

# Cover Page

**Title of submission:** Early explorations of interaction design for nature experience

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# Early Explorations of Interaction Design for Nature Experience

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## Abstract

How can interaction design be used to advance information design, interactive services, and in the end increase the tourist attraction at nature reserves and national parks? Based on sketching, field studies and analysis of the experience of visiting nature reserves and national parks, 60 interaction design and media technology students at the advanced level have developed initial concepts and early prototypes for interactive services. Based on their design alternatives, we develop a categorization of different kinds of applications: guides, routes, events, games, installations, and websites. We finally discuss briefly the design ideas in terms of cross-platform applications, multiple platform applications, embodied multimodal experiences, user generated content, and location-based information.

## Keywords

Interaction design, nature experience.



## Introduction

How can interaction design be used to advance information design, interactive services, and increase the tourist attraction at nature reserves and national parks? We believe that interaction design can improve the nature guides and the experience before, during and after a visit to a tourism destination. Based on sketching, field studies and analysis of the experience of visiting nature reserves and national parks, we aim to develop concepts and prototypes for interactive services, e.g. web services, mobile nature guides, and web services using GIS (geographical information systems). In this position paper we outline our initial steps in this endeavour.

### *Related Work*

In our yet preliminary literature survey a few studies have surfaced as important to relate our work to. We currently see a trend towards more use of computers outdoors and location based games (Benford, et al., 2004) and Geocaching is an example of that, where you try to find hidden things using a GPS device. Different kinds of pervasive computing applications and games are also examples of this trend (Harris, et al., 2004; Rogers et al., 2004; Vogiazou, et al., 2005; Verhaegh, et al., 2006). Many of these are made for learning purposes. For example, Rogers et al. propose that digital augmentation offers ways to enhance learning, by encouraging exploring and reflecting when doing scientific enquiries in the woodland. Chen et al. (2003) suggest a system for scaffolding the learning of bird watching.

## Method

Based on sketching, field studies and analysis of the experience of visiting nature reserves and national parks, we developed initial concepts and prototypes for interactive

services, e.g. web services, mobile nature guides, and geographical information systems (GIS) on the web.

Students' projects were conducted on the topic, as part of course work. In total about 60 students participated, both individual projects and group projects were performed, depending on the set up of the. The authors of this paper acted as a combination of researcher and design tutor.

## Results

Different kinds of design concepts were developed: guides, routes, events, games, installations, and websites.

### *Guides*

Several of the early design concepts can be characterized as guides for visitors. Stationary versions were implemented as installations, kiosks or billboards, or sometimes websites to be used before a visit. Other variants of guides were made to be used while hiking in the national park. These were usually made for mobile phones, PDAs, or sometimes dedicated mobile devices with possibility of positioning (Figure 1). Some of the guides were based on communities like bird watching or fishing. One design concept was an idea of a small log of wood you walked around with, which was an aesthetically interesting guide. The log had a hole you could listen into, and a hole you could either blow or talk into. The main input method was gently blowing into the log. A physical, but not interactive prototype was also developed.

### *Routes*

Before going out into the countryside, routes can be planned. They could involve downloading others' routes, or



Figure 1: Design by Markus Borgström, James Enkel, Lars Nilsson, Stefan Norling, and Anton Widgren. Guides on mobile phones.



Figure 2. Design by Håkan Andersson, Christer Byström, Ellinor Johansson, Anders Hagberg, Torbjörn Härje, and Mikael Nordenrot. Using an electronic billboard and a mobile guide.

make your own. While being outdoors the route was used in mobile phones or other mobile devices that had possibility of positioning. Some were also combined with games (see below). One of our students, developed a novel version of the route, where kids online could create an animal supposedly living in Tyresta, learn about what it was doing, and then track the animal on a PDA or mobile phone and when visiting the national park.

#### Events

An example of an event was the dating service where an online dating service was combined with a visit to Tyresta, including an evening dinner. This category could probably be explored further than our students did in their projects.

#### Games

Several routes investigated by the students included games that could be played at different stations. Many were in the form quizzes that sometimes also used scoreboards on the web. Students also made references to Geocaching. Other games were part of installations.

#### Installations

Installations like electronic billboards and kiosks were explored by many of our students (Figure 2). One novel idea was a woman who lived in a lake and a screen or a projection under the water surface could show you things from other places or times. Another example was a living tree (with a face projected onto it) (Figure 3). The tree included interaction techniques like groups of kids stamping on things in the ground, and kids hugging him. He also had a website. Another interesting installation was a pair of stationary mixed-reality binoculars. The idea was that people would discover them and start talking about them, and more people would come looking for the binoculars.



