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Audit of conservation and safety policies

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Abstract: WebPark provides visitors with information, where the question is asked. Therefore, this tool is an add-on to the existing strategies of protected areas for education, information and communication. The charter of Biodiversity includes an article for education and information. The aim to inform and educate visitors in protected areas to support the attitude of people concerning the conservation and sustainable development is widely accepted by authorities of protected areas. Moreover, the United Nations General Assembly has declared Decade of Education for Sustainable Development starting in 2005. The high technical tool WebPark was eyed very sceptical by the staff in the Swiss National Park. Some advantages of the tool, mainly the reduction of infrastructure like information tables turned this view into a positive attitude.

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1 Introduction

WebPark would like to “ensure that administrations and workers in these areas will be able to influence the attitudes and preferences of the urban visitors through the flow of information to their phones/PDA’s while also deriving some economic benefit from their visit.”(WebPark 2001).

This idea in the proposal of WebPark implies the need to influence the attitudes of urban visitors in their relation to protected areas. And it implies as well that the digital approach could be a common way to help to change points of view and attitudes of visitor.

This paper will review the following points:

1. Summarize the state of the art in park tourism and the role of protected areas authorities.
2. Summarize the conservation policies concerning information and communication on international level and give the relation to the national level with the case study SNP.
3. Summarize the experiences with park managers in the test sites of Webpark during the project and indicate related projects during this period. The main focus is given on the match or mismatch of natural heritage and the high tech approach of WebPark.

2 Park Tourism and Conservation

There are several approaches to explain the trends and needs of tourism in protected areas. Nature based tourism became an important global industry (Eagles 2001). Eagles divides these market in four groups: Ecotourism, Adventure Travel, Wilderness Travel and Car Camping. This is the view towards a global market, where all types of protected areas all over the world are combined. Locally, there are major differences in respects the aspect of tourism in protected areas and the role of park authorities and tourist operators. It must be underlined that



protected areas are founded before all with the aim to conserve the natural heritage and secondly with the wish to prospect the tourism industry. The World Conservation Union (IUCN) has defined a set of management categories (see Box 1): Educational aims are listed (e.g. category II). Not one of these categories includes activities like adventure or wilderness tourism as a main factor for conservation. Historically, the concept of building protected areas was driven by the aim to protect uninhabited areas. The Yellowstone National Park is the first example. The Swiss National Park is also based on this idea. Bringing into rural areas the idea of conservation with protected areas needs a change of the aims: Inhabitants of future protected areas will only accept an administrative authority, if a social or economical benefit comes out of it. The most recent founding of a protected area follows a third strategy: Protecting the area will have a substantial medial echo and therefore make the area interesting for visitors: Local tourism might be developed and a sustainable income for inhabitants will be generated.

All types of protected areas will have to solve the same problem: Which economic benefit could they offer to local people while keeping their major focus on protecting and developing the natural heritage. The role in the tourism context has to be identified for each area separately. In a first step there should be a clear distinction between the educational mandate and the one to allow certain tourism. The second step should be to make the educational mandate as attractive as possible for potential visitors or tourists.



Box 1: IUCN definitions for protected areas

Category Ia

Strict Nature Reserve: Protected Area managed mainly for science.

Area of land and/or sea possessing some outstanding or representative ecosystems, geological or physiological features and/or species, available primarily for scientific research and/or environmental monitoring.

Category Ib

Wilderness Area: Protected Area managed mainly for wilderness protection.

Large area of unmodified or slightly modified land and/or sea, retaining its natural character and influence, without permanent or significant habitation, which is protected and managed so as to preserve its natural condition.

Category II

National Park: Protected Area managed mainly for ecosystem conservation and recreation.

Natural area of land and/or sea, designated to

1. protect the ecological integrity of one or more ecosystems for this and future generations:
2. exclude exploitation or occupation inimical to the purposes of designation of the area: and
3. provide a foundation for spiritual, scientific, educational, recreational and visitor opportunities, all of which must be environmentally and culturally compatible.

