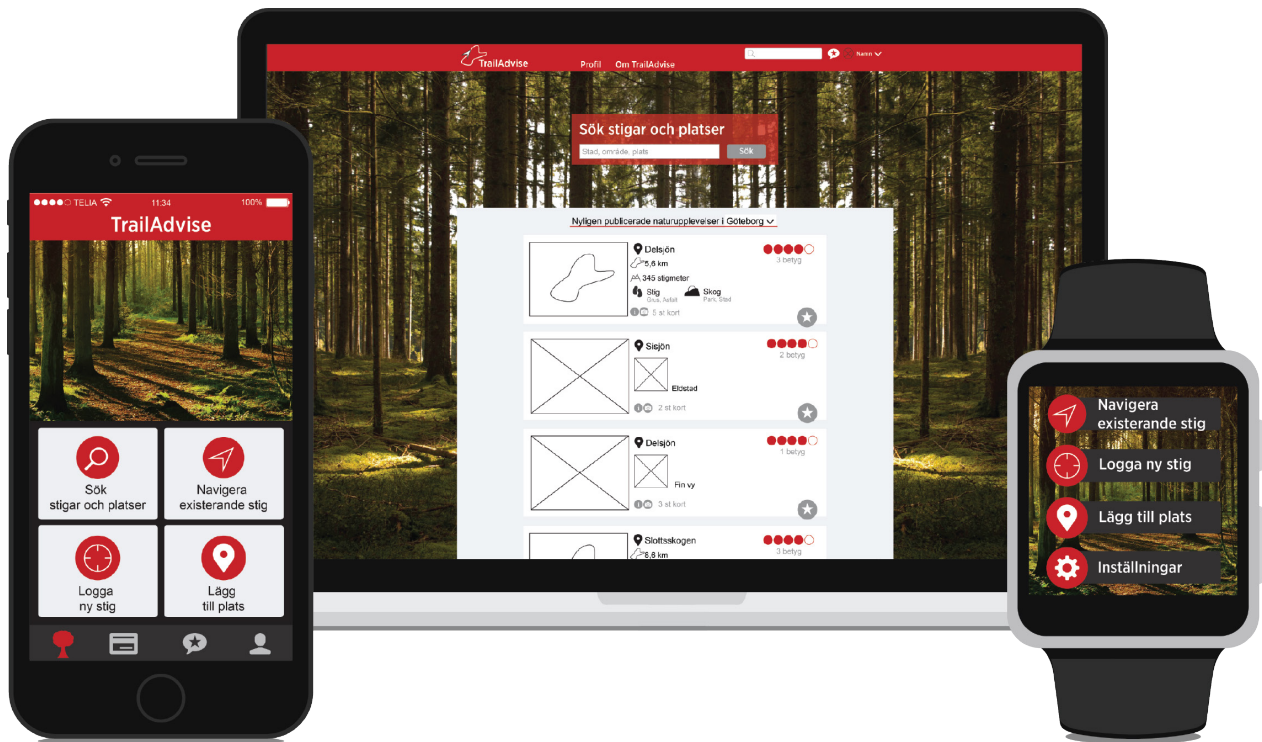# CHALMERS

Design and Development of the User Interface of TrailAdvise

The new digital service that facilitates exploration of the nature

M.Sc. Thesis in Industrial Design Engineering

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Design and Development of the User Interface of TrailAdvise

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Acknowledgement

Abstract

This project is part of a bigger project that is managed by Innomate, a company that are running internal product development but also provides project management consulting services to external customers. The projects aim is to make footpaths and hiking trails more accessible by creating a digital service where the user can find trails and paths that suit their needs with a mobile phone or computer.

The purpose of this project is to create a conceptual user interface for this new service that should be available on the web and as an application on smartphone and smartwatch. The focus is on identifying the intended users needs and to conclude what functions and information that should be available and how to priorities these in order to provide an attractive service.

The most important information gathering was regarding the different intended users needs. Two target groups were identified and investigated, namely runners and hikers. It was found that their basic needs are much alike so they could benefit from using the same service as long as the service focuses on experience and not performance. This was found to be important in order to make the service differentiable as well.

The project resulted in conceptual wireframes of the user interface for the different devices. The conceptual interface allows the user to search for trail and places in the nature as well as provides them with important information about them. The user can also get navigation help when wanting to explore a new trail or place. The service grows by users adding their own places and trails so the service makes it possible to track and add trails and places as well. In order to motivate people to contribute to the service some elements of social rewards has been included such as that a user that adds a trails gets to know when someone rates, comments or saves that trail.

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1 Introduction

People all over the world know the importance of exercise and many are therefore spending a lot of time exercising every week. In Sweden half of the population is working out at least two times a week (Stadium, 2009). A very easy and accessible form of exercise is running and hiking, something that one can start doing right outside the door. About half of the people that are exercising on a daily basis in Sweden are walking as an exercise and about a fifth of them are running. Most people prefer to run or hike in the nature since it provides a much nicer experience compared to city streets. But since about 85 percent of the population in Sweden are living in cities (Globalis, n.d) they often run or hike in urban areas since they do not know any nice nature trails in their neighbourhood.

There are a lot of different mobile applications that help people to track their training. Some also motivates, keeps track of personal records and compares results with friends. But very few of these applications focuses on helping the user to get a nice experience, they only focuses on results and performance. This is why a company called Innomate has started a project with the purpose of facilitating for people to find nice nature trails in their neighbourhoods. Which would facilitate for people to also get a nice experience when exercising. This will be possible by creating a new digital GPS service available on the web and as an application for smartphone and smartwatch.

The amount of applications that are available for mobile phones is steadily increasing (Böhmer, et al., 2011). People use mobile applications for a brief period of time due to the fact that they are used on the go most times (Cooper, et al., 2014). People switches fast between different applications, it is therefore important for mobile applications to be self-explanatory. Due to increased app fatigue and decreased adoption rates it is important to create simple applications that are intuitive for the users in order to success (Rao, 2014). Many people use applications such as Facebook and Twitter habitually, they use them with little or no conscious thought. The habitual behaviour has been intended by the designer and it is imperative for many products and services (Eyal & Hoover, 2014).

1.1 Background

This project is performed for a company called Innomate which is a company that are running internal product development but also provides project management consulting services to external customers. Innomate are currently working on an internal product development project which has the purpose of facilitating for people to get information about and explore the nature. Innomate believe that young people wont use physical map sheets and pdf:s when they want to explore the outdoors, they need something new. Innomate are therefore working on a service called TrailAdvise that will make footpaths and hiking trails more accessible. To be able to find trails and paths that suits the users needs with a mobile phone or computer will provide young people with the possibility to explore and experience the outdoors. These devices will provide information and location of the different trails available. The goal of this project is to start with this service in Gothenburg in Sweden and then grow from there.

The organisation for this project consists of Innomate which is in charge of the project management and a developing team which consists of a mobile application developing company called Oppocit. The development team will also include some different students' thesis projects that will have some different focuses. One of which is to develop and design the user interface for web, mobile and smartwatch.

Innomates vision for the new GPS service is that it should be the first hand choice source for finding trails in the nature. It should also grow by user activity, the users should be able to affect the information that is provided in the service. It should also provide the first off road GPS navigation.

Based on initial research performed by Innomate three basic functions for the service was identified. One is called TrailGuide which includes the possibility for the users to find routes and be able to add geographic information themselves. This includes being able to search routes, both text search and location. It should also be able to filter the routes based on different criteria such as distance, reviews and location. The users should be able to comment and rate the trails and it should be possible to upload pictures and specific places.

Another functionality is called TrailActivity, this function includes navigation when using a route and it is also possible to create and upload a new route. Here the user can add a place and it could also be possible to see pictures from different locations.

The last function is called TrailPal, which is communication and social interaction. This includes an online community where it is possible to share routes, activities, reviews and photos. It should also be possible to create and invite people to events and the users should be able to share information on social medias.

1.2 Purpose and Deliverables

The purpose with this project is to investigate what people seeks to fulfil when they are using footpaths and hiking trails in Sweden. The aim is to find out what they think is important and what they base their decisions on when deciding what route to take. The project seeks to conclude what functions that should be available and how to prioritise them in order to provide an attractive GPS service. This information will then be used to produce a conceptual user interface for the new GPS service.

The deliverables in this project will be conceptual wireframes of the user interface for the web, smartphone and smartwatch. These wireframes will include all the functions that should be available and how and what information should be presented in order for the user interface to be as intuitive and effective as possible.

1.3 Limitations

Below are a list of limitations that will not be addressed in the project.

- The project will not deliver any materials such as images that will be ready to use by the programmers.
- The focus during this project will be on presenting the main functionality and information and that the user understands how to use the product. Details concerning colours and icons will not be investigated thoroughly.
- Since the delivered wireframes only will be on a conceptual level no consideration will be taken to different brands on devices such as different designs for different mobile platforms etc.
- The focus during this project will be to satisfy the primary users of the service. Secondary users and how to make money from the service will of course be considered but the focus will be on creating an interface for the service that makes the primary users satisfied.
- As this service will be released in Sweden first and foremost the delivered user interface will be in Swedish.

1.4 Report Setup

The report will describe the developing process of the conceptual user interface for the new GPS service in a structured and clear way. The different chapters and their content is described below.

- **Chapter 2**: Theory and Methods (page 4)
  The theories and methods used in the project is presented.
- **Chapter 3**: Implementation (page 12)
  The process of the project as well as how methods have been implemented are described briefly.
- **Chapter 4**: Competitors and Devices (page 15)
  Presents information about existing actors on the market as well as some information about the devices the service will be available on.
- **Chapter 5**: Identification of User Needs (page 19)
  Presents the user study and the needs elicited from the users are presented.
- **Chapter 6**: Identification of Requirements of Usage (page 28)
  The usage of the product is investigated and some context scenarios is presented as well as requirements from the usage of the service.
- **Chapter 7**: Overall Design (page 35)
  Describes the ideation and four overall concepts and some overreaching design proposals that was evaluated in order to continue working on the detailed design for the user interface.
- **Chapter 8**: Detailed Design (page 46)
  The evaluation of the user interface of the service as well as a requirement fulfilment is presented.
- **Chapter 9**: The Final User Interface (page 50)
  Presents the final user interface for the application on smartphone and smartphone as well as the web.
- **Chapter 10**: Future Work (page 70)
  Presents ideas about future functions and developments of the service.
- **Chapter 11**: Discussion (page 72)
  Discussion about the result, process and methods, sustainability aspects and gained knowledge from the project.
- **Chapter 12**: Conclusion (page 75)
  The authors conclusions about the project as a whole.
- **Chapter 13**: References (page 76)
  References used in the project.

2 Theory and Methods

The theories and methods used in this project will be presented and described in this chapter.

2.1 Theory

The theories in this project is concerned with human-machine interaction with focus on interaction design for web and mobile phone. It is essential to make use of the existing guidelines in order to create an interface that is useful and efficient for the target users. Some other theories that are essential is social interaction in softwares as well as habit-forming theories.

2.1.1 Human-Machine Interaction

The cognitive theory that concern human-machine interaction is central in this project since it is the base for the understanding of the human mental process and is therefore crucial in order to design a successful and efficient user interface.

Cognitive Ergonomics

Cognitive ergonomics deals with mental processes such as perception, memory, reasoning and motor response in relation with the tasks that are carried out and the human cognitive reaction to physical environmental factors (Bligård, 2015).

The human information process based on Wickes et al (2004) in Bohgard, et al. (2010) starts with perception, the human registers visual input from the environment through the senses. The selection and the interpretation of the information depends on internal and external factors. The internal is based on the humans needs, experiences, feelings and expectations whilst the external is based on the stimulis size, contrast, intensity and frequency. A reduced amount of the un-interpreted information is temporary stored in a short-term sensory store. The human can then based on previous experience steer the attention to the most important stimuli.

The memory is essential in order to take advantage of previous experiences. The long-term memory is a central part in perception. The stimuli is compared to pervious information stored in the long-term memory in order to understand and interpreting the information. The stimuli that gets the attention gets perceived and is created into something meaningful. The information in the short-term memory is active through attention. A part of the data that is in the short-term memory can be encoded into the long-term memory, this is not an automatic process. This process is affected by external things such as stress or disruption of different kinds. The short-term memory or working memory is used to make decisions based on current information in the short-term memory.

