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STATE OF THE ART AND OPPORTUNITIES OF NEW TECHNOLOGIES OF COMMUNICATION IN THE ENVIRONMENTAL INTERPRETATION

Case of Saimaa Protected Areas

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Abstract

This Bachelor thesis is commissioned by Metsähallitus Natural Heritage Services, Southern Finland area, Recreation process. One of the missions of this service is to provide environmental education and interpretation in national parks, protected areas, information point and information hut. New technologies of communication give the opportunity to extend that mission both in space and time by communicating with the visitors before, during and after the visit of the protected areas. However, those new media have their own specificity that must be considered before using those for environmental interpretation.

The aim of this thesis was to understand the methodology of environmental interpretation and find what principles and techniques are applicable to which new technology of communication in the Saimaa protected areas. Therefore, a literature review was done for both environmental interpretation and new technologies of communication that revealed the importance of knowing users expectations and social media characteristics. A visitor survey was realised for researching visitor's values, activities and use of technology. This visitor survey revealed that few customers are using social media in their travel, but they are interested by that possibility and the tendency could rapidly change in the future.

Tips and techniques were proposed for environmental interpretation using social media. Facebook is the only social media that is specifically used for Saimaa protected areas communication. This social network has been analysed using those tips and techniques. The results show that if Metsähallitus is doing well with Facebook, there are still place for improvements. Solutions have been proposed for the improvement of environmental interpretation using Facebook.

Those protected areas are absent from other social medias and new technologies of communication. The opportunities and threats of those media have been analysed using SWOT analysis and the visitor survey. The results showed that media-sharing and blogs are good opportunities but micro-blogging and mobile application will be more difficult to use for environmental interpretation due to their technical characteristics. A combination of different social media would be the best solution.

Subject headings, (keywords)

Environmental interpretation, new technologies of communication, social media, Saimaa Protected Areas.

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CONTENTS

1 INTRODUCTION

Nature conservation is the most important task of national parks and protected areas (Laukkanen 2009, 11). However, those places are also used for recreation and nature-based tourism. All those activities can coexist in the same geographical place only if the totality of stakeholders, especially visitors, are aware of the impact of their activities and adopt behaviours that reduce damages to the environment. This is one of the goal of environmental interpretation. Well designed, it provides learning, understanding and motivation to achieve changes in behaviours that will be beneficial for both visitors and protected areas (MBRS 2005, 1). Environmental interpretation is the key element of every nature conservation program's success.

Metsähallitus is a state owned company that is in charge of the management of Finland's 35 National Parks and other protected areas. In Saimaa region it manage 17 000 ha of protected area, in addition to the 1 500 ha of Repovesi National Park that are part of the Saimaa administrative management region. These protected areas are visited by more than 290 000 visitors annually. As Lake Saimaa receives an estimated 500 000 tourists per year, we can say than more than half of the tourists coming in Saimaa area also visits a protected area. Therefore, protected areas and those provided services are business sources for more than 70 entrepreneurs that have nature-related activities by providing guiding, equipment and accommodation services in and around those areas. With the indirect activities of Nature-based tourism, protected areas are seen as a major part of Saimaa Lake economy. (Laukkanen 2009, 11.)

One of the missions of Metsähallitus Natural Heritage Services is to provide environmental interpretation and environmental education to the visitors of national parks, protected areas and information points in Finland. However, environmental interpretation designers of Southern Finland region have to face numerous difficulties in Saimaa protected areas due to the vast area to cover, the diversity of the visitor's interests and activities and the preservation of the aesthetic of the protected areas. New technologies of communication (NTC) could be the best media to tackle those difficulties, make visitors more active in nature conservation and, more generally, in environmental protection. However, if environmental interpretation techniques are well known and NTCs start to be well documented, those two disciplines might never meet each other. There is no standard, publication or methodology explaining how to use new

technologies of communication for environmental interpretation. Metsähallitus has an interpretation plan for the Saimaa area 2009-2015, but during that period, new technologies of communication becomes more and more important in media and visitor's life (Metsähallitus 2009). It is necessary to understand those technologies and identify the opportunities offered by them.

As a former science interpreter and a user of social network, it was interesting to have an overview of the environmental interpretation techniques and then to start research which the new technologies of communication are suitable for the protected areas in Finland. Through this research, I had the ambition to learn the State of the Art of two activities that I have practiced for years, both for professional and personal purpose, without any precise methodology. The terms interpretation and new technology of communication were even vague to me. After understanding those two disciplines, solutions will be proposed to improve existing environmental interpretation or propose new products using new technologies of communication in the Saimaa protected areas.

2 ENVIRONMENTAL INTERPRETATION

Most people think that interpretation is a synonym of translation, which is the process of transforming information from one language to another one. Therefore, environmental interpretation would be the translation of a technical language from a natural science into terms and notions that non-scientists can understand immediately. That is interpretation at its most basic level. (Ham 1992, 1). This chapter will reveal that environmental interpretation is a much more difficult discipline than usually thought.

2.1 Definition

Freeman Tilden was the first author who gave a definition to interpretation in 1957 (Ham 1992, 1; Moskardo et al 2004, 231; Knapp 2005, 1). Therefore, his definition of environmental interpretation was the reference for long time. In his book "Interpreting our heritage" (Tilden 1957, 8), he defined interpretation as: "- - an educational activity which aims to reveal meanings and relationships through the use of original objects, by first-hand experience, and by illustrative media, rather than simply to communicate

factual information." In this definition, Tilden only says that interpretation is an educational form of communication that plebiscite the transfer of ideas and relationship, in opposition of formal education communication that exposes isolated facts and figures (Ham 1992, 1). This definition is incomplete and the term 'educational activity' will create a polemic in the literature.

Education and interpretation are different. Therefore, environmental education and environmental interpretation either can not be synonyms. Mullins (1984, 1) argued that education is a societal approved sanctioning system where students are required to learn and demonstrate their competencies. If interpretation would have similar messages, media, outdoor setting and outcomes, it would be difficult to setup a sanction for the visitors of a national park. Knapp (2005, 2) continues by explaining that environmental education requires students to participate in sequential and long term learning process when environmental interpretation is usually a single and short term experience (rarely more than two hours). One difficulty of environmental interpretation is the lack of time to diffuse the message. The other difficulty comes with the fact that interpreter's audience is non-captive because they don't have to worry about grade or losing a reward (Ham 1992, 4). It should be also pointed out that the visitors are at leisure; they will stay and pay attention to the environmental interpretation only if it is enjoyable. Therefore, many authors, including Tilden himself in his late years, said that the term 'educational activity' should be replaced by 'recreational activity' or another term describing a pleasant time. (MBRS 2005, 2; Ham 1992; Moscardo et al 2004, 231.)

Don Albridge, considered as the pioneer of interpretation in the United Kingdom and the rest of the Europe, was the first to banish the term 'education' in his definition (MBRS 2005, 2). He defined environmental interpretation as: "- - the art of explaining man's place in his environment, for the purpose of enhancing visitor awareness of the importance of his interaction and awakening the desire to contribute to the conservation of the environment" (Aldridge 1973, quoted in MBRS 2005, 2). Furthermore, Aldridge introduces the purpose of environmental interpretation in his definition. The main outcome of that activity should be a change in attitude of the visitor and his involvement in nature conservation.

Sam Ham (1992) and Jorge Morales (1994) emphasize that environmental interpretation should be recreational and entertaining for ensuring the commitment of the public to behaviour change and environmental protection. A compilation of other definitions proposed by different authors is presented in the book Environmental interpretation manual for protected areas in the Mesoamerican barrier reef system region, but those are more or less based on the principles developed by Tilden in 1957. (MBRS 2005, 2-3.) Metsähallitus defines interpretation as a communication which aims to increase the visitor's understanding of the relationship between the natural and cultural heritage of the place and their own behaviour. It encourages the adoption of sustainable behaviour. (Metsähallitus 2009, 3.)

In this thesis, the author will make his personal definition by adding the one of Interpretation Canada organisation and the one developed by MBRS organisation (MBRS 2005, 2). "Environmental interpretation is a communication process, designed to reveal meanings and relationships of our natural and cultural heritage to the public, through first hand experiences with objects, artefacts, landscapes, or sites" (Interpretation Canada, quoted in Veverka 2005, 2). Its objectives are to awaken the interest, change the attitude, achieve the visitor's understanding and enjoyment, and establish direct contact between the visitor and the resource to create behaviour change and involvement in environmental protection (MBRS 2005, 2). The combination of the two precedent sentences gives a good definition of environmental interpretation that contains its nature, techniques, tools and outcomes.

2.2 Principles of environmental interpretation

Freeman Tilden wrote the six basic principles of interpretation fifty years ago and those are still in use for environmental interpretation today (Knapp 2005, 2; MBRS 2005, 5; Veverka 2005, 1). Those principles are listed in different order in different books and documents according to the importance that the writer gives to each of them. Veverka (Veverka 2005, 1) resumes Tilden's principles as:

1. The interpretation must be somehow related to the personality or experience of the visitor.
2. Interpretation is not just information. It is a revelation based upon information.
3. Interpretation is an art that combines many different arts, and any art is teachable in some degree.

4. The top aim of interpretation is not instruction but provocation.
5. Interpretation should present the whole picture of the phenomenon and not just a part of it. It must be addressed to the whole person and not to a particular part of his personality.
6. Interpretation for children should not be a soft version of the adult one. It should be a fun and different approach of the topic. The best would be to create a separate program for them.

The first principle means that interpreters should know the characteristics of the visitors (age, educational background, centre of interest, culture and language); what introduces the necessity of a visitor survey before any interpretation production. If that is not possible, a few questions to audience members could help. That principle also suggests that interpretation must be at the same geographical location than its topic. An interpreting product about a tree should be nearby that tree or a physical representation of it. The visitor should be able to touch, feel and experience the object. This principle will be difficult to put in practice in natural places, especially for moving creatures, aesthetic places where interpreting panels are not suitable, or places with exposure to extreme weather elements. New technologies of communication could be the best solution for that as the interpretation product will be virtually in the hand of the visitor and follow him wherever he/she goes. Furthermore, the visitor could choose the degree of knowledge that corresponds to his/her education background.

The second principle says that an interpretive panel is not interpretive only because it gives information about what you see around it. It has to provoke, relate and reveal a message or a story to visitors using a variety of media (Veverka 2005,2). Information will not induce behaviour change unless it is related to every day life or history. Therefore, the interpretive panel must reveal the relationship between what is seen and its consequences on visitor's life, culture or history. This second principle is directly related to the forth one which says that interpretation is not instruction but provocation. However, the term 'provocation' does not mean irritating the visitor but making him to think about the situation and convince him to provide his own solutions to the problem of natural conservation (MBRS 2005, 7). In opposition of instruction, interpretation should stimulate curiosity and reveal the importance of what at first appeared to be insignificant (MBRS 2005, 5). It can provoke ideas and jolt people into a completely new understanding of what they came to see (Cater 2001, 4).

The third principle describes interpretation as a combination of different art. The best interpretations create an atmosphere of direct discovery; give a tangible and concrete description of the phenomenon (MBRS 2005, 5). Different skills used in different art are often needed to create that atmosphere and that relationship between the visitor and the resource. Depending of the interpretive product, theatre, painting, cinematographic, photographic or literature skills will be needed to create a story. Stories entertain, show us the consequences of our actions, educate our desires and those teach us how to be human (Beck and Cable 2002, 37) .It is not an easy task to find an interpreter that has scientific background and all those artistic skills. But every art can be taught if there is a basic methodology and technique.

Fifth and sixth principles are easy to understand. Interpretation describes the entire phenomenon and not a part of it. This could be difficult to achieve in environmental or biological science, where all phenomena are more or less connected to each other. Consequently, it could be difficult to decide where a topic stops and where another one starts. The answer comes from the public. The visitor is not captive; he decides how much information he wants to have according to his interest, background and activities. Again, those principles stress the importance of knowing the audience.

Veverka (Veverka 2005, 2) developed a short version of environmental interpretation definition that he called Tilden's tips. He said that a good interpretation should provoke the interest and be related to the everyday life of the audience, reveal the main point through a unique ending or view point, address the whole by focus on illustrating a theme and strive for message unity. If those tips are missing from a panel, presentation or exhibition, those are not interpretive but just informative. (Veverka 2005, 2.) It is difficult to find information powerful enough to provoke a change in behaviour without being shocking for the audience. Therefore, information is not sufficient in protected areas, interpretation is needed.

More recently, the book "Interpretation for the 21st century" (Beck and Cable 2002) introduced nine principles in addition to Tilden's one. Those principles are more specific to environmental interpretation and take into account the development of technologies that did not exist when Tilden wrote his principles. In a list of fifteen guiding

principles for interpreting nature and culture (Beck and Cable 2002, 8), after the Tilden's six principles, comes:

7. Interpreters can bring the history of a place alive to make the present more enjoyable and the future more meaningful.
8. Using technology is an exciting new way of revealing the world. However, it has to be integrated in interpretive program with foresight and thoughtful care.
9. Interpreters must focus on the quality and the correct quantity of information presented. Information well researched, selected and accurate will be more powerful on the visitors.
10. The interpreter must be familiar with basic communication techniques and his skills and knowledge must be continually developed over time.
11. Interpretive writing should teach what visitors would like to know, with wisdom, humility and care.
12. The overall interpretive program must be able to attract support (financial, political or administrative ones) needed for the program to flourish.
13. Interpretation should provoke the desire and the ability to sense the beauty in the surrounding and encourage people to encourage nature preservation.
14. Interpreters can use thoughtful program and facility design to promote optimal experiences for the visitors.
15. Passion is essential for interpretation, passion for the resource and passion for the visitors who came to be inspired by it.

In addition to those principles, Ham (Ham 1992, 8-29) presented 4 qualities that any environmental interpretation should have. The first one says that interpretation is pleasurable and entertaining. If entertainment is not the goal, it holds the attention of the audience by making learning to be a funny activity. The visitor is having leisure time. Any information received in a formal or academic atmosphere is felt boring and will obviously be rejected. (Ham 1992, 8). Best exhibits are those that are game-like, which contain movement, lively colours and changing scenes. Likewise, an interpretation that contains multimedia such as background music, coloured pictures and video will hold the audience's attention longer than one which has only text photocopied on white paper. (Ham 1992 , 8-9; Moscardo and al 2004, 242). The table one presents techniques to make technical information more entertaining.

TABLE 1: Techniques to make technical information more entertaining. (Ham 1992, 10)

Techniques	**Description**
Smile and the world smiles with you.	If the interpreter looks relaxed and having fun, the audience will begin to feel that way too. Being too serious will create an academic or formal atmosphere.
Use active verbs.	Passive verbs are marks of academic writings. To use powerful, active verb forms will keep audience's attention.
Show cause and effect.	Showing the direct relationships between causes and their effects satisfy the curiosity of visitors.
Link science to human history.	Non-scientists are more interested in science if it is related to people that lived in a different time. Relating the environmental knowledge to indigenous population lifestyle will make it more interesting.
Use a visual metaphor to describe complex ideas.	Using an illustration which shows visually a phenomena or an idea will be easier to understand than with words alone.
Use a "vehicle" to make the topic more interesting.	A vehicle is an exaggeration of size or time scale that makes the audience imagine being in a vehicle travelling through space and time that are not accessible by human kind.
Use an overriding analogy.	It is an analogy that the entire presentation revolves around. An example could be comparing forest succession to the construction of a house, step by step.
Use contrived situation.	To go forward or back in time and pose a hypothetical situation where an element of the environment would have changed or disappear. Examples are "How would be life on earth if its average temperature increased by 5^{o}C?" or "What if there were

	no predators in this ecosystem?"
Use personification	Give selected human qualities to nonhuman species or objects to make the public identify them to the animal and have critical point of view of visitor's behaviours.
Focus on an individual	Make a fictitious but scientifically accurate story about a person, animal or object in order to reveal all the experiences and transformations lived by that character. Many people have a better memory of story than pure facts. The adventure of the water molecule in the water cycle is a famous example of that technique.

The second quality introduces the notion of relevance. Interpretation will be relevant to the audience if it succeeds to be both meaningful and personal. Meaningful means that the information is presented in a context of something that the visitor already knows about. The best way of being meaningful is to avoid technical terms that only specialist use every day and to make analogy with familiar object or phenomenon. The analogy of the eruption of a volcano with a pot of percolating coffee is a well-known example for interpreters. However, the biggest challenge in interpretation is to relate the information presented to something that the visitor cares about. This is how the information becomes personal and then seems to be highly important to visitors. Non-captive audience will always ignore information that seems to be unimportant, even if it is perfectly understood. Relating environmental degradation to risks on health, degradation of our way of life, economical threat and the future of our children is an efficient way of making environmental protection highly relevant. (Ham 1992, 13)

The third quality says that interpretation is organized. It must be presented in a way that is easy to follow. The information should be organized into categories attached to an organizational framework of ideas. Those ideas are part of a whole picture constituting the main them of the interpretation. Based on the formula developed by Wilbur Schramm in 1971 (Shramm 1971) and presented in Equation 1, it is obvious that as the amount of work the audience have to do increases, the likelihood that they will

continue to pay attention decreases. Therefore, the best interpretation is highly entertaining and easy to follow. (Ham 1992, 20)

Equation 1: Wilbur Schramm equation. (Shramm 1971; quoted in Ham 1992, 19)

$$P_{pa} = \frac{Reward}{Effort}$$

P_{pa} is the probability that a non-captive audience will pay attention. Reward is the potential benefit and effort is the amount of work required to understand the message.