Category III

Natural Monument: Protected Area managed for conservation of specific natural features.

Area containing one or more specific natural or natural/cultural feature which is of outstanding value because of its inherent rarity, representative or aesthetic qualities or cultural significance.

Category IV

Habitat/Species Management Area: Protected Area managed mainly for conservation through management intervention.

Area of land and/or sea subject to active intervention for management purposes so as to ensure the maintenance of habitats and/or to meet the requirements of specific species.

Category V

Protected Landscape/Seascape: Protected Areas managed mainly for landscape/seascape conservation and recreation.

Area of land, with coast and seas as appropriate, where the interaction of people and nature over time has produced an area of distinct character with significant aesthetic, cultural and/or ecological value, and often with high biological diversity. Safeguarding the integrity of this traditional interaction is vital to the protection, maintenance and evolution of such an area.

Category VI

Managed Resource Protected Areas: Protected Area managed mainly for the sustainable use of natural ecosystems.



2.1 Conservation Policies for education and communication

The act of dedication of the world oldest National Park, the Yellowstone National Park in US declares that the area "... is hereby reserved and withdrawn from settlement, occupancy, or sale under the laws of the United States, and dedicated and set apart as a public park or pleasuring ground for the benefit and enjoyment of the people..." (Congressional Act, 1872). The Swiss National Park – the oldest National Park in Central Europe – has restricted the access for people: visitors are tolerated, as long they do not disturb the natural processes (Act of the Swiss National Park, 1914, renewed 1980). Scientific research is in second place, right after the act of protecting nature and ecological processes.

The last decade was branded with the perception of a different view to the aims of protected areas. The initial point was the Convention on Biological Diversity. It was negotiated under the auspices of the United Nations Environment Programme (UNEP). It was opened for signature at the June 1992 UN Conference on Environment and Development and entered into force on 29 December 1993. As of October 1998, more than 170 countries had become parties. The three goals of the CBD are to promote the conservation of biodiversity, the sustainable use of its components, and the fair and equitable sharing of benefits arising out of the utilization of genetic resources.

Article 13 of the CBD declares that contracting parties should "(a) Promote and encourage understanding of the importance of, and the measures required for, the conservation of biological diversity, as well as its propagation through media, and the inclusion of these topics in educational programmes; and (b) Cooperate, as appropriate, with other States and international organizations in developing educational and public awareness programmes, with respect to conservation and sustainable use of biological diversity." IUCN has established a Commission for Communication (CEC) which leads the communication and education of conservation programs and protected worldwide. CEC propose a tool for change called CEPA for protected areas. CEPA stands for Communication, Education and



Public Awareness and provides the link from science and ecology to people's social and economic reality. The World Summit on Sustainable Development 2002 recommended to the United Nations General Assembly that "it consider adopting a Decade of Education for Sustainable Development starting in 2005" (para. 117d, Plan of Implementation). In December 2002, resolution 57/254 on the United Nations Decade of Education for Sustainable Development beginning 1 January 2005 was adopted by consensus.

2.2 Ecotourism and education

Eagles (2001) acknowledges the importance of education while visiting natural parks: "as educational levels rise, demand for appreciative and learning opportunities associated with parks and protected areas increases". The needs and wants of tourists are crucial concepts to be taken into account by the park administrations in order to improve the tourist experience. Parks increasingly rely on market funding with a shift from government grants to visitor fees and service charges (Eagles 2001). This results in higher levels of visitor focus in management: if the focus is shifting towards the visitors, their needs of information in the field cannot be neglected.

Information availability is instrumental to environmental education and awareness. It increases visitor's knowledge about the environment and fosters attitudes, motivations, and commitments to make informed decisions and take responsible action (UNESCO, 1978). Environmental education is therefore an indirect instrument for park managers to facilitate the protection of the area and its sustainable use. Kreft-Burman (2002) considers information as "one of the most important aspects of raising environmental awareness". The concept of environmental awareness is defined as a combination of three elements: motivation, knowledge and skills (Kreft-Burman 2002). A high level of environmental awareness enables conscious choices to act in an environmentally friendly way, therefore contributing to a more eco-friendly behaviour from the visitors and minimizing the impact of tourism in the protected area.