Once an action is decided the response execution is the part where the human actually perform the action that was decided. The feedback loop indicates that actions are sensed by the human and the information process can be started at any point and is continuous. This feedback loop establishes that the desired goal has been accomplished i.e. the human gets stimuli that confirms the outcome of the action (Bohgard, et al., 2010).

Mental Models and Represented Models
Humans have internal representations of products and systems called mental models. These models describes functions and relations in the system. The user creates ones mental model based on pervious experience but it also changes when the user gets more knowledge about a system (Bligård, 2015). Problems arise when the user develops an inaccurate mental model of the system which can cause ineffective usage and errors.

The represented model is the way that designers choose to represent how their applications function to the user. This model is therefore something that the designer has great control over. The designers most important goal should be to match the representation model to the users mental model as closely as possible. This will make it easier for the user to use and understand the application, it is therefore crucial for the designer to understand how their target users think (Cooper, et al., 2014).

2.1.2 Interaction Design
Interaction design is the practice of designing interactive digital products, systems and services. It is concerned with form like most design principles but it first and foremost focuses on the design of behaviour. The most significant concern with interaction design is to satisfy the needs of the people who will interact with a service or product (Cooper, et al., 2014).

There are a number of different design principles that interaction designers can use to aid their thinking when designing for user experience. Rogers et al. (2011) has listed the most common once:

- ***Visibility***
  If the functions are more visible it is more likely that users will know what to do.
- ***Feedback***
  Sending back information to the user about what action has been done and what has been accomplished.
- ***Constrains***
  Restricting the different kinds of user actions that can be done at a given moment.
- ***Consistency***
  The interface should have similar operations and use similar elements when conducting similar tasks.
- ***Affordance***
  Objects should have attributes that allows the user to understand how to interact with it.

Usability and Utility
Usability assesses how easy and pleasant user interfaces are to use. It is a quality attribute that is defined by the following components (Nielsen, 2012):

- ***Learnability***
  How easy is it for users to accomplish basic tasks the first time they encounter the design?
- ***Efficiency***
  Once users have learned the design, how quickly can they perform tasks?
- ***Memorability***
  When users return to the design after a period of not using it, how easily can they reestablish proficiency?
- ***Errors***
  How many errors do users make, how severe are these errors, and how easily can they recover from the errors?
- ***Satisfaction***
  How pleasant is it to use the design?

Utility is another important attribute which refers to if the products functionality satisfies the users needs. In order for a product to be useful the product or service must have both high usability and utility, it must have the right functions that is in line with the users needs and these functions must be easy to use (Nielsen, 2012).

According to Nielsen (2012) one of the most useful and basic methods for studying usability is user testing. In order to conduct user testing one needs to find representative users, ask the users to perform representative tasks within the design and observe what the users do. Observe where they have difficulties with the interface and where they succeed. A test with five users is usually enough in order to identify the most important usability problems (Nielsen, 2012).

Product Postures

The posture of a product is its behavioural stance, it is a way of discussion how much attention the user has on the product when interacting with it (Cooper, et al., 2014). Also how the product responds to that attention. This decisions is based on likely context and environments that the product will be used in. Cooper et al (2014) first of all mentions three different postures namely, sovereign, transient and daemonic posture. Sovereign postures monopolizes the users attention for long and continuous periods of time. They provides the user with many functions and features, and they are often occupying the entire screen. Users that are working in sovereign applications often achieves a state of flow and is the users primary work tool.

Transient postures comes and goes, the application is used when it is needed, it performs its job and then goes away so that the user can continue with the normal activity (Cooper, et al., 2014). The most defining characteristic of this posture is the temporal nature, since users do not use it for long periods they do not get the chance to become familiar with it. Therefore the interface should be obvious, helpful and clear about what it does.

The daemonic posture is applications that the user do not usually interact with. These applications work in the background quietly and invisible. They perform vital tasks without having the need of human interference.

2.1.3 Social Interactions and Behaviours in Softwares

One fundamental aspect of everyday life for humans is to be social, to interact with one each other (Rogers, et al., 2011). Humans is a species that depend on each other, we are supposed to be a part of a tribe (Eyal, 2012). Therefore our brain seeks for rewards that make us feel important, accepted included and attractive. It is thereby no wonder that social media is so popular, the users with powerful social rewards. Every time a user post something they wonder how much social validation they will get.

Of the online adults, two-thirds are using social networks such as Facebook, these people states that staying in touch with family and friends is their main reason for using social medias (Smith, 2011). Some people however appear to use such sites in an attempt to increase their self-image (Danowski & Zywica, 2008). For many people it has become a part of their daily routine to check the latest postings, emails etc. on their mobile phones or computers (Rogers, et al., 2011). Friends and family keep each other updated about what is happening in their lives. This has become an integrated part of humans social lives, something that is not surprising since humans are inherently social. The face-to-face conversations is still central to many social interactions but the use of social media have increased dramatically.

Rogers et al. (2011) states that it nowadays is common for people to take photos of different aspects of our everyday life and share them with others as a sort of intimacy. Internet has also changed how people find and inform others about different events. People are creating much digital contents such as photos, videos and information, web services allow people to easily make that information accessible to the world. The result is that it is extremely easy for everyone to share, recommend and view stuff.

According to Correa et al (2010) three personality traits affect to which extent different people use social media. People that are extraverted are more likely to use social media more frequently. How emotionally stable people are also affect their use of social media, people that are more emotionally stable uses social media less frequently. People that are anxious and worrisome tend to use social media more frequently. The final personality trait that has affect on social media use is that people that are open to new experiences uses social media more frequently.

Java et al (2007) states that user participate in social media communities where they share similar interests. The people that join can however have different intentions, some are just looking to get new information that they find interesting while others act as information providers. In relation to information sharing through the use of collaborative media (Jarvenpaa & Staples, 2000) states that task characteristics, the perceived usefulness of the information and how comfortable the person is at handling computers is strongly linked to how much a person uses collaborative media. Jarvenpaa and Staples (2000) also implies that frequent users want a structured information flow since they have a need to have reliable access to knowledge and information from other users.

2.1.4 Habit-forming Theory

In order to create habit-forming technology Eyal and Hoover (2014) presents a model called Hook which consists of four parts (see figure 1).
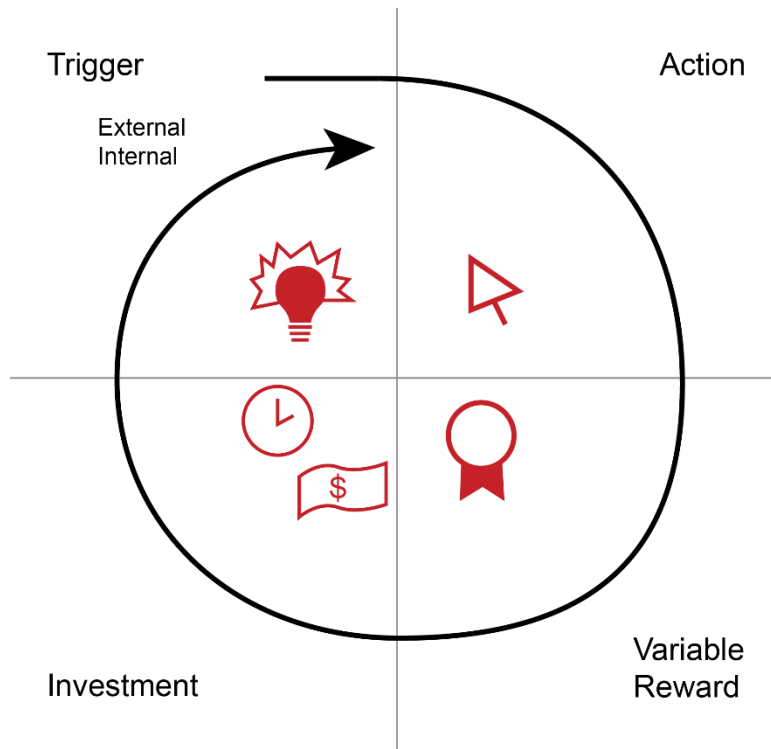
Figure 1 The Hook Model

The first part is the trigger which puts the habit in motion, it is the first step in order to connect a solution to the users problem. Triggers comes in two forms, external and internal. Habit-forming technologies begin with notifying users with external triggers such as an email, notification or a link to a website. Successively by continuously cycling through desire processes the users start to associate with internal triggers, these get attached to existing behaviours and emotions. This means that soon the users become triggered every time they feel a certain way. The second step is called action, this is what comes after the trigger, the intended action. Here it is important in order to make the user conduct the intended behaviour that the motivation and ability is in balance. If making the intended action as easy to conduct as possible, while also bosting the users motivation the odds increase that the user will carry it out the intended action (Eyal & Hoover, 2014).

The next step is the reward, here the important thing to notice is the value of variable rewards. The level of dopamine suddenly increases in the brain when expecting a reward, when introducing variability this effect multiplies and activates the parts of the brain that is connected to wanting and desire. Eyal and Hoover (2014) propose that there are three different types of variable rewards, rewards of the tribe, the self and the hunt. Since we belong to a species that depends on each other we are driven by feeling connected to other people. People seek social rewards, the human brain are adapted to seek for rewards that makes the human feel important, accepted, included and attractive. Users anticipate social validation with every post or tweet they put on social medias. For those who share content on a social media site the comments and "likes" provide a tribal validation. It also acts as a variable reward and it motivates the users to continue posting. The rewards of the tribe makes the users come back, wanting more.

Rewards of the self is the type of variable rewards humans seek for personal form of gratification (Eyal & Hoover, 2014). Humans are driven to conquer obstacles, to complete a task can influence people to do different sorts of behaviours. People want to feel a sense of competency, if adding mystery to this goal makes it more enticing. This type of rewards are a defining component in video games where the player try to gain skills in order to come to the next level. But this can also be seen in e-mail systems where the number of unread messages for some people create a sort of challenge to complete.

The reward of the hunt is defined as the search for resources (Eyal & Hoover, 2014). One part of our brains operating system is to need to obtain objects that aid our survival such as food. Humans once hunted for food but now we are hunting for interesting information in different feeds. The variety of both mundane and relevant content in such feeds creates a variable reward of the hunt. Occasionally the user find something very interesting, since the action to keep hunting for more information is so easy, the user scrolls and scrolls in search of a variable reward.

The last step in the Hook Model is the investment, here the user is asked to do some work (Eyal & Hoover, 2014). This will increase the chance that the user will return. This work implies an action that improves the service, it can be inviting friends, stating preferences or building virtual assets. They are all actions that improve the service for the user. The more time and effort a user puts into a service, the more they value it. If users store value in the product it is more likely that they will use it again.

2.1.5 Implication of the Theory

The most important theory for this project is the theory about habit-forming technologies since it is important for such a digital service to have returning users in order to function. Therefore the Hook Model provides a great model to use in order to make sure that the service becomes successful. Product postures and the design principles are also important to keep in mind when designing a new interface for services, they are good to always keep them in mind when designing.

2.2 Methods

This chapter will describe the theory behind the methods used in this project. More details about how they where applied will be described further in the report.

2.2.1 Competitor Analysis

A competitor analysis is conducted in order to assess the competitors ability to satisfy the users needs and expectations. The purpose is to find factors that are important for the users that the competitors do not satisfy and in that way get an advantage. Perceptual mapping is when different products are plotted on a graph or map, the closer products are on the map the more they resembles one another. It can be useful when developing a new product in order to determine the competitors position in order to identify opportunities in unoccupied positions (Law, 2009).

2.2.2 Interviews and Surveys

Interviews is one of the most fundamental method for gathering of information about what people think. Through interviews knowledge about persons experiences, knowledge, values and opinions is obtained. Interviews can be basically structured in three different ways. They can be structured where the interviewer follows a formal script, semi-structured which allows for probing or as an open discussion about a subject. The semi-structured interview form allows for further question asking if the interviewee has much to say or if the interviewer wants the interviewee to elaborate something (Bohgard, et al., 2010).

