



A Systematic Approach to Formulate Design Recommendations for Location-based Stories in Augmented Reality

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Like humans, places have their own stories to tell and maps are a powerful medium for communicating these stories^[1]. Augmented reality (AR) extends the dimensions of maps by combining reality with virtuality. It is becoming popular in many fields, however, the scientific exploration of designing location-based stories in AR has received little attention^[2]. The aim of this thesis is to recommend some design principles for location-based storytelling in AR considering cartographic design patterns to provide the audience with the best possible experience.

OBJECTIVE

The objective of this research is to give suggestions on how to transform the existing methods of location-based storytelling into AR environment by identifying how stories with spatial information are visualized in different media (print, web and AR) and what improvements can be made to use AR tools for enhanced storytelling experience.

ADOPTED METHODS

A mixed research design is adopted for this study including a comparative study and a case study consisting of conceptual design development and usability evaluation.

COMPARATIVE STUDY

A total of 38 printed maps, web maps and AR/VR applications are collected and compared. A data coding method is applied to extract and categorize design elements found in the maps.



Fig. 1: Examples of maps/apps reviewed for comparative study: printed map (top), web map (middle) & AR app (bottom)

CONCEPTUAL DESIGN

For the case study, a conceptual design of an AR tour app for the TU Munich main campus is developed in the form of an interactive mockup based on the design elements and patterns found in the comparative study.



Fig. 2: Screens from the mockup: homepage (top-left), popup indicating POIs (top-right), story page (middle-left), overview map (middle-right), route visualization (bottom-left), search and filter POIs (bottom-right)

USABILITY EVALUATION

An online usability evaluation is conducted as a semi-structured interview to gather user requirements and feedback on the design. The study incorporated mockup demonstration, observation, thinking aloud and post-interview sessions with 22 participants.

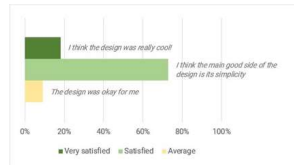


Fig. 3: User satisfaction level for the mockup design

RECOMMENDATIONS

Some major recommendations for designing future AR location-based stories derived from the usability evaluation are as follows:

1. Combine both storytelling and route visualization elements for a complete tour experience.
2. The interface design for AR should be simple, intuitive, have an appropriate color palette and provide clear instructions with customization options.
3. For storytelling, combine different elements e.g. text and infographics, and provide options e.g. text or audio to access the story.
4. For route visualization, use simple elements e.g. line and arrows.
5. Include a simultaneous map view with the recommended route visualization in AR and an interactive overview map for self-guidance.
6. User feedback should be included at every step of the design.

CONCLUSION

To make the most of the technology and to provide the audience with the best possible experience, the design of a location-based storytelling application in AR needs careful attention. In this study, the general recommendations for designing a mobile AR app for location-based storytelling is proposed to help with the future application development in the early phase of designing.

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