3 Issues in the management of Natural Areas: the View of park authorities

The following part of the paper focuses on the understanding of the issues in natural parks management that arise from high number of visitors. Online interviews were conducted among an expert panel composed by twenty-two park administrators (responsible for tourism and communication within the park) 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 a tool for park sustainability.

The results, although not statistically relevant, indicate trends and reveal common issues: park managers are concerned about the distribution of visitors inside the park, such as high local concentrations that pose a significant disturbance to the environment, and acknowledge the relevance of tools to monitor the whereabouts of tourists. Safety issues are considered important by almost all park managers, such as warnings for visitors in the field about the proximity or dangers (e.g. weather alarms, avalanches). Almost all interviewed park managers refer to environmental education as one of the main institutional mandates of the parks, and expect users to be interested in receiving information during their outdoor visit to the park. This implies that park managers link information provision to visitors' behaviour: visitors which are better informed are expected to make more eco-friendly decisions.

The interviews reveal that park managers are aware that information can be instrumental by contributing to park sustainability. Most of the contacted area administrators rate the importance of information supply to the area visitors as "fundamental" or "very important" (see Table 1).

Table 1 - Level of importance of information supply to the area visitors



| N= 22 | Frequency | Percent |
|--|-----------|---------|
| Fundamental Improving the level of information of visitors and their awareness is the main goal of the Park | 4 | 18,2 |
| Very Important Improving the level of information of visitors and their awareness is one of the goals of the Park | 17 | 77,3 |
| Important It is considered as important by the park, but priorities for using the resources of the park are elsewhere | 1 | 4,5 |
| Neutral It does not make a major difference for the Park. | 0 | 0 |
| Not important Informing visitors is not a core goal of the Park | 0 | 0 |
| Total | 22 | 100,0 |

Most parks have in place information channels to address this goal. Table 2 gives an overview of which instruments the parks have currently implemented and their degree of implementation among the twenty-two contacted parks. The high adoption of these instruments is also proof of the commitment to have informed visitors in the field by the park administrators.

Table 2 - Existing instruments to make information available to visitors outdoor (i.e. in the field).

| N = 22 | Frequency | Percent |
|----------------------------------|-----------|---------|
| Guided tours | 19 | 86,4 |
| Info boards | 21 | 95,5 |
| rangers who can answer questions | 19 | 86,4 |
| Free leaflets | 18 | 81,8 |
| Paid leaflets | 15 | 68,2 |
| Printed guide | 15 | 68,2 |
| Park specific maps | 21 | 95,5 |

Regarding the investment in information technology for addressing the environmental awareness issue (see Table 3 for an overview), it was observable from the interviews that websites and CD-ROMs are the only commonly used IT tools to inform the visitors. But these tools are not appropriate to inform the visitors in the field. For example, only when hiking in the park visitors need to know if they can picnic or light a camp fire in a certain area. Website and CD-Rom typically contain rules and information of this type, but they are not accessible outdoors.



Table 3 - Existing information technology tools available for the visitors.

| N = 22 | Already Available | | Planned to have within 1 year | | Planned to have in the long term | | Not planned | |
|--|-------------------|------|-------------------------------|------|----------------------------------|------|-------------|------|
| | F | % | F | % | F | % | F | % |
| Website of the park/areas | 21 | 95,5 | 1 | 4,5 | 0 | 0,0 | 0 | 0,0 |
| CD-ROMs, containing information on the park/areas | 10 | 45,5 | 2 | 9,1 | 6 | 27,3 | 4 | 18,2 |
| Digital kiosk/touch screens in the information centres | 8 | 36,4 | 4 | 18,2 | 4 | 18,2 | 6 | 27,3 |
| Digital kiosk/touch screens in the Park (outdoor) | 1 | 4,5 | 2 | 9,1 | 2 | 9,1 | 17 | 77,3 |
| Mobile devices (Handheld computers) available to users | 2 | 9,1 | 1 | 4,5 | 3 | 13,6 | 16 | 72,7 |
| GPS devices for use by visitors | 0 | 0,0 | 3 | 13,6 | 2 | 9,1 | 17 | 77,3 |
| Mobile devices connected to GPS | 0 | 0,0 | 1 | 4,5 | 3 | 13,6 | 18 | 81,8 |

