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Research becomes public: The use case of WebPark

Ruedi Haller, Christophe Rhin

Abstract

Thanks the EU research project „WebPark - Geographically relevant information for users in protected areas", the Swiss National Park (SNP) has established a mobile digital visitor information system called WebPark^{2005}. The system was developed as prototype and could be a model for protected areas. The overall aim of the system is to provide visitors in protected areas with location based information. A common personal digital assistant (PDA) with an integrated GPS is used.

The current version of WebPark^{2005} integrates the following applications: A topographic map and a profile of the selected trail allow the cartographic overview. On request, a "search around" tool lists the available information around the current position. This tool integrates thematic map information (e.g. distribution of mountain ungulates) as well as general information (e.g. general description of the selected animal). A interactive tool allows the visitor to store and send their own observations to a server in the National Park house. If wanted, the observation can be submitted to other online users of the system. This tool is used for survey purposes by the administration staff as well. Moreover, a virtual natural trail on wildfire and a classification key for butterflies has been integrated.

The integration of existing GIS data and information was an explicit task of the project. The huge knowledge from research could be offered to the guests, obviously filtered and redesigned.

WebPark was a successful project, not only due to the completion of a number of technical tasks. As important as the technical work was the work on additional components like the accurate definition of user needs and the continuously collaboration with the staff of the protected areas. The combination of nature and high technology was on interest for media. Due to the overall positive feedback it was possible to find sponsors for the next years to maintain the system in the SNP without project support. Further development shall integrate tourism relevant information too.

The project WebPark

The EU research project "WebPark - Geographically relevant information for users in protected areas" has been started in autumn 2001 with the aim to demonstrate the possibilities of a Location Based Service (LBS) for leisure and professional users in recreational and protected areas. Therefore, visitors of natural areas and parks should be provided with information about their surroundings using smart phones or personal digital assistants (PDA) and GPS. The objectives were divided in two main directions: (1) Developing a prototype for the test sites and (2) investigating intensively the user needs and reactions. Moreover, the potential of the service should be tested under the premise of policies on conservation and safety in recreational areas.

The project consortium was composed of six partners from five European countries: Geodan Mobile Solutions (NL), European Aeronautic Defence and Space Company EADS (F), the City University London (UK), the Geographical Institute of the University of Zurich (CH), Laboratório Nacional de Engenharia Civil (P) and the SNP as the main test site. The other test site was established on the island of Texel (NL).

User needs and information strategies of protected areas

The visitors of protected areas were identified as the end users of the LBS. Therefore, the main questionnaire was distributed within the subscribers of the journal of the SNP and on the park's website. It has to be pointed out that most of the visitors could only react from the basis of their imagination what an LBS could serve for, as the service not yet had been established in the first year and LBS at that time was not commonly used.

In situ monitoring showed in the SNP, that 95% of all visitor groups carry a mobile phone at least for safety purposes. Out of 1000 responses of the questionnaire of the journal subscribers, 23% wanted to use such a digital mobile service, 24% would like to use it for safety reasons and 37% refused the use of a PDA in the SNP. 10% could not imagine, how the service would work (KRUG,

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ABDERHALDEN et al. 2003). The possible contents were also evaluated: Safety information was rated with the highest priority, followed by possible locations for the observation of wild animals in the SNP, topographic and thematic maps with the current position of the visitor and location based information. A possible virtual natural trail was not highly prioritised (see Table 1).

n=1000	% very important	% important	% less important	% not necessary	
Safety information	51,2	26,7	8,9	4	
Locations of particular animal species	36,1	37,3	7,3	8,6	
Information for orientation purposes	20,5	37,4	12,8	17,2	
Current information about vegetation	20,1	45,3	13,2	8,7	
Thematic maps (e.g. geology, vegetation)	15,4	45,4	16,3	10,4	
Information about current research projects	8,7	40	26,5	11,9	
Route information	15	37,3	18,6	18,2	
Nearest possibility of personal information	12	34,6	26,1	14,8	
Virtual trail guided by a PDA	2,5	19,8	28	35,4	

Tab. 1: Possible contents of a Location Based Service in the Swiss National Park and the weighting by visitors.

The needs on information technology from protected area management were collected with online interviews among an expert panel composed by sixty-seven park administrators of distinct protected areas in Europe. The goal was to collect their assessment of the challenges related to the (over)exploitation of the park resources, and the introduction of targeted information provision tool for park sustainability. 22.4% of the information management in protected area (n = 67) have defined the importance of information as "fundamental", 70.1 % still as "very important". No single park is defining the importance as "neutral" or "not important". Different techniques are used to make information available outdoor, mostly guided tours (88.1%) and info boards (94.0%). Although 89.6 % of the areas are maintaining a website, only 17.9% are planning to provide visitors with digital information outdoor in a long term perspective (DIAS, BEINAT et al. 2004).