A well-established method for collecting demographic data and the opinion of users is surveys. It is important that the questions are clear in order for the collected data to be useful. Surveys are good in order to get answers to specific questions from many people. They can also be used together with interviews in order to be able to confirm the concussions drawn from the interviews (Rogers, et al., 2011).

2.2.3 User Profile and Persona

A user profile describes abilities, limitations and characteristics such as knowledge and experience of the intended users that are relevant for the project. It searches for common characteristics in the user group but also defines the diversity. The user profile can include different things depending on the characteristics of the system investigated (Bligård & Osvalder, 2010).

The user profile can be complemented by a persona in order to make the user more visible. The persona is created in order to represent the user group and is a realistic but fictive user of the product. The purpose with personas is to make the user more concrete and real which will help the designer to meet the users actual needs. If the persona is written rich enough the designers will perceive and identify the intended user as an authentic person and thereby be reminded of and integrate the users needs in their design concepts which is preferable (Bligård & Osvalder, 2010). A persona captures a set of behaviour patterns, these patterns together with motivations or goals define the personas (Cooper, et al., 2014).

2.2.4 Scenarios

Scenarios allows exploration and discussion of context, needs and requirements as it describes the users tasks or activities in a story (Rogers, et al., 2011). It does not explicitly describe the technology used to achieve the task. Scenarios can be understood by the stakeholders due to the use of vocabulary and phrasing of users. The focus in stories is quite naturally about what users are trying to achieve, what their goals are. This allows us to focus on the users activity rather than specific interaction with technology.

A story that is about how a special persona uses the future version of a service is called a context scenario (Cooper, et al., 2014). In this story the persona is using the service in the way that is special for that persona depending on various motivations, needs and goals. It also describes the context broadly of where the persona uses the product.

How the persona interacts with the product can be described in a key path scenario. In these scenarios the primary pathways the persona takes through the interface with greatest frequency is described. These scenarios typically originate from the context scenarios but they are much more task oriented and detailed.

2.2.5 Imageboard

An imageboard is a collage of pictures that conveys the mood or expression in something (Bligård, 2015). The purpose of the imageboard is to document and communicate the idea about the aesthetic design and facilitate that the future work is going the right way. It can also be used to describe and communicate the user, the usage and the context.

2.2.6 Requirement Specification

The list of requirements specifies what the product is supposed to do, it is a document that will be changed and modified throughout the entire project (Bohgard, et al., 2010). The requirement specification can contain both requirements and guidelines and can be used as a staring point in the ideation and in the concept evaluation to ensure that the solution reaches the goal (Johannesson, et al., 2004). The ACD3-process applies four different requirement specifications with different focus, one for each step of the process. In the first step the focus is on user needs, the second step is on usage needs, the third focus is on product requirements and the fourth is on sub-system requirements (Bligård, 2015).

2.2.7 Brainstorming

Brainstorming is used in order to find solutions to problems. It is carried out in groups and the idea is that the participants are supposed to get stimulated by and get new ideas from each other. The aim is to come up with as many ideas as possible without evaluating their quality (Johannesson, et al., 2004).

2.2.8 Sketching and Prototyping

The first sketches of the interface should be very simple. They should start by subdividing views into rectangular areas that correspond to panes, control components and other top-level containers. It is important to look at the top-level first and do not be distracted by details in that stage. It is good to try different arrangement before choosing the best solution (Cooper, et al., 2014).

A prototype is a manifestation of a design concept that stakeholders can interact with in order to explore its suitability. Prototypes can have very different fidelity. A low-fidelity prototype does not look like the final product that much, they are very useful since they tend to be simple, cheap and fast to produce. It can for example be a paper prototype that rely on hand-drawn sketches. High-fidelity prototypes on the other hand looks almost the same as the final product and they are very time consuming to produce (Rogers, et al., 2011). High-fidelity prototypes can be created in for example InVision, a web based prototyping, collaboration and workflow platform.

2.2.9 Evaluation Matrixes

There are a number of different matrixes that can be used in order to evaluate different solutions against each other in order to decide which the best one is or which to continue working with. In a elimination matrix different alternative solutions gets evaluated against different criteria and based on the result it gets decided if they gets to continue to the next evaluation phase, if they gets eliminated or if they need more information to make that decision (Johannesson, et al., 2004).

Pughs method compares different concepts against each other based on a set of criteria. The method starts by selecting a reference object, this object is often an already existing own or a competitors product but it can also be one of the concepts that are being evaluated. Then every other concept gets compared against the reference object. In the end every concept gets a value and based on that the concepts get ranked (Johannesson, et al., 2004). It is also possible to insert weights on the different criteria depending on how important they are.

3 Implementation

This chapter describes the process of the project and how the different methods used have been implemented. The process used is based on Bligårds (2015) ACD3-process which consists of eleven blocks where four of these are continues throughout the entire project, namely planning, data gathering, evaluation and documentation. The remaining sequential blocks are identify user needs, identify requirements of usage, overall design, detailed design, construction, production and commissioning. However this project will only be concerned with the first four blocks (see figure 2).
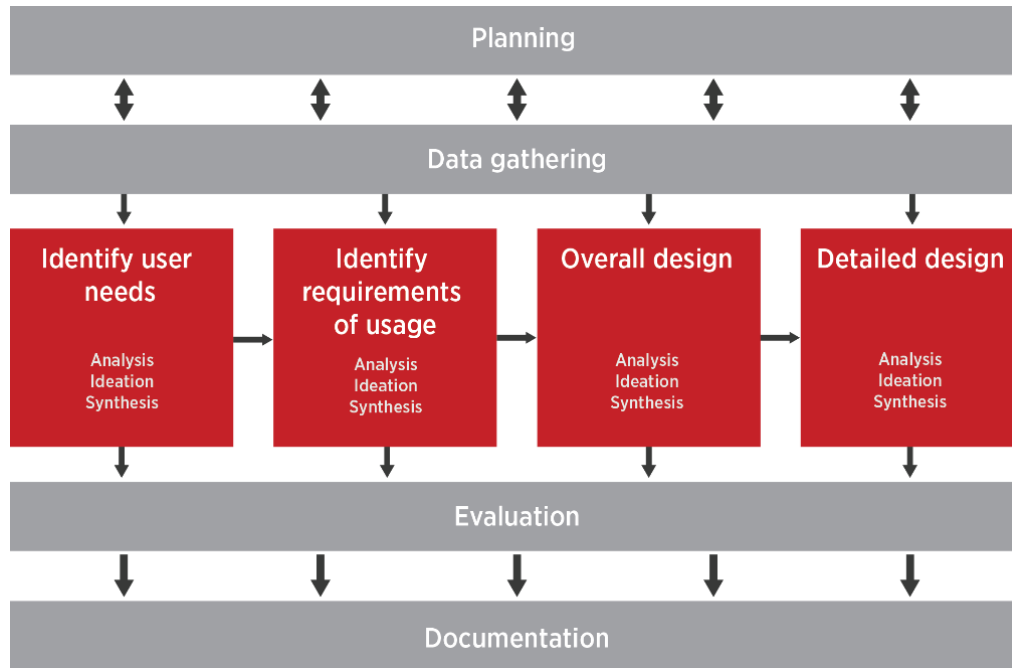
Figure 2 Illustration of The Process

The first sequential block in the process is to identify user needs. In this phase the user is the starting point in order to identify needs and expectations for the solution. This phase resulted in requirements on the product that the human-machine system is expected to meet.

The second step is the identification of requirements on the usage. This phase has a focus on the usage of the product, which means the requirement from the usage in order for the system to be able to reach the goal. This phase also resulted in requirements but this time the focus is on the usage.

In the third phase the overall design of the user interface are produced. This phase resulted in an overall design of the final interface as well as a list of requirements and guidelines for the proceeding work of creating the detailed design.

The last phase is the detailed design where the conceptual user interface is created more in detail. This resulted in wireframes for the different devices that display how the user interface should be designed in order to fulfil the previous requirements from the process.

3.1 Data Gathering

Some information in addition to the user studies was necessary to collect. This information related to possible competitors as well as information about the different devices the service should be available on. The competitors was also investigated and analysed in order to be able to find factors that are important for the users that the competitors do not satisfy and in that way get an advantage. The information and conclusions found can be seen in chapter 4 *Competitors and Devices.*

3.2 Identify User Needs

Users play a huge role in this project since they are the basis for the development of the service and its user interface. In order to create a service that will be appreciated it is important to understand the users needs and expectations on such a service. To identify these needs user research was conducted, that included interviews and surveys conducted with people from the target groups. First interviews was conducted in order to get a fundamental understanding for the users behaviour and what they think is important. Based on that a survey was created that had the purpose to verify that the information found in the interviews seams to be true for a larger amount of people as well. The survey also collected some additional and more quantifiable data about the users habits and opinions. Chapter 5.1 *Study of Intended Users* covers the entire users study and the elicited information.

Analysis and compilation of the information found in the user study lead to a specification of the intended users first in form of a more general description and then also in form of different personas that represent different intended users found during the user studies. This is covered in chapter 5.2 *Specification of the Target Group*. The personas form the basis for the further design choices but also as a mean in order to communicate the personalities and characters of the intended users to the stakeholders in the project.

3.3 Identify Requirements of Usage

In this stage the information found in the previous step was built upon and complemented with information regarding the usage of the new service. Here context scenarios was created to communicate and identify in which context and what the different users would want to achieve when using the service. A system description was also made in order to get an insight of how all the devices included in the service would work together on a high level. Some basic aesthetics guidelines regarding the service was also identified with the help of an imageboard.

3.4 Overall Design

When it comes to the creative process different types of brainstorming methods was used based on the need and situation. Brainstorming sessions was conducted both as workshops with some intended users in order to get some new ideas but also with out users in order to get deeper into some specific issues that can be hard to get into with users. All different ideas, functions and types of information that was possible to include in the service was evaluated in a matrix regarding how interesting and how much the different user groups would appreciate them. The approach for getting ideas and evaluating them is covered in chapter 7.1 *Generation of Ideas*.

When deciding what type of information should be included in the service some different concepts and overarching design for the service was created and sketched in order to communicate the ideas to intended users and the stakeholders in the project to obtain their ideas and feedback on the different solutions. The overall idea and the concepts are presented in the chapters 7.2.1 *Conceptual System Description*, 7.2.2 *Overarching Design Proposals* and 7.2.3 *Overall Concepts* respectively.

The ideas developed in this stage was evaluated with two different focus groups where intended users got to discuss the concepts in order to get feedback regarding the solutions. This in order to be able to keep working towards a final conceptual user interface. The evaluation is presented in chapter 7.3 *Evaluation of the Overarching Design Proposals and Concepts*.

3.5 Detailed Design

Once a final concept was reached the detailed user interface design was generated for the different devices in the form of wireframes. Before creating the wireframes the different functions that should be available on the different devices was decided. Different key path scenarios was also identified in order to determine if the user interface is affective and usable for the most common tasks. The wireframes was evaluated in order to ensure that the user understands the interface and can use it in a proper manner. This evaluation was conducted with a working interaction prototype where the users where asked to conduct the identified key tasks in order to ensure that they understood how to use the service. When the evaluation was conducted one final iteration was conducted before reaching the final wireframe design.

4 Competitors and Devices

This chapter will cover an analysis of the competitors that was conducted in order to compile what services is out there and where to position the new GPS service in order go get a beneficial position. Some information about how smartphones and smartwatches work and how to design for them was also found and compiled in this chapter.

4.1 Analysis of Competitors

There are many different applications available on the market that are interesting to look at. There are a lot of applications that focuses on fitness, tracking and storing training sessions. They can either be used by them self but some are also possible to connect to a GPS watch. There are some application that focuses on finding different types of trails and then there are also regular paper maps and navigation applications such as Google maps.