It was also observable that access to outdoor information technology (like outdoor digital kiosks and handheld computers for the visitors) are seldom implemented and not even planned by the majority of the park administrators.

The previous results show that the majority of the ICT investment goes to the tools that are not available outdoor (while visiting the park), however the majority of park managers agree on the importance of informing visitors outdoor and specifically about their surroundings (Table 4). Park managers understand and agree that providing information can influence the behaviour of the visitors to a more eco-friendly level and they acknowledge therefore to use information as a tool to support in the sustainability quest of the respective protected areas.



Table 4 - Opinion of the twenty-two contacted parks regarding the relationship between information and eco-behaviour and the importance of informing visitors about their surroundings.

| N = 22 | Strongly agree | | Agree | | Neutral | | Disagree | | Strongly disagree | |
|---|----------------|------|-------|------|---------|------|----------|-----|-------------------|---|
| | F | % | F | % | F | % | F | % | F | % |
| Provided information to visitors changes their behaviour | 5 | 22,7 | 15 | 68,2 | 2 | 9,1 | 0 | 0 | 0 | 0 |
| The visitors that are better informed about the park make more eco-friendly decisions | 5 | 22,7 | 15 | 68,2 | 2 | 9,1 | 0 | 0 | 0 | 0 |
| Users are interested in receiving information during their outdoor visit to the park | 7 | 31,8 | 11 | 50,0 | 3 | 13,6 | 1 | 4,5 | 0 | 0 |
| It's important to warn visitors in the field about sensitive areas proximity or dangers (e.g. weather alarms, avalanches) in relation to their location | 7 | 31,8 | 11 | 50,0 | 3 | 13,6 | 1 | 4,5 | 0 | 0 |
| It would be good to inform visitors about the surroundings of where they are walking | 7 | 31,8 | 15 | 68,2 | 0 | 0 | 0 | 0 | 0 | 0 |

When asked about the main institutional goals within their respective area (see Table 5), approximately half of the contacted park managers consider *leisure* as a main goal, though the large majority of the parks consider *environmental education* as a main mandate. It can be concluded that there should be no effort from the side of the park administration to develop infrastructures to facilitate tourism/leisure (and therefore increase the number of visitors). Out of contrary the main effort should be steered by improving the tourism experience by providing access to information and consequently increasing the levels of environmental awareness.

Table 5 - Main institutional mandates of the contacted protected areas.

| N = 22 | Frequency | Percent |
|--------------------------------|-----------|---------|
| Biodiversity protection | 20 | 90,9 |
| Research/Science | 15 | 68,2 |
| Leisure | 12 | 54,5 |
| (Environmental) education | 18 | 81,8 |
| Information supply to visitors | 13 | 59,1 |
| Cultural Attributes protection | 16 | 72,7 |
| Other | 3 | 13,6 |



3.1 Visitors' spatial distribution along the park area

Most of the contacted park managers think the distribution of the visitors within the park is an important concern for the park management (see Table 6). Any approach to tackle this issue, starts by knowing the location of the visitors in the park.