The final quality of an interpretation is the presence of a theme, a message. As the previous paragraph introduced, interpretation must be organized by theme and topic. The theme is the main idea or outcome of the interpretation. As Tilden states (Tilde 1957) "The story's the thing" (quoted in Ham 1992, 22). That means that an interpretation should be organized as a story, with a beginning, vicissitudes and an end. The "moral" or end of the story will be the theme and the vicissitudes will be the topics. An interpretation without a theme will inevitably generate the "so what?" reaction from the audience, meaning that the interpreter failed to communicate the importance of the information and the message of the interpretation. In environmental protection, the importance of protecting predators could be a theme, when the food chain will be a topic. Presenting the food chain without showing the consequences of the suppression of predators would automatically generate the reaction "so what?". But if the interpreter reveals that protecting predators protect human and the environment from the danger of proliferation of certain species. The food chain becomes more important and the predator's protection programs too. Then "so what?" becomes a "oh, now I understand why…"

2.3 Techniques of environmental interpretation

Environmental interpretation techniques derive from interpretation principles and qualities described previously. In this paper, environmental techniques will be defined as the application of communication techniques used to increase the public's awareness, understanding and provoke a change in behaviour. Usually, an environmental interpretation technique uses several media channels or combinations of them (MBRS 2005, 6). This next chapter will present the most common techniques that can be practiced in any environmental context, with any media.

2.3.1 Thematic approach

Professional interpreters say that there are few, if any, concepts more important than theme in term of selecting and organising ideas and information (Ham 1992, 22). Environmental interpretation must be organised in accordance with, 1) theme, 2) topics and 3) information. Selecting themes must be in the initial planning stage of the interpretation. Those themes are related to the overall idea of the protected area and to the behaviour that visitors should adopt in order to support environmental protection. Themes should be selected according to the real interpretive capacities of the place (objects, processes, phenomena or concepts present in the protected area, that are worth being interpreted). Then, every piece of the environmental interpretation proposed to the public should be related to that central idea which gives cohesion and reinforces the message. (MBRS 2005, 8).

Based on Tilden's fifth principle (present the whole picture, address to the whole person), this technique organise the interpretation as a part of a whole "experience package" that includes all the experiences lived by the visitor. Those experiences can be delivered straight form the nature (landscape, nature observation, smell or just fresh air) or by the protected area's management (facilities, services and interpretation). Ververka (2001, 4) names that holistic approach of environmental interpretation "- - the total experience package" (Veverka 2001, 4). He goes further by including even marketing and promotion of the protected areas into the whole environmental interpretation plan. He argues that interpretation planning should propose a wild range of experience opportunities, and the experience starts at home while looking for protected areas information. The marketing of those areas should be related to the themes of the environmental interpretation.

The National Association for Interpretation (NAI) propose that interpretation plan should have a central theme (also named vision in other literature) and no more than four sub-themes for a specific site, building or media piece (NAI 2009, 11; Beck and Cable 2002, 43). Studies on how much information humans are able to handle show that, on average, we are capable of making sense of only 7±2 new separate ideas at one time. That means that in order to be efficient on the whole population of visitors, the number of main points of the interpretation should not be more than five. This

guideline applies to all types of media. (Ham 1992, 21-23.) In the case study of Saimaa protected area, the key messages are based on general national ones. The National key messages are:

1) Protecting biodiversity to ensure the adaptability of nature in the future.
2) Distinctive and diverse cultural landscapes and historic sites by taking care of preserving our cultural heritage.
3) The preservation of biodiversity requires the consumption patterns change.
4) In nature, the movement of refreshes, strengthens and increases the mental well-being.
5) Everyone is responsible for the comfort of protected areas and the preservation of natural values. (Translated from Finnish, Metsähallitus 2009, 6.)

According to Saimaa interpretation plan (Metsähallitus 2009, 6-7), in Saimaa, the three principal messages and the topics related to them are:

1) The thousands of islands in Saimaa are precious and special.
    - Shaped by the Ice Age, Lake Saimaa is unique.
    - Saimaa ringed seal is the native habitant of Lake Saimaa and it is endangered.
    - People have taken advantage of Saimaa islands and water ways throughout the ages.
    - Wild areas are also needed by Lake Saimaa to ensure that all specific ecosystems are preserved.
    - Now, the waterways are paradises for mobility.
2) We take attention and responsibility for hikers, nature and other travelers.
    - Sparing use of firewood in order to preserve the resource and the environment.
    - Vote for a peaceful nature.
    - Luontoon.fi provides tips and guidelines.
    - Litter-free hiking.
3) Can human and seal co-exist on the same Saimaa?
    - Saimaa ringed seals are “natives”
    - Our way of life also affects the ringed seal’s future: climate change – ringed seal’s life.
    - The ringed seal is successfully protected – A co-existence is possible.

- Saimaa ringed seals need non-built areas in order to survive.
- Fishing nets are not harmless for the ringed seals – the pups are particularly in danger in spring time.
- The ringed seal needs calm and silence. (Translated from Finnish, Metsähallitus 2009, 6-7.)

Each theme should have a set of topic or information that guides the visitor to the same conclusion than the theme. In the precedent paragraph's example, information on water pollution's topic should make visitors think about the consequences of that pollution on their life and on fragile animals living in the protected areas. There are no recommendations in literature about the number of information that have to be presented for each subtheme. It will depend on both visitor's time availability and resources accessibility.

However, Ververka (2005, 3) proposes three tips to choose what information will be included in the interpretation. Those are named **Tilden's Tips**. Each information should answer to three questions. Why would a visitor want to know this? Answer to this question means that information is related personally to the visitor and will provoke behaviour change. How the visitor should use this information? If visitors can not use it, then why to give it to them. What are the benefits for the resource, agency and visitors? Furthermore, the information should not provoke the "so what?" reaction which indicates that information is not related to a clear theme. (Veverka 2001, 3; Veverka 2005, 3; Ham 1992, 24.)

2.3.2 Encouraging participation

This technique is directly related to the first principle of interpretation. The interpreter and the media used must stimulate the public by establishing a relationship between the resource (object, plant or animal) and the visitor. Therefore, in opposition to a museum where the sign "do not touch" is often seen, environmental interpretation should encourage the visitor to touch, smell, and look closely in order to create their own personal and critical experience.(MBRS 2005, 7.) Several studies show that factors that are consistently associated with effective environmental interpretation are the inclusion of participatory, interactive, multi-sensory activities and building of personal

connections to visitors (Moscardo et al 2004, 241; MBRS 2005, 7). Learning by doing is one of the most successful techniques used in learning process. Consequently, every message should be an incentive to participate by doing something. (MBRS 2005, 7.) This technique stresses the importance of a message being at immediate proximity of the resource or a representation of it.

Knowing the visitors is also a way to identify barriers to participation. Two of the most widespread and powerful barriers to interest and visitation in nature protected areas are fear and negative perceptions. Many people see wild land as a scary, disgusting and uncomfortable place. Then interpretation can be adjusted to highlight security, esteem and comfort which are key interest for those potential visitors who are otherwise inhibited. A visitor survey would be necessary to identify those barriers. However, the analysis of that survey should not only identify who are present, but also identify who are absent and why. Understanding why people do not come to a nature protected area is the first step of breaking participation barriers. (Beck and Cable 2002, 18). This can be difficult to achieve in an isolated protected area, but it becomes easier in a network of protected areas where experiences and knowledge are shared.

2.3.3 Provocation

As it was explained in chapter 2.2, provocation does not mean shocking or irritating the visitor, but persuading him to provide his own solution to the presented problem. In natural protected areas, the solution is that visitors adopt behaviours in favour of environmental protection. It is common sense that no change of behaviour comes without an uncomfortable feeling about a present or future situation. Therefore this technique will aim to make the visitor feel a little responsible for environmental degradation and engage him in the first steps of becoming an active environmental protector.

This technique is used in the choice of the headers, title of graphics, pictures or any audio-visual document. Its objective is to catch visitor's attention and to spark their curiosity (Veverka 2005, 3). A well known application of that is the title given to a mirror, "the most dangerous animal on earth", strategically placed in a certain context and a specific theme. The visitor is surprised to see his own image under such title (MBRS 2005, 7). With new technologies of communication, an example of this tech-

nique could be a picture of an enormous white shark and a diver with the title “the most dangerous animal in the world… by his side a white shark swimming peacefully” (Lolsnaps 2013). This technique can also be applied by simply asking questions to visitors. This application has both advantages to catch the attention and to create a direct communication with the visitor. Those questions have to be in active form, short and use “you” as subject of the sentence. (MBRS 2005, 7; Ham 1992, 16).

Ham (1992, 16) named that technique as self-referencing and argues that making the audience think about themselves and their own experience causes them to connect the new ideas to something they already care about. As most of the visitors care about themselves, it is an efficient way to connect the audience personally with the topic presented and make them remember it. As examples of questions may serve “Have you ever …?”, “Think about the last time you…?” or “How many of you…?”.

However, provocation cannot be used without a minimum of information for guiding the person after provoking him (Ham 1992, 16). It has to be used in a purpose and a way directly related to the topic and the theme of the interpretation. It is also important to know the audience for judging the limit between provocation and irritation. In protected areas with very international visitors, this limit will move according to the culture of the visitor. Therefore, provocation technique has to be used carefully.

Another way to provoke behaviour changes is to challenge the visitor’s belief systems (Beck and Cable 2002, 42) by providing experiences that prove a misunderstanding of a phenomenon. Medias and new technologies of communication are full of stories or “facts” that do not have any scientific foundation. The interpreter must be ready to get in confrontation with beliefs and guide listeners to basic principles or irrefutable facts that establish common agreement. However, the interpreter should not provoke confrontation on controversial issues not well established by the scientific community, and he should know the topic and the personal benefits that the visitor will get from it in order to stay credible and interesting.

2.3.4 Use of humour

Humour is always received with enthusiasm by the public (Ham 1992, 8). It contributes to install an enjoyable and informal atmosphere. Humour also contributes to cap-

turing and maintaining the interest and enthusiasm of the audience. Used with metaphors and analogies, humour builds links between the interpretive content and everyday experience of the audience. Visitor surveys and interviews realised in many studies show that being able to find a personal link to a topic is a major factor influencing visitor's satisfaction and how much they feel they learn from the interpretation. (Moscardo et al 2004, 246).

FIGURE 1: Humour used to influence people's behaviour. (Carter 2001, 8)

However, it is difficult to transmit great ideas in a jovial way and, as humour is highly cultural, it could be misinterpreted by foreigners (MBRS 2005, 8). So it is recommended to use humour in small doses and think about whether it is appropriate for the presented situation. It can be used as a transition between two important topics or to regain attention after a moment of less demanding attention like a contemplation of landscape.

2.3.5 Making meanings for the visitor

This technique was introduced in the chapter 2.2 page 8 to explain what is relevant to the public. Making meanings is described in most of interpretation literature as one of the most important techniques of environmental interpretation (Beck and Cable 2002, 23-25; Ham 1992, 10-15; MBRS 2005, 7). It consists of illustrating ideas and principles by using facts which are familiar to the public (MBRS 2005,7; Beck and Cable

2002, 14-15; Ham 1992, 10; Moscardo et al 2004, 244). This technique of communication is based on the cognitive map theory developed by Piaget in 1972 (Moscardo et al 2004, 242). Cognitive map theory suggests that information received is encoded in simplified units and related to other pre-existing information. That network of units forms cognitive maps, which are the person's way of structuring, storing and organising information, that grow along life time. (Beck and Cable 2002, 14.) In this theory, people learn new information by incorporating it into existing framework (assimilation), or by changing the entire cognitive map to fit the new information (accommodation) (Moscardo et al 2004, 242). It is obvious that assimilation of information needs less mental effort than accommodation. This is why information presented with familiar words and in a familiar context will be memorised faster and easier than with technical words in an exotic place.

Therefore making meanings will be the art of connecting information given in an interpretation to the cognitive maps of the visitor. Examples, analogies and comparisons to common everyday objects or concepts are the best way to achieve such connections (Ham 1992, 13). However, it is important to know about visitor's background. What is common for an American will not be for an African or even for a European. There are differences in systems of measurement and way of life that will make difference in the notion of volume, distances and standards of consumption.

There are many other techniques that can be applied for environmental interpretation. Most of those techniques will have the purpose of maximising visitor's experience of nature. Beck and Cable (2002, 148) list eight characteristics which define optimal experiences and that interpreter can act on by different techniques. Those characteristics have been reordered and renamed to form the acronym PACIFICS : Purpose, Attention, Challenge, Involvement, Feed-back, Immersion, Control, and Sense of time.

2.4 Use of technology in environmental interpretation

There are much more researches available about the use of technology in education system than in interpretation. The development of portable, handheld devices in the 90s created a need for literature on the possibilities of e-learning. Education system has the idea that technology could help learners to make sense in their studies by proposing tools that will expend and amplify student's cognitive processes (De Crom and

Jager 2005, 18). Still, even in education system which is more advanced than interpretation, there is a lack of models for using new technologies, mobile applications and digital literature for learning (Naismith and al 2004, 1; Tuomi and Multisilta 2010, 165).

So far, no existing literature explains how to use technology for environmental interpretation. One reason is the cost and the difficulty to install any technological device in nature. According to the first principle of interpretation, the piece of interpretation should be nearby the resource or a representation of it (see chapter 2.2). Then having technology in a protected area would generate maintenance cost and would also need a source of electric power. That technology is also exposed to vandalism and climatic elements so often that its reliability will be a constant question for the organization in charge of the interpretation. Using technology is easier in the premises of a Nature Centre, where both nature and visitors are under control. However, to recreate natural environment and atmosphere in-door needs an important investment and would never be as good as the original. Still, with the recent development of mobile technologies and the constant progress in communication network, technology does not need to be at a fixed geographical place anymore. Nowadays, a visitor does not need a complete and bulky computer to see an animation, video or any digitalised information. A tablet or a smartphone is enough.

Beck and Cable say that technology could give access to information and allow visitors to see objects that could not be seen previously. It expands and advances interpretive opportunities by opening new worlds of revealing and meaningful experiences to visitors. Exciting audio-visual information resulting from new technologies can bridge diverse learning styles and attract a new public. However, older adults and technologically timid people are intimidated by technological devices and without guidance and personal encouragement, they will be driven away. (Beck and Cable 2002, 82.) Therefore, the technology and its importance in the overall environmental interpretation should be chosen carefully.

The technology should be engaging, which means rewarding and fun. It has to be challenging enough to be interesting without creating frustration because of its level of difficulty. It should reveal a new perception about the world and add value to the existing interpretation. The organization needs to have a dependable technology. It has

to work well, and, if not, be quickly repairable and put into service. (Beck and Cable 2002, 83.) The following chapters will present technologies used for environmental interpretations that suite both Nature Centres' and natural protected areas' conditions.

2.4.1 Video

The generation born with television has an affinity for video format. Video programs can replace slide shows, movies and personal presentations at many facilities. They need little maintenance, especially with Hard Disk Drive support (DVD, computer hard drive) and offer high quality resolution. There is also the possibility to offer multilingual versions of the same piece of interpretation without extending physically the place needed for stock. In exhibits, video creates more colour, motion, and sound, which attract attention and are more engaging than text and pictures. However, corresponding text must be available for those who can not hear well. (Beck and Cable 2002, 85.)

The development of new technology of communication (Chapter 3) proposes quantity of tools that help people in the production, distribution, exchange and reception of videos for free or low cost and with an excellent quality of product (Tuomi and Multisilta 2010, 165). Even if the organisation does not have the resources to create its own video material, museums and universities are publishing on the internet plenty of free of charge environmental interpretation videos that can be podcasted (downloaded) or watched with a simple internet connection (Global Museum 2012). With an appropriate agreement, the organization could use one of those video or have help for the production of a video from such institutions. However, by filming workers and researchers in their tasks and explaining the reason of their work, the organisation could have a good and cheap way to start. Researches in e-learning show that even with low quality videos, the learners judge the experience of using videos engaging (Naismith 2004, 21; Tuomi and Multisilta 2010, 175).

2.4.2 Geographic(al) information systems (GIS) / remote sensing

Seeing a familiar area from above, with birds-eye, fascinates people. Aerial photographs and satellite data imagery allow people to see their world from an entirely new perspective. (Beck and Cable 2002, 86.) GIS is an information system which uses ge-

ographically related information and images. Location makes information more valuable and then it can be used in a whole new ways. GIS can reveal hidden patterns, relationships that are not readily apparent. (Hannus 2012.) Maps or interactive imagery generated by this technology will reveal important features not visible from the ground. Those can be used to interpret land use changes, habitat types and many other environmental and cultural themes. (Beck and Cable 2002, 86).

