
Introducing Technology in Museums: How to Start?

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Abstract

We present a conceptual reference framework to make informed decisions on designing mobile technology for museum environments. Our framework strives for enhancing the visitor experience, whilst not losing sight of the museum's message and values. Four dimensions of context have proven to be indispensable for conceiving the most appropriate solutions for a specific cultural heritage site: mobility, personalisation, interaction with the environment and social interactions. We believe the community can benefit from this reference framework and the visual depiction we present here, as a tool that conveys high-level design choices and to validate resulting designs with respect to these choices.

Authors Keywords

Design, Museum, Technology, Mobile Guides

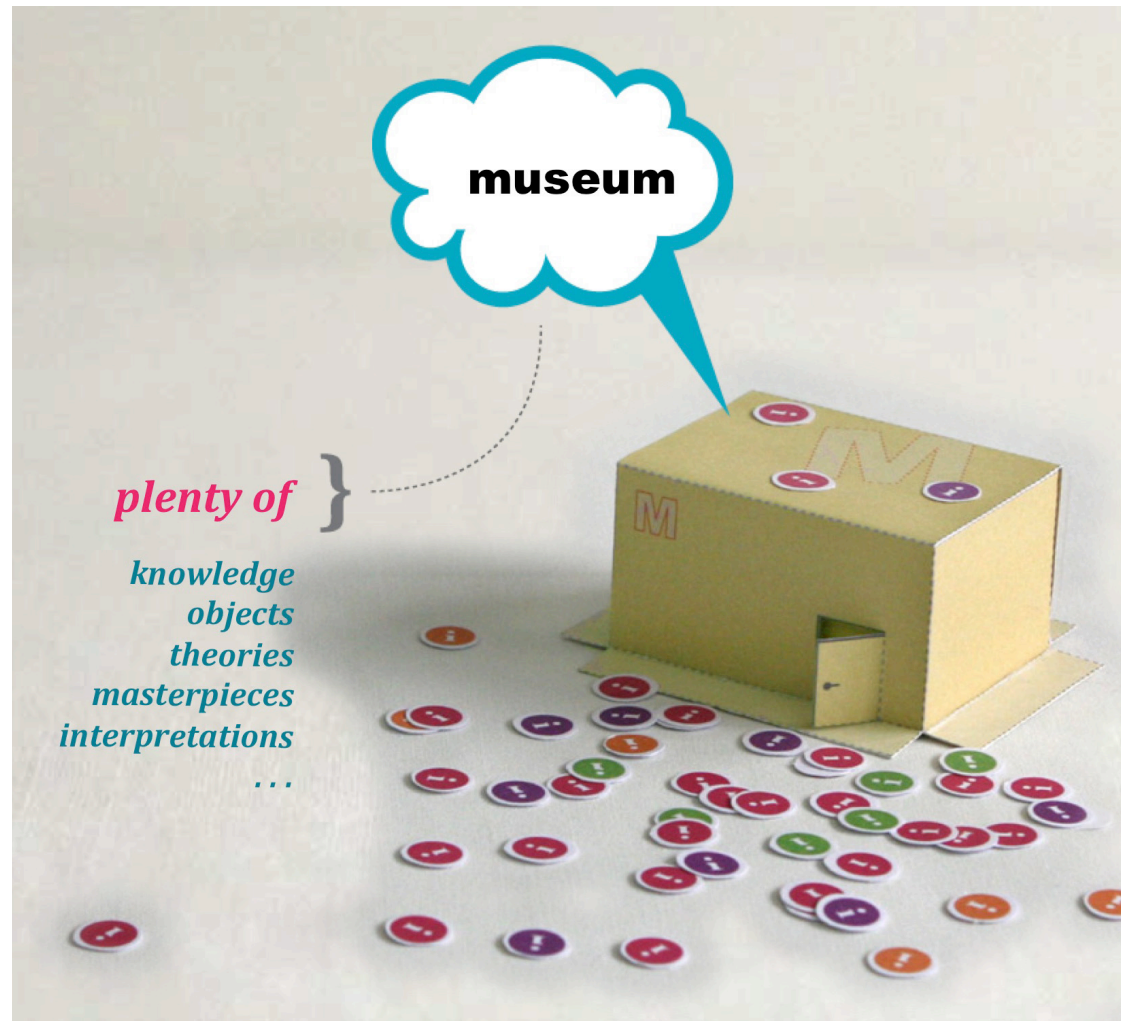
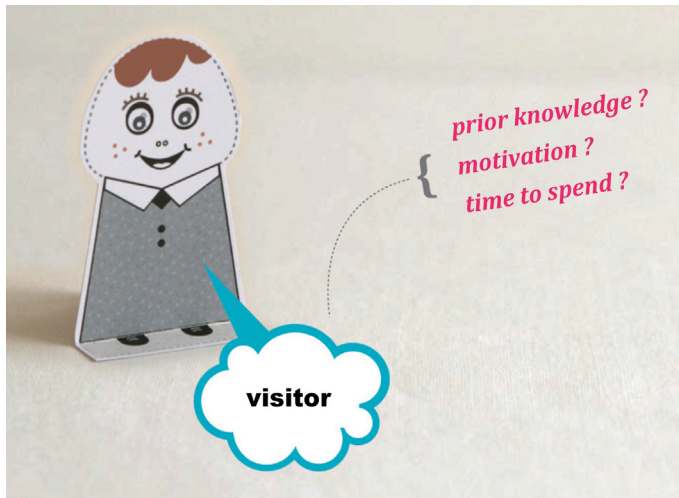
ACM Classification Keywords