Table 6 – Visitor management issues rated by the Park Managers (PM).

| N = 22 | An issue to solve with top priority for the PM | | A regular concern for the PM | | An occasional concern for the PM | | Does not concern the PM | |
|---|--|------|------------------------------|------|----------------------------------|------|-------------------------|------|
| | F | % | F | % | F | % | F | % |
| There are too many visitors | 3 | 13,6 | 3 | 13,6 | 12 | 54,5 | 4 | 18,2 |
| There are too few visitors | 0 | 0 | 2 | 9,1 | 8 | 36,4 | 12 | 54,5 |
| The visitors are concentrated only in very few areas (badly spread over the park) | 3 | 13,6 | 9 | 40,9 | 8 | 36,4 | 2 | 9,1 |
| The visitors put themselves at risk | 1 | 4,5 | 7 | 31,8 | 7 | 31,8 | 7 | 31,8 |
| There aren't any means to contact visitors in case of danger or an emergency | 2 | 9,1 | 3 | 13,6 | 11 | 50,0 | 6 | 27,3 |

The necessity to contact visitors in case of danger or emergencies was classified as an issue that concerns the parks administration. This issue is reinforced by the fact that most of the contacted parks think that visitors put themselves at risk while visiting the area. In accordance to the relevance given to the issue of visitor distribution along the park, most area administrators agree to the need of a tool to monitor the location of the visitors (see Table 7). Such a tool would allow the managers to better allocate resources and analyse the presence and impact of tourists inside the park (where do they go and when are they there).

Table 7 - Opinion of the twenty-two contacted parks regarding the need for a solution to know the location of the visitors inside the park.



| N = 22 | Strongly agree | | Agree | | Neutral | | Disagree | | Strongly disagree | | Don't know/ No answer | |
|--|----------------|-----|-------|------|---------|------|----------|---|-------------------|-----|-----------------------|-----|
| | F | % | F | % | F | F | F | % | F | % | F | % |
| The park managers need a tool to monitor the whereabouts of the visitors | 2 | 9,1 | 14 | 63,6 | 4 | 18,2 | 0 | 0 | 1 | 4,5 | 1 | 4,5 |

4 The WebPark approach

It is quite a simple approach, the project WebPark – Geographically relevant information for mobile users in protected areas – had be proposed as its credo: Answering the question at the location, where the visitor's question arise. This simple rationale has implied many questions concerning the behaviour of the visitors and management in a protected area:

- What are the visitors questions in protected area?
- And what are the answers by the park management?
- How are the answers structured, prepared and presented within an area?

A exhaustive questionnaire about the user needs has included the questions about the content needed in the Swiss National Park (SNP) as a test area (D2.2.1). Moreover, the current status of paper and digital publications has been collected. The critical question on this stage is the one about the location: How can be ensured by the management, that the information is on the place, where a potential reader is most interested. It is a very old awareness of the pedagogy in natural heritage: "Interpretation that does not somehow relate what is being displayed or described to something within the personality or experience of the visitor will be sterile."(Tilden 1977). It is an often discussed topic in the field of environmental education, how "good" information and communication has to be in protected areas. Beyond dispute is only the need of communication and information: Every protected or recreational area has in some way the mission to inform visitors in one or the other way.



5 Location relevant information in protected areas: Solutions so far.

Visitors in protected areas need location based information. In the SNP as in other areas a variety of solutions have been presented in the past (see also Table 2). It has to be distinguished between direct contact with the visitors and indirect contact with the visitor, where no personal communication between guest and park managers is given. In the direct contact, the guide or park ranger can stop at certain places and give direct hints to places of interest. Courses with children may occur at places, where the topic is obvious. In the indirect communication, the indication of locations is more complicated and needs more investments of the park management. The location is indicated by different ways:

- Entrance tables with the most important information about the site, rules and often endorsed with a map of the closer and wider surrounding.
- Nature trail tables; the relation of the nearest environment and the information of the table must be obvious; often, the content is also prepared for a certain user group like children.
- Additional information tables at specific, most interesting places.
- Maps with features of interest.
- Trail descriptions in books, indications of local names.
- Short message service with locations by local names or coordinates.