An interview of Tuula Kurikka, Species Conservation manager in the South-Savo conservation service, reveals that Metsähallitus has a great quantity of data on habitats, biotopes and species, collected and saved in GIS databases. That database is used for administrative and reports purpose, given to researchers on demand, but not given to the public. Giving the public an access to that database will be counterproductive because it does not have the tools and the knowledge to handle those data. (Kurikka 2013.) However, every GIS program has an interpretation function in order to show the relationship between the information according to what the user wants to reveal (Hannus 2012). If you put it in the hand of an interpreter that knows both visitor's interests and GIS program, this technology would be a fantastic tool for environmental interpretation in the protected areas in general.

Advanced GIS programs can produce images, 3D maps, and animations that can be used as raw material for interpretation trails, videos, animation projected in Nature centres and environmental education. Aerial photographs give a better appreciation of distances and give to the visitor a global view of what can be seen on the trail. Still, this technology has to be attached to other techniques of environmental interpretation. GIS and remote sensing can help visitors to understand how humans are changing the planet but those can not substitute knowledge of both environment and history of the area.

2.4.3 Interactive Computer Exhibits

Interactive computer, or device, can be used for three purposes. First, it can be used as a reference device that will direct visitors to a particular trail, program, or exhibit to meet their needs, interests and abilities (Beck and Cable 2002, 87). A computer with a connection to a well-designed website such as "Outdoors.fi" and "excursionmap.fi" (Metsähallitus 2013 a and b) is an excellent application example. It also has the ad-

vantage to be used as a reference for any mobile device that has an internet connection, so it can also be used on field. In a visitor centre or nature centre, computer should be correctly set-up to restrict navigation in order to avoid misuse or vandalism.

Interactive computers may serve as personal tour guides. At protected areas, visitors can get a guided tour of the area's features by using interactive technology, just as a guide might do. (Beck and Cable 2002, 87; Ruchter et al 2010.) The results of a German research on computer guided tour (Ruchter et al 2010) show that, if using an electronic device for guiding was more disturbing than traditional media for adults and elders due to the novelty of the technology, the global efficiency of the interpretation did not suffer from the media. Furthermore, young participants of that study found using handheld interactive technology in environmental interpretation more interesting. That study was made using PDA as a guiding device. Today, tablets and smartphones have better memory, calculation and screen capacities than PDA's, and interpretation could be easier and even more effective. (Ruchter et al 2010, 1062.)

Interactive computer exhibits can encourage visitors to manipulate variables, observe effects and make discoveries in a problem-solving atmosphere. At Mount St. Helen national Park, USA, visitors can use a touch screen computer exhibit to play the role of pioneer species and make decisions about survival strategies in a post-eruption landscape. They learn about plant succession, insects, mammals and other organism interactions in the process. (Beck and Cable 2002, 87.)

Modern devices allow visitors to see and experience the world differently. Computers and other technological devices and tools can be useful in the hands of thoughtful environmental interpreters. However, those can not fully replace the personal contact and on-site experience. Today, visitors come to historic sites, museums and national parks with a request of entertaining, learning and to be astonished. Technology can be used by interpreters for that and for inspiring people to learn further. (Beck and Cable 2002, 95.)

2.5 Why to use Environmental interpretation?

Environmental interpretation has objectives that will create outcomes. Those outcomes will benefit the resource, the agency, the visitors and the environment in gen-

eral. Those objectives are described in an environmental manual (MBRS 2005, 4) as following:

- Behaviour objectives: These should be the real purpose of any interpretation project (MBRS 2005, 4). The interpretation should create awareness and engagement for conservation for visitors. It will teach visitors of the consequences of certain behaviours and tell about appropriate ones. (Moscardo and al 2004, 232-234.) If some studies suggest that a stand-alone short time experience is not enough to produce a behavioral change, all of them agreed that it will have an important influence on it (Balantyne and Packer 2005, 4; Knapp 2005, 2; Ruchter et al 2010, 1063).
- Emotional objectives: It is difficult to achieve behavioural objectives without creating emotion. The visitor has to feel that the appropriate behaviour is important to him. Accordingly, the change in attitude and restrictions will be understood and accepted by him.
- Learning objectives: These are notions or information that the majority of visitors should be able to identify or make note of. Interpretation should provide elements for pleasure and education.
- Management objectives: Objectives that will facilitate management goals and maintenance in the protected area. Interpretation should encourage the appropriate use of recreational resources and behaviour by the visitor in order to reduce human impact to a minimum. (MBRS 2005, 4-5; Balantyne and Packer 2005, 7.)

Consequently, the outcomes of environmental interpretation will be:

- To create a direct contribution to enriching the experience of visitors (MBRS 2005, 6; Veverka 2005).
- To make the visitor aware of his place in the environment and facilitate his understanding of the complexity and fragility of the environment.
- Establish public support.
- Motivate the public to take actions for environment protection.
- Create employment opportunities for the local communities and tourism sector, for people working as interpretive guides, trail maintenance, in visitor centre.

- Decrease the need for maintenance and the degradation of fragile ecosystems in the protected areas (MBRS 2005, 6). Make people understand restrictions and accept it.

Different objectives will generate different outcomes. In the case study of Saimaa protected areas, the objectives in the interpretation plan are:

- To improves accessibility and safety.
- To promote the natural and cultural heritage.
- To deepen visitors into the natural and cultural experiences.
- To provide materials that encourages visitors to be environmentally responsible and create a behaviour change in citizens.

Then all interpretation in the Saimaa protected area will try to fulfil those objectives.

An average citizen of developed countries spends only 3% of his life at school. Environmental interpretation must cover the need to continually access and understand the rapidly changing environmental issues. (Ballantyne and Packer 2005, 1.) It will be an important part of visitor's satisfaction, environmental education and protected area's value. As ecotourism is stated to be one of the fastest growing forms of tourism, it can be expected that in Finland, where tourism is mostly nature-based, protected areas will receive more and more visitors (Ikonen 2012, 4). That type of tourist has a great curiosity for local ecosystem, culture and history that interpretation should provide. Therefore, environmental interpretation is an important part of tourism as well as an important part of education.

3 NEW TECHNOLOGIES OF COMMUNICATION

New technologies of communication emerged from a various combinations of web innovations during the past 20 years (Suni 2010, 1). Those innovations, little by little, have enlarged the possibilities and use of the internet. The internet, like all technologies of communication before it, has changed the way that we communicate with one another (Deal 2008, 1). Today, a large number of people are able to communicate and share knowledge with a mass of other people wherever they are. The main evolution is that traditional technologies of communication can aloud mass diffusion of information only in one direction (from an organisation or a person to the public), when

new technologies of communication enable bidirectional discussion. New technologies of communication give a voice to people and therefore power that few technologies gave before. That revolution has a name, Web 2.0.

3.1 Web 2.0

New technologies of communication is a term that is associated with a large branch of innovations that changed the way we use technologies to communicate. There are two main approaches for new technologies of communication according to the nature of the stakeholders: human-machine or human-human. In this thesis, the author will focus on the human-human communication using internet technology (Web).

The term Web 2.0 comes from Tim O'Reilly, the founder of O'Reilly media, who has written the book "What is Web 2.0?" (O'Reilly 2005; Lee 2013, 23; Suni 2010, 1; Luukka 2011, 10). By the term 2.0, borrowed from programmers, he wanted to show that internet technologies started a revolution that will change business and organizations relationship with the customers (O'Reilly 2005; Lee 2013, 23). In the jargon of programmers, 2.0 is the first version of a new release that has a major innovation for the user but is still based on the same concept and technology than 1.0 version. Today, that term is mostly used as a synonym of social media (Lee 2013, 23). However there are slight differences between those two terms. If most of the Web 2.0 sites are social media, there are also Web 2.0 sites dedicated exclusively to business, work, or politics.

The Web 2.0 is based mainly on technologies and open standards that were used since the World Wide Web (WWW) was founded. Therefore, there is no major technological breakthrough between the web 1.0 and the web 2.0; both are websites. The main differences come from the structure, layout and the fact that Web 2.0 is more oriented for social, political and business use. Web 1.0 sites have hierarchical structure with a front page leading to subpages by using cross-links and search functions. The user can only navigate from pages to pages, view the information but can not interact with nor modify the pages. In that sense, those websites are using the same communication system than press, radio or television. Web 1.0 sites can have links to other websites for enlarging the scope of the site but it will cover only specific information that will be updated less often than with web 2.0. Due to the simplicity of Web 1.0 sites, users

do not need to log-in and, generally the pages can be accessed easily by most browsers and mobile technology. (Suni 2010, 2-3)

In Web 2.0, the user has the possibility to add its own information, which can be personal information, images, videos, audio, post etc. (Suni 2010, 3). A part of the website layout and service can be modified to match with user's preferences. Accordingly, the structure of the websites become so complicated that each user must have an account that will identify the user and stock all his information and preferences. Therefore, most of Web 2.0 sites ask the user to log-in. The Web 1.0 was organization oriented, the Web 2.0 is user centred. It is a platform where content and applications are continuously modified and exchanged by all users in a collaborative manner, and no longer created and published by individuals. (Lee 2013, 23; Suni 2010, 2-3.) Social media is the best example of this evolution.

3.2 Social media

Social media is a new way of socializing information. It is facilitating and enhancing communication flow by making it faster and for a large online audience. Since social media, a conversation made on a local media can have a global impact. (Lee 2013, 24; Smith and Zook 2011, 10). Social media is the combination of social interaction sharing contents on communication media. The following figure shows the difference between social media and other media.

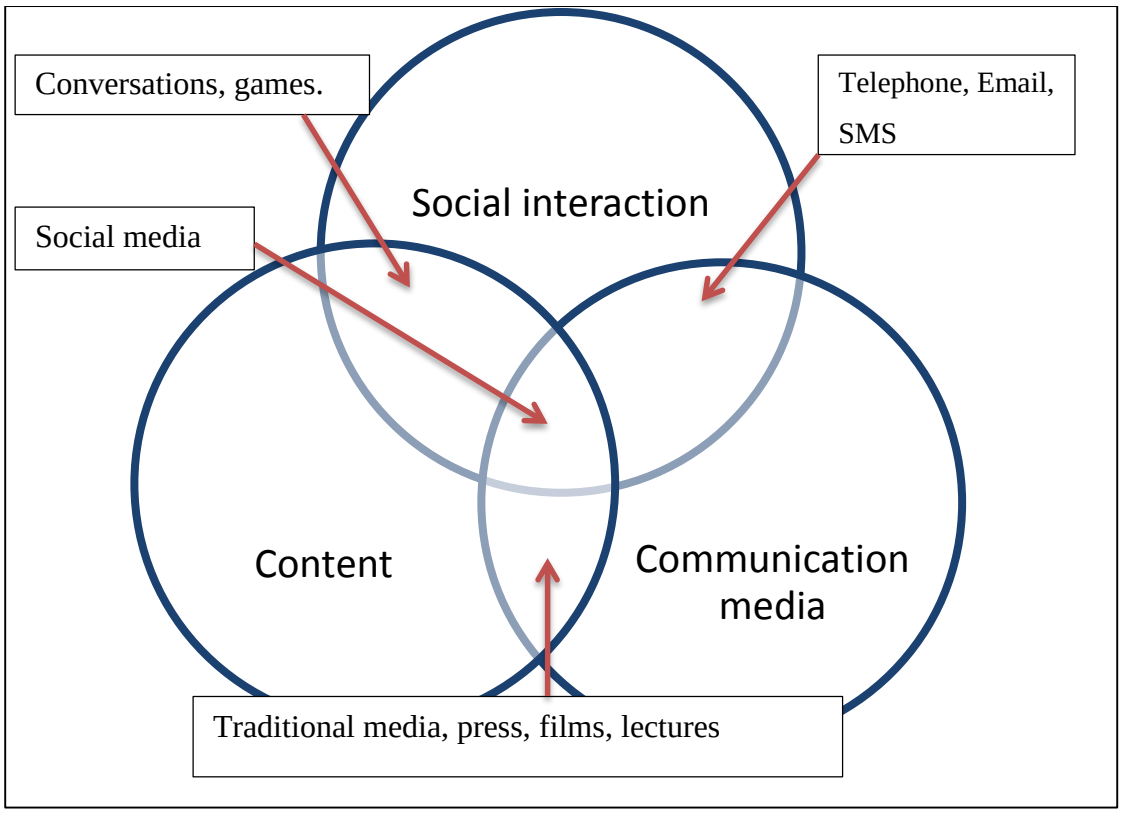


FIGURE 2: Social media's components. (Lee 2013, 24)

The Finnish Terminology Centre (TSK 2010), define social media as "a form of communication benefiting from information technology and networks, where content produced interactively by the users is handled and where relations between peoples are created and maintained" (Translated from Finnish, TSK 2010, 14). The key elements in social media are the interactivity, user-centred architecture and content generated by them.

According to Pauker Kreizberg (2009), social media has five advantages. It is transparent, user centric, agile (nimble and quick to adjust), empowering and creative. Those characteristics are really interesting for environmental interpretation practices. But she also said that it can have 10 restrictions. The restrictions that affect interpretation are, security (ensure security without restricting creativity and communication), generation gap (Baby boomers and Millennials use the Web differently), communication (both interpreter and public have to be on-line in the same range of time), and behaviour (employees need to know the organization's policy for online behaviour). (Luukka 2011, 11).

3.2.1 Different types of social media

Social media is growing and changing continuously but, there are five main types of social media. Those are **social networking sites, social news, media sharing, blogs and micro blogging.** Each of those has its own characteristics and provides unique features and experiences to the user. However, the combination of those creates the social media sphere. (Lee 2013, 25). In the next paragraphs, the author will describe each social media type.

The social network site is based on a network where individuals are able to connect with others. Generally, people are connecting to others that have similar backgrounds and interests. The user can create interactive and customized profile, either public or semi-public, share connections with "friends" and have access to lists or groups of users. The precedents characteristics are the only ones common to all social networks. Facebook, Vkontakte or One, are the most used social networks in Europe, Russia and Estonia respectively. (Maps of World 2009). Metsähallitus applies Facebook in communication and interpretation activities. (Lee 2013, 25; Metsähallitus 2013e and f.)

Social News, or Social bookmarking sites are online communities of people that are sharing "news". It is different from social network by allowing the user to be in control of their news streams, to submit and vote on the content that is judged interesting in the Web. The user can also collect links they have discovered on the internet, share those or stock them for later revisit. (Zarrella 2010, 1003; Lee 2013, 26). Then other users can discover websites that has been judged interesting according to certain criterion, with discussion and reactions from the community. (Lee 2013, 26.) Examples of Social News are Digg, Reddit or Scoop. Metsähallitus does not apply any social news sites (Metsähallitus 2013 c).

Media-sharing sites are websites where users can upload, store and share multimedia files such as photos, videos and music with other users. The most popular of them are Youtube, Flickr or Picasa. Those sites provide opportunities to create podcasts (producing and distributing multimedia files) with affordable technology, and propaganda "channels" that have the same topic via subscriptions. Therefore media-sharing sites have always been popular in online societies and social media. However, many organizations and users are underestimating the importance of tags in those media. "A tag is

a word assigned to a piece of content that helps describe it" (Zarrella 2010, 81; quoted in Lee 2013, 26). Because of the mass of content stock on those sites, a search engine is compulsory. As no public search engine can identify the topic of a video, audio or image by face, voice or action recognisance, the tag will be a code for data classification. Therefore, tags are as important on those sites than search words are in databases. The author of this thesis did not find any mention of media-sharing sites used by Metsähallitus in its documentation (Metsähallitus 2013 a, and c; Metsähallitus 2009; Laukkanen 2009). However, an account named MH Luontopalvelut exists on YouTube since 2010. With 114 subscribers and 117 355 views, its importance in environmental interpretation and Metsähallitus communication should not be underestimated. (YouTube 2013.) It should be more visible on the websites and other communication of the organization. As explained in the chapter 2.4.1, video can be a very good tool for environmental interpretation. Metsähallitus is also the owner of the website www.yhteiso.luontoon.fi that has the same function than media sharing. However it is more complicated to use than Youtube, Flickr or Picasa.

A blog is an online journal that is maintained by individuals or groups, and features commentary and ideas for a larger group of audience. Blogs are good hubs for other social media marketing tools such as videos, hyperlinks, pictures, articles and so on. If blog software provides social features such as comments, blogroll which are a list of links to other "friend's" blogs, and subscriptions, blogs can also be integrated into other social media platforms. It allows everyone to publish and to join multithreaded conversations online. (Lee 2013, 27.) If users must have an account and log-in in order to create a blog or to write a comment, blogs are technically websites opened to all visitors; accordingly it can be read by any devices that have an internet connection and a browser. Easier to create and manage than a traditional website, it was first designated to people with limited knowledge and resources in internet technology.

Free blog editors have some limitations on the amount of data (images and videos) that varies from one blog editor to another one. Still the amount of subpages and posts are unlimited and each one of those has a specific Web-address that can be shared. Good examples of free blog platforms are Blogger (ex-Blogspot), Wordpress and Tumblr. There are a lot of other blog platforms with more features for a cost starting from 5 US$ per month to 100US$ per month according to the level of quality and professionalism wanted. (The next web 2013.) There are also programs for editing blogs

easily. Nevertheless, Blogs can also be used as a reserve of interpretation materials for other media. According to websites and discussions with Nature Heritage Service employees, Metsähallitus has six blogs, but no one is dedicated to Saimaa region. (Metsähallitus 2013 c).