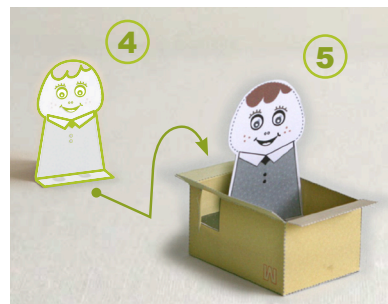
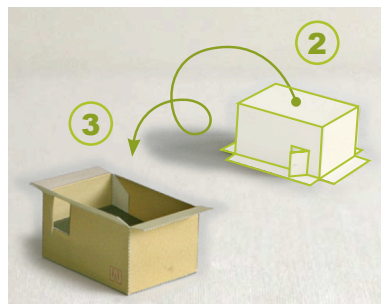
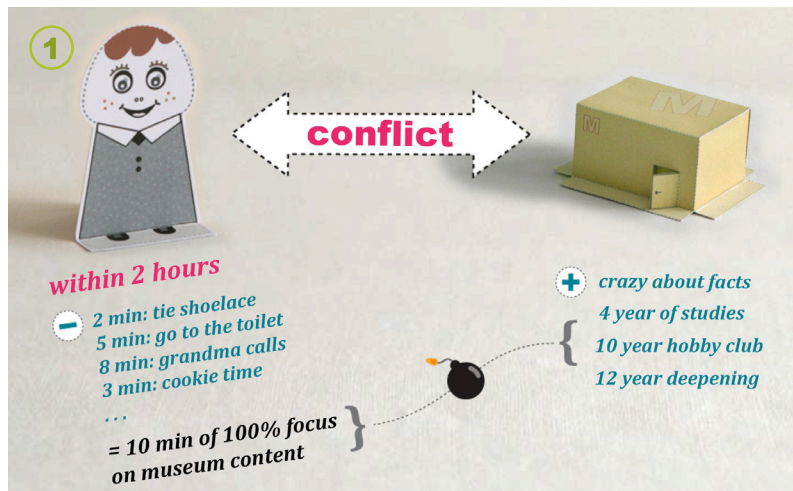
H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

Museums often have a plethora of information to share with their visitors. Similar to the design of interactive systems, the presentation of a museum is of great importance.

Alongside all the information it has to share, a museum needs to find a way to convey their message, their values and their own identity to the audience.

A museum also serves the visitors — reaching and informing people is one of their main goals — and would do well to use a visitor-centered approach while designing their overall representation. This has proven to be challenging, especially when digital aids like interactive displays or mobile guides are part of the overall representation. In this work we will focus on the design of mobile guides.



