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# Exploring Cultural Spaces Through Location-Based Mobile Games

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**Abstract**

This is an overview of game-related research of the HCI Group of the University of Patras. We are active in the area of location-based mobile games, with an interest at games that can enrich the cultural experience in open spaces (like city centres) and in museums aiming to actively engage citizens and/or visitors with cultural spaces. Over the past decade we have studied, designed, implemented and evaluated a number of games that run on mobile platforms (Windows PocketPC and Android). Our results include design tools that can aid the design of such games (heuristic guidelines, design patterns, conceptual frameworks), game concepts and prototypes as well as implemented games.

**Author Keywords**

location-based mobile games; playful cultural experience; player participation in game design; design patterns; heuristic guidelines.

**ACM Classification Keywords**

H.5.m [Information interfaces and presentation (e.g., HCI)]: Miscellaneous; K.8.0 [Personal computing]: Games; K.3.0 [Computers and education]: Miscellaneous

**Level 1: Devising the Idea of Linking Games**

The initiation of the team to location-based mobile games happened when we designed and implemented a multi-

## Side Quest

**The Significance of Content:** Location-based games rely on content that is relevant to the location.

**Participation:** Engaging players to create content for the games is a participatory cultural experience.

**A Multitude of Locations:** A lot of locations can be included in a location-based game. Besides the game itself, the tailored content is a necessary ingredient of a meaningful game that links locations with ideas.

**No-one makes a game alone:** Ideally, users would be able to create content for any type of location-based game that challenges the players to link the real world with entities of the digital realm, and allow that game to be played in any location [11, 2].

player location-based game for a museum in 2006–2008. PocketPC devices were used to scan RFID tags that were attached to the exhibits of the Museum. The result, the MuseumScrabble [9, 3] game, highlighted the complexities of designing such games and spurred us to continue research in this area. The premise in MuseumScrabble was to connect ideas or concepts with artworks. In this way the players have to observe and reflect about the artworks and correctly assign them to the corresponding idea or concept, while being under pressure due to competition from other teams who play at the same time. This was a powerful idea and the team returned to various forms of it later.

### Level 2: Taking Linking Games to Open Spaces

In 2011 Invisible City: Rebels Vs. Spies [10], an adaptation of the Mafia game, was designed and implemented to be played in the city-centre of Patras. The aim of the game was to offer a playful acquaintance with the city. A short evaluation study [10] showed that game play offered to the players opportunities to discover “invisible” aspects of the city (e.g. previous uses of buildings). Another observation was that the game focused very much on factual information about the city. This prompted us to think what other aspects of spatial “learning” could be integrated in the game play and how these aspects could seamlessly become part of the game mechanics. While MuseumScrabble was designed for groups of pupils that visit a museum, this game was intended to be played by visitors of a city.

### Level 3: Abstracting from the Design Process

During the same period the HCI Group collaborated with the University of Bari, Italy. This collaboration, with Prof. Carmelo Ardito, led to a list of heuristic guidelines to aid the design of location-based mobile games [1]. In parallel a game design workshop was devised [4] that has been implemented on several occasions both in Greece and inter-

nationally<sup>1</sup>. Using content analysis, the designs that were produced in these workshops were the basis for an open set of specialized design patterns for location-based mobile games [5].

### Level 4: Linking the Visible with the Invisible

Our interest in location-based mobile games was maintained and we returned to the idea of linking ideas and concepts with the physical objects. In 2012 we implemented a variation of the MuseumScrabble game for the Benaki Museum [7], the largest private museum in Greece. The game, named Benaki MuseumScrabble, aimed at expanding the cultural experience to the invisible artworks preserved in the Museum’s storage rooms through seeking connections with the exhibited cultural objects.

### Level 5: Integrating Cultural Content and Space in Game Mechanics

Another take on this idea was implemented in 2014, with the game Tangling [12, 6] in collaboration with the Macedonian Museum of Contemporary Art[8], in Thessaloniki, Greece. The players have to “untangle” a set of tags—in the form of keywords—that have been randomly assigned to the exhibits. The more correct tags are attached to correct artworks the more points earned for the team. During the design process we focused on our collaboration with the museum addressing issues related to content (selection of artworks, elaboration on curated information and how this information could be “transformed” and be seamlessly integrated in the game) and space (game levels were initially connected to museum floors, i.e. a level changed when all the exhibits of one floor were “tagged” with the correct

<sup>1</sup>Among others, the Game Based Learning Summer School 2011 in Autrans, France, the Design for Educational Games Workshop 2011 in Torre Cane, Italy, and the Creative Use of Cultural Heritage Conference 2013 in Pecs, Hungary.

tags). The aim was to provide players with interpretive tools to establish contact and get interested in the exhibits.

### Future Quests

- How is cultural content seamlessly interweaved with game mechanics so that playfulness is tightly connected with learning.
- How cultural space influences the design of location-based games.
- What is an 'interface' for the players in location-based games.
- Player practices are loose.

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### Hall of Fame

CityScrabble, an open area variation of MuseumScrabble, wins the Innovation Award at the *Athens Plaython 2012*

Keynote at *Hybrid City II: Subtle rEvolutions*, Athens, May 23-25 2013

Keynote at *rePLAYCE:theCITY* conference, Zürich, November 7-9 2013