ÄÄNIJÄLKI

Opening Dialogues for Visually Impaired Inclusion in Museums

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Abstract

This paper describes the project: Äänijälki, keskustelun avaus (Sound-trace, Opening the dialogue). The project is used as a case study for analysing visitor experience enhanced through active participation in museum exhibitions.

While walking through an exhibition, visitors have access to the message from the museum. The experience is more engaging when visitors go to an exhibition with a friend that knows about the subject exhibited. The whole practice refreshes when someone tells the visitor something that connects her own life with the exhibition in an informal language with personal opinions. The idea of the project is to open this dialogue with other, possibly anonymous, visitors in order to augment users' experience.

The way this idea takes shape is creating a social tool for exchanging comments about the experience of going to and being in an exhibition, leaving audio traces in the process. These traces allow a dialogue within visitors that are not necessarily present at the same time in the exhibition.

Äänijälki is a service for visually impaired people and their related community for exchanging advises about exhibitions. Äänijälki is an instrument for enhancing accessibility and the experience in the context of Finnish museums. At the same time, it is a platform for collaborative sound gathering created mainly by visually impaired people. Despite that, our aim is that every visitor can listen Äänijälkiä (sound-traces).

The visitor participates in creating knowledge in the exhibition, and in exchanging it with other future visitors. All visitors have something in mind while in the exhibition, and they are inspired or provoked. Äänijälki is a tool for sharing these thoughts. Visitors and pieces in the exhibition will open their existing dialogue, by making it audible.

This service has two main elements: a PDA (Personal Digital Assistant) device with texture touchable screen (for using in the Museum) and a WWW portal (for remote use). The visually impaired person will leave audio traces in the exhibition by using a PDA device and/or the website. All the information addresses to visually impaired people in Museum pages is in the WWW portal, as well as the traces left in the museum connected to the exhibition as a whole.

Keywords: museum, inclusion, user centred, visually impaired, assistive technology, social tool

1. Introduction

After our observations, we found out that visually impaired people are interested in going to museums and exhibitions in general, but they do not have the information they would need in order to enjoy a visit. This information is related to accessibility issues as well as about opportunities for them to enjoy the exhibition. They are an excluded community not fully taken into consideration while designing exhibitions (e.g., there is no a feedback board where they could exchange comments about exhibitions).

On the other side, we wanted to know how do visually impaired people "visualize" and bring visually impaired people's world closer to the sighted people's world by providing descriptions and comments. Thus, we create a tool for visually impaired people and their related community (e.g. friends, family and workmates), for them to use for exchanging advices about exhibitions.

> *"How can a blind person from birth form in his mind the idea of figures? I think that the movement of his body, the successive existence of his hand in different places, the non-interruptive sensation of a body passing through his fingers, give him the notion of direction."* (1)[1]

Äänijälki is a project about creating a service that Finnish museums could offer to visually impaired people and their related community. This first phase of the project is done in collaboration with Ateneum Museum[2], The Finnish National Art Gallery, in Helsinki**.**

Äänijälki will be used for sharing hints about the experience of going to and being in an exhibition. The goal is to motivate visually impaired people to visit museums by providing a tool to get information about museum spaces and exhibitions, with their "comments".

Äänijälki consists of creating a platform for collaborative audio gathering of people's comments related to the museum exhibition.

This service has two main elements: a PDA (Personal Digital Assistant) device with texture touchable screen (for using in the Museum) and a WWW portal (for remote use). The visually impaired person will leave audio traces in the exhibition by using a PDA device and/or the website. They can also access other visitors' comments, and museum's experts through earphones from the PDA.

All the information addressed to visually impaired people in museum pages, is in the WWW portal, as well as the traces left in the museum connected to the exhibition as a whole and to accessibility issues.

Äänijälki is a multi-user system that has a simple interface and requires no training. People coming in groups to the museum can record a part of their conversation, and share the listening of traces left by others.

2. Background

This initiative was born after coordinating a usability test study in the context of the Museum of Cultures in Helsinki for improving the interface of the Digital Facsimile of

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[1] Mariana Salgado did the free translation from French to English.

[2] Ateneum; www.ateneum.fi

the Map of Mexico 1550. Many visitors had very interesting comments about the Map. Some of them were Mexicans and had comments related to the city and the places where they have been. One expert in the Map came and had a lot to tell about the history of the document. A researcher in our team had a lot to add about how they took the photographs and how the map is conserved in the Museum in Uppsala. Others were anthropologists and had other points of views. The Map was alive while listening to them, their impressions, stories, and reactions!

An exhibition is a unique opportunity to collect data about the items, personal stories, questions, jokes, recommendations, etc. This is why the content of *Äänijälki* are visitors' comments.