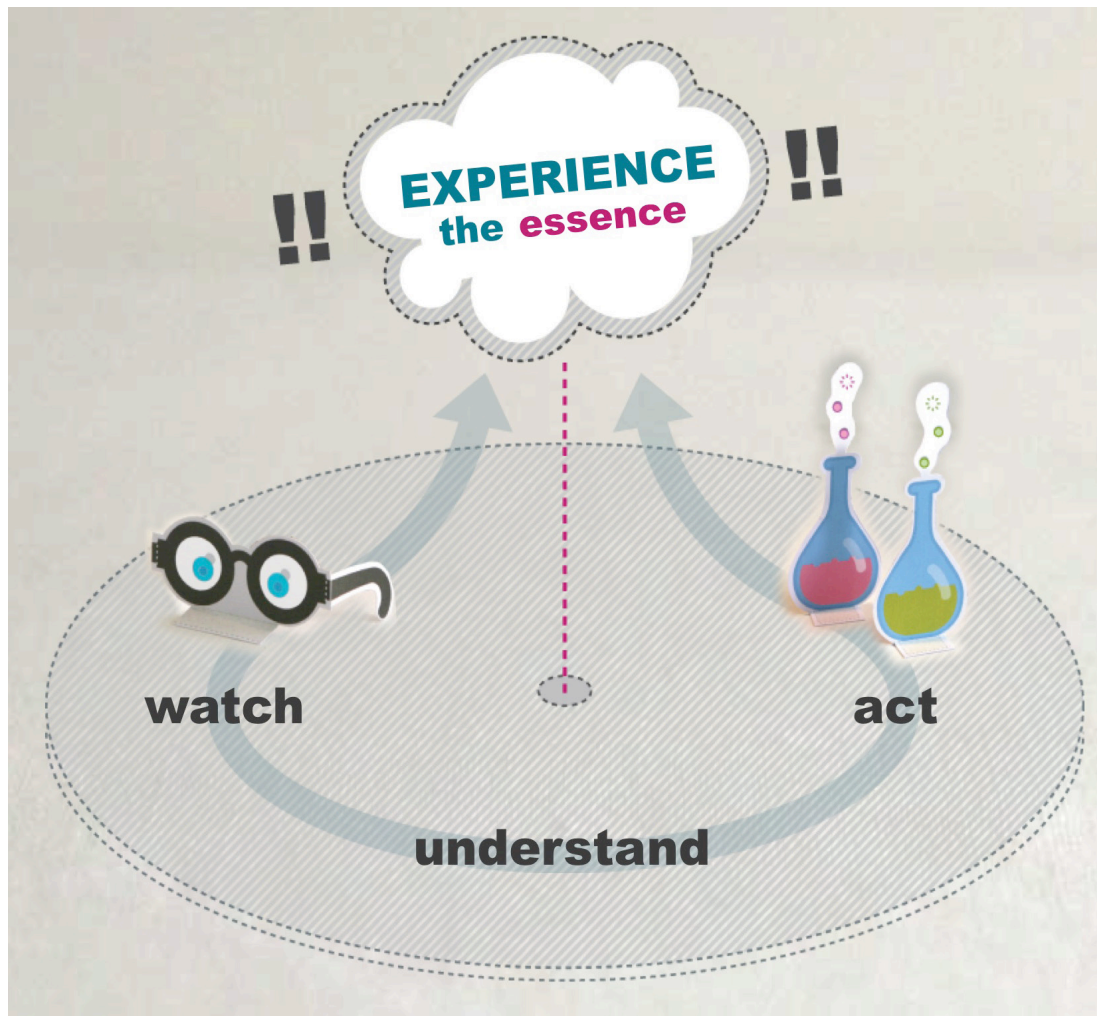


Our reference framework aims to solve the conflict between user and museum (1) by turning the museum "inside out" (2 to 3) so that it becomes a comfortable environment for the user (4 to 5) that supports them in their journey throughout the museum (6).