4.1.1 GPS Watches and their Accompanying Software

There are a lot of different GPS watches available on the market. They can collect a live stream of data such as pace, speed, distance etc. (McDannald, 2015). That data can be viewed on the watch's display, it can also be transferred into a database which allows the user to view progress over time. This information serves as a training log and it allows the user to review the route on a map and also to see graphs and tables over information such as time, pace, distance etc. This information can usually be view on the web and/or in a mobile application.

The brands that creates GPS watches usually have accompanying software that the watches can be used together with or the software can be used by itself with the GPS function in the mobile phone. Some of these brands are Suuntos, Garmin and Polar. Above all the different information about speed and distance etc. these mobile and web applications also allow the user to share their activities whit friends on for example social medias.

4.1.2 GPS Applications for Mobile Devices

Some applications for mobile devices only uses the mobiles GPS technology in order to track and store training sessions, such as Runkeeper, Endomondo, Funbeat and Strava. These applications will do the same thing that the watches does, there are even some benefits such as bigger screen, better speaker and the ability to play music etc. (McDannald, 2015). However they are also much heavier than a GPS watch and also sensitive to rain, something that the user do not have to worry about when using a GPS watch.

Some of these applications also offer route search in their web application. In many of them it is possible to save routes but they can not be viewed in the mobile application. However RunKeeper and Strava allows the users to save routes and view them in the mobile application.

4.1.3 Applications for Finding Trails

There are some mobile applications that allows the user to find trails, in these it is possible for the user to search and find trails on their phone. Most of these applications allow the user to track and store their activities, often together with photos taken along the way. Some also allows the user to contribute to the service by uploading their own routes. They also let the users share their adventures with friends on social networks. However most of these applications have some limitations, at least for usage in Sweden. An application called AllTrails currently only offer trails in North America (AllTrails, Inc., 2015). Another called EveryTrail is only avalible for Android phones and one called Hike+ does not appear to be available through a computer.

ViewRanger is another service where the user can download and buy maps from for example Lantmäteriet here in Sweden. They can also search for routes and download them and then follow them with the help of their navigation system (ViewRanger, n.d.). These tracks are possible to share through social media or email and the user can also contribute their best tracks with the ViewRanger community.

4.1.4 Other Interesting Competitors

Another relevant tool for finding and navigation trails and routes is off course the regular paper maps. Maps over ones neighbourhood is often available at local retailers such as bookshops, tourist offices and gas stations. They most interesting ones for finding routes outside of the city is orienteering maps. These are not that easy to get a hold of, some are available to download from the web but most of them are owned by different orienteering clubs. Google maps offer the user maps and directions, the mobile application also offers live navigation in order to find a specific location or address. This navigation can also be audio by voice (Google, Inc. , 2015).

One website and mobile application called TripAdvisor is also interesting to look into. This application helps the user to plan their perfect trip since it gives the user access to millions of reviews, photos and maps. It helps the user find the lowest airfare, best hotels and fun things to do (TripAdvisor LLC, 2014). The user can add own reviews and photos and get answers to questions in the forums.

4.1.5 Summary about Competitors

There are a lot of applications and devices that can be used in order to track and store fitness aspects such as speed, heart rate, personal records etc. They all have in common that they focus on performance and are activity based. Many of these also have route searching functions however they are not that well designed and very few users know that they exists.

There are three applications that has the purpose of helping people to find trails. However these applications are not that complete and do not offer the user any real navigation to the routes. They do not offer that much social interaction either, they just offer the user the opportunity to post their tracks on social medias. The only application that offers the user navigation is Google Maps which is more targeting urban environment and traffic directions than nature and terrain environments. Since none of the competitors, when it comes to finding trails, offer any real navigation this can bee seen as a key aspect in order to create a successful differentiable mobile application. When it comes to standing out from the fitness applications it is important to focus on experience instead of performance. Another thing with the fitness applications is that they are activity based, the training sessions get divided into what type of activity they performed, running, walking or cycling for example. As a consequent the routes also get divided into different activities, the idea with TrailAdvise is that the focus shall be on the route, what type of activity carried out is not that important. A compilation of all the different competitors and the functions they offer as well as a perceptual mapping can be seen in appendix 1 and 2.

4.2 Smartphones

The number of applications available for mobile phones is steadily increasing (Böhmer, et al., 2011). Smartphone users spend almost an hour every day using their phones, in spite that that average session with an application lasts for less than a minute. Even if the smartphone nowadays have much more functionality that just calling, they are still first and foremost used as a device for communication (Böhmer, et al., 2011).

The handheld devices such as mobile phones present a challenge for designers (Cooper, et al., 2014). Since they are designed for mobile use they must be small, light, have low power consumption and be easy to hold and manipulate in situations that can be busy and distracting. With the introduction on iPhone and Android smartphone came a new posture called standalone posture. This application shares attributes from both sovereign and transient postures. They are full-screen and have functions available via menus and toolbars placed along top and bottom of the screen like sovereign postures. The similarity to transient applications is that they make relatively little use of comparatively larger controls and text (Cooper, et al., 2014). This is due to the limitations concerning legibility and finger input that is the case with mobile phone screens.

Since the nature of mobile applications is on-the-go most users will use the application for a very brief period of time (Cooper, et al., 2014). People might switch between social media, e-mail, news and messages over minutes. Therefore it is important for mobile applications to be self-explanatory. With the small screens, increased app fatigue and decreased adoption rates, the key to creating a successful mobile application is keeping it simple (Rao, 2014). Do not make the user think, create an intuitive user experience. App fatigue comes after a while as users gather a, as it seams, endless stream of applications that basically do the same thing (Kendrick, 2011).

4.3 Smartwatches

New wearable computing is a new generation of satellite devices, such as for example smartwatches. They normally pair with a standalone device via wireless connections such as Bluetooth and provide the user with notifications or other information through small touchscreens (Cooper, et al., 2014). A smartwatch is basically like having a tiny smartphone on your wrist (Martin, 2014). Once the smartwatch is connected to the users smartphone the user can choose what types of notifications to get on the wrist, it can be emails, messages, social networks and calls. Many smartwatches can do more than that, apps can let the user control music and take a photo remotely. The functionalities varies between different smartwatches.

Smartwatches are in general developed to work together with a special mobile phone platform (Martin, 2014). Some smartwatches also offer fitness features that allows the user to keep tabs on the workout (Prospero, 2015). However an update of the RunKeeper application for smartwatches has made it possible for Sony SmartWatch 3 users to be able to use the application without their smartphones (Lamkin, 2014). The Samsung Gear S smartwatch has also GPS connectivity (Stables, 2015) as well as the Garmin Vivocate, the runners smartwatch (Alger, 2015).These smartwatch devices offer just enough information and actions that are absolutely relevant in the specific moment and they thereby take a highly transient posture (Cooper, et al., 2014).

4.4 Web

The web has been around for a while now, but web site design took off in the early 2000s when editing tools and programming languages that where user-centred emerged. Since it provided both designers and the general public the opportunity to create websites that looked and behaved like multimedia environments (Rogers, et al., 2011). The main difference between web and other user interfaces is the webs emphasis on content. When designing for web it is important to consider how to best design, structure and present information. Some key design issues when designing for web is to provide the user with information about where they are, what information they can find there and where they can go next.

4.5 Conclusions from competitor and devices

Due to the very many applications available it is important that the service is differentiable and self-explanatory. This means that the service should focus as much as possible on experience since there are so many applications that focus on performance. It is also important for the service to communicate its functionality so that new users easy and fast can understand what it is about.

Due to the very limited screen size of the smartwatch the functionality on that device must be very limited, only keeping just enough information and functionality that are beneficial to use in a smartwatch.

5 Identification of User Needs

The identification of the users' needs has been elicited first and foremost through interviews with people from the target groups, hence runners and hikers. Based on that information a survey was sent out to a larger group of people that could confirm the conclusions drawn from the first interviews. The purpose and subject of the questions was based around how and why they run and hike and also some questions regarding how they go about choosing which route to take and what they think is important. With that information as a base personas was created and a conclusion about the findings from the user needs phase was created.

5.1 Study of Intended Users

The intended users of the TrailAdvise application basically is people that appreciates to spend time in the nature. In this project two main target groups was defined, people that prefers to run or hike in the nature. The target group hikers include both people who goes on day trips in a couple of hours and people who likes to hike for a couple of days. People with this interests where offered to participate in the study and contacted through contacts, specific social media groups and forums with this focus.

5.1.1 Interviews

Initial interviews were conducted with eleven people from the two different target groups. The purpose of the interviews was to get a fundamental understanding for how and why these people conduct these types of activities in order to get an understanding of what they think is important and what needs they have. The interview was semi-structured, a list of questions regarding their training habits was prepared but some additional questions was asked during the interviews in order to be able to get a deeper understanding of the users. The list of questions discussed during the interviews can be seen in appendix 3.

5.1.2 Surveys

A survey was sent out after these interviews was conducted in order to get some additional information but most importantly to be able to confirm that the conclusions drawn from the interviews was true for a larger amount of people as well. It was also used to get more quantified data from the users to complement the qualitative information elicited from the interviews. The survey can be seen in appendix 4.

In the start of the entire project Innomate conducted a survey in which 14 people who liked to run answered to questions regarding in what environment they prefer to run, why and how they are training and how and why they use GPS services such as GPS watches or applications. The result from this survey was analysed and used as a source of information about the intended users as well as new surveys sent out to both runners and hikers.

5.1.3 Elicited Information from Interviews and Surveys

Almost all the persons that answered the survey and the people that got interviewed stated that they would find it interesting to get accessible information about trails. Many subjects expressed that they often take the same routes because they do not know any new once and that there is much insecurity involved when trying to find new trails.

"It is actually not that easy to find new trails, but sometimes you get some advice from others that have been somewhere."

Hiker, 42 years old

"I would definitely like to have easy access to new trails. If I take new trails then I need to make new choices and I do not know when I will get home. There is a big insecurity in where I will end up and the time."

Runner, 30 years old

However some hikers did not think that it would be interesting with that type of information. The hikers was also less prone to share their trails with others, whereas almost all runners would be willing to share their trails with others. This is probably due to that some hikers appreciate and strive to find hikes that has as much wilderness feel to it as possible, they therefore would not like other people to take the same hikes and therefore they are not willing to share their trails.

Of course there are differences regarding how runners and hikers behave in the nature. However, among all the persons that answered to the survey about 40 percent stated that they both hike and run on a daily basis (see figure 3).
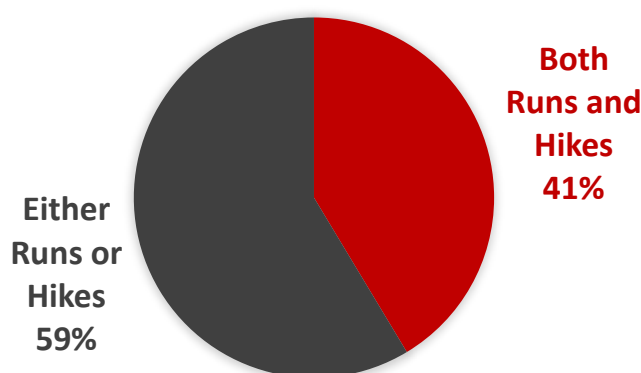
Figure 3 Pie chart illustrating how many subjects that both runs and hikes

The hikers use physical maps in a larger degree in order to find their way. One reason for why hikers use physical maps more is because some hikers go for long hikes in deserted areas and they can not trust that their phone will have battery so therefore they can not rely on their phone for navigation but has to have a physical map. Some hikers bring their phone only for emergencies and even have it shut off when they not need to use it. However most hikers bring their phone into the nature. The runners however do not bring their phone as much, only half of the participants in the survey stated that they always bring it, the others only occasionally bring it. This is due to that they think that it is inconvenient to bring it since it is so big and that they do not have a good place to put it so when they are running in the city or with others many runners prefer not to bring their phone.

The hikers take more pictures than the runners for obvious reasons, but some of the runners uses their phone to take pictures as well. However the hikers often uses a digital camera or even a system camera in order to capture memories from their adventures. The hikers are also more prone to share their pictures on for example Instagram, over messages or mail.