3. Process

In the beginning of the development of this project we decided to make accessible the exhibition's information in the Museum, and remotely (e.g. from home or workplace). The idea behind this was to make available all necessary details about an exhibition beforehand, since visually impaired visitors need information about accessibility issues, and the museum experience before the visit. In one visit to a museum with a visually impaired person, she noticed that she would not have gone to the museum we proposed because she didn't know there were so much hands-on experiences in it.

It was important for us to make Äänijälki available for all blind and visually impaired persons. This is why we never experiment with Braille based applications. In this way, people that have only recently lost their sight can use this tool.

The metaphor of a compass helps to visualize directions for different implementations and technology involved. We analysed these options during the process of defining this project. A key issue in our discussions was how to make the data gathered accessible. Some ideas about managing the traces that visitors leave in the museums are in Figure 1.

Defining this project implied several testing periods. Our design approach was user-centred and used a number of methodologies.

We experimented with a touchable-screen with texture for a desk terminal when considering the possibility to install a computer in an isolated place *inside the museums.* Tests of the prototype were done in the Media Lab, with sighted people that had their eyes covered. The prototype only worked by having someone behind-the-scenes who is pulling the levers and flipping the switches, in our case copying the testers behaviour in the computer. This allowed testing of an interface concept before the system was fully working. This type of technique is called the Wizard of Oz. (2)
Everybody could easily understand and use the prototype. Although the test was successful, we considered that the idea of a separate place inside the museum is not a right concept while considering inclusion. Moreover, we thought that it is beneficial for our concept to have a mobile device in order to enhance accessibility, and comments related to specific items.
During this test we realized that the content was important for the participants. The fact of having only two comments was a bit frustrating.

In order to clarify our goals, we used scenario-based methods. Scenarios are stories. They are stories about people and their activities. They are widely used in the field of software design for arrive to a common understanding of what are the user's activities, tasks and behaviours. (3). In these scenarios, we described different visitors situations, analyzing pros and cons of the tool.

Ateneum Museum gives permission to touch certain sculptures only to visually impaired persons. We went with visually impaired persons and a museum guide to create the content for our PDA device. The descriptions, we gathered from the visually impaired visitors, in order to produce the content for the prototype, are surprisingly visual.
In the case of these sculptures in Ateneum Museum, sighted people can enjoy the traces that visually impaired people left in certain sculptures, after touching them. See figures 2-3-4

For managing the information, in this phase of the project, we decided to do a time-line, that combines in a chronological order comments related to the building, the exhibition, and the pieces. The comments come in alteration from the visitors and from the museum guide.
The aim is to produce a tool that is user-centred and an example of both of Assistive technology and Universal design. Universal Design is the concept of designing products that are usable by all people, including people with disabilities. When applying Universal design, the aim is to improve the usability making the product suitable for people with disabilities. (4)

The next phase is to test the demo PDA application in Ateneum Museum and the WWW Portal. The testing will include in-depth interviews, semi structured interviews, and behavioral observation with visually impaired persons. The interviews will be held in Ateneum Museum and in people's houses when evaluating the WWW Portal.

4. Content

The visually impaired people will be the co-authors together with the museums' experts of the content for both the PDA application and the web portal, leaving audio tracks during the visit. The content of these inputs relates to the exhibition, to the building, or to accessibility issues. The tracks could be "attached" to a certain piece, space or to the exhibition as a whole. That means that the comments will be reachable from certain places, and will relate to them. In the case of the remote dialogue, the comments are managed in the same way as inside the exhibition, making explicit the link between a comment and the referred item.

The content of Äänijälki is divided in two:
a) SHARE: content connected to experience of being in an exhibition that people like to share because it is nice to be "heard" and to give a comment.

b) ORIENTATION: content connected to the place, the real building of the museum and the accessibility. It has details that visual impaired people need for navigating and orientating inside the building and on their way to the museum.

Äänijälki in Ateneum Museum allows the following actions: a) listen and record the directions for arriving to a certain sculpture, toilet, cloakroom b) listen and record stories related to the sculptures, the building and the exhibition in general.
Äänijälki uses speech, because the goal is to present it as a natural component to visually impaired people, as Ubiquitous Computing where the aim is to make the technology invisible to the user. Also, speech is essential to enable systems to be used by disabled people and so is important for Universal Design. (4).

Technical resolutions have been explored for the device to use in the museum, using both mobile phones and PDA devices. We decided that a PDA is the appropriate solution. The current prototype uses the Hewlett-Packard iPAQ h5450.
The technical functionality consists from server and client side elements. Server side consists of database, server software and hardware. The client side of this service consists of a PDA and the client software in it. The client software contains necessary interfaces and hardware support to use the service and to communicate with the server. The main line of communication will be Wireless LAN. User positioning and recognition will be implemented using Bluetooth. Bluetooth stations are essential for each piece or room in the exhibition, so each area in the museum can be recognized as its own space, and can be identified through visitors' PDA (positioning).
The product is demonstrated by using Apache server, MySQL Database, PHP-programming (server-side) and simple Flash-application in the Client side.