We have worked with five museums of various sizes, ranging from museums that have more than 350.000 visitors a year to museums



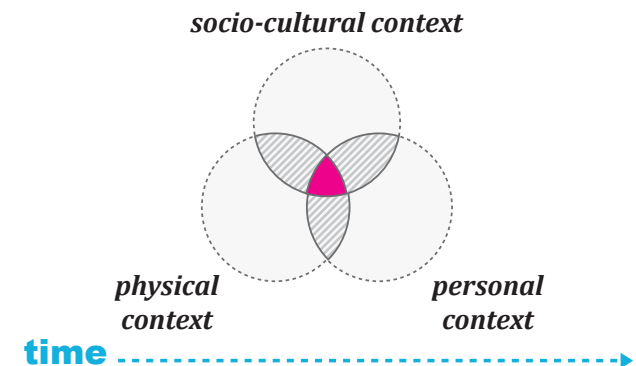
that have less than 1.000 visitors a year, and all of them face the same conflicts. What should be shown to the visitors in the limited time that is available? What are the important facts, values, messages and experiences the museum wants to convey?



We adhere to the contextual model of learning of Falk & Dierking [1], which states that there are three overlapping contexts that contribute to and influence the interactions and experiences that visitors have with museum objects and the consequent learning and meaning-making: the personal context, the physical context and the socio-cultural context (see figure below).

As visitors tend to have different approaches toward learning in a museum, personalisation is often used as a way to serve a wide variety of visitors [2]. Nevertheless, depending on the content and type of museum some ways of learning might be more appropriate than others (observation, understanding, discussion and even interaction with museum staff and objects, e.g. [3]).

Both the model of learning and these various types of learning should be taken into account for museum visits but are cumbersome to put into practice.



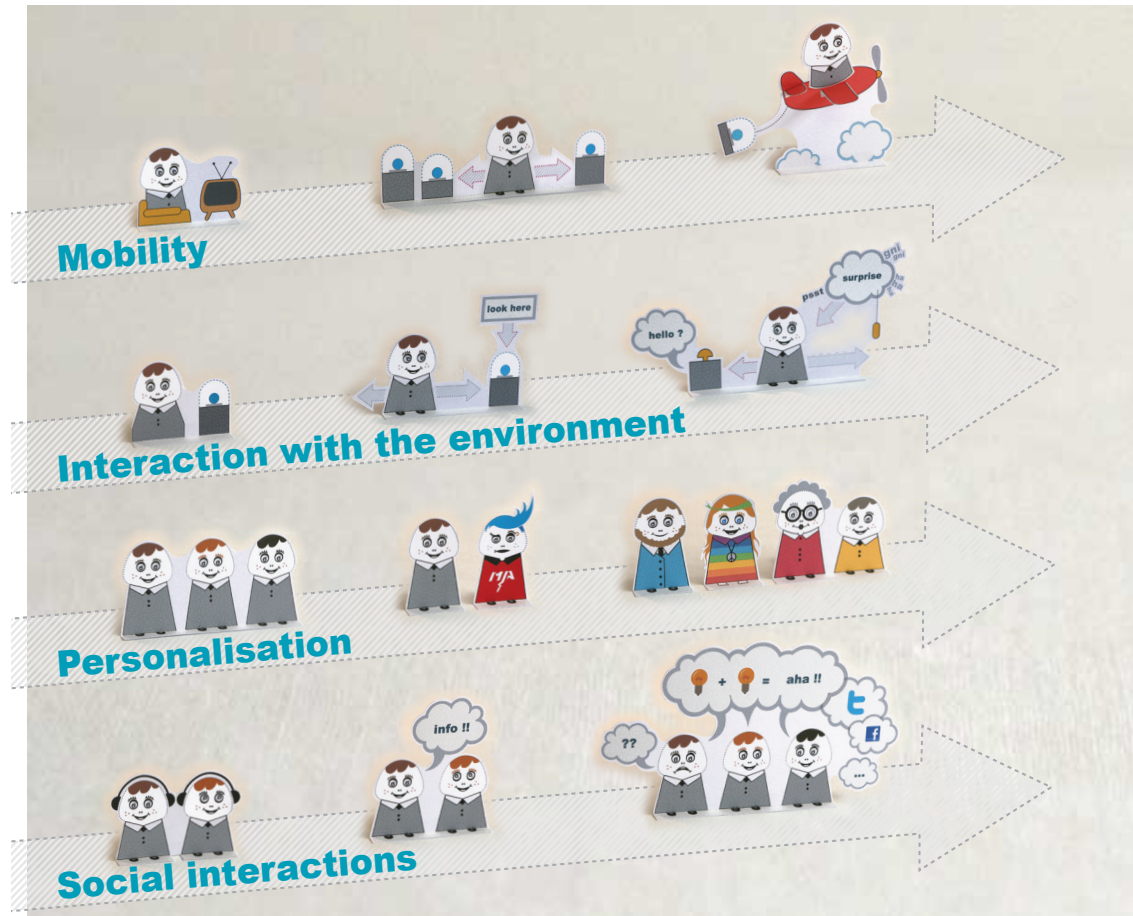
The Four Dimensions for Situating Mobile Guides in a Museum Context