Functionalities

Based on the questionnaire and first tests in the SNP in 2002 the following core functionalities were developed:

1. A mapping tool provides the user real time with their position on different topographic maps and on the profile of the trail. Moreover, the current coordinates can be listed.
2. Features of Interest (FOI) were integrated and mapped on request. Additionally, more general content (e.g. species descriptions) can be integrated as texts, images, films or audio files. The content of the FOIs in the SNP application is mostly based on existing content from the GIS or information department. In the SNP, a virtual trail on wildfire was developed for 2005, based on research activities and results.
3. All current observations and information outdoor can be forwarded to other users of the system with geographical bookmarks. A specific approach is the development of a butterfly application, which allows the user to identify occurring butterflies with a classification key. The observation can be stored and transmitted online to a server in the national park house.

All the tools had to be developed with the limited resources of a PDA like power availability, processor speed and screen size as well with a limited availability of the mobile network. Therefore, the involved institutes focused on these scopes. The user interface is based on the functionalities of the Internet Explorer and was improved with many hints of test persons (see Fig.).

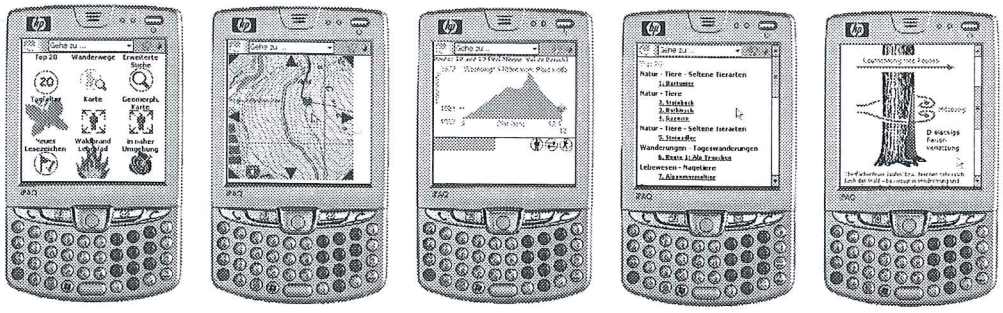

Fig. 1: (1) User interface of Webpark: With 9 symbols the user will be guided to the most important applications.The map (2) and the route profile (3) with the current position. The top 20, the interactive list with the most important key words for the SNP (4). Some explanations on effects of wildfire (5).

The acceptance of the project

The project was launched as a technical research project. Including a protected area as a partner in the consortium illustrates the awareness of the complexity (not only for technical but also for social reasons) to build a bridge between natural environment and high technical tools. The project had the aim to adapt visitors and park managers reactions. The initiating phase showed mainly sceptical or denying attitude. Like many of the visitors managers thought that there is a mismatching of mobile devices in protected areas. Further, they explained that the conservation policies concerning information, communication and geographically based education could be achieved with other solutions. Nevertheless, the acceptance of the new service has grown. In autumn 2004, the SNP has decided to continue the service at least the next three years. A set of strong arguments helped to change the attitude:

- The possible impacts of this new instrument could come along with the reduction of other impacts. For example, the number of information boards can be reduced and therefore the impact reduced by using the new technology. This argument is the strongest one in relation to the conservation strategy.
- The tests in 2004 showed clearly, that younger people – a target group in the information strategy of a protected area - prefers the use of such a device compared with traditional media.
- The protected areas have a strong economic value. They have to follow economic principles of expansion and investment. More and more, the visitors satisfaction will be an important value of the existence of a protected area. The visitors of protected areas will receive additional information, which is not available in not protected, managed and investigated areas.

- An interactive process has been started, integrating the knowledge of visitors in the survey processes.
- There is an added value of monitoring data and GIS data layers, if they are also used for information purposes.

Conclusion and outlook

The conclusions for the project WebPark might be distinguished into two parts:

1. Does a service as presented could help to spread research results and the need for research in protected areas?
2. Did the WebPark research project became accepted as a substantial research work?

For (1) the answer is not yet fully deployed: Visitors appreciate the possibility to be informed about research results. And WebPark offers a media, which is highly predestined to present these results of research, because different types of information can be integrated and the visitors interest is higher out in the area than elsewhere. Nevertheless, unfiltered and redesigned results can not be integrated. Therefore, other types of media could also be used to provide the public with information. Moreover, no media is the unique one for all visitor types in protected areas.

For (2), the public acceptance of the project idea and its results was the key for the success of the use case WebPark. The decision of the quality and success might differ from different perspectives. Although it might not be a "typical" research project for a protected area, the project has shown that different opinion leaders might influence the overall success. A key to success was the high presence of the press in the last months of the project. The combination of high technology and natural environment was highly appreciated by the media s.o.. Several journalists have reported on WebPark. The overall opinion was very positive. This has been accepted by official bodies after the acceptance through the public.

The further success of WebPark[2005] will also depend on the possibilities to integrate more general tourism information. A close collaboration of tourism and SNP managers will be necessary to provide the tourist with all information needed for his stay and mobility in the area.

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Contact

Dipl. Geogr. Ruedi Haller
rhaller@nationalpark.ch

Schweizerischer Nationalpark
CH 7530 Zernez
Switzerland

Christophe Rhin
christophe.rhin@camineo.com

Camineo SAS
10 avenue de l´europe - Parc technologique du canal
F 31520 Ramonville Saint-Agne
France