5. Dialogues

The traces allow a dialogue within visitors that are not necessarily present at the same time in the exhibition. It is an exchange of ideas between future, past and present visitors to museums. Future visitors get to know about Äänijälki and even enter questions before the visit. Present visitors leave a comment in the moment of the visit. Past visitors can remember something and add it later, or they can even check for some information that

was added after. One visitor is able to reach the message left by his friend that was in the exhibition some time ago, or to listen to anonymous comments. Äänijälki provides information about exhibitions, information that is not coming from journalist or expert discourses.

Simultaneously, visitors and pieces in the exhibition open their already existing dialogue by making it audible. Visitors have something in mind in the exhibition, are inspired or provoked by the exhibition. This is why Äänijälki is a social tool that contemplates the human necessity of commenting, criticizing and recommending.

Äänijälki facilitates the communication between the museum, as an institution, and the visitors. Many museums are looking for more visitor-focused ways of approaching their audiences. (5).

The museum institution sends a particular message to visitors using Äänijälki. Visitors can reply leaving feedback to the museum. The message of the institution (which is the message of an expert, with formal language) is complemented with the fresh messages coming from the visitors. Once Äänijälki is implemented, visitors and the museum institution will generate a new understanding of their respective roles.

As Äänijälki allows a dialogue between visitors that are not necessarily present at the same time in the museum, visually impaired persons that normally have problems in meeting by chance (or recognizing that they meet) in a public space could "meet" inside the museum or in the web portal.

Wakary and Evernden, while analysing a case study of an Ambient Intelligent Museum Guide, saw the chance to give form to the intellectual knowledge of the museum staff in addition to the embodied knowledge of the artifacts. They wanted to catch the informal and yet engaging delivery of specialized knowledge on behalf of the museum researchers. (6). The difference is that Äänijälki includes all other visitors beside the researchers.

It was evident to Wakary and Evernden that once the artifacts were connected to people, the understanding of these artifacts became deeply connected to all aspects of the museum ecology. The comments from museum researchers came out in the form of storytelling that covered activities related to the artifact, conservation, storage, research and display technologies, meaning and values associated with the artifacts- all situated in specific contexts of time and place. (6)

It has been compared with Wikipedia,[3] because the content is open, and users can modify it. In the case of Äänijälki the content relates to exhibitions, to physical places, or to pieces inside exhibitions. The object themselves, the exhibition and the building by their presences in a certain place affects visitor's comments.

6. Conclusions

There is a need to change museum experiences and convert them to more participative ones, connecting people's comments to the exhibition. The visitors participate creating knowledge in the exhibition and exchanging it with other future visitors. We think that in this way the visit is more active, communicative and engaging.

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[3] Wikipedia: http://www.wikipedia.org/

The feedback we are gathering in our interviews in museums, while making the content with visually impaired people and in the test sessions, is encouraging.
Äänijälki is a project in the beginning of its development, but we believe that in the future, it can influence the visitors' experience positively.

Opening the dialogue to the visually impaired people is a good way of making the exhibitions more inclusive and engaging by exchanging opinions about the exhibition. In the path of working for this project, we understood the need from the museums to communicate with the visually impaired community, and the need of visually impaired persons to get information about museums.

Silvia and Victor Margolin highlight that the foremost intend of social design is the satisfaction of human needs. Äänijälki tries to enhance quality of life, directed to a specific vulnerable population and can thus be framed into social design. (7)

We share the belief with Ciolfy and Bannon that understanding the concepts of space and place can be beneficial in a project about physical spaces enhanced by technology. Places offer cultural, structural, and social clues that shape the actions of the visitors. (8). Our experience in the Ateneum Museum, a historic and respectful building showing art from the 1750s to the 1960s, might be different from designing for other museums involved in the service. Analysis of this comparison is one of our research concerns while developing Äänijälki.