Figure 1: Example of a information table in the Swiss National Park

Information tables for visitors in protected areas are highly welcome by tourists. The information need is satisfied mostly by such installations (Abderhalden and Krug 2003). Nevertheless, there are disadvantages for the park management:

- The investment for building and maintenance are high.
- The impression of a natural environment or even wilderness is disturbed by such installations.
- Hard to keep up-to-date.
- Moving objects (animals) or one year living plants can not truly be indicated.
- The depth of information is limited.

6 Swiss National Park managers reactions on introducing Webpark

The following chapter should illustrate the emotional environment, in which the project took place within the SNP administration. It is coined by personal experiences of the persons in charge in the SNP, the persons which are part of the park administration. 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 reasons but also for emotional reasons) to build a bridge between natural environment and high technical tools.

The GIS-Department of the SNP was officially responsible for the project within the SNP. Therefore the project was mainly perceived as a technical project. The intention of the project therefore was less obvious: to observe visitors and park managers reactions in behalf of the aim to introduce a technical tool in a natural environment. Moreover, the communication department of the SNP was allowed to express their point of view without influencing the project flow itself.

The project can be divided in three parts concerning the emotional evolution:

Phase 1 showed mainly sceptical or denying attitude towards the persons in charge. Two persons of the information staff were writing a letter to call the whole concept into question. Mainly the technical approach, using PDA/ mobile phones out in the nature was criticized. Moreover, the personal contact to the visitors was missed. Third point was the missing approach with all minds. Another aspect was the carrying capacity of the area for visitors: SNP would reach this capacity introducing a new tool out in the field. Today, the WebPark tool is accepted as a form of controlling the distribution of visitors by introducing interesting information on trails where the feature of interest is not obvious. Last but not least was the anxiety to introduce safety information to the tool: National park authority would not have the knowledge and resources to take over the responsibility providing people with safety information. In case of accidents this could be a problem for the SNP. This concern was respected by the WebPark consortium: Today, the only direct safety information tool is the "Where am I" which writes the current position on the device.

Phase 2 was determined by a careful observation strategy by the SNP staff, if and how technical problems of WebPark would be solved. The strict abidance of the law to not introduce new infrastructure (e.g. Wireless LAN) brought some confidence toward the National Park authorities.

Phase 3 was embedded by a working functionality of WebPark services. Limits and benefits and limits of the system could be demonstrated to park managers. It was supported by a general introduction of a digital rapport system for park



rangers. This tool is working on portable computers. The rangers have to fill their observations during the day at the end of each day and send them to a server. This system was developed with a high involvement of the rangers and is therefore accepted. The idea to reduce the operating expenses by introducing a ranger application had a strong effect: the acceptance grew. In the information department, a short message service was introduced for guests in the SNP: The lack of current information from rangers in the field for supporting this service and time consuming work to write the information were two reasons to accept an application like WebPark: There, the information is transferred directly from a ranger in the field to a visitor in the field. The main point to accept the tool was a third one: The imagination to replace tables in the area to keep the wilderness impression was the most convincing advantage. It can be summarized that the technical development of the WebPark tool went along with a growing acceptance of the idea to bring location based services to visitors in the field.

7 Conclusion: Benefits and risks of the Webpark application: The park managers view

WebPark aims at "ensuring that administrations and workers in these areas will be able to influence the attitudes and preferences of the urban visitors through the flow of information to their phones/PDA's while also deriving some economic benefit from their visit."(WebPark 2001).

The idea is impressive: To support the park administrators with a tool to reach their goals of information, education and communication. Nevertheless, the enthusiasm of the technical coined consortium for this highly technical tool for protected areas was not appreciated by park managers. Like many of the visitors they opine the 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. The acceptance of the tool depends on other arguments. The possible impacts of this new instrument must come along with the reduction of other impacts. This can be achieved with WebPark services. This is the strongest argument is in relation to the



conservation strategy. Secondly, the protected areas have a strong economic value. They have to follow economic principles of expansion and investment. More and more, the visitors satisfaction is a important value of the existence of a protected area. Webpark services allow reacting on the demands of information anywhere in real time.

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