Micro blogging is a direct information network, with similarities with blogging, but with only one single page and a restriction in the number of word of each post. It encourages faster mode of communication by allowing users to spread short-texted messages via instant messages, mobile phones, e-mails or the Web. The receiver of the message gets the essence and concise information through short-texted posts from whatever media he is connected to. Twitter is actually the leader on the market with 140 million users in 2012 and 1,6 billion search queries per day. (Lee, 2013, 27.) Twitter gives now the possibility to add an image to a "Tweet", but the limited amount of characters, fewer than 140 characters including spaces and links (Twitter 2013), makes interpretation very difficult to be achieved via this media. Metsähallitus administers six accounts on Twitter but none of them is specifically dedicated to Saimaa region.

3.2.2 SWOT analysis of social media

This chapter presents a SWOT analysis of the social media previously discussed with an environmental interpretation point of view. The SWOT analysis is a qualitative analysis showing the Strengths, Weaknesses, Opportunities and Threats of a situation or phenomenon. Every social media has their own characteristics but those are all based on the Web. This gives them all common strengths and weaknesses.

The common strengths of social media include its penetration in the society, its reactivity and the possibilities to have real-time statistics on visitors. According to Official Statistics of Finland, in 2010, only 42% of Finnish population are registered as a social network service user and 28% follow some social network service ate least daily. However, 83% of 16-24 years old Finns are registered as social network service users and 67% of them follow some social network service at least daily. (Official Statistics of Finland 2010). That means that social media and the use of internet is an important part of the young population's life in Finland as well as globally. It is not a non-sense to assume that the use of social media increased during the past three years and would

be even higher now. The following figure shows the importance of social media in Finnish population.

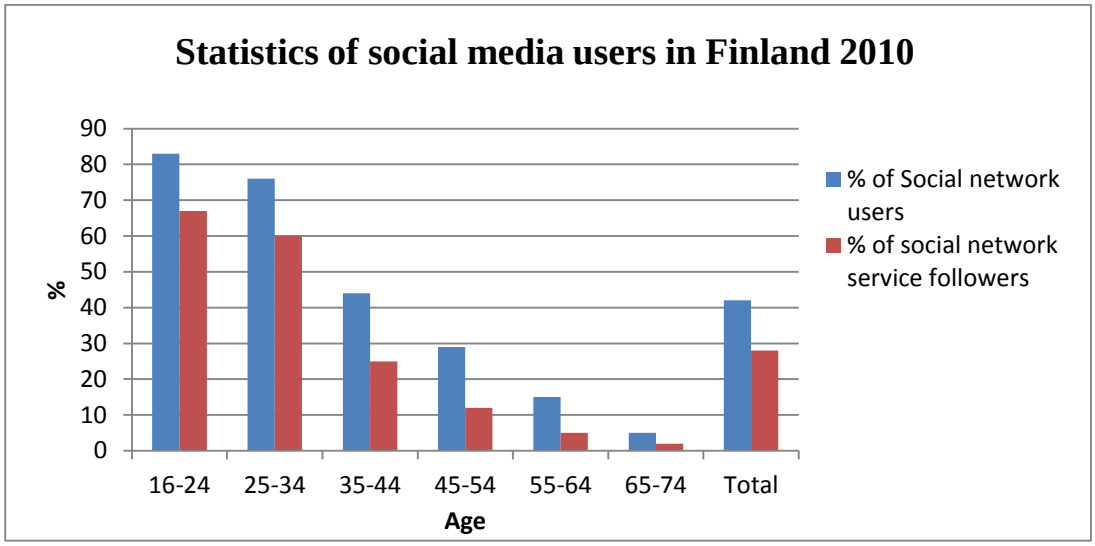


FIGURE 3: Social media use in Finland. (Official Statistics of Finland 2010)

For the next generation, the internet, and media based on it, could become more important than television and all other traditional media. A research online conducted by Microsoft and TNS Gallup in 2011 shows that 78% of Finns use the internet daily but only 66% use the television. However, social media have also a systemic weakness; it is based on internet connections. Users need a good internet access at an affordable price in order to use it out of home. The following tables present the SWOT analysis of each Social media.

TABLE 2: Social Network SWOT analysis. (Based on Leskinen 2012, 15; Luukka 2011, 16 ; Lee 2013, 7 and 25; the author's experience)

Strengths	**Weaknesses**
- Over 600 million active users, over 2 million users in Finland for Facebook. - Almost ½ of users are 18-34 years old. - Multimedia embedding possibilities: text, video, images, links. - Little computer knowledge needed. - Free. - Well established and documented. - Give detailed statistics on the visits and	- Security issues - Constant evolution of the site (new layout and services are released every year) - Fast reaction from comments is needed from the organization. - Because of its complexity, an application is needed on smartphones and tablets. - The posts do not have specific Web

information spreading.	address. - The user must log-in.
Opportunities - Free media for mass publishing of documents in any electronic form. - Strong potential for future development in the population. - Used by at least 5% of elders. - Possibilities for virtual discussion on one or more topics. - Source of feedback. - The interpreter can ask the public direct questions and have real-time statistics on the answer. - The organization can give to the customer access to decision making. - The customer can feel more related the organization's mission and activities	**Threats** - Lack of security. - The organization's image can be badly affected by few bad comments or reactions if there are no quick actions done. - Necessity of constant monitoring - Will exclude those who do not have an account - A daily monitoring is needed.

Social networks are fast developing media that are suitable for environmental interpretation because of its capacity to create a direct discussion between individuals or groups of visitors, and it enable adding multimedia or documents to support the interpretation. However, security issues and the necessity to be constantly active for monitoring and managing the discussions could generate problems if the interpreter is not an active user of that media.

TABLE 3: Social News SWOT analysis (Based on Lee 2013, 26; the author's experience)

Strengths	**Weaknesses**
- The "New" is readable without any account or log-in. - It can be viewed by the all world. - The news can embed a vast variety of multimedia, including video animations. - More secure than social networks. - Free	- News are classified according to their popularity and/or most popular topics, not on geographical locations. - Environmental protection rarely hit the top 20 most popular topics. - Need to log-in for voting. - Much less popular and have much less active users than social networks.

	- Few documentation and literature exist.
Opportunities - Permit long interpretation articles. - Long articles are as popular as short ones. - No necessity for constant and regular feed of articles. - Worldwide diffusion of the articles.	**Threats** - Need a high level of multimedia and social media knowledge. - Little feedback for the writer. - No existing methodology or standards. - Most of the users have an account in another more popular social media. - Will exclude a large range of the customers. - Difficulties to apply interpretation principles as the communication can be differed for months.

Social News is one of the less suitable social media for environmental interpretation. It is really difficult to have direct and personal communication with users, which needs a social network account anyway in order to log-in. The only opportunity that the author found was the absence of length or volume of information as a criterion of popularity of News. However, a large range of the protected area's visitors will be excluded of that form of communication and the results will be hard to monitor.

TABLE 4: Media-sharing SWOT analysis. (Based on Lee 2013, 26; Leskinen 2012, 18; the author's experience)

Strengths	**Weaknesses**
- Strong use among online society. - Possibility to have a "channel" where all organization's videos can be stock and shared. - Possibility to share partner's videos - No need to log-in for viewing the content - More secure than social networks - Links of the video or image can be imbedded in any media support.	- Quality videos need more expertise and material to be created. - Copy writes issues. Some programs allow the user to copy any media played on his/her computer. - Log-in is needed for commenting. - Few elders are media sharing users.

- Free - Possibility for multilanguage content	
Opportunities - Video is a strong and visual interpretation tool. - Videos are more popular than text and pictures for youth and elders - A link to the video can be added to trailer's marks or any document using QR-codes or Web address. The visitor can view the video if he/she has a device connected to internet. - The visitor can have a better nature experience with videos.	**Threats** - Some elders will be excluded. - More resources are needed for creating the contents. - The channel needs a regular feed of content. - Almost impossible to have a real discussion with the viewers.

Media-sharing offers a good opportunity for environmental interpretation. It is a free tool for diffusing interpretation videos to the public and the access to the video is open to anyone that has the address link. With the development of mobile communication, it could be an opportunity to produce video guided tours of the protected areas trails. However, a fast internet connection and a handheld device capable of playing videos are vital for streaming videos outdoors. That will, de facto, exclude everyone who does not have a smartphones or a tablet, and a large part of tourists that do not want to pay roaming charges. Still, media sharing will be a good tool for environmental interpretation and environmental education for visitors before, during and after their visit.

TABLE 5: Blog SWOT analysis: (Based on Lee 2013, 27; Worldpress 2013; Luukka 2011, 15; the author's experience)

Strengths	**Weaknesses**
- Well established and documented media. - Most secure social media. - The owner of the blog has a complete control on the site and communication. - Use a big range of multimedia. - Give the possibility to create interpretive articles.	- Free blog platforms have limitations in layout and volume of data stocked - Need some skills in internet tools for making an original blog. - The writer of the blog needs sup-

- It management and monitoring is similar to a Web-site. - No need to log-in for viewing content and letting a comment. - The basic service is free. - Blog publisher programs exist for building and managing easily a blog. - Each post and page has a specific Web address. - Possibility to create Multilanguage pages	port from the organization and other similar organizations to help blogs distribution. - Need a daily monitoring for answering questions from visitors. So it could be costly. - Any non-active blog or webpage (not accessed for more than 1 year) will be deleted. - Free blog platforms can have advertisements added to the owner's blog. - Training is necessary for the workers responsible for the blog.
Opportunities - Constitute a hub for all kind of communication on electronic form (text, images, video, audio etc.) - Can be used as an interpretation platform where any numeric document or piece of interpretation can be stocked. - Can be accessed as easily as any Website. - High opportunity for marketing and promoting protected areas. - Coupled with QR-Codes, it can be a virtual trailer guide for visitors equipped with adequate devices. - It is easy to have a virtual discussion with visitors that let comments.	**Threats** - Building and managing a blog can be time consuming. - Daily monitoring is necessary. - Badly written blogs could lead to customers lost. - Personnel can think that writing takes too much time. - Costs for the organization.

The blog is the social media that looks to have the most opportunities for environmental interpretation. All interpretation principles can be applied on a blog. The amount of pages or posts are unlimited, and excluded the volume of the videos and images on free platforms, the quantity of interpretation that can be stocked and shared to the public is enormous. It is also the only one social media where the visitor do not need any log-in for commenting, and as each blog works like a Webpage, it is easily accessible to any device that have a Web-browser.

TABLE 6: Micro blogging SWOT analysis (Based on Lee 2013, 8 and 27; Twitter 2013; Luukka 2011, 17; the author's experience)

Strengths	**Weaknesses**
- Well established and documented media. - Well used worldwide, over 140 million users, 370 000 new sign-up/day. 600 tweets/s in 2012. - The function "retweet" give the possibility to have a viral form of information spreading. - Can use text, images, videos and links. - Establish a real-time discussion with the public - Free - Secure if well set-up. - Statistics are provided by the site	- Limited amount of characters (140 including links) - High frequency of updating is needed - Real-time conversation, which means a constant monitoring from the organization. - The user must log-in to view the information. - No specific address for the information written on the micro-blog. - Most costly to manage.
Opportunities	**Threats**
- Massive and real-time distribution of information. - The followers feel like to be a member of the organization's team. - Give real-time feed-back from user's experience. - A good way to locate quickly consumer's pain points	- Difficulty to apply interpretation's principles in of maximum140 characters. - Necessity of high frequency updating. - Necessity of constant monitoring. - Exclusion of the elders, foreigners and every one that do not have an account. - False information can spread fast and get out of control.

Micro blogging is the least suitable media for environmental interpretation. The restriction of characters and the necessity to log in for viewing the information restricts its utility for interpretation. This media, made for instant discussion and simple information sharing, needs a high frequency of activity in order to transmit an idea or a message, which means that the responsible workers will have to be connected many times a day.

3.3 Mobile Applications

Mobile applications are not completely part of new technology of communication (NTC). They could be seen as specialisations of NTCs that is different in the way that

the communication is Human-machine oriented instead of Human-machine-Human as it is in NTCs. In that sense mobile applications are defined as Information and Communication Technology (ICT) because it is said that the social and human dimension of the communication is absent. However, mobile applications have been designed for mobile social media platforms (Facebook, Instagram, etc.), so the frontier between ICT and NTC tends to be blurred. Those ICTs are made for delivering information to mobile devices on-field. Correctly designed, the information can be developed into environmental interpretation.

Mobile application, or so called "app", is software used on smartphones, tablet computers, personal digital assistant (PDA) and palmtops. Applications are designed to educate, entertain, or assist consumers. (Kiilunen 2013, 33.) Several studies done in environmental education in the 2000s conclude that if the technology available in 2000 generated limitations in the learner's experience (small screens, limited memory and performances of the device, cost of both devices and software design), its potential for environmental interpretation is great (De Crom and Jager 2005; Hashemi et al 2011; Naismith et al 2004). The technology has progressed, the price of the device decreased, many people own smartphones today and programmer's tools are available for designing "apps".

With more than 5 billion mobile phone users in 2010, the mobile web traffic is expected to surpass the desktop internet one by 2015. As mobile applications aim to provide its users with context and time specific data for visitor, and limit choices to the tactical needs of the moment, it could be applied for environmental interpretation and guiding on, for instance, a protected area's trail. (Kiilunen 2013, 34.) If an application can guide a person in a city, showing interesting shops, historical monuments and useful services, why not use that tool to guide the visitors in national parks, interpreting interesting landscape or historical, cultural and natural specificities of the area. Furthermore, games, questionnaires, interactive maps, and multimedia can be added to such applications. The following table presents the SWOT analysis of mobile application.

TABLE 7: SWOT analysis of mobile application. (based on Kiilunen 2013; the author's experiences)

Strengths	**Weaknesses**

- Can be designed to work without internet connection. - Used on-field - Popular and well documented (29 billion downloads). - Secure. - Use multimedia. - Can use GIS and interactive maps - Can be sold to the user. - Multilanguage is possible	- Has to be downloaded before use - High level of program knowledge is needed by the designers. - Resources consuming (time, development cost). - Have to work on different operator systems and distribution platforms. - Need to be monitored and updated. - Usually created for one specific task. - It is not free for the organisation. - Have much more legal and ethical issues than the other NTCs
Opportunities - Good interpretation tool downloadable worldwide and in advance. - On-field piece of interpretation that is not sensitive to deteriorations. - Can be sold to the users for cost recovery and benefice. - Can use all kind of electronic data. - Geolocalisation of the user is possible. - Possibilities to integrate games and questionnaires. - Can be designed to help protected area's management (the user can signal and localising degradations). - Can coach and motivate behavioural change. - Will be popular to foreigners if it is designed to be internet connection free. - Increase tourists satisfaction	**Threats** - Direct communication with the user is impossible. - Need of a team for designing and managing the application. - Economical risk of failure. - Need to create updates when a change occur on field - Impossibility to make a multitasks application for all kinds of visitors. - The user needs a smartphone, tablet or compatible device, which will exclude a part of the visitors that don't have it or don't know to use it. - If there is no possibility to download it on-field, it will exclude visitors that did not prepare their visit in advance.

Mobile application represents a good opportunity for environmental interpretation in protected areas but its design and development need resources that usually the organisation in charge do not have. That means that the development and management of the

application have to be done by a subcontractor, generating cost, legal and ethical issues. Mobile application must be considered as a project that will engage the organisation resources for years without any guaranty of success in the public. Furthermore, Mobile application is the less agile of NTCs. A mistake in the design and program process can generate a failure that will be very difficult to repair later on. Mobile application can be either a formidable opportunity or financial and image catastrophe.

4 CASE STUDY OF SAIMAA PROTECTED AREAS

Saimaa protected areas represents 18 500 ha of protected area (185km^2). These protected areas are visited by more than 290 000 visitors annually. As Lake Saimaa receives an estimated 500 000 tourists per year, we can say that more than half of the tourists coming in Saimaa area also visits a protected area. Therefore, protected areas and those provided services are the business sources for more than 70 entrepreneurs that have nature-related activities by providing guiding, equipment and accommodation services in and around those areas. (Laukkanen 2009, 11.) Environmental interpretation is an important part of the overall tourist's experience of the region and has an important value for both protected areas and region's economy. The following figure presents the location of Saimaa's protected areas. Repovesi National park is not present on the map because of scale issues.