Figure 3. Design by Johan Blomkvist, Ruken Cetiner, Oskar Jeremias, and Sara Schill Saran. Interacting with a computer augmented tree.

When looking through them and turning them in different directions, additional information about the things you were looking at would be disclosed.

#### Websites

Many projects made use of the web to prepare before a visit to Tyresta, or do things after the visit. But other used it to provide information about Tyresta. Yet others included features building a community around geo-tagged photos (Figure 4). In one project, the family at home could track their father who was out fishing and see photos he took immediately after he had taken them (Figure 5).



Figure 4. Design by Sebastian Bolling, Stefan Bolling, David Borgenvik, Anders Brink, Linus Dolk, and Per Lindgren. Sharing photos on the web using a gaming console.

Figure 5. Design by Stefan Nygard. Geo positioned photos.



## Conclusions

We see that most design ideas are composites stretching across different context of use and different media. Some part of the concept is used before the visit to Tyresta, some part is used during the visit, and some parts after the visit. Many services could be used either on mobile phone, or PDA, or on a PC. These cross-platform services are a consequence of starting with the desired user experience rather than with a choice of platform. Not only, were the project cross-platform applications, they were also multiple platform applications; in many projects, the same service or system made use of combinations of platforms, like for example dedicated devices, mobile phones, projections, and web over PC.

Several of the ideas that our students developed were based on embodied multimodal experiences. They included moving around and some had interaction techniques like blowing and hugging. The designers paid attention to aesthetics of touch, movement, sound and sight, as well as instrumental and social issues.

The websites that were suggested were built on user generated content and the social web. Ideas included sharing photos, ranking them, making comments, and building communities.

Another feature included in most projects was location-based information, based on positioning. These ideas could be realized using WiFi-triangulation, GSM-triangulation, GPS, RFID, Bluetooth, barcode readers, or even as low tech as calling or messaging a particular number on your mobile phone.

The ideas presented here are accordingly making use of features like cross-platform applications, multiple platform applications, embodied multimodal experiences, user generated content, and location-based information. All of these are among the currently hottest topics in interaction design, and it can only be regarded a mirror of our zeitgeist. It would have been interesting to see what interaction design students would have made of this project ten years ago, and it will be interesting to see what they will make of it ten years into the future.

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## References

Benford, S., Seagar, W., Flinham, M., Anastasi, R., Rowland, D., Humble, J., Stanton, D., Bowers, J., Tandavanitj, N., Adams, M., Row Farr, J., Oldroyd, A., & Sutton, J. [The Error of our Ways: The Experience of Self-](#)

[Reported Position in a Location-Based Game](#). Proceedings of Ubicomp 2004 (Nottingham UK, September 2004), Springer/ACM.

Chen, Y., Kao, T. & Sheu, J. (2003) [A mobile learning system for scaffolding bird watching](#). Journal Computer Assisted Learning, 19, 347-359.

Harris, E., Fitzpatrick, G., Rogers, Y, Price, S., Phelps, T., Randell, C. [From Snark to Park: Lessons Learnt Moving Pervasive Experiences From Indoors to Outdoors](#). Proceedings of the fifth conference on Australasian user interface (Dunedin, New Zealand, 2004), CRPIT Vol 28 - User Interfaces 2004, Australian Computer Society, 39-48.

Rogers, Y., Price, S., Fitzpatrick, G., Fleck, R., Harris, E., Smith, H., Randell, C., Muller, H., O'Malley, C., Stanton, D.,

Thompson, M. and Weal, M.J., [Ambient Wood: Designing New Forms of Digital Augmentation for Learning Outdoors](#). in Third International Conference for Interaction Design and Children (IDC 2004), (Maryland, USA, 2004), 1-9.

Verhaegh, J., Soute, I., Kessels, A., and Markopoulos, P. 2006. [On the design of Camelot, an outdoor game for children](#). Proceedings of the 2006 Conference on interaction Design and Children (IDC 2006), (Tampere, Finland, June 2006), ACM, 9-16.

Vogiazou, Y., Eisenstadt, M., Dzbor, M., and Komzak, J. [From buddyspace to CitiTag: large-scale symbolic presence for community building and spontaneous play](#). Proceedings of the 2005 ACM symposium on Applied computing (Santa Fe, New Mexico, 2005), ACM, 1600-1606.