The main question in Äänijälki is how the insights that people leave in the museum change the experience of being in a museum, enhance the accessibility, and generate a manageable amount of data for remote use.
Other important issues are:
- How could these comments improve visitor's learning about the exhibition? How does Äänijälki generate education added value to the exhibition? How can the museum collect information about the exhibition's theme with Äänijälki?
- In which way Äänijälki influences interactions within visitors in the context of a museum visit? For example: Will the talk of the visitors be organized around the listening activity, or the other way around?
- How to evaluate, classify and perhaps select the content that visitors are leaving in the exhibitions?
- In the case of opening this service to all visitors. How can editing the gathered data be adapted to the practices and processes of museums?
- How effective is Äänijälki for collecting feedback from the visitors?
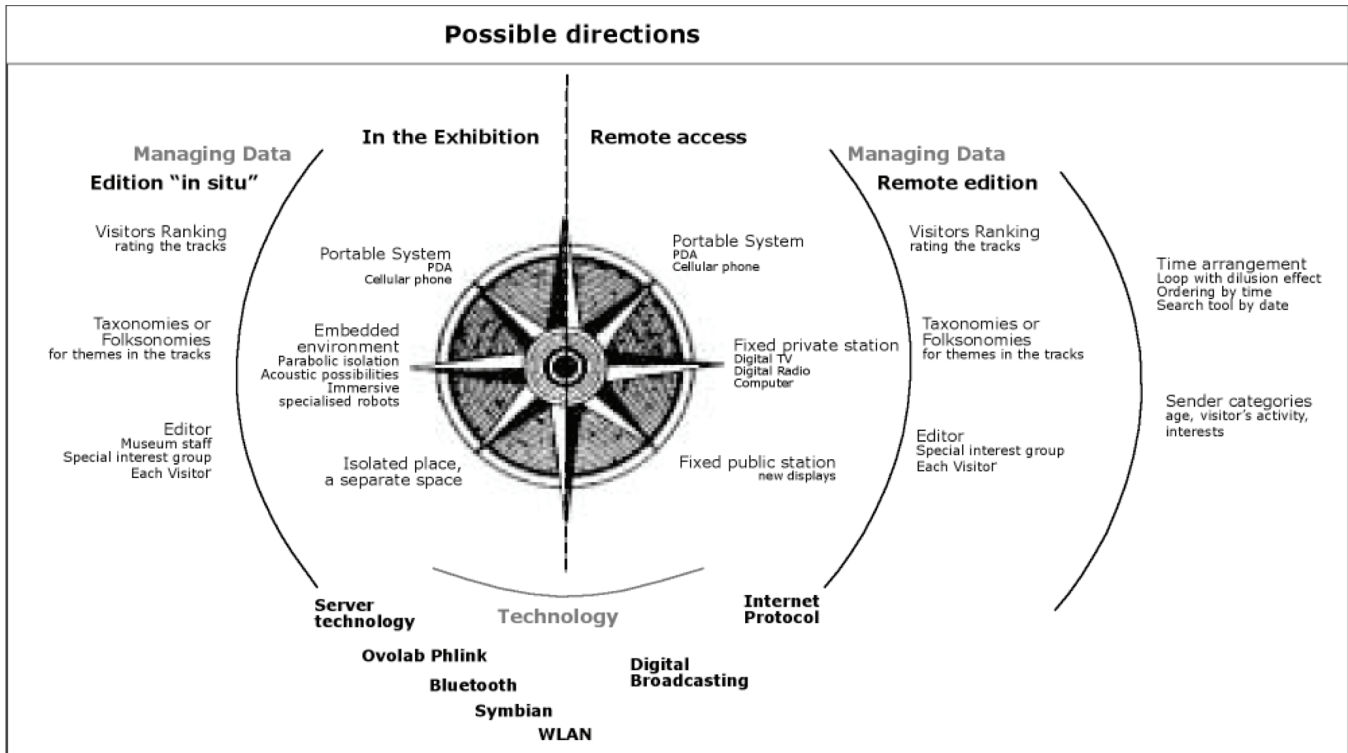
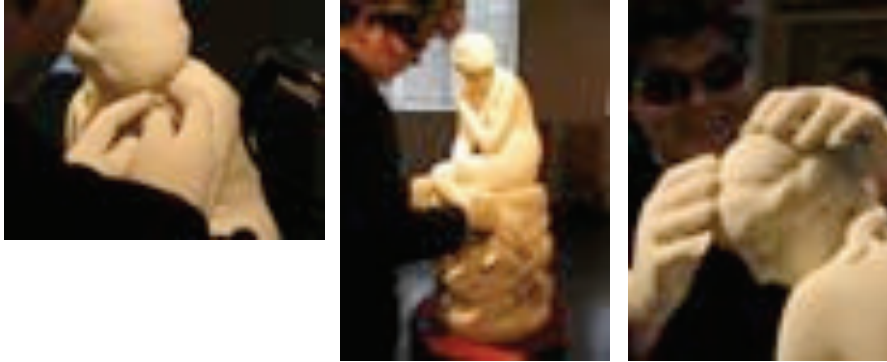*Fig 1. Figure: Possible directions analyzed in the process*

Fig 2,3,4. Figure: Touching the sculptures in Ateneum.

Acknowledgements

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