The runners are more likely to to tracking their activities, even if not everyone does it and some only does it occasionally. Hikers however claim to only do it occasionally and many never does it. The hikers use a GPS application in their phone to track their activities to a greater extent whilst the runners use a GPS watch to a higher degree.

"I prefer to have a watch since it is easier to look and keep track compared to having a phone on your arm, easier to keep track of during the run."

Runner, 49 years old

Regarding what information they found interesting concerning trails there was not that big of a difference regarding the most important information which was considered to be distance, type of ground, environment and elevation.

"I want to know what type of terrain it is [....] I think that it would been interesting with information about the ground and elevation."

Runner, 28 years old

"Which route I take which day depends partly on how much it has rain lately, if there has been much rain you might not want to take some forest trails. Also how much elevation it has depending on your daily shape"

Runner, 32 years old

"Where I run depends on the weather, if it is windy I want to run in the forest but if it is a sunny evening I want to run in the docks."

Runner, 31 years old

What types of attractions there are was also found to be quite interesting by both groups however the hikers found it a bit more interesting. The difference between the runners and the hikers regarding what they think is interesting is the amount of things they found interesting. The hikers where more interested in stuff like if there is a fireplace, shelter, camping etc. In general hikers seemed to have a more goal oriented behaviour, they often wanted to go to some special place.

"When hiking I am more goal oriented, then I want to make a bonfire or have coffee someplace."

Runner and hiker, 26 years old

"Something that can make me want to go to a new place is if it is spectacular nature, cool rock formations, odd threes or weird boulders. [....] That there is something fun to take pictures of, something spectacular."

Hiker, 42 years old

"Something that can make us go to a new place can be a shelter or if we find out that there is a bird watching tower."

Hiker, 35 years old

Both target groups found it interesting to see a map over the route and pictures taken from it. They also thought that it would be good to see comments about them and ratings.

Runners states that they prefer to run in the nature over city streets and many runners admits that they often run the same routes over and over again. Some runners often end up running in the city since it is more accessible even thou they prefer the nature. This is due to that they do not know any nice nature trails in their neighbourhoods. Most runners usually have a planed route that they follows when they are running however some states that they often run without having a predefined route, they make decisions as they go.

"Much more well-being when I am running in the nature"

Runner, 30 years old

"Since I do not live close to a nature area I most often run on asphalt but I prefer to run in the nature"

Runner, 30 years old

The runners and hikers get to their trails by foot to a large degree, however the hikers also use their car to a greater amount where as runners use their bike or public transport to a larger degree instead. Only half of the runners states that they use their car to get to the trails. This means that the hikers are more flexible and can travel longer distances in order to reach the trails. The result from the survey can be seen in appendix 5.

5.2 Specification of the Target Groups

This chapter presents the target groups quite general, based on the information found during the interviews and the survey. They are first presented one and one and then a summary about the findings are presented.

5.2.1 Runners

This target group consists of both people that runs most in the city and people who most often runs in the nature. The runners can be divided into two sub-groups, accessible runners and devoted runners. Accessible runners are characterised by that they run in order to feel good and get some exercise and that they appreciate that it is so accessible, that they can start right outside their door. They prefer to run in the nature since they think that it provides a nicer experience and more wellness but since they live in the city it often takes some time to get there and they do not know any nice trails in their neighbourhood, they often end up running in the city.

Devoted runners are most of all characterised by how much time and effort they put into their training. They are often a part of a running club and runs many times a week, they most often run together with others. They most often run in the nature since it provides a nicer experience. Performance is also important for them, they keep track of the distance and speed with GPS watches. They take their running very seriously, and are often training for different types of competitions. Every running session has a predefined purpose, it can be short or a long run, or practising running in hills or intervals. In appendix 6 a list of the different user profiles can be seen.

5.2.2 Hikers

The other target group is hikers, which basically includes people who likes to hike both long and short routes. They can be divided into three different sub-groups, wilderness enthusiasts, everyday hikers and adventurers. Wilderness enthusiasts wants to hike as far away from the civilisation as possible or at least that the nature they hike in give them that feeling. They also wants the environment to be quiet and they do not rely on their phones but follows a physical map in order to navigate and keep track of where they are. Everyday hikers are people that hikes in order to get some nice exercise out in the nature. They value accessibility and closeness but also nice nature experiences and points of interests such as a nice place to eat or something nice to look at. Adventurers are very active and carry out a lot of different activities outdoors often together with friends. They create events on weekends where they gather some friends and then they carry out an activity together, it is usually a daily activity where they bring or cook food in the nature. They also likes to document their adventures in different ways and share that with friends. In appendix 6 a list of the different user profiles can be seen.

5.2.3 Summary of Findings during the Study of Intended Users

A summary about the information elicited from the study of the users are listed below. A compiling list of the different sub-groups goals, characteristics and needs can be seen in appendix 7.

- Most people that run think that their phone is big and inconvenient and that they do not have any good place to put it when running
- People that run in the city or together with others are less likely to bring their phones
- People that hike usually bring their phone, however some persons do not like to be disturbed so they have it shut of.
- People that brings their phone often takes pictures, either on the nature or on their company
- People that put much time and effort into their running often run together with others and are also more prone to run in the nature
- People that runs because it is accessible are less likely to take the time to travel to a nature are to run and therefore often end up running in the city
- People that hikes usually also hike together with others, usually family members or friends
- People that hikes usually have or search for a specific place, it can be a shelter or a place with a nice view to stop and have a picnic or take photograph

5.2.4 Personas

Based on the findings from the study of the intended users five different personas was created to represent the different intended users of the service. Each persona represents one of the different sub-groups mentioned earlier, accessible runners, devoted runners, wilderness enthusiasts, everyday hikers and adventurers.

Stina, 34 - Accessible Runner

Stina is a 34 year-old woman living in Gothenburg, she has a full-time job as an accountant and have a boyfriend (see figure 4). She goes for a run about two times a week, both after work on week days and on the weekends. She likes to run because it makes her feel good both during and after the run. She also appreciates that it is so accessible, that she can start right outside the door. She also enjoys to play football, and to go to classes on the gym.

Figure 4 The persona Stina Source: flickr.com, cropped

Since she lives in the city she does not run in the forest that much even though she prefers it, but it takes longer time and she does not know any good trails in her neighbourhood. The same goes for running with friends, she likes it but it does not happen that much since there is so much planning and takes longer time than to just do it by her self. She often feels that the time is an issue when running, she often have something else planned afterwards that she has to be in time for.

She most often leaves the phone at home since it is so big and inconvenient. But sometimes she tracks her runs and then she brings her phone and uses a GPS application to keep track of the distance and the speed. What she thinks is important when she decides where to run is what weather it is, if it is windy she wants to run in the forest but if it is a sunny evening she might want to run by the dock. What type of environment and what type of ground is also important. She also thinks that it is important that it becomes a route that is an appropriate length so that she do not have to run for a while and then turn back.

Magnus, 48 - Devoted Runner

Magnus is a 48 year old man living in Gothenburg where he works as a mechanical engineer (see figure 5). He is divorced and has no kids. He runs quite much, usually five times a week. He is a part of a running club and enters different competitions now and then. He likes the feeling he gets when he is running and that he feels very satisfied afterwards. It is also important for him to become better and better and to perform on different competitions.

He most often runs in the forest since he thinks that there is more variation and it gives him a nicer experience. Every running session has a predefined purpose, it can be short or long runs, or practising running in hills or intervals. He uses his GPS watch to keep track of the distance and the tempo, after the run he also uploads the workout to jogg.se in order to be able to keep track of his workout and compare with friends. For Magnus the running is also a very social activity, he usually runs either with his running club or with some other friend which he appreciates because he thinks that it is fun and nice to be with like minded people. But sometimes by himself also. He usually has his phone with him and takes pictures that he uploads to the running clubs Facebook page or on Instagram. He sometimes runs a route that is set before but it also happens that it is just an area that are decided and then he runs as he feels like there.

Figure 5 The persona Magnus Source: flickr.com, cropped

Åke, 65 - Wilderness Enthusiast

Åke is a 65 year old man living with his family outside of Gothenburg (see figure 6). He likes to hike alone in the forest and goes on longer hiking trips about once a year. He is retired and goes for shorter hikes in his neighbourhood on a daily basis. He appreciates the calmness, the natures sounds, to see wild animals and the smell in the nature. In short he wants his hiking environment to has as much wilderness feeling to it as possible, which means that it preferably should be as far away from the civilization and other people as possible so that he can enjoy the nature.

He use physical maps in order to navigate when hiking since he can not rely on that the phone is working or have battery. He thinks that it is fun and adds to the wilderness feeling to read the map and navigating in the wilderness. When going on longer hikes he often sleep in tent or in a shelter and cooks food on a camping stove. He always brings his phone for emergencies but has it shut of most of the time. He sometimes takes pictures of the nature that he sends by message or as an email to friends and family. He also sends text messages to his wife to let her know that he is alright. The most important thing for Åke is that he gets to be alone on his hike to get the wilderness experience that he likes, but he also thinks that it is nice to know if there is a fireplace, a shelter or possibilities to camp.

Figure 6 The persona Åke
Source: flickr.com, cropped

Figure 7 The persona Marie
Source: flickr.com, cropped

Marie, 42: - Everyday Hiker

Marie is a 42 years old woman who lives with her family in Southern Sweden (see figure 7). She has two children who are two and five years old. Marie likes to hike with her family about one time a week, she sometimes also hikes or runs by her self. They always hike in the forest, sometimes they have to take gravel roads if they need to bring the stroller.

They most often decide which route to take before they head out. They seldom take the same route, they think that they have many alternatives and Marie usually finds information about new routes on the internet. What she looks for there is if the trail is easy to access and if there four example is a shelter or a bird watching tower on the route that can be decisive. They always bring their phones with them and they usually take pictures on the family which they sometimes post on social medias.

Erik, 43 - Adventurer
Erik is 43 years old and lives in a smaller town in Sweden, he works as a project manager and lives with his girlfriend (see figure 8). He lives a very active life and loves to be out in the nature, he hikes, goes paddling, climbs and skies. He likes to take pictures out in the nature and he appreciates the nice and tired feeling he gets in his body after a hiking day. For him it is also a fun and social activity where he gets to meet his friends and new people.

Figure 8 The persona Erik
Source: flickr.com

They sometimes travel quite far by car to visit nice places, they bring food that they eat along the way or when they get back. It is important for him that the route has an appropriate level of difficulty based on the people that are joining the hike. It is also important that there are possibilities to park cars adjacent to the route and that it becomes an appropriate length regarding time. He also likes to track his adventures with different tracking devices, he uses mobile applications, GPS watch or a regular GPS. He then uploads the route on a map together with pictures taken from the adventure and posts it on Facebook in order to share it with his friends. He then gets comments and questions about the route such as if there are possibilities to sleep over, bring the kids etc. Something that makes him interested in exploring a new area is if there is something spectacular to see there, and to take pictures of. He always bring his system camera.

5.2.5 Summary about the Personas

There are some crucial differences between the different sub-groups of the personas hand how they would use the GPS service. The accessible runners goal is to stay healthy and running is a mean for them to do so. Since they do not put much time or effort into their running they will probably mainly use the service in order to see if they can find nice routes in their neighbourhoods. The devoted runners however put much more time into their running and also the documentation of it, they often upload their activities to some website in order to keep a training diary. Since they already track their workouts and likes to run in the nature it is possible that these runners would use the service to both upload new trails and to search for new once.

The everyday hikers goals is to get some exercise and fresh air preferably in the nature. They do not put that much time and effort into their hiking and they do not often log their workouts so they will probably mainly use the service in order to find new trails to explore. The adventurers are very active and devoted to their hiking and are searching for new exiting adventurers to experience, therefore they might not use the service in order to find adventurers but it might be interesting for them to use it to store their adventures in a easy way and then they can share them and hopefully contribute them for the rest of the users of TrailAdvise to be able to search for them. These adventures usually takes place a bit outside of the city but they might still be interesting for longer adventurers for people that lives in the city.

The wilderness enthusiasts prefer to have physical maps and also since they very much value the calmness and wilderness they might not be that prone to share their routes with others. However the service might be used by tourist organisations in order to promote their trails and then these users can use the service to get contact information to them.