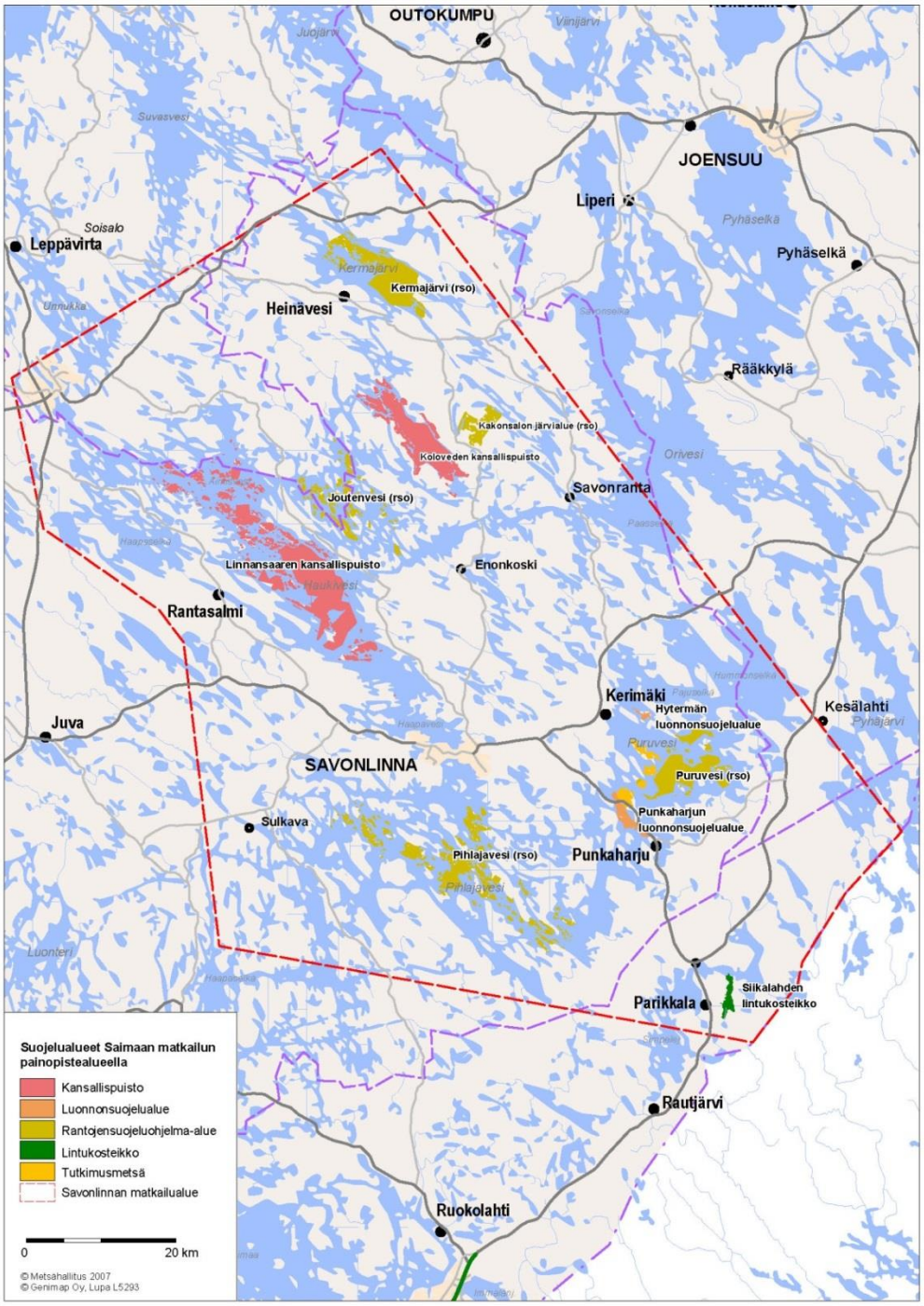


FIGURE 4: Saimaa region protected areas. © Metsähallitus 2009 © Map of Central, License L5293.

The objectives of this study are threefold. First, to analyse how visitors use New Technologies of Communication (NTC) before and during they visit; second, to find what environmental interpretation content will match with visitor's expectation; and third, to analyse each NTC in order to propose improvement and new opportunities for existing interpretation. Functional scheme of those solutions will be proposed but the details of development will not be part of this study. This thesis will focus on Finnish

most popular and cost effective NTCs that are suitable for environmental interpretation.

Two different methodologies have been used for this study. An open-ended visitor survey, in the form of a questionnaire, was realised and a social network analysis was conducted online. The visitor survey was conducted in every protected area of Saimaa region, including Repovesi National Park. Quantitative and qualitative analyses were conducted on social network (Facebook) of the protected areas of Saimaa region. Twitter has not been analysed as it is not specifically used for this region.

4.1 Visitor Survey

4.1.1 Material and methods

A visitor survey, in a form of a questionnaire, is a quantitative research method for collecting numerical data that permits a range of statistical analysis in order to solve or answer a particular research problem or question (Lee 2013, 45; Luodes 2012). Still, as the totality of a phenomenon can not always been analysed with numbers, it is usually better to link quantitative data with other methods such as qualitative research methods. By adding open-ended questions in the questionnaire, the researchers gain valuable qualitative information. It is also useful for reducing the length of the text and the effort needed by the interviewee to answer the questions. Open ended question help the researcher to motivate the interviewee and to collect information pointed by the public that he did not expect when designing the questionnaire. (Lee 2013, 46; Luodes 2012.)

A questionnaire was designed in the state of the art of interview research methods (Luodes 2012) with the help of Metsähallitus team. The questions 9 to 12 were took from Metsähallitus standard visitor survey in order to have a statistical source of comparison (precedent visitor surveys done by Metsähallitus in those protected areas). The questionnaire was designed to answer the following questions. What technologies of communications are used by the visitors before and during their visits? What environmental interpretation content will match with visitor's expectations? Answering to those questions is the key point of environmental interpretation. It will determine what

opportunities NTCs can offer and what themes will be included to the interpretation plan.

The questionnaire was written in Finnish and in English. The questionnaire was pilot tested by international exchange students of Mikkeli University of Applied Sciences via Facebook and Oskari Visitor Centre staff from 25th to 30th of July 2013. The purpose of pilot testing was to assure respondents will not encounter difficulties in answering the questions, and gathering suggestions and comments for later modifications. The questionnaire is shown in Appendix 1.

The visitor survey was conducted in the protected areas of Linnansaari, Kolovesi, Repovesi National Parks and in Siikalahti protected areas from July 30th to August 30th 2013. Questionnaires have also been filled in the Oskari visitor centre (Rantasalmi) and in the Riihisaari museum (Savonlinna) as those places are information points for visitors on the way to protected areas and the practical training placement of the author. As the visitor survey was conducted during the practical training of the author, it has been realised in addition to practical placement tasks. An electronic format of the questionnaire was realised using GoogleForm®. The link of the questionnaire was shared via social media, imbedded in Metsähallitus website and Mikkeli University of Applied Sciences blog. Because of the small amount of answers from social media, the decision has been taken to let the electronic form questionnaire open for answers until the 30th of September.

The interviewer was in the most popular entrance of the protected areas and he stayed with the interviewee for answering to eventual questions. However, the interviewer was not close enough to interfere with or read the answers. Every visitor could answer to the questionnaire, but, for groups with more than 10 members, the interviewer was asking to only four or five people to answer because of limited resources. Because of legal issues, only adults were answering to the questions. The visitor survey was usually done from 9:30 to 16:00 except for Repovesi, where the visitor survey was done from 11:00 to 17:00 due to the distance of travelling. The schedule of the visitor survey was dependent on the availability of transportation and the amount of practical placement tasks. It had been decided that the visitor survey will be done in Repovesi only when no other visitor survey was conducted (Repovesi National Park conducted

also its own visitor survey). The schedule of both interview and internet release can be seen in APENDIX 2.

4.1.2 Results

All the answers collected, both in paper and electronic forms, have been entered in the same table file furnished by GoogleForm®. A copy of the file was saved as a Microsoft EXCEL file. GoogleForm® has basic statistical tools developed specifically for questionnaires analysis. The author used the Excel file when further analysis was necessary with specific statistical tools. The details of the results can be seen in Appendix 3.

137 responses were collected, 102 on paper form and 35 online. The following figure shows the places where the answers were collected.

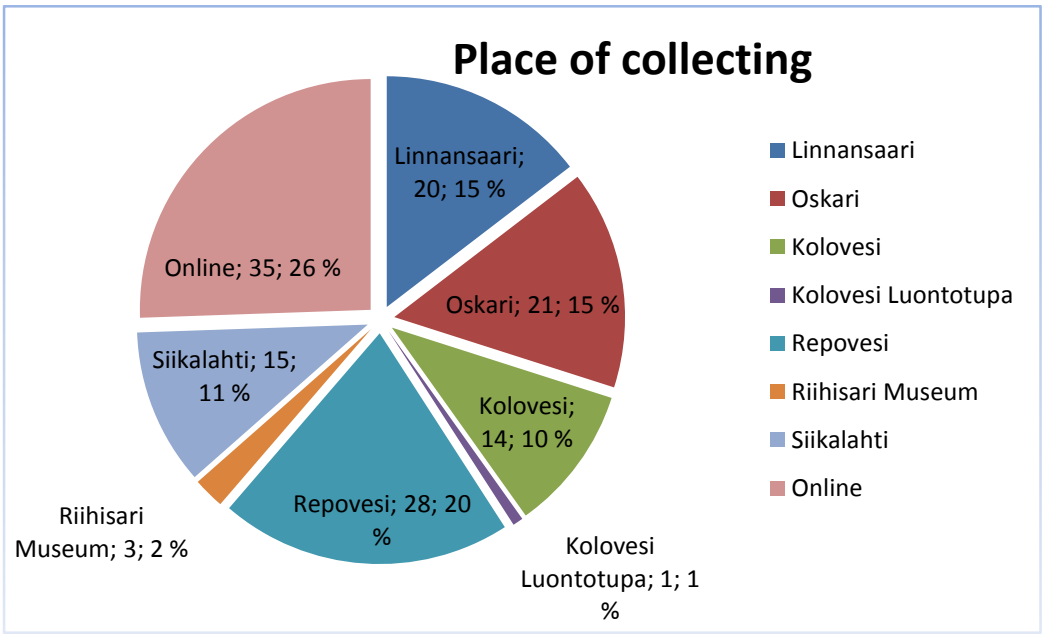


FIGURE 5: Number of questionnaires collected and places. (N=137)

Repovesi and social networks were the places where more answers were collected. 55% of the responders are males and 45% are females, and the age average is 41 years old. The oldest respondent has 79 years old and the youngest 18 years old. Most of the respondents were travelling as a group of 3 to 4 people of own family member (66%) or friends (19%). Most of the respondents were Finnish (73%) but foreigners were dominated by German speaking language countries such as Germany and Switzerland

(respectively 6 and 5%). All the foreigners that responded to the questionnaire were also English speaking.

It was interesting to know how visitors prepare their travel to the protected area. As the nature experience is often part of an overall travel that many times includes several places to visit, the first question of the questionnaire was "How do you prepare your trip at home and on the way to the nature protected area?" The following table shows the answers to that question.

TABLE 8: Use of media for preparing the travel.

How do you prepare you trip at home?				**On the way to protected area?**	
Using internet	95	30 %		49	22 %
websites (including research engines)	71	22 %		33	15 %
blogs	6	**2 %**		3	**1 %**
social networks	15	**5 %**		7	**3 %**
web based maps	46	14 %		24	11 %
phone call	8	3 %		6	3 %
books	31	10 %		23	10 %
travel agency	0	0 %		0	0 %
I did not prepare my trip	24	8 %		45	20 %
Other	23	7 %		31	14 %

Most of the travellers are using internet and especially websites to prepare their travel. However, very few of them use social networks (5% at home and 3% on the way to protected area) and even less use blogs. The label "other" corresponds to visitor's own knowledge, the guidance of friends or members of the family.

The next questions were about how visitors use Websites and NTCs to gather information about Saimaa protected areas. Obviously those questions concern only those who used internet and have prepared there visit. 91% of the respondents did not use blog to look for information and 75% did not use social network neither. However, Facebook was the most used of the social network with 23% of the respondents. Google map was the most used Web based map (35%) followed by Retkikartta.fi

(20%) and Google Earth (6%). Still 27% of the respondents did not use Web based maps. Websites were the most used source of information, especially Luontoon.fi (23%) and Outdoors.fi (7%). Research engines is the third one but the author added this alternative because many users of internet remember the first website they used in a research and not the following ones. The author tested that on the most popular research engines, Luontoon.fi, Outdoors.fi, or Retkikartta.fi were in the beginning of the response list when a Saimaa protected area was entered as a query (tested with Google, Bing ,Yahoo and AOL on 23.10.2013). The following table shows how the visitors use websites to gather information about protected areas.

TABLE 9: Use of Websites for information seeking on Saimaa protected areas.

Use of Websites for Saimaa protected areas information seeking		
Websites	**Answers**	**%**
Luontoon.fi	44	23 %
Metsa.fi	11	6 %
Outdoors.fi	13	7 %
Municipality's webpages	11	6 %
Retkikartta.fi	19	10 %
Excursionmap.fi	0	0 %
research engine	23	12 %
I don't remember	7	4 %
I did not use websites	39	21 %
Other	22	12 %
Total	**189**	

As the visitor is on-site, he could use a mobile application, if he/she has a smartphone in order to receive piece of environmental interpretation and have a virtual guide on the trails. Then, knowing the type of mobile device, its connectivity, and visitor's willing to use such program is needed for the feasibility and development of that application. The following table presents the devices used by the visitors.

TABLE 10: Devices possessed by the visitors on-site.

Devices possessed by the visitors on-site		
Devices	**Responses**	**%**
Laptop	24	14 %
Mini laptop	7	4 %
Tablet	21	12 %
Smartphone	**86**	**50 %**
I don't have any of those devices	30	17 %
Other	4	2 %
Total	**172**	

It can be noticed that 50% of the visitors had a smartphone, which means that an application that would guide and interpret nature on protected areas trails has the potential to be used by 50% of the visitors. Apple, Samsung Android and Nokia Microsoft are the most used operator system by the respondents with respectively 32%, 30% and 21% of the responses. 89% of the respondents that have a mobile internet connection use a 3G connection. Then questions were asked on visitor's willingness to use their devices for receiving information about nature, culture and ecosystems. As mobile application can also be used for guiding people in nature trails, questions were asked about their desire to have an interactive map of the protected area and how much they could pay for it. Obviously, only those who had a device compatible with mobile application answered to those questions. The following figures show the results for those questions.

TABLE 11: Willing to receive information about nature, culture and ecosystems on their device (N=105)

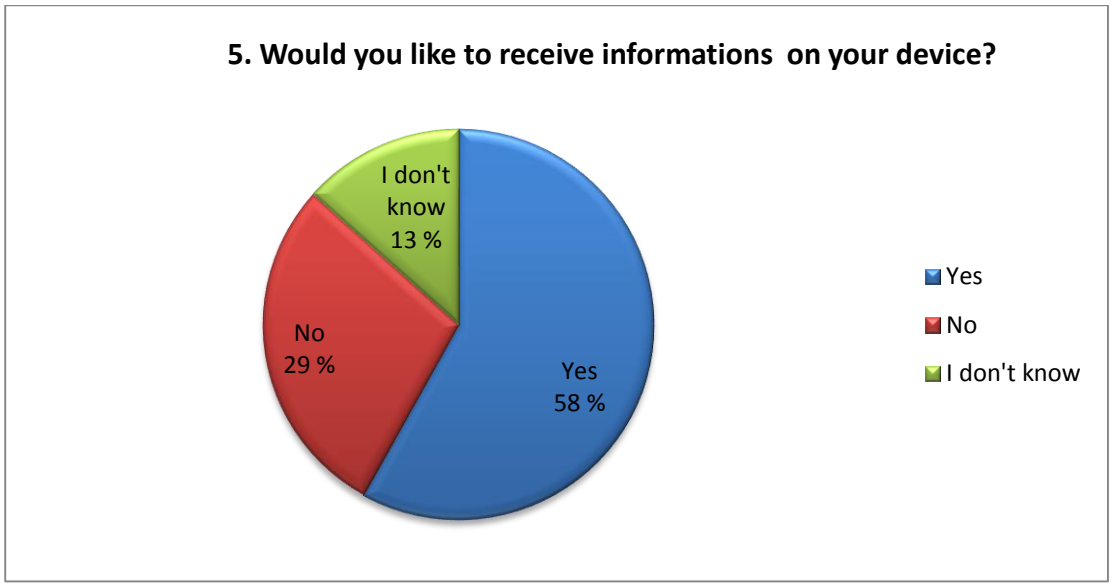
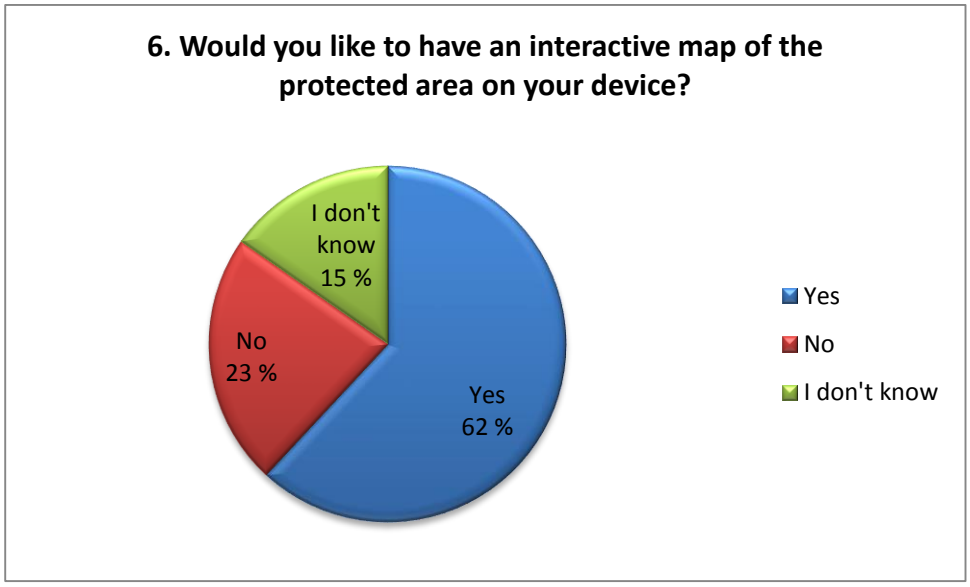


TABLE 12: Willing to have an interactive map of the protected area (N=105)



57% of the respondents (N=105) said that they would like to have an application or game on their device that would guide them in the protected area. And they are willing to pay an average of 3€ for such application (18% of respondents, N= 55).

