medieval city of Regensburg (to become a UNESCO World Heritage site in 2006) serves as the game board for the competition. Participants will receive missions or stunts on a mobile phone that

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<sup>1</sup> <http://www.rex-regensburg.de/>

will lead them to certain locations that have high historical, scenic, or cultural significance. Using the latest interactive mobile technologies, we will provide an experience that is user-focused, simple, and makes learning about the city fun.

## Scavenger Hunt

The scavenger hunt is the core component of REXplorer, and is targeted at participants of age 16-25. Participants will compete in teams to complete missions requiring them to take pictures, record video and audio, or answer questions about the city and its cultural heritage. We have been working with a select group of Regensburg tour guides, historians, and game designers to create the best set of missions possible to balance the desires of seeing everything and having fun.

An example mission includes creating a picture that fits the title “Red Regensburg”, which will be scored for the competition through ratings from other participants and outside observers (as done by Chang et al. (2004) in the Digital Street Game). Plans include displaying the REXplorer photos on a large public display in the Regensburg Experience museum for visitors to provide an unbiased rating, and preview REXplorer to attract more participants.

## Mobile blog as a travel journal

As visitors are completing their missions, the Regensburg application servers are automatically cataloging the media content they create to generate a website demonstrating where they've gone and what they've done. During the game, this weblog (or blog) can be used to monitor the current game status by getting an overview of the teams' progress and updated scores. In addition, visitors will be encouraged to capture sights and sounds unrelated to the scavenger hunt to add a more personalized touch to their blogs. After the game is complete, the blogs can be used as a souvenir journal that can be easily shared with family and friends through the Internet.

## Interactions with large public displays

Although the mobile phone has transformed into a highly sophisticated computing platform, it remains limited in its ability to support immersive interactions, primarily because of the lack of display space. To compensate, we are placing

immersive interactive elements, such as large public displays, in the environment that can be utilized by nearby REXplorer participants similar to the vision presented by Thoresson (2003).

We have developed several new interaction techniques using the camera on the mobile phone to control large public displays in multi-user scenarios (Ballagas, 2005). These interaction techniques allow the game participants for example to manipulate a browser to view their blog and game status. We also plan to use these large public displays to host small-scale games (shown in Figure 1) facilitate the creation of collaborative art, and navigate multimedia tourist information content relevant to that site.

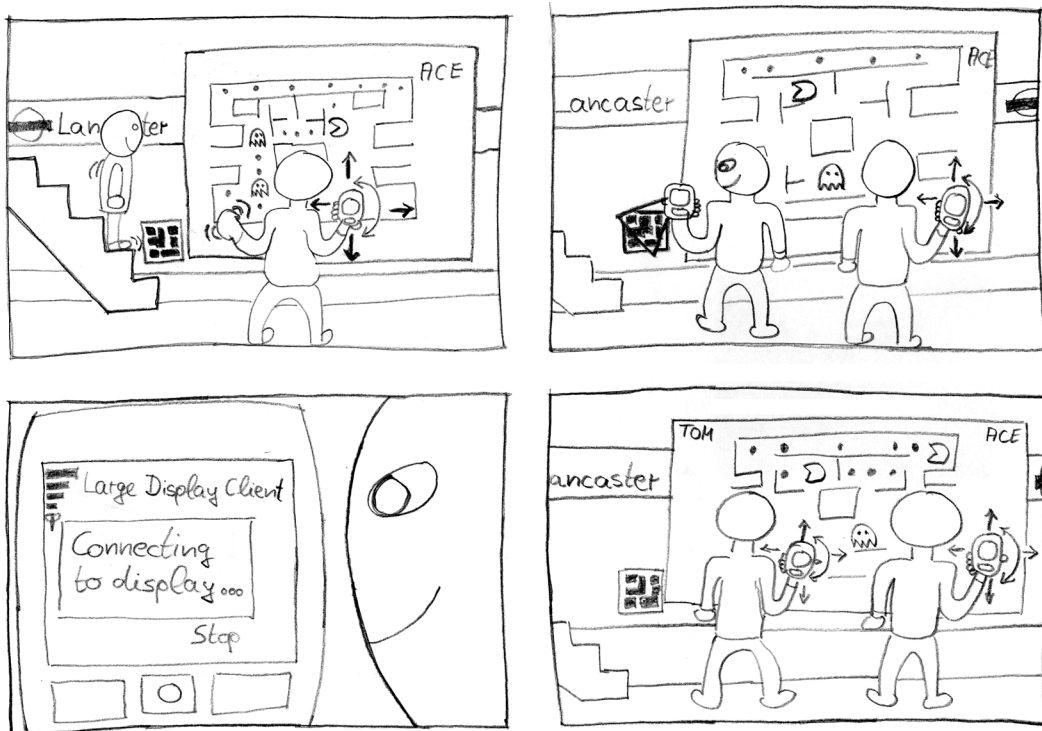


Figure 1. Tom joins in a competitive game by taking a picture of the 2D barcode next to the large public display. By waving his phone in the air, he controls his character in the game.

## Navigation

This project will use Place Lab (LaMarca, 2005) location technology to provide users with a view of their current location on the mobile phone and help them

navigate through the city. This location information will also be fed back into the mobile blog to catalogue the users path, and mark the exact position of important events (such as scavenger hunt submissions). A sketch concept of the resulting blog can be found in Figure 2:

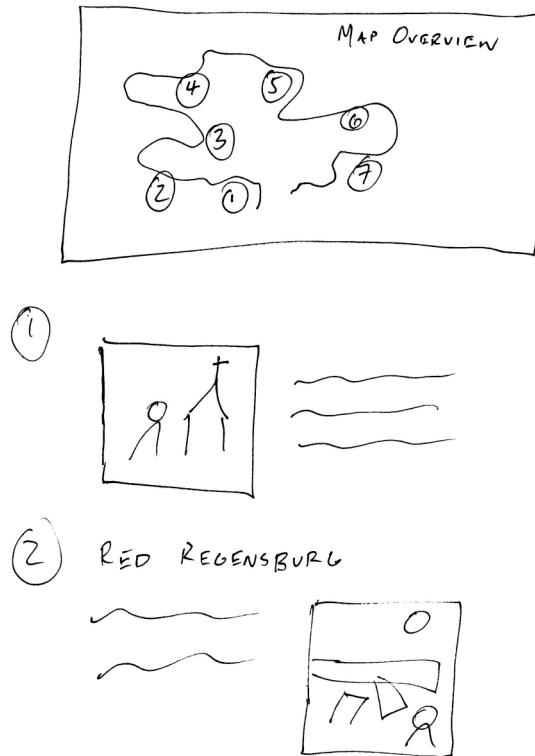


Figure 1. The mobile blog travel journal concept with the visitors path mapped out and significant events highlighted.

## Feasibility

The interactions described in this paper require certain hardware capabilities such as a built-in camera with advanced mobile processors, as well as special software to support mobile blogging and the new input techniques. Mobile phones meeting the hardware requirements, preloaded with custom software will be available for rent to the tourists through the Regensburg Experience (REX) Museum. Tourists will also have the option of using their own mobile phones to play an alternative text-based version of the scavenger hunt that uses the SMS (short messaging service) standard.

## Conclusions and Future Work

This paper describes the preliminary design of a pervasive game for tourists using mobile phones with large public displays. We plan to use the REXplorer game as a research platform to understand pervasive games, mobile blogging, and multi-user interactions with large public displays. Evaluation of the system will try to quantify the benefit of the interactions to the tourist experience through surveys and comparative evaluations to the SMS-based game and standard city tours.

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