5.3 Summary about User Needs

Many intended users expressed in the interviews and questionnaires that they prefer to run or hike in the nature but they do not always get there. The reason for that is many but the main one is that there is no easy way for people to get access to information about nature trails in their neighbourhood which makes it less likely for them to explore the nature. The desired effect from this service is therefore to get more people to experience and share their nature trails.

The service needs to supply people with important information about trails in different areas. It also needs to store different information about trails, both the users own and the trails in the services database. The application should also help the users navigate the trails in order to make it easier for people to get out and explore new trails. The value for the users is that the service will facilitate for them to get out and explore new trails, since they get easy access to information about trails and navigation on them. It also provides a good way for the user to store their adventures together with pictures etc. and it is easy to share their adventures with friends and family.

Since about half of the users that answered to the survey stated that they both run and hike in the nature on a daily basis, the service will focus on satisfying the needs of both these users. This decision can also be supported by the fact that the most interesting things about trails was the same for runners and hikers. Since this service depends on that people uploads their trails and in order to get an overall and nice information base with routes, pictures and places it would not be critically to only focus on either runners or hikers. Based on the findings, the service would be best for everyone if the runners and hikers work together and create the information about the routes. This will mean that the purpose of the service and the target group, what they have in common is that they like to spend time in the nature. Which is what the service will be all about, it shall facilitate and encourage people to explore and share their nature experiences.

The effect of the service should be that it should facilitate for the users to be able to enjoy nice nature experiences in their neighbourhood and on vacations. The most important requirements from the user needs is the following:

- Display information about the distance of the trails
- Display information about the ground on the trails
- Display information about the environment the trails is located in
- Display information about the elevation the trail has
- Provide information about different interesting places
- Make it easy to explore new trails, eliminate the insecurity about how long time it will take and where they will end up
- Be able to share their experiences on social medias and via messages and email
- They should be able to benefit from the service even if they do not want to have their phone with them while running or hiking

A complete list of users needs design guidelines and requirements can be seen in appendix 8.

6 Identification of Requirements of Usage

The main functionality of the service was identified based on the users needs and the competitor analysis. How the system of the different devices would work together with the users and the environment will be identified and described at a high level. Based on the different personas a couple of context scenarios was created in order to identify a typical use of the product for some different personas which aims at helping the ideation of forming functions and design of the service. Also some guidelines for the aesthetics of the service has been identified. In the end of the chapter requirements and guidelines as well as a conclusion of the requirements of usage will be presented.

6.1 Main Functionality

There are some main functionalities that this service has to provide, in order to differentiate from existing services, the main function should be to search for trails. Since no other service has managed to provide this in a good way and it is requested from the users, this is a key success factor. In order for the service to grow and to give the users some added value there has to be other functions as well. The user must be able to create own trails by tracking them with the service, it must also be possible to share these with others and to contribute them to the service. The user must also be able to store their adventures and information about them such as photos. In order to facilitate the exploration of new trails for the user they need to be able to get navigation when exploring them. Since many runners did not like to have their phones with them when they where running it should be possible to import GPX files, a file format that stores coordinate data such as points and routes, from their watch into the service when using the service on the web. Below is a list of the main functionalities that the service must provide.

- Enable people to **search** for trails and get valuable information about them
- Enable people to **track** own trails
- Enable people to upload and **store** their adventures
- Enable people to **share** their trails with friends and to contribute with their own trails to the service
- Enable off-road **navigation**

Innomates vison included a social aspect that included an online community with communication and social interaction and the possibility to create and invite people to different events. Based on the user research, the people that want to communicate and interact with each other are already doing that. Mostly by using Facebook, which is very hard to compete with since it is so common. It was therefore decided to not include that much interaction between the user but to leave that to Facebook, the users will be able to share information found in TrailAdvise in their running groups on Facebook for example.

6.2 The System of the Service

As previously mentioned the service will be available on three different devices, on the web, as a smartphone application and as a smartwatch application. These three devices are of course connected and the user will be able to reach their profile and settings on all the different devices. There are however some different functions available on the different devices. When the user is home or at work or has a computer available, they will be able to use the service. Other possible users such as tourist and nature organisations will also be able to share their trails and routes with the help of the web. The user will interact with the different devices and get different types of information back. Both the smartphone and the smartwatch will be able to get information from the environment if the user chooses to track or navigate a trails. Both these devices can be used on the go and will be used when the user runs or hikes in the nature. The user can also through the service send information about the service and different trails to friends and family which creates an interaction between them and hopefully brings more users to the service. A system picture of the service can be seen in figure 9.

Figure 9 Illustration over the system of the service

These different devices puts some different requirements on the user interface present on the different devices as well. The computer and web usually have a big screen and the user can insert information through a keyboard and use a mouse for navigation. The smartphone and the smartwatch has much smaller screens and the user will navigate them mostly by touch. Their devices will also be used on the go and when hiking and running which gives them some other requirements as well.

6.3 Context Scenarios

In this chapter the context scenarios, which aims at describing different personas goals and in which context the service will be used, are presented.

Find a new route in her neighbourhood to explore

Stina is standing in a crowded tram on her way home from work on a Tuesday evening. She feels like going for a run when she gets home so she uses her phone to search for trails in her neighbourhood. She gets interrupted now and then by that people are getting on and off the tram and that she has to move out of the way. Before she has found an interesting trail the tram stops and she gets of and goes home. Once she is home she continues her search for a trail and finds one that is not to far way and seams too have the right level of difficulty for her daily shape. She saves that trail and changes into her training clothes before she heads out for her run. Since it is a new route she is trying out she brings her phone and activates the navigation function for the route in order to get directions of where she is going. When she gets home again she rates the trail and leaves a comment about it in order to inform others about that she thought that it was a very nice trail. Other than that she feels good about the workout, it was a quite nice new trail that she got to explore today.

Share the experiences of a workout using a GPS watch with friends

Magnus is sitting at home in front of his computer after he has gotten home from a nice workout with his friends, taken a shower and gotten something to eat. He is going to upload todays workout session to his training diary, by using his GPS watch that he connects with the computer while he is eating his food. He also exports todays GPX file and uploads it on his TrailAdvise page. He adds some pictures that he took during todays workout and writes a short text about the running session. Then he shares the pictures they took during the workout together with the route plotted on a map on his running clubs Facebook page.

Track route with smartphone

Marie is going out hiking on a Sunday afternoon with her family, which includes her two kids and her husband. Today she wants to track the route so when they get out she takes up her phone she gets interrupted by her daughter who wants her to look at a bird that is flying by. While they start walking she starts the tracking on her phone. Once they get to a nice viewpoint she takes up her phone to take some pictures, she also marks the location of the place in the next second she needs to help her son with his gloves. When they stop for some food at a shelter she remembers to pause the tracking, she also takes some pictures with her phone of the kids and her husband. Once they are done eating she starts the tracking again and they head home, when they get home again she stops the tracking on her phone. Once they are in the house again and the kids are sitting in front of the TV Marie is feeling very satisfied with todays physical activity.

Contributing a route and sharing it with friends and family

The day after Erik got home from a hiking adventure he sits with his computer in the kitchen and uploads the pictures from his adventure from his camera. He tracked the hike yesterday using the mobile application. He also uploads the pictures to TrailAdvise in order to store his adventure but also to be able to share it with his friends. He writes a text about the adventure and about some interesting places that he found on the hike. He then contributes it to TrailAdvise so he choose which pictures to include there. When he is done he goes out and sits down in the sun on his balcony to enjoy some breakfast, he then gets his first question from another TrailAdvise user about the trail in his phone that he then answers. He then remembers that his father probably would enjoy seeing the pictures and the route so he sends him a link to the adventure as well while he drinks his coffee in the sun.

6.4 Aesthetics of the Service

An imageboard (see figure 10) has been created to convey the expression of the service. The image to the left of the forest shall represent the calm and peaceful nature experience that is central to the service. The image of the feet represents that the service is going to express and motivate activity, the user should get motivated to get out and explore the nature and the service should express that movement and activity. The shoes symbolises a rough, robust and solid feeling that the users should get from the service. The mud on the shoes and the colour also represents the activity and feeling the user should get when using the service. The colours are some colours that are quite strong, energetic and active, which is the feeling the user should get when using the service.

Figure 10 Imageboard illustrating the desired expression of the service
Image credit: flickr.com, cropped

Some possible aesthetical solutions for this service is different colour themes and the balance between nice pictures and clear buttons and easy navigation. In figure 11 below an example of a red and green colour theme can be seen. The red one is supposed to make the user feel more energetic and want to get out and explore the nature as according to O'Connor (2009) red is often described to be a strong intense colour that evokes feelings of excitement in popular culture. The colour green is described as a restful, soothing and balancing colour in popular culture. The green colour theme represents the calm and soothing nature. The two images with the colour theme has the possible aesthetic solution with focus first and foremost on the visibility of the different functions with big navigation tabs in the bottom of the screen. Whilst the image to the right solely focuses on giving the user a nice feeling whilst the visibility of the functions and options are somewhat hidden in a menu in the top left corner.

Figure 11 Three different screens the illustrates some possible aesthetical solutions for the service, including different colour themes and the balance between nice pictures and clear buttons and easy navigation

6.5 Requirements and Guidelines of Usage

Since the service is going to be available in a mobile application the context of use is very broad. The user can search for trails whenever, either on the go or at home in peace and quiet. It will also be used on the run or hike on the trails. However the use of device may differ. The service can be seen as having a transient posture due to its temporary nature. The service should therefore be obvious and helpful (Cooper, et al., 2014). It is important that a new user is able to grasp the main purpose and the functionality of the service within a couple of seconds after opening the service the first time. It is also important that it is very easy to use in order for them not to get tired and move on to something else. The objective benefit for the users is to provide useful information about trails to the user. The transient posture also allows for bolder graphics in order to help the user orient them self in the service faster.

The service should be usable on the go since it is available in smartphones and smartwatches. It must also be easy to use with special gloves since it must be easy to use while running or hiking every season. This means that the service has to have big and clear icons and buttons, and that it has to be easy to navigate in the service. Regarding the aesthetic guidelines the service must have a consistent interface and coherent and restricted colour pallet that provides the right feeling to the user. Below are some requirements and guidelines of usage listed. A complete list of design and requirements of the usage can be seen in appendix 9.

Requirements from usage:
- The applications shall be easy to use on the go
- The applications shall be possible to use with specific smartphone gloves

Requirements from users:
- Be able to read text
- Be able to press different buttons
- Be able to insert information

Requirements from market:
- Be differentiable
- Communicate functionality

Requirements from production:
- Be able to develop

Guidelines for usability:
- Easy to see different buttons/functionalities
- Easy to navigate the service
- Easy to understand how to use the service

Guidelines for aesthetics:
- Consistent interface design
- Coherent colours that provides the right feeling
- The service should clearly express the most important functionality the first time a user opens it

6.6 Conclusion about Requirement of Usage

Since the service shall be used in many different contexts it will be important to adapt the different interfaces for the different devices based on their possible context. What functions that should be available on the different devices will also differ both based on technical possibilities but also screen size and what will be useful for the user. However these devices will be used together to offer the user the choice of using the device that best fits their purpose and needs.

Since the service shall motivate people to go out and explore the nature it is important both that it displays nice nature pictures but also that it gives the user a positive and energetic impression. But of course the most important thing is that the interface make sense and is easy and efficient to use, much due to its transient nature. It is important that the main functionality identified in the beginning of this chapter is visible and easy to use for first time users as well as for intermediate users.

7 Overall Design

The overall design has been generated with the different personas and the main functionality in mind. To get some new insights to the project a brainstorming session with some intended users was conducted. There was also ideation sessions where no users was participating in order to get deeper into some specific issues. All the ideas on types of information and functionality was compiled in different matrixes in order to be able to elicit the necessary information for the service and be able to eliminate the information and functions that does not contribute to the user experience of the service. When that was conducted some different concepts was created that could be evaluated by intended users in order to get feedback.