In environmental interpretation, it is important to know what values are important for the visitors and why they visit the area. The author asked to visitors what is important for them during their visit. The visitor had to give a value between 1 and 5 according to the importance of what they expected to find in the protected area (5 is the most important). By multiplying the value by the number of responses, the value has a

number of points that is proportional to its importance. **Nature experiences, Scenery and relaxation are the most important values for the visitors of Saimaa Protected areas** with respectively 648 points, 622 points and 587 points. Observing nature (24%) and hiking (14%) are the most important activities practiced.

There were two categories of comments left in the end of the questionnaire. Finnish visitors were either complimenting the quality and maintenance of the areas or complaining for having more interpretive boards and better signs on the trails. Foreigners stressed the fact that internet connection is expensive for tourists and that explains why most of them would not use it if there is no possibility to connect to a Wi-Fi internet access. Those comments came from young foreigners that overnighted in or nearby the protected area but can be generalised to all foreigner tourists.

4.1.3 Discussion and conclusion of the visitor survey

The results of this visitor survey can not be representative of the totality of the customers that visits the Saimaa protected areas because of the limited time and resources that the authors had to carry it and the limited amount of respondents. Furthermore, summer time visitors are different than winter time visitors both in their characteristics and activities. The school calendar has affected the age and group composition of the respondents. Indeed, schools start in the mid-August and that can explain why there were few respondents under 20 years old. However, 53% of the respondents were less than 40 years old, which means that there was equilibrium of age in the population questioned. The results can not be compared to other researches as no other visitor survey has been found on this topic in Finland. The only reference that the author has is the result of the precedent visitor surveys for the second part of the questionnaire, which is from question 9 to 15. But even there, the reference can be biased because those surveys have been made in a specific national park and on a much longer period, usually 5 months. Those surveys did not include as much online answers and those were in a completely different context, based only on recreation, business and services provided by Metsähallitus. However, the proportion of Finnish is equal (73% for Linnansaari visitor survey) (Rekiranta 2013, 14). The repartition of age and sex were similar too with 58% of men for Linnansaari survey (55% for this survey) and an age average of 46 years old for Linnansaari and 41years old for this survey. Nature experience (enjoying the nature in this visitor survey) is still the most popular hobby but

nature observation was the first activity practiced in 2012 in Linnansaari and it is fifth in this visitor survey. (Rekiranta 2013, 18 and 24.)

The results show that a very small part of the visitors use new technologies of communication either before or during the trip to nature protected areas. However, 80% of the visitors have a device giving them the possibility to use those NTCs on the way or on-field. Even if foreigners were restricted by the cost of internet connections, 82% of the respondents (mostly Finnish) have a 3G mobile phone internet access. Therefore, as the high score of website shows (the highest of all media used for gathering information), the disaffection for using new technologies of communication does not come from a repulsion for internet or for electronic devices. Now people are more used to websites, research engines and web-based maps for seeking information about a place than using social media or blogs. It is one of the characteristic of the generation Y (18 to 34 years old) and, in a less pronounced proportion, the generation X (35-52 years old) (Kiilunen 2013, 19). The generation Y was born with the development of websites and the generation X had to use it in their professional life , so using websites became almost a reflex for them. The next generation was born with social media so they may use more new technologies of communication for the same task. (Kiilunen 2013, 17-22.)

The results show that if people are interested in receiving information about the area and having an interactive map on their device, there is no clear demand for an application that could be downloaded by the visitor. Furthermore, it will be difficult to design an application for hikers and nature observers (most popular activities) without excluding all the other visitors. For those activities, existing websites such as Retkikartta.fi and Excursionmap.fi are already covering the basic needs. However, with an application, more environmental information could be added on different layers of the maps. As foreigners can have difficulties to access to internet during their trip, the development of interactive maps independent of internet connection could be an opportunity for Metsähallitus. It could be just an evolution of the previously sited websites. As a feedback of this thesis, the authors learnt that a mobile application version of Retkikartta.fi will be release soon but it will be dependant of mobile connection.

The author had the idea of guiding the visitors on the trails using QR codes on the signs. By scanning the QR code, the visitor will have access, via an internet connec-

tion, to environmental interpretation that will correspond to the natural and cultural specificity of the place that can be seen by the user and could include multimedia. However, the results of the questionnaire show that few visitors have a QR code scanner in their device or know that they have one.

In conclusion, the visitor survey reveals that, at this moment, few visitors use new technologies of communication before coming to protected areas and on-site. However, the situation may rapidly change in the future. Those technologies might not be made for geographical and cultural research in the visitor's mind. Even if the visitors dispose of all the technologies necessary to access to social media or mobile application, there is no evidence that he/she is willing to use it. However, this visitor survey is just a snapshot of the situation at a precise time of the year. Further research should be done with more resources on a larger period of time. All the questions were asked in the context of preparing a travel or travelling in a protected area, no questions were asked on how the visitor uses social media after the visit in order to continue or share the nature experience that he/she just had. Such questions should be added in future visitor surveys. It would be interesting to know if the visitor uses social media to share his/her nature experience and if so, could it be used as interpretation and promotion materials for the protected areas.

4.2 Facebook analysis

Facebook is the only one social media that is used exclusively for Saimaa protected areas. Metsähallitus also use Twitter and blogs, but those are used for national or for large region communication. This analysis of Facebook communication will be qualitative and based to the information that the author could access. The analysis will be based only on the posts that appear on the wall of the Facebook pages of Linnansaari, Kolovesi and Repovesi National Parks. All posts published by other people than Facebook page owner will be excluded. In accordance with the purpose of this thesis, each post will be analysed qualitatively using Tilden's tips for environmental interpretation.

4.2.1 Material and method

This analysis is based on content analysis method, which several qualitative methods are based on (Leskinen 2013, 30). The focus and interest will be to find if the posts are following the environmental interpretation principles in order to propose possible improvement. All the posts published by Linnansaari, Kolovesi and Repovesi National parks during the period from 1st of Jun to 30th of August will be collected and saved on a Microsoft Word document. As the posts are written in Finnish, the author will translate the post in English before any analysis. The analysis will concern the post itself, links of other documents will not be analysed but a short description of those will be added. The links will be described as follows:

- Link to a video
- Link to an article
- Link to a long publication
- Link to an image.

The number of "likes" is not a proof of a real discussion and less than 3% of a page followers give a "like" (Leskinen 2013, 21). However it can be related to the active followers' degree of satisfaction created by the post. The number of comments will be observed as it is a sign of discussion between the national park and the public.

The Facebook postings will be tested on Tilden's tips which are the following:

- Why would a visitor want to know this? Answer to this question means that information are related personally to the visitor and will provoke behaviour change.
- How the visitor should use this information? If visitors can not use it, then why to give it to them.
- What are the benefits for the resource, agency and visitors? Furthermore the information should not provoke the "so what?" reaction which prove that information is not related to a clear theme. (Veverka 2005, 3; Veverka 2001, 3; Ham 1992, 24.)

If the answer is negative for any of those questions, then the analysis goes further for identifying the missing environmental technique. The author will look in the posts for:

- Encouraging participation
- Provocation
- Use of Humour
- Making meanings for the visitor

The description of those techniques can be found in the paragraph 2.3 pages 11-17. If any one of those techniques is used, then it could be said that the post is a piece of environmental interpretation. The best environmental interpretation would use all the Tilden's tips and environmental techniques.

4.2.2 Results and discussion

Altogether, 54 posts were analysed, 49 of them had a multimedia file with it (48 with 1 picture or more, and 1 post with a video). One post has been rejected because it was just a link without any text added by the Facebook writer, then it is not considered as a post.

If Kolovesi had the smallest amount of posts, only 13 in three months; with only 2 posts failed to pass the Tilden's tips test (15% of failure), it has the best results in environmental interpretation test. Indeed, if Kolovesi's Facebook page has a better ratio comments/posts than Linnansaari's one, which means a better participation and exchange with the public with similar amount of posts , the scarcity of posts has a negative incidence on the amount of "likes" and comments. The results of the tests are exposed in the following tables.

TABLE 13: Resume of the results of the Facebook analysis.

Arguments	Results of the tests	Linnansaari	Kolovesi	Repovesi	Total
posts		17	13	24	54
With links or multimedia		16	11	22	49
Comments		7	12	32	51
Likes		135	95	557	787
Tilden's tips test					
Willing to know	**Pass**	17	12	19	48
	Fail	0	1	5	6
Use of informati-on	**Pass**	15	12	17	44
	Fail	2	1	7	10
Benefits	**Pass**	15	11	18	44
	Fail	2	2	6	10
E.I techniques test					
Encouragement	**Pass**	1	1	2	4
	Fail	3	1	5	9
Provocation	**Pass**	2	0	5	7
	Fail	2	2	2	6
Humour	**Pass**	0	1	1	2
	Fail	4	1	5	10
Making meanings	**Pass**	1	0	1	2
	Fail	3	2	6	11

TABLE 14: Ratios for social media analysis.

Ratios	Linnansaari	Kolovesi	Repovesi
comment/post	0,41	0,92	1,33
like/post	7,94	7,31	23,21
Tilden's tips test failure/post	0,24	0,15	0,29

Obviously, other factors influence the number of comments and “likes” such as, the number of followers (related to the number of visitors), the talent of the post writer,

the amount of links to articles or multimedia files, and so one. So it will be difficult to find a direct correlation between Tilden's tips and the number of "likes".

Most of the posts that failed to Tilden's tips test were because of a lack of making meanings for the reader (11 fails) or because of a lack of encouragement for participation (9 fails). As it is explained in paragraph 2.3.3 and 2.3.5, encouraging is inciting the reader to do something, in this case to comment or to confirm a sustainable behaviour; and make meanings is to connect information to everyday life. In the last case, the posts failed to make meanings by a lack of information, or by information that the reader could not access when the post is read. It is clear that there will be few comments if there is no provocation and people who will "like" are people who are able to understand the post.

If Repovesi could have such good ratios of comments/post and like/post even with the highest level of Tilden´s tips failure, it is also because of the participation of the writer in the discussion. "Repoveden kansallispuisto" participates to and revives the discussion after the first or second comment sometime just some minutes after the first one. That participation generates more comments and more "likes". That also opens the post to more information, if the follower did not understand the post, and starts an exchange of ideas. Repovesi has also the highest frequency of posts. However, with a mean of a post every 4 days (average between each post: 3.8 days) this frequency of post is still low compared to other organisations that post every day.

In conclusion, Facebook is a social media that is suitable for environmental communication on the condition that the fundamental principles of interpretation are applied. Persons in charge of Metsähallitus' Facebook account are usually professional interpreters that apply environmental interpretation principles every day, so this is why theire are few posts that failed to the tests. However the writers should always remember some characteristics of social media. The first one is similar to a discussion after a presentation; the public will make few comments if there is no incitation to ask questions or to react to the topic. The second one is due to technical characteristics of social networks. As the posts are presented ante-chronologically, what means from the present to the past, and as the user comments and "like" a post when it is read, all the information needed to understand it must be in the post or linked to it. Therefore, information can be repeated in each post or via a link if the user needs it to understand

the post. A post will not be understood if all the information on the topic is in a precedent post that has been written 3 days or a week ago. Then this post will be automatically less popular and will have less effect on the users behaviour.

FIGURE 6: Example of environmental interpretation failure. (Metsähallitus 2013d)

FIGURE 7: Example of environmental interpretation success. (Metsähallitus 2013d)

5 RECOMMENDATIONS

Environmental interpretation has fifteen principles that would be difficult to apply in totality in new technologies of communication (Chapter 2.2). First because of the frequency of interpretation needed to feed the media, and second, because of its constant evolution. However there are techniques that will help the interpreters to make piece of environmental interpretation faster and handle the opportunities offered by new technologies of communications.

5.1 Improvements

Posts on the social networks should be tested with the Tilden's tips and the environmental interpretation techniques before any release on the wall. That could remove a little bit of spontaneity but might avoid incomprehension of the message and increase the efficiency of behaviour change in the users. Beautiful images and nicely written texts can generate "likes" and comments but without any scientific facts and meaning making, those feelings explained will not become behaviour changes and passion for environmental protection. However, art is a component of interpretation and should not be discriminated. Art can also gear up the positive attitude of visitors towards nature conservation.

The Tilden's tips and environmental interpretation techniques can be applied quickly for any kind of publication on the social media. It should be incorporated into the interpretation plan of the region for social media communication and into the formation for Facebook writers, where it is absent (Metsähallitus 2013e, Metsähallitus 2013 f). As videos are much more appreciated by the young generation, that uses more social media than the elders, more videos should be incorporated in the posts. It would be an opportunity to equip the persons in charge of Facebook with a small video camera, which is easy to use on field for filming workers' job and environmental protection techniques.

The National Parks, especially Kolovesi and Linnansaari should be more present on Facebook by:

1) **Post at least 3 times a week** if it is not possible to write every day. Researches shown that Mondays, Thursday and weekend (especially Fridays

and Sundays) and preferably in afternoons or evenings, generate more interactions from customers (Budy media 2012, 5-14; Women in government 2012; Metsähallitus 2013f, 14.)

- **Simply ask for comments, shares and likes**.
- **Ask questions directly to the public, using active verbal form and "you"** for increase participation and feedbacks.

2) A worker, confortable with Facebook and who personally use it daily, should **monitor the social media daily and many times a day.**

- **Be more present in the comments**; respond and relive the discussion for more participation and create a debate.
- The results of visitor surveys could be used as references for post topics, visitor's interest and values, but always according to the interpretation themes of the National park.

3) Now Facebook include questionnaire possibilities for simple and short questions, this could be used for crowdsourcing. Crowdsourcing is inviting people to solve a problem collectively. Small decision such as colour used in an event, topic of future exhibitions or just some feedback and ideas to improve the quality of the service could be asked directly via Facebook. It could raise the participation of the visitors and make them feel as team member of the National park in the mission of environmental protection.

Many visitors come to Linnansaari and Kolovesi for the first time (Metsähallitus 2013e) consequently, information about services proposed, activities to do, navigation and transportation will be appreciated by them and will improve their nature experience. Even if the visitor survey shows that visitors do not use social media to prepare their travel, the tendency could change rapidly as social media and new generation of visitors grow. Promoting a nature event is also a good way to make environmental interpretation and promotion in the same post. Small articles could also be created by the National Park about recurrent activities done by the workers. Linked to posts, those would be important sources of information that the writer will not have to rewrite every year on each post.

Finally, having social media exclusively in Finnish language excludes de-facto 27% of the visitors and all the potential tourists from other countries. Foreigners need more information and guiding than the Finns, not only because they do not know the places, but also because they are looking for culture, history, nature and social relation with local people. Social media has been created for social relation between peoples who are geographically separated, so it should be used in that purpose for environmental interpretation too. During the visitor survey, only 3 persons could not answer to the questionnaire because of language barrier. More and more tourists speak English and today, Metsähallitus should also have an English voice in Facebook.

5.2 Opportunities

YouTube is a formidable opportunity for sharing environmental interpretation both with the public and with other National Parks and protected areas. Piece of interpretation, free of copy writes, could be stocked there for environmental education and interpretation for the visitors at home and on the trails. As each video has a specific Web address, a video could be linked to signs of a trail, constituting a virtual guided trail available every day 24h/24h. Every visitor that has a 3G internet access on his/her device (89% of those who have a mobile internet connection) could access to that service (Chapter 4.1.2 , 43). Except the video camera, which can be used also for Facebook and other tasks, this service will is free of charge for the organisation (Google 2013).

A Blog will be a similar opportunity but with more interaction with the customer. However, this social media needs more technical knowledge than Facebook and it should be managed by workers that are already experts in blog design and management. As a poorly designed and managed blog could lead to customer lost (chapter 3.2.2), this responsibility should be given to an experienced worker. Even if Facebook is well established in Finland, there are Finns and foreigners that use internet but do not want to get in Facebook or any social network for personal or other reasons. A social media that does not ask to log-in, such as blogs, would be an opportunity to reach them and communicate with them without losing the advantages of social media.

A mobile application could either be a remarkable opportunity to add both a service for the customers and a new income for the National Park; or a financial lost if it do not reach the customer's expectations (chapter 3.3, 34). With a mobile application, a new world of environmental interpretation is open for data and knowledge that Metsähallitus has difficulties to share with the public because of the technology used (GIS, database, etc.). However, much more research on potential market, risks, costs efficiency and technical process has to be done, and that could engage organisation's resources for years (Chapter 3.3, 34). The visitor survey had shown an interest toward the public for an application but not a real tendency for downloading it, especially if it is not free. Therefore, it would be wiser to focus on free and established new technologies of communications prior trying to purse mobile applications.