Mobility is about how much freedom of movement is supported by the combination of the setup and the user while visiting the museum. This ranges from stationary setups on the left to having a solution that allows for freely roaming the museum environment.

Interaction with the environment covers what type of interactions are performed between the user and the museum environment. How interactive should the user's environment be? This ranges from non-interactive environments that merely act as an information provider on the left of the scale, to environments in which it seems that every museum object can start a conversation with the visitor.

Personalisation covers how well the solution should be tailored according to the visitors. The choices here are quite clear: a solution can be general i.e. the same for every visitor, but it can also be tailored according to a visitor group (e.g. youngsters between 13 and 17 years old) or even tailored according to the individual visitor profiles.

Social interaction defines up to what level a solution should explicitly support communication among visitors. This ranges from solutions that isolate the visitors and turn every visit into an individual visit, to solutions that force visitors to communicate about the museum content.



museum experience

mobility

interaction with environment

personalisation

social interaction

museum A

museum B

museum C

park D

museum E

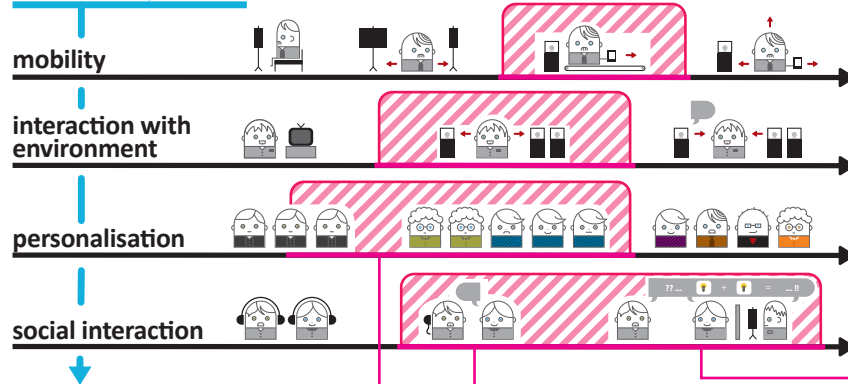
tour F

We verified this conceptual framework by using it for five different museums looking for deploying suitable mobile designs to support their visitors. The museum staff specified their preferences for each dimension, which were then mapped on various design alternatives that contained elements capturing these preferences.

All museums found this approach very useful and it made them reflect on the message and values they wanted to convey. It also provided them with more insights into how the design and technologies used should support the visitor.

On the next two pages, we presents two existing and deployed mobile guides which were designed based on these four dimensions.