7.1 Generation of Ideas

The brainstorming session with intended users was conducted with eleven persons with an age range from 18 to 73 years and there was both runners and hikers present. The objective with this session was to get new ideas and insights from intended users regarding what functions there should be and how to encourage people to upload their trails. The participants got divided into three groups, they got a short introduction to the purpose, the main idea about the service and some pictures of hikers, runners and social media sites to serve as inspiration. They also got a shorter easy assignment first in order to get into the right mood since most participants was not used to his way of working. After that they got to brainstorm about what information runners and hikers would like and then also how to motivate people to share their trails. The result was concluded in from of written lists with suggestions about functions and solutions. When having ideation sessions without users some different social media sites was used as inspiration and different personas and problems was focused on one at a time.

7.2 Design Proposals and Concepts

All the different ideas about types of information and functionality generated during the brainstorming sessions was inserted in different elimination matrixes based on what they were regarding. In the matrixes the different information and functions got evaluated based on how much they would be appreciated by the different sub-target groups (see appendix 10). This in order structure what information and functions should be included in the service. However the decisions was not solely based on the result but much decisions was taken based on if it was necessary or not, in general the included information and functions were kept to a minimum and only the most relevant information and functions got included. This matrixes also helped decide in which order information should be presented. Since one crucial thing for the service to be successful is that the users share their own trails and help update the trails with information and photos some functions was included in order to fulfilled the different criterions that Eyal and Hoover (2014) states to be important to get users to create habits of using a product, something that is important for this type of service since it needs the users to use the service active and share their information.

Some overarching design proposals for some overreaching parts such as search, filtering, search results, tracking of new trails and navigation was created and sketched in order to be able to communicate them. Four different overall concepts was also created and sketched so that they could be communicated and evaluated as well. The representations was kept at a pencil-sketch level since it increases the understanding of that they represent work in progress which encourages discourse about proposed design (Cooper, et al., 2014).

The design proposals was visualised both on the web and for the smartphone application. However the most focus, especially for the different concepts, was on the interface of the smartphone application. This since that is the interface that contains most information and functions on the smallest screen which makes it the most challenging interface to design for. The interface for the smartwatch will be created later since the functions available there will be the lowest amount possible.

7.2.1 Conceptual System Description

In order to get an idea of how the entire system could work, a more general system description was created to get an idea of how everything could work together. The main idea evolves around that every user has their own profile (see figure 12). The users either tracks new trails with the application or inserts GPX files from another device. They can also input information and photos from the trails. That information then goes to "My trails" under the users profile, the user can then choose to contribute trails to the service and then gets to choose which information and photos to include. It is also possible for the user to share his or her trails, or other trails they find through the service with friends and family which may attract more users. Once the user has contributed a trail other users can find it, save it, navigate it and also rate, comment or ask questions about it which the user then gets to know about in his or her profile. Every user can search for all contributed trails and save them or ask questions about them. If they save them they can then find them under their own profile from which they then can choose to explore it using the navigation function, if the user do not want to bring their phone or if they already have explored a certain route they can just mark it as explored and then they get the chance to contribute with ratings and information about the trail.

Figure 12 Illustration of the conceptual system for the service
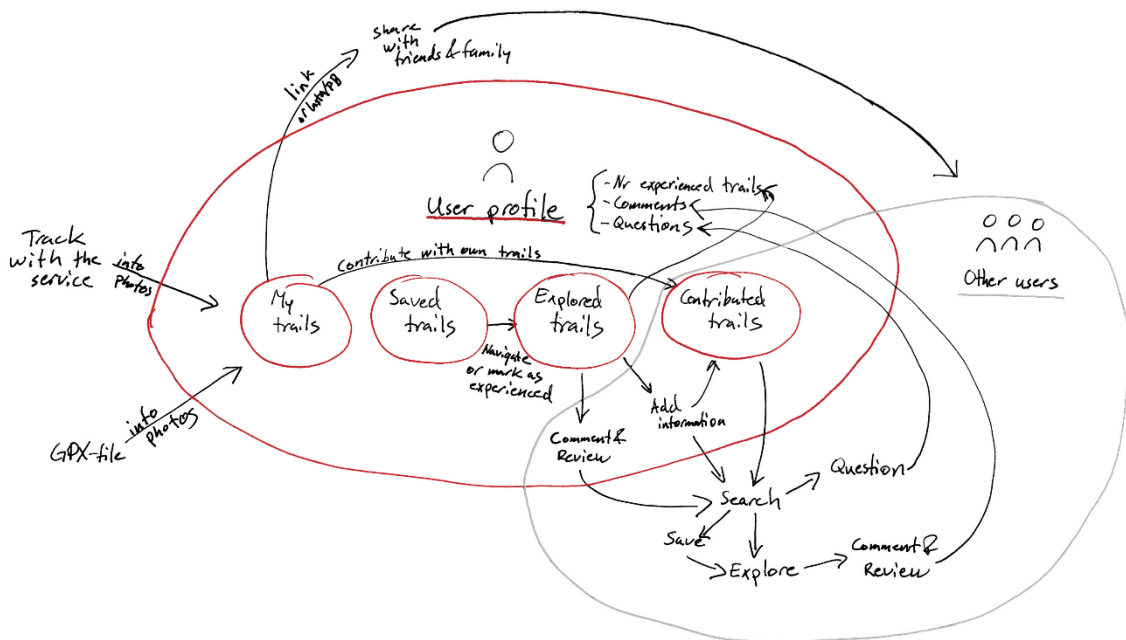
7.2.2 Overarching Design Proposals

The first overarching design proposal is regarding the search result, filtering and sorting of trails. The user can filter the search on distance, type of ground, environment and types of places (see figure 13). They can also sort the trails on the newest, closest or on the ratings. The information the user get in the search result list is the route plotted on a map, where it is, the distance, the elevation in meters up and down, environment and ground. They can also see the rating and how many attractions there are on that trail.
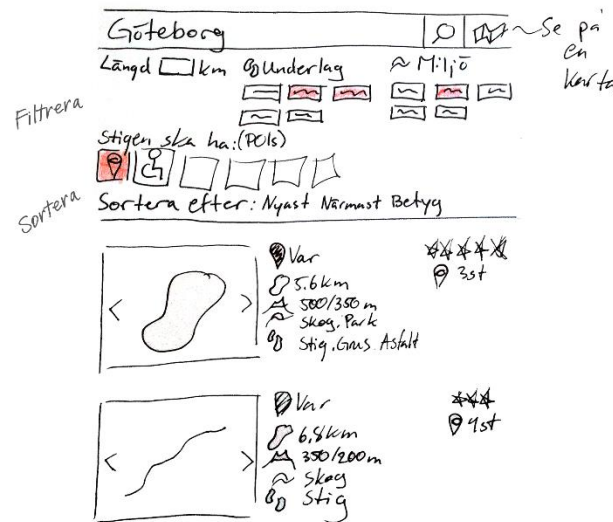
Figure 13 Overarching design proposal of the search result, filtering and sorting of trails

Regarding the search result in the application there are three different alternatives with different focus on the map/pictures and information, the purpose with that is it to evaluate what the users think is most important (see figure 14). Here the distance to the trail is displayed in the top right corner of the picture from the trail. Underneath these the design proposals for the filtering and sorting for the application can be seen.
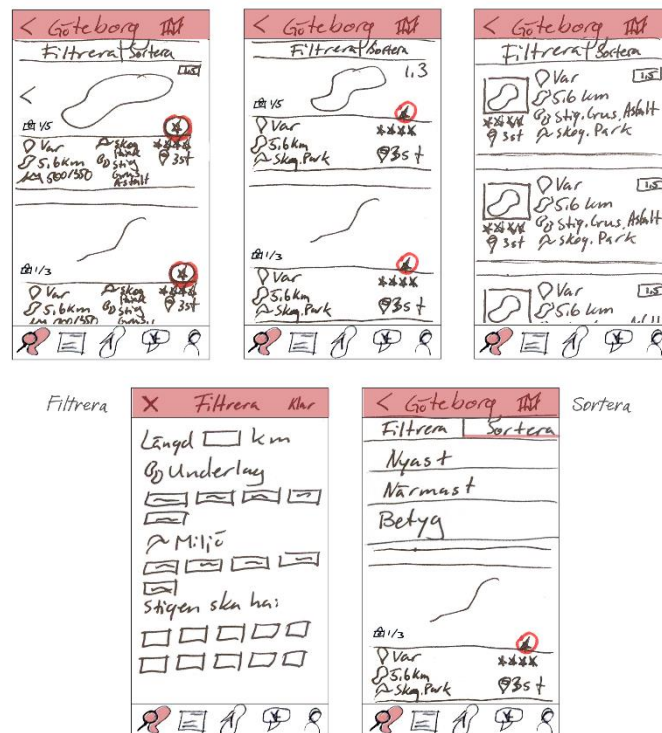
Figure 14 Overarching design proposal of the search result, filtering and sorting of trails in the smartphone application

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The proposal of the design of the information of trails both on the web and in the app can be seen in figure 15 below. On the top of the map the user can choose to save the trail, ask a question about the trail, share it or mark it as experienced, if the user has already experienced the trail. In the application it is also possible to choose to navigate the trail. This particular trail has five pictures taken from it which is possible to know from the symbol and numbers in the bottom left corner of the map. The map on the web has some more information such as all the places located on it. Other than that the information is the same. At the top there are the basic information such as where it is, distance, elevation, environment, ground and ratings. After that the places are displayed with the attractions first, which are colour marked, has pictures and an explanatory text about them and after that the icons of the other places are listed. Then there comes a descriptive text about the trail that the person that contributes the trail writes, and also that person is listen underneath. In the bottom there is the comments and questions and answers about the trail.
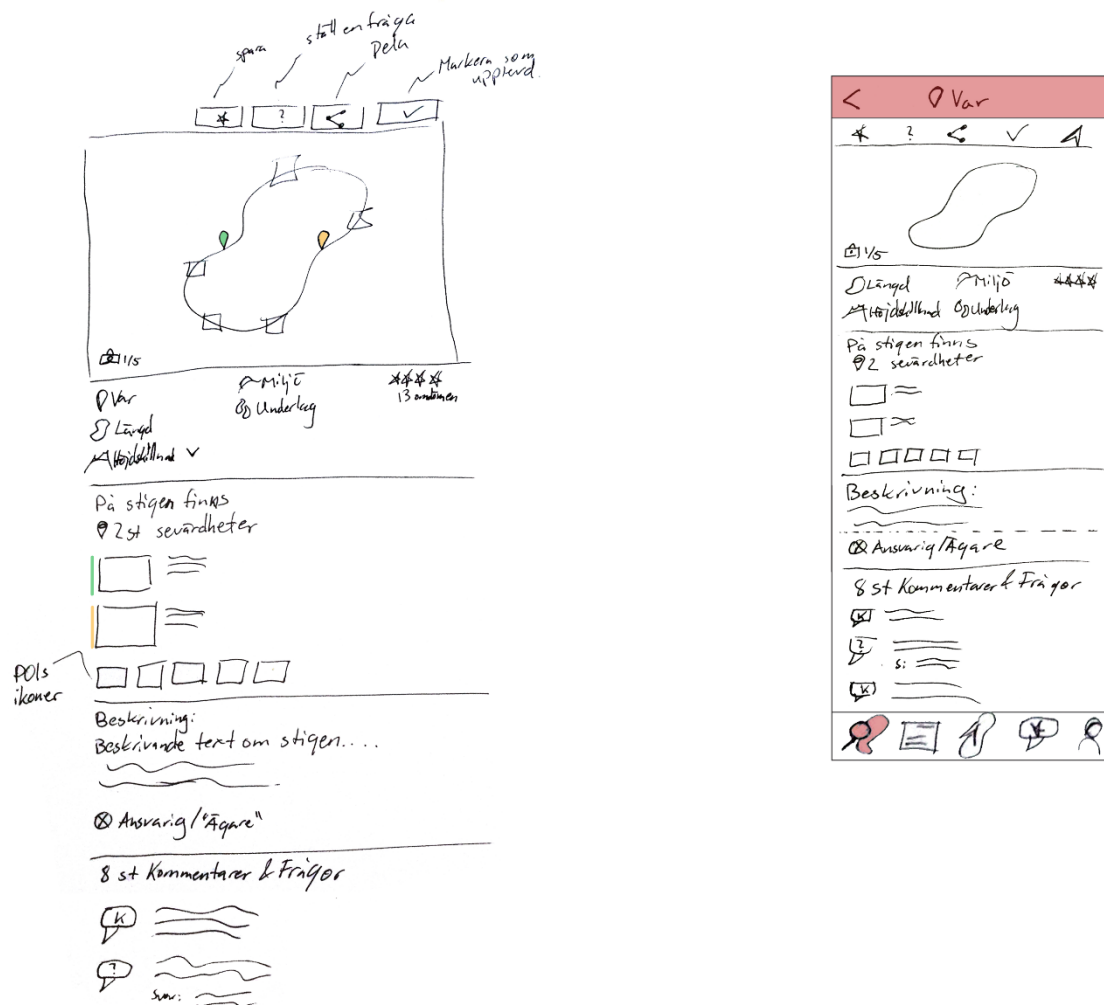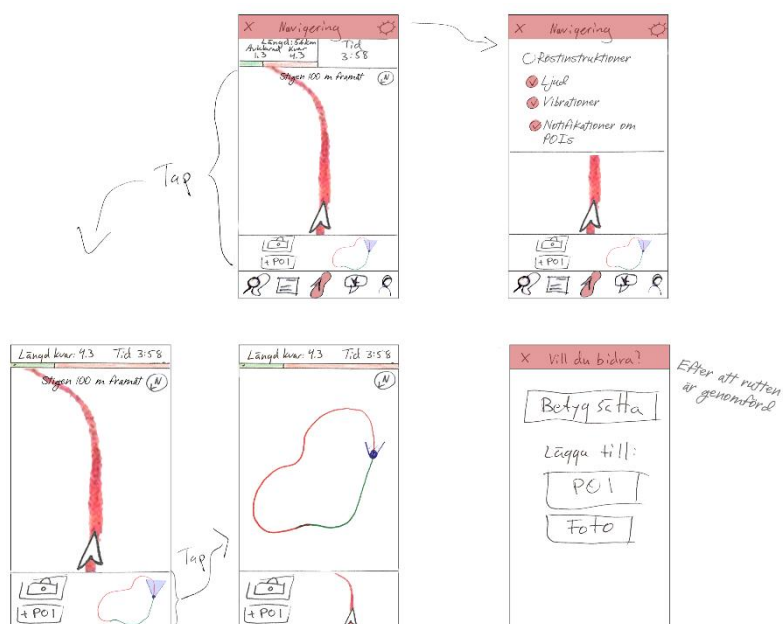