The best opportunity could come from a combination of social media. Each one has strengths that will compensate the weaknesses the other ones; A blog or a media sharing site (YouTube) could compensate the necessity of log-in in social networks. Social networks on the other hand could compensate the lack of feedback and comments in YouTube. The following figure shows a possible social media combination.

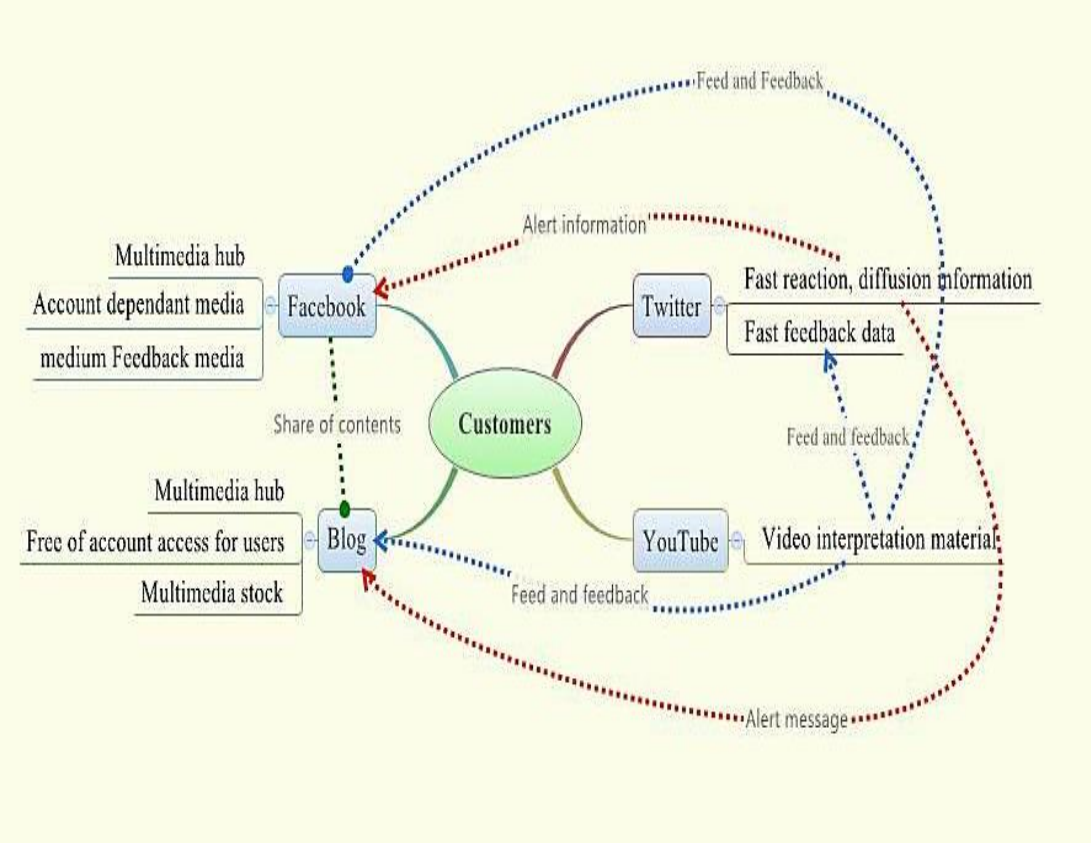


FIGURE 8: A model of a social media combination

6 CONCLUSIONS

Environmental interpretation is not environmental education but it leads to learning. Educational techniques can not be simply transposed into interpretation techniques. Environmental interpretation has its own principles that can be applied on any media. As the audience is at leisure, the environmental interpretation should be an additional value for both visitors in their nature experience, and for the organisation responsible for environmental protection. As interpretation is an important part of the visitors' satisfaction, it should be practiced carefully in any media used by Metsähallitus and new technologies of communications do not make exception to the rule. Therefore, as literature on utilisation of social media for environmental interpretation is inexistent, the use of Tilden's tips test and environmental techniques is a better alternative than the strait application of interpretation's fifteen principles and four qualities.

New technologies of communication can diffuse knowledge and interpretation without being sensitive to weather, vandalism or other degradation. Those technologies allow interpreters to communicate with visitors both at home and on field. However, those are based on internet; some places in national parks and some visitors have mobile communication issues that have to be considered for decision making.

Metsähallitus is doing well with Facebook but there are still place for improvement. The biggest problems found in the posts are a lack of encouragement for customer's participation and encouraging them to attach meanings. Propositions have been advanced in this thesis to correct those weaknesses. The protected areas of the Saimaa region are absent from the other social medias. This absence is partly compensated by national Metsähallitus' social media but proximity and relationship with the users are lost in the process. By using only one social media and only Finnish language, many potential visitors such as foreigners and people who do not use Facebook are excluded of the interpretation.

Opportunities have been developed in this thesis. Some are easy to realize such as opening a YouTube account and produce videos of Metsähallitus workers in their environmental protection mission, others need more resources and planning such as blogs and mobile applications. It will be difficult to use Twitter as an environmental

interpretation tool mostly because of the restriction of characters. Still this media is in constant evolution, but the author does not see opportunities for using it at this moment. In the author's opinion, blogs, social networks such as Facebook and video sharing such as YouTube are the most suitable new technologies of communication for environmental interpretation. However, those social media have their technical strengths and weaknesses. A combination of various social media is an opportunity and a tool for tackling technical restrictions and sharing environmental interpretation materials. It could help visitors both at home and on the field.

Mobile application could be a very good opportunity to guide the visitors of Linnansaari, Kolovesi and Repovesi on trails and lakes. Well designed, it could have the advantages of social media without its systemic weakness (its dependency on internet connection). But the resources needed to develop and maintain a good application are obstacles for a small team of workers. The decision will have to be taken carefully and with all the necessary pre-analysis.

This thesis gave me professional and personal experience and expertise in environmental interpretation and new technologies of communication. Those disciplines, practiced for a decade instinctively, empirically and without any standards and principle, are now clear and ordinated to me. I hope that this thesis could help developing and future environmental interpretation in Saimaa national parks. I will let the last world of this paper to Antoine de Saint-Exupéry:
"The central struggle of men has ever been to understand one another, to join together for the common weal. And it is this very thing that the machine helps them to do! It begins by annihilating time and space." (Antoine de Saint-Exupéry 1939, 41.)

BIBLIOGRAPHY

Aldridge, Don 1973. Upgrading Park Interpretation and Communication with the Public. IUCN (ed.), Second World Conference on National Parks; Yellowstone and Grand Teton, USA, September 18-27 1972. Report No. 25.

Balantyne, Roy and Packer, Jan 2005. Promoting environmentally sustainable attitudes and behaviour through free-choice learning experiences. PDF-document. http://espace.library.uq.edu.au . Updated 9.12.2005. Referred 12.10.2013

Beck, Larry and Cable, Ted 2002 . Interpretation for the 21st century: fifteen guiding principles for interpreting nature and culture. Second edition, Sagamore Publishing (ed).

Budy Media(ed.) 2012. Strategies for effective wall posts: a Timeline analysis. WWW document: http://bddy.me/timelineposting. Updated 27.10.2013. Referred 27.10.2013.

Carter, James (Ed.) 2001. A sense of place: an interpretive planning handbook. PDF document. http://www.greentourism.org.uk/SOFP.PDF. Updated 9.10.2013, Reffered 9.10.20013.

De Crom, E.P and De Jager, A. 2005. The « ME »- learning experience: PDA technology and E-learning in Ecotourism at the Tshwane University of Technology (TUT). PDF document. http://www.mlear.org.za/CD/papers/DeCrom.pdf. Updated 51.11.2005. Referred 11.10.2013.

Deal, Walter F. 2008, Communication technology: the magic touch. The technology teacher vol.68, Nº 2, October 2008.

Global Museum 2012, WWW-page. http://www.globalmuseum.org/ Updated 22.11.2012. Referred 11.10.2013.

Google (ed.) 2013. Google+ rules and policy. WWW-page: http://www.google.com/+/policy/pages-services.html. Updated 14.5.2013. Referred 27.10.2013.

Ham, Sam H. 1992. Environmental interpretation: A practical guide for people with gig ideas and small budgets. North American Press (ed.). Colorado, USA.

Hannus, Esa 2012. GIS and remote sensing. Course in Environmental Engineering bachelor degree program. Spring 2012 Mikkeli University of Applied Sciences, Finland.

Hashemi, Massoud et al 2011. What is mobile learning? Challenges and capabilities. Procedia (ed), Social and Behavioural Sciences Nº30 (2011), 2477-2481.

Ikkonen, Hanna 2012. Perception of ecotourism in Finland. Rovaniemi University of Applied Sciences. Degree programme of Tourism. Bachelor's thesis.

Kiilunen, Olga 2013. Mobile applications as solutions to enhance sustainable travel behaviour among Generation Y. Haaga-Helia University of Applied Sciences. Degree program in Tourism, Master's thesis.

Knapp, Doug 2005. Environmental education and interpretation: The relationships. In the book From Essential readings in Environmental Education. Stipes Publishing

L.L.C (ed.). PDF document .
http://www.eenorthcarolina.org/ee_and_interpretation.pdf. Updated 4.11.2008. Referred 4.10.2013.

Kurikka, Tuula 2013. Researches done by Metsähallitus in Saimaa protected areas. Interview of the Species Conservation manager in the South-Savo conservation service. 25.6.2013

Laukkanen, Mari 2009. Saiman suojelualueiden luontomatkailusuunnitelma. Metsähallitus (ed.). Nature protection publications of Metsähallitus. Series C 64. Finnish language.

Lee, Ethel 2013. Impact of social media on consumer behavior - Decision making process. Turku University of Applied Sciences. Degree Programme of International Business. Bachelor's Thesis.

Leskinen, Hanna 2012. The Greens of Finland in social media: Facebook as a communication forum. Haaga-Helia University of Applied Sciences. Degree programme of Multilingual Management Assistants. Bachelor's thesis.

Lolsnaps. The most dangerous animal in the world. WWW document.
http://lolsnaps.com/news/51539/0/. Updated 10.07.2013. Referred 10.07.2013.

Luodes, Nike 2012. Research methods and reporting. Mikkeli University of Applied Sciences, Environmental Engineering degree program. Lecture, September 2012, Mikkeli, Finland.

Luukka, Katri 2011. Managers'Experiences of the Use of the Social Media as Part of Their Leadership: Towards to the Social Media Leadership Theory. University of Wales. MBA research not published. Helsinki.

Maps of World 2009. World Social Networking. WWW document.
http://www.mapsofworld.com/world-top-ten/social-networking-websites-popularity-map.html. Updated 15.10.2013. Referred 15.10.2013.

MBRS (project for the conservation and sustainable use of the Mesoamerican barrier reef system) 2005. Environmental interpretation manual for protected areas in the Mesoamerican barrier reef system region. Technical document N^{o} 25. PDF edition.

Metsähallitus (ed.) 2009. Saiman matkailun painopistealue : Opastusviestintasuunnitelma vuosille 2009-2015. Finnish language

Metsähallitus (ed.) 2013 a. Outdoors.fi. WWW site of Metsähallitus (ed.)
http://www.outdoors.fi. Updated 11.10.2013. Referred 12.10.2013

Metsähallitus (ed.) 2013 b. Excursionmap.fi. WWW site of Metsähallitus (ed.) http://www.retkikartta.fi. Updated 11.10.2013. Referred 12.10.2013

Metsähallitus (ed.) 2013 c. Luontoon.fi. WWW site of Metsähallitus (ed.) http://www.luontoon.fi/Sivut/Default.aspx. Updated 16.10.2013. Referred 16.10.2013.

Metsähallitus(ed.) 2013 d. Repoveden kansallispuisto. Facebook page. WWW-site: https://www.facebook.com/repovesikansallispuisto. Updated 27.10.2013. Referred 27.10.2013.

Metsähallitus(ed.) 2013 e. Metsähallitus ja sosiaalinen media. Finnish Language, intern documentation for Metsähallitus team. Metsähallitus Intranet.

Metsähallitus (ed.) 2013 f. Facebook päivittäjän ohjeet. Finnish Language, intern documentation for Metsähallitus team. Metsähallitus intranet.

Morales, Jorge F. 1994. Interpretation centres? Information Folder CENEAM (ed.) (National Centre for Environmental Education). Madrid, Spain.

Moscardo et al 2004. The role of interpretation in wildlife tourism. In the book Higginbottom, Karan (ed.) Wildlife tourism impacts. Australia, 231-251.

NAI (National Association of Interpretation) 2009 Standards and practices for interpretive planning. PDF document. http://www.interpnet.com/docs/BP-Planning-Jan09.pdf. Updated 23.7.2013,Reffered 9.10.2013.

Naismith, Laura et al 2004. Literature review in mobile technologies and learning. Futurelab (ed.), Futurlab series, report 11. PDF-document ISBN: 0-9548594-1-3

O'Reilly, Tim 2005. What is Web 2.0? O'Reilly Media Inc (ed.)

Official Statistics of Finland 2010. Every second Finn uses the internet several times a day. WWW document: http://www.stat.fi/til/sutivi/2010/sutivi_2010_2010-10-26_tie_001_en.html. Updated 26.10.2010. Referred 19.10.2013.

Rekiranta, Heli 2013. Linnansaaren kansallispuiston kävijätutkimus 2012. Finnish language, Metsähallitus (ed.) serie B182.

Ruchter, Markus et al 2010. Comparing the effects of mobile computers and traditional approaches in environmental education. Computers and Education 54, 1054-1067

Saint-Exupéry, Antoine 1939. Wind, Sand and Stars. Harcourt, Inc (ed.) 1984.

Schramm, Wilbur 1971. The process and effects of mass communication. Urbana (ed.), Illinoi, USA.

Smith, PR. And Zook, Z. 2011. Marketing communications: integrating offline and online with social media. Fifth edition. Kogan Page Ltd (ed.).

Suni, Jevgeni 20010. Web 2.0 technologies and applications. Turku University of Applied Sciences. Degree in Information Technology/Embedded systems. Bachelor's thesis.

The next Web 2013. The 15 best blogging and publishing platforms on the internet today. Which one is for you? WWW document. http://thenextweb.com/apps/2013/08/16/best-blogging-services/. Updated 20.08.2013. Referred 16.10.2013.

Tilden, Freeman 1957. Interpreting our heritage. The University of North Carolina Press (ed.). North Carolina, USA.

TSK(ed.) 2010. Sosiaalisen median sanasto: TSK 40. The Finnish Terminology Centre. WWW-document. http://www.tsk.fi/tiedostot/pdf/Sosiaalisen_median_sanasto. Updated 14.5.2010. Referred 15.10.2013.

Tuomi, Pauliina and Multisilta, Jari 2010. MoViE: Experiences and attitudes—Learning with a mobile social video application. Digital Culture & Education (ed.), 2:2, 165-189. PDF-document. Tampere University of Technology, online publication 15.10.2010.

Twitter 20013. About Twitter. WWW-site: https://twitter.com/about. Updated 16.10.2013. Referred 16.10.2013.

Veverka, John 2001. Interpretive planning for the next millennium: The "product of the product"- "outcome based planning" and the "experience economy". http://portal.uni-freiburg.de/interpreteurope/service/publications/recommended-publications/veverka-interpretive_planning.pdf Edited 12.3.2001. Referred 4.10.2013

Veverka, John 2005. Exactly what is "Interpretation"? PDF-document. http://www.gov.si/aplikacije/mop/interpretacija_narave/arhiv/exactly.pdf. Updated 3.8.2005. Referred 4.10.2013.

Women in Government 2012. Hepatitis C Awareness and Education Toolkit: How to guide for social media.PDF document. http://womeningovernment.org/files/HepCHowToGuide-SocialMedia.pdf. Updated 19.12.2012. Referred 27.10.2013.

Worlpress (ed.) 2013. Support. WWW site. http://en.support.wordpress.com/get-started/. Updated 20.10.2013. Referred 20.10.2013.

YouTube 2013. MH Luontopalvelut. WWW site. http://www.youtube.com/user/Mhlpviestinta/about. Updated 16.10.2013. Referred 16.10.2013.

Zarrella, Dan 2010. The social media marketing book. CA: O'Reilly Media Inc. Sebastopol (ed.)

The person collecting the forms will fill in this field:

Number	Place	Visitor	Interviewer	Post	initials	Date	Time

Opportunities of new technologies of communication in environmental interpretation

Visitor survey 2013

How to fill in this questionnaire:
The information collected by this Visitor Survey will be used for a bachelor thesis about the opportunities of new technologies of communication for environmental interpretation, and possibly for the planning of protected areas in our region. We hope that you answer all the questions. Please note the following instructions:

1. Read the questions with care.
2. Answer the questions **personally** by ticking the appropriate circle (◯). In multiple choice responses, tick all relevant boxes (□). In some questions, you will need to write your responses in the boxes.
3. The questions are about **your actual use** of new technologies of communication.
4. Please return the completed form to the interviewer.
5. For more information, please contact Mr. Philippe Potiron

THANK YOU IN ADVANCE!