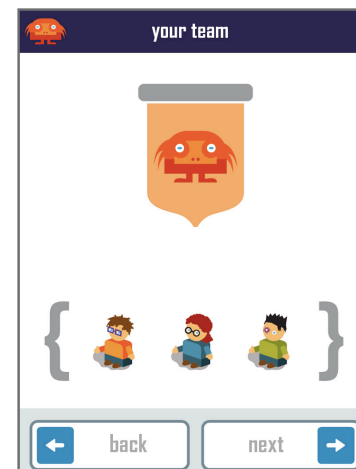
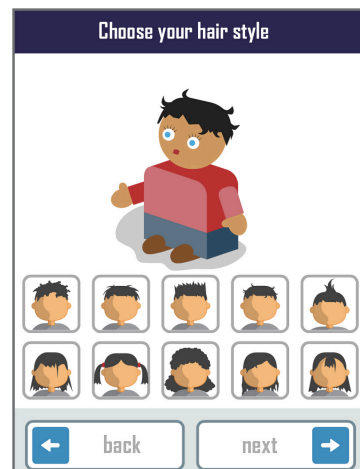
museum experience



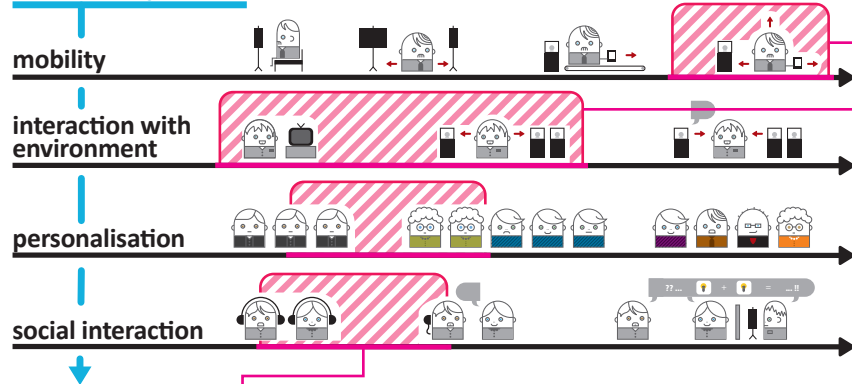
Users start with creating their personal avatar. These avatars represent them throughout the game.

The game requires teams of two or three players to collaborate.

Each player has individual tasks in the game, which can only be accomplished in collaboration with the others. This ensures players discuss the museum content with each other.



museum experience



The app motivates to individually explore artworks, but also encourages social interactions because of the way it requires people to search throughout the park.

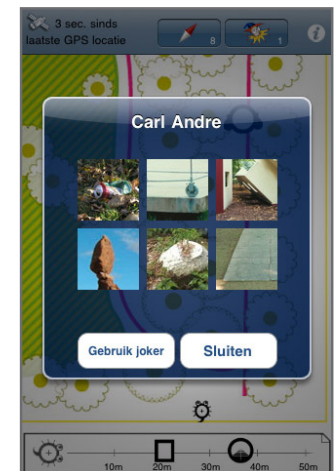
The radar on the bottom only reveals the distance to an artwork, but not the location. Consequently, people start skimming the environment for that particular artwork.

The visitor can freely choose how to explore the park.

Discover Art in an Open-air Museum

What the museum asked for:

- We would like to attract young adults.
- We would like them to discover art they did not notice before.
- We want to share how others looked at these artworks.
- We would also like them to discover the park as a hang-out and meeting spot.



Discussion

In this paper, we presented a simple yet powerful conceptual reference framework to specify the contextual elements of a visit to a particular museum. The contextual elements include to what extent the museum wants to establish personalisation, social interactions, interactions with the museum visit and overall mobility (and guidance) of the visitor throughout the collection.

This framework helps museum employees in choosing the technology that best matches the specific content and goals of the museum. We have learned that this reference framework was an important tool to discuss with the museum staff and to clarify why and how (mobile) technology could be used to improve the visitor experience. Several of the core elements of the mobile interfaces that were designed can be directly related with what was indicated on the reference framework. This makes the reference framework also useful for verifying whether the intentions of the museum are supported by the mobile technology that was being deployed.

Additionally, the framework avoids overloading museum visitors with too much information by focusing on a core take home message ("the essence") that leads to a memorable experience. This focus on what is essential, encourages museum exhibit developers to view the museum experience from the perspective of the average museum visitor, and step out of their comfort zone consisting of facts, their own interests, background and knowledge.

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