Before your trip

1. How did you prepare your trip in this region?
(Select more than one alternative if applicable.)

a. At home	**b. On the way to the National Park**
□ using internet	□ using internet
□ Websites (including research engines)	□ Websites (including research motors)
□ Blogs	□ Blogs
□ Social networks	□ Social networks
□ Web based maps	□ Web based maps and GPS
□ Phone call	□ Phone call
□ Books	□ Books
□ Travel agencies	□ guided visit
□ other, please specify:	□ other, please specify:
_____	_____
□ I did not prepare my trip at home	□ I did not prepare my visit

If you did not use internet or you did not prepare your visit, please go to the question 3

2. Where did you find information about the Finnish protected areas… (Select more than one alternative if applicable.)

a. On websites

□ Metsa.fi □ Luontoon.fi □ Outdoors.fi
□ Municipality's webpages □ Retkikartta.fi □ Excursionmap.fi

□ research engine, please specify :_____

□ other, please specify : _____

□ I don't remember
□ I did not use websites

b. On blog(s)

□ Metsähallitus merellä
□ Luonto ja kulttuuri
□ Rakkaudesta lajiin
□ Haltia
□ other blog, please specify:_____

□ I don't remember
□ I did not use blogs

c. On social networks

□ Facebook □ Twitter □ Badoo
□ V Kontakte
□ other, please specify : _____
□ I don't remember
□ I did not use social networks

d. On Web based maps

□ Retkikartta.fi □ Google maps □ Google earth
□ Here (Nokia) □ Apple Maps □ Microsoft research Maps

□ other, please specify:_____

□ I don't remember
□ I did not use web based maps

During your trip

3. Which one of the following devices you have or can have with you? (Select more than one alternative if applicable.)

□ Laptop
□ Mini laptop
□ Tablet, please specify the model:_____

□ Smart phone, please specify the model:_____

□ I don't have any of those devices → please go to question 9

4. **Does your device have:…**
(Select more than one alternative if applicable.)

□ Mobile internet connections
- □ 2G
- □ 3G
- □ 4G

□ Wi Fi
□ Bluetooth
□ GPS localization
□ QR cod scanner

5. **Would you like to receive information about nature, culture and ecosystems on your device during your visit?**
- □ Yes
- □ No

6. **Would you like to have an interactive map of the National Park on your device?**
- □ Yes
- □ No
- □ I don't know

7. **Would you like to download an application or game on your device that would guide you in the National Park?**
- □ Yes
- □ No → go to question 9

8. **How much could you pay to have such application on your device?**
- □ 0,5€
- □ 1€
- □ 1,5€
- □ 2€
- □ 2,5€
- □ 3€
- □ 3,5€
- □ 4€
- □ 4,5€
- □ 5€

9. What was or is important to you during this visit? (respond to each alternative)
(5 = very important, 4 = fairly important, 3 =neither, 2 = of little importance, 1 = not important at all)

	Very important				Not Important at all
	5	4	3	2	1
nature experiences	◯	◯	◯	◯	◯
scenery	◯	◯	◯	◯	◯
being on my own	◯	◯	◯	◯	◯
mental well-being	◯	◯	◯	◯	◯
getting away from noise and pollution	◯	◯	◯	◯	◯
relaxation	◯	◯	◯	◯	◯
meeting new people	◯	◯	◯	◯	◯
being together with own group	◯	◯	◯	◯	◯
pleasant old memories	◯	◯	◯	◯	◯
getting to know the area	◯	◯	◯	◯	◯
learning about nature	◯	◯	◯	◯	◯
improving my own skills	◯	◯	◯	◯	◯
keeping fit	◯	◯	◯	◯	◯
experiencing excitement	◯	◯	◯	◯	◯
getting to know the cultural heritage of the area	◯	◯	◯	◯	◯
guided tour/trip	◯	◯	◯	◯	◯
overnighting in the area	◯	◯	◯	◯	◯

10a. What did you do or intend to do at the National Park during this visit?

1□ walking
2 □ Nordic walking
3 □ jogging
4 □ hiking
5 □ observing nature
6 □ picnicking
7 □ bicycling
8 □ fishing
9 □ bird watching
10 □ picking wild berries
11 □ picking mushrooms
12 □ studying plants
13 □ education - related visit
15 □ nature photographing
16 □ scouting
17 □ school camp
18 □ walking with a dog
19 □ orienteering
20 □ overnight camping
54 □ watching the scenery
57 □ climbing and abseiling
63 □ boating
64 □ canoeing
80 □ charter boat or charter ship traffic
84 □ mountain biking
86 □ guided tour
87 □ participating to an organized happening
88 □ getting to know the cultural heritage
92 □ recreation

999 □ Other, please specify?_____

10b. Which of the alternatives that you selected was or is **<u>the most important</u>** to you during this visit?

Number → _____

11. During this visit to the National Park, what is your group like?

I'm alone □ → move on to question 13.

The size of the group (including you) _____ persons

Of which under 15 years old? _____ persons

Physically disabled _____ persons

12. During this visit, your group mainly consists of… (Please choose the most appropriate alternative)

- ◯ Member of own family
- ◯ Other relatives
- ◯ Friends
- ◯ Co-workers
- ◯ School class
- ◯ Kindergarten children
- ◯ Student group
- ◯ Senior citizens
- ◯ Client of an enterprise offering organized programs
- ◯ Clubs, association, etc.
- ◯ Others, please specify _____

13. Country of residence? _____

If you permanently live in Finland, please specify in which town:_____

14. Gender?

◯ Male ◯ Female

15. Year of birth? [_ _ _ _ _]

Thank you for answering this questionnaire!

If you have any idea or experience of new technologies of communication used in National Park or Nature center that you would like to tell us, please use the space below

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

TABLE 15: Visitor survey schedule

Thesis visitor survey

Date	**Protected area**	**Place**
30.7.	Oskari	Visitor Centre
31.7.	Oskari	Visitor Centre
1.8.	Repovesi	Lapinsalmi entrance
2.8.	Repovesi	Lapinsalmi entrance
4.8.	Oskari	Visitor Centre
5.8.	Kolovesi/information Hut	Enonkoski
6.8.	Kolovesi	Kirkkoranta
7.8.	Riisaari	Museum
8.8.	Oskari	Visitor Centre
12.8.	Oskari	Visitor Centre
13.8.	Repovesi	Lapinsalmi entrance
14.8.	Riisaari	Museum
15.8.	Kolovesi	Kirkkoranta
16.8.	Kolovesi	Kirkkoranta
19.8.	Siikalahti	Fire kamp
20.8.	Siikalahti	Fire kamp
21.8.	Siikalahti	Fire kamp
22.8.	Riisaari	Museum
23.8.	Riisaari	Museum
26.8.	Oskari	Visitor Centre
27.8.	Linnansaari	Sammakkoniemi
28.8.	Linnansaari	Sammakkoniemi
29.8.	Oskari	Visitor Centre
30.8.	Oskari	Visitor Centre

TABLE 16: Questionnaire release on social media.

Date	Media	Language	Account	Link/imbedding
30.7.	Twitter	English+Finnish	Green tourism1	Links
		Finnish	Metsähallitus	
		Finnish	Luontopalvelut	
		Finnish	Luonnonsuojelu	
		English	Sealtrail	
		English	Personal Twitter account	
31.7.	Facebook wall	Finnish	Repoveden Kansallispuisto	
		Finnish	Koloveden Kansallispuisto	
		Finnish	Linnansaaren Kansallispuisto	
		English	MAMK international ex-change	
		English+Finnish	Personal Facebook account	
8.8.	Facebook wall	Finnish	Repoveden Kansallispuisto	
		Finnish	Koloveden Kansallispuisto	
		Finnish	Linnansaaren Kansallispuisto	
		English	MAMK international ex-change	
		English+Finnish	Personal Facebook account	
		English+Finnish	Naava	
		English+Finnish	Luonnon Päivä	
	Twitter	Finnish	Metsähallitus	
		Finnish	Luontopalvelut	
		Finnish	Luonnonsuojelu	
14.8.	Facebook wall	Finnish	Repoveden Kansallispuisto	
		Finnish	Koloveden Kansallispuisto	
		Finnish	Linnansaaren Kansallispuisto	
		English	MAMK international ex-change	
		English+Finnish	Personal Facebook account	
22.8.	Webpage	English+Finnish	Luontoon.fi + Outdoors.fi	
30.8.	Blog	English	MAMK AS blog	Embedded

TABLE 17: Responses collected by the visitor survey.

Places	**Responses**	**%**
Linnansaari	20	15 %
Oskari	21	15 %
Kolovesi	14	10 %
Kolovesi Luontotupa	1	1 %
Repovesi	28	20 %
Riihisari Museum	3	2 %
Siikalahti	15	11 %
Online	**35**	**26 %**
	137	

TABLE 18: Age repartition of the respondents

Age classe	**Responses**	**% of responses**
18-20	2	1,5 %
20-30	37	28,0 %
30-40	31	23,5 %
40-50	18	13,6 %
50-60	27	20,5 %
60-70	13	9,8 %
70-80	4	3,0 %
Grand Total	132	100,0 %
Mean age	**41,17**	
Sd dev	15,03	
Oldest	79	
youngest	18	

TABLE 19: Nationalities of the respondents

Nationalities	Effectif	%
Finland	**97**	**72,9 %**
Germany	**8**	**6,0 %**
Switzerland	**7**	**5,3 %**
France	5	3,8 %
Italy	4	3,0 %
Russia	3	2,3 %
Austria	2	1,5 %
South Africa	2	1,5 %
Check republic	2	1,5 %
USA	1	0,8 %
Holland	1	0,8 %
Israel	1	0,8 %
Total	133	

TABLE 20: How visitors prepare their travel.

How do your prepare you trip at home				**On the way to protected area**	
Media	responses	%		Responses	%
Using internet	95	30 %		49	22 %
websites (including research engines)	71	22 %		33	15 %
blogs	**6**	**2 %**		**3**	**1 %**
social networks	**15**	**5 %**		**7**	**3 %**
web based maps	46	14 %		24	11 %
phone call	8	3 %		6	3 %
books	31	10 %		23	10 %
travel agency	0	0 %		0	0 %
I did not prepare my trip at home	24	8 %		45	20 %
Other	23	7 %		31	14 %
Total	319			221	

TABLE 21: What media is used to gather informations about protected areas?

Websites		
Websites	**Responses**	**%**
Luontoon.fi	**44**	**23 %**
Metsa.fi	11	6 %
Outdoors.fi	13	7 %
Municipality's webpages	11	6 %
Retkikartta.fi	19	10 %
Excursionmap.fi	0	0 %
research engine	**23**	**12 %**
I don't remember	7	4 %
I did not use websites	39	21 %
Other	22	12 %
Total	**189**	

Blog(s)		
Websites	**Responses**	**%**
Metsähallitus merellä	0	0 %
Luonto ja kulttuuri	0	0 %
Rakkaudesta lajiin	0	0 %
Haltia	0	0 %
I don't remember	9	7 %
I did not use blogs	**116**	**91 %**
Other	2	2 %
Total	**127**	

Social networks		
Social network	**Responses**	**%**
Facebook	29	23 %
Twitter	0	0 %
Badoo	0	0 %
V Kontakte	0	0 %
I don't remember	3	2 %
I did not use social networks	**95**	**75 %**
Other	0	0 %
Total	**127**	

Web based maps		
Web based maps	**Responses**	**%**
Retkikartta.fi	**32**	**20 %**
Google maps	**56**	**35 %**
Google earth	10	6 %
Here (Nokia)	3	2 %
Apple Maps	6	4 %
Microsoft research Maps	0	0 %
I don't remember	3	2 %
I did not use web bases maps	43	27 %
Other	5	3 %
Total	**158**	

TABLE 22: What devices the visitors have or can have with them?

Devices	Responses	%
Laptop	24	14 %
Mini laptop	7	4 %
Tablet	21	12 %
Smartphone	**86**	**50 %**
I don't have any of those devices	30	17 %
Other	4	2 %
Total	**172**	

Operator System used by the devices		
Operator system	**Responses**	**%**
Nokia Microsoft	12	21
Nokia Symbian	3	5
Samsung Android	**17**	**30**
HTC Android	4	7
Apple	**18**	**32**
Blackberry	1	2
Sony Ericson	1	2
Total	**56**	

Connectivity of the devices		
Connection	**Responses**	**%**
Mobile internet connection	**92**	**22 %**
2G	4	1 %
3G	**82**	**20 %**
4G	17	4 %
Wi Fi	67	16 %
Bluetooth	55	13 %
GPS localization	65	16 %
QR cod scanner	27	7 %
Total	**409**	

TABLE 23: Would you like to receive information about nature, culture and ecosystems on your device during your visit?

Response	Respondents	%
Yes	61	58 %
No	30	29 %
I don't know	14	13 %
Total	105	

TABLE 24: Would you like to have an interactive map of the protected area on your device?

Response	Respondents	%
Yes	65	62 %
No	24	23 %
I don't know	16	15 %
Total	105	

TABLE 25: Would you like to download an application or game on your device that would guide you in the protected area?

Response	Respondents	%
Yes	57	54 %
No	48	46 %
Total	105	

TABLE 26: How much could you pay to have such application on your device?

Price	Respondents	%
0,50 €	7	13 %
1 €	7	13 %
1,50 €	1	2 %
2 €	9	16 %
2,50 €	6	11 %
3 €	10	18 %
3,50 €	2	4 %
4 €	4	7 %
4,50 €	2	4 %
5 €	7	13 %
Total	55	

TABLE 27: What is important to you during your visit?

Values	Points
Nature experience	648
Scenery	**622**
Relaxation	587
Getting away from noise and pol-lution	586
Getting to know the area	**563**
Mental well-bein	561
Learning about nature	**520**
Getting to know the cultural heritage of the area	**511**
Being on my own	473
Keeping fit	470
Being together with own group	468
Improving my own skills	433
Pleasant old memories	418
Experiencing excitement	392
Meeting new people	304
Overnighting in the area	102
Guided tour/trip	**74**

TABLE 28: Activities practiced by the visitors.

Actitities	**Responses**	**%**
1. walking	**106**	**14 %**
2. Nordic walking	5	1 %
3. jogging	9	1 %
4. hiking	70	9 %
5. observing nature	**95**	**12 %**
6. picnicking	55	7 %
7. bicycling	3	0 %
8. fishing	15	2 %
9. bird watching	30	4 %
10. picking wild berries	22	3 %
11. picking mushrooms	14	2 %
12. studying plants	8	1 %
13. education - related visit	3	0 %
15. nature photographing	46	6 %
16. scouting	0	0 %
17. school camp	1	0 %
18. walking with a dog	13	2 %
19. orienteering	3	0 %
20. overnight camping	30	4 %
54. watching the scenery	**88**	**12 %**
57. climbing and abseiling	2	0 %
63. boating	23	3 %
64. canoeing	32	4 %
80. charter boat or charter ship traffic	1	0 %
86. guided tour	5	1 %
88. getting to know the cultural heritage	28	4 %
92. recreation	52	7 %
999. Other	6	1 %
total	**765**	

TABLE 29: The most important activity for the visitors.

N° of the activity	Responses	%
1. walking	5	4,1 %
3. jogging	1	0,8 %
4. hiking	**18**	**14,8 %**
5. observing nature	**30**	**24,6 %**
6. picnicking	1	0,8 %
8. fishing	1	0,8 %
9. bird watching	3	2,5 %
11. picking mushrooms	2	1,6 %
15. nature photographing	7	5,7 %
18. walking with a dog	1	0,8 %
20. overnight camping	1	0,8 %
54. watching the scenery	14	11,5 %
63. boating	2	1,6 %
64. canoeing	14	11,5 %
88. getting to know the cultural heritage	3	2,5 %
92. recreation	17	13,9 %
999. Other	1	0,8 %
Grand Total	**121**	**100,0 %**

TABLE 30: Composition of groups of visitors

Group Composition	Responses	%
Member of own family	**84**	**66 %**
Other relatives	7	5 %
Friends	**24**	**19 %**
Co-workers	3	2 %
School class	0	0 %
Kindergarten children	0	0 %
Student group	0	0 %
Senior citizens	0	0 %
Client of an enterprise offering organized programmes	1	1 %
Clubs, association, etc.	0	0 %
Other	9	7 %
Total	**128**	

TABLE 31: Comments let by the respondents of the visitor survey.

Need more interpretation boards in Repovesi. Interested by Smartphone possibilities. Internet-independent maps are really important. Internet independent guide about culture, if possible maybe as a free app (people are lazy in paying). A map is ok to sell, but not too expensive because of missing electricity to charge here. There is an app: univers/star/planet , can tell this to overnight stayers. Mobile internet connection is too expensive for foreigners. Would be good to propose information in advance that can be downloaded from home. This National park, like Kolovesi's one are very important to cherish and to highlight the cultural heritage. Already answered to Kolovesi visitor survey. Good place and good maintenance. Internet without WIFI is too expensive The internet on the phone is too expensive to use. Would be good to have a sign saying how long is the trail. (Note: that sign exist but was a bit covered by vegetation). Wi-Fi is always nice to have. Some people might not like it though. As the campsite is for free, Wi-Fi cannot be expected. To use internet without Wi-FI is too expensive for me. It would be good to have WIFI. Hotspots available for information/mails. Better signs for the trails. Need a clear road map. Used Sport Tracker, idea to incorporate map into Sport Tracker.