Figure 15 The overarching design proposal of the design of the detailed information about trails both on the web and in the application

The tracking of a new trail starts pretty basic with an indication of where you are, how strong the GPS signal is and a start button (see figure 16). Once the tracking is started the user can se the length and the time at the top of the screen. Below that the user can add a place or take a picture. The route the user have travelled so far is showed in the middle and under there is a stop and pause button. Once the users presses the stop button they get to a page where they can get different information about the route that the application itself has collected such as where it is, how long it is and the elevation. The user can also choose to insert other types of information such as environment and ground, descriptive text and in the bottom is the places added on the trail listed with their icons. Once the user presses save in the top left corner they get to a screen that asks them if they want to share the trail, either with the entire service or just on Facebook or Instagram.

Figure 16 Design proposal of the tracking function

When a user navigates a trail they get to see how the trail looks like the next hundred meters in the middle. Under that they can add a place or take a picture and down to the right the entire trail is displayed and they can see where they are and where they have gone and what part they have left (see figure 17). They can also press that route in order for that to trade places with the picture that shows the next hundred meters. In the top there are information such as total length, the covered length and the remaining distance. There are also a bar showing this relation underneath. And to the right the total time is displayed.

Figure 17 Design proposal for the navigation function

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When pressing the options symbol in the top right corner the user gets to choose if they want voice navigation, sound, vibrations and/or notifications when coming close to an interesting place (see figure 17). The voice, sound and vibration gets activated when the user gets to far away from the trail or if the trail is turning quite much in some direction. It is also possible to tap at the screens navigation area in order for it to become full screen. After the navigation is completed the user comes to a screen where they get the question if they want to contribute, see the bottom right screen, there they can choose to rate the trail or add place and/or photos.

7.2.3 Overall Concepts

Four different concepts with some different purposes and ways to try to motivate people to both explore the nature and share their own trails have been created. All four concepts has the same foundational user interface and navigation. The main navigation is a horizontal tab bar in the bottom of the screen with five different tabs in the form of different icons. These icons and their functions differs a bit from concept to concept. The reason for choosing to have the navigation like this is that all the available functions become visible at first glance and also because it is easy to switch between the different functions with these tab bars.

Concept Experience

The purpose with this concept is to motivate the user to get out and explore nature as much as possible. When opening this application the first window one sees is the one to the left, where the user can search for trails in a city or an area or in their current location (see figure 18). This concept also has a news function where all the newest contributed trails, photos and places can be browsed, see the second screen to the left. The screen in the middle shows the exploration function where the user can chose to either track a new trail or get navigation on an existing one. The second rightmost tab is called activities and that is where the user can see if someone has rated, commented or asked a question about a trail that the user has contributed with. It is also possible for the user to see his or her own actions under the the second tab called "Du" which means you in Swedish. The rightmost tab is the profile and there the user can see how many trails they have explored and how many they have contributed with in the top. They can also search among their trails and find their own trails, saved trails and their photos in the tab bar.

Figure 18 The experience concept

Concept Top list

In this concept the trails get different scores of "nature points" based on how nice they are which is based on the rating they get, which environment they are in etc. The first window, the leftmost, is a combined search page and below that is the newest trails, photos and places contributed to the service (see figure 19). The second leftmost window is the top lists, the user can choose which location to show the top lists in and also chose to see the top list of trails, explorers and contributors. The explore and activities tab is the same as in the previous concept. The rightmost tab is the profile, in the top the user can see how many nature points they have explored and how many they have contributed with. They can also use the tabs below to switch between their own trails, saved trails and their photos.

Figure 19 The Top list concept

Concept Challenges

In this concept the user can complete different challenges in order to get different awards. The starting screen in this concept is also a combined window where the user can search for trails in areas or in their current place in the top bar and in the content area the newest contributed trails, photos and places are displayed (see figure 20). The second leftmost window displays the current challenges the user has and a bar under each of them where the user can see the progress. They can also display their completed challenges under the tab "Genomförda". The tab explore and activities are the same as in previous concepts. The profile window is also quite similar, the difference is that in the top the number of completed challenges are shown.

Figure 20 The challenges concept

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Concept Trail vs Place

The last concepts is one where the user get to chose if they want to search for trails, places or both, see the screen in the lower left corner in figure 21. If the user searches for places and finds one he or she likes they can get examples of trails that passes that place. In the news tab in this concept it is possible to choose if one wants to see the newest trails, places or both. The activities and exploration tabs are the same as in previous concepts. Under the profile tab the number of explored and contributed trails are shown in the top and below the user can see his or her trails, places and photos in the tab bar. Below them the trails for example are divided into their own, favourites, contributed and explored.
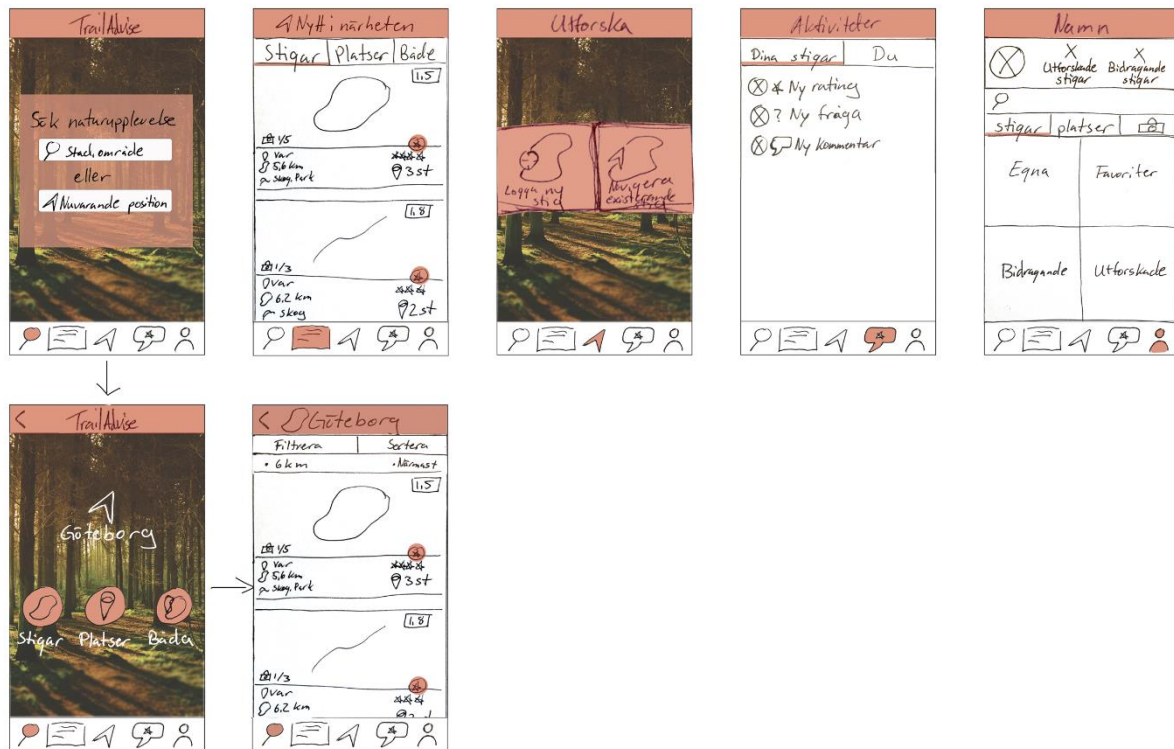
Figure 21 The trail vs place concept

All these different concepts has some different approaches to trying and create habit-forming behaviours in order to get the users to use the service and help it grow.

7.2.4 The Thought behind the Concepts

The overarching design proposals and all the different concepts provides the user with the needed information and functionality they need to be able to explore the nature. They all provide the users with useful information about trails and navigation when wanting to explore a trail. Which then satisfy the main goal of the users, to be able to explore nice nature trails and to get nice nature experiences.

The different concepts however have some different ways of trying to keep the users engaged or "hooked" as that is crucial since the service is based on that the users contribute with trails that they track by them self, either directly in the mobile of watch application or with their own GPS devices. One way of trying to entice the users is by implementing the news feed that are present in all the concepts. This is a way of engaging the user in the variable rewards of the hunt. By having a way of letting the user scroll through newly added trails, places and photos or even some interesting articles that might be interesting for the target users, without having anything particularly in mind or as a search criterion. This might trigger the users to use the service when feeling bored and seeing newly added trails or pictures hopefully will motivate them to explore more.

Another thing that might trigger the users to come back is that they have the possibility to store value in the service. They can both store trails that are available in the service if they find them interesting and want to explore them in the future. They can also use the service to store their own nature adventures by tracking them and adding photos, text and different interesting places. They can then chose to just have them for them self or if they want to share it with everyone using the service. If they choose to contribute a trail they get to choose which content they want to make public. According to Eyal and Hoover (2014) services that allow the users to store value makes it more probable that the users will come back. Also the functions of tracking and saving trails can be seen as a way for the user to invest something, which also makes the probability that the user comes back higher (Eyal & Hoover, 2014).

The two concepts *Challenges* and *Top list* are an attempt to try and motivate people to contribute to the service with ratings and trails but also to motivate them to go out and explore nature. The *Challenges* concept are trying to do so by triggering the need for humans to complete and achieve things, the rewards of the self (Eyal & Hoover, 2014). This might be possible to make variable if for example one challenge would be to contribute with a top rated trail. The *Top list* concept is a combination between variable rewards of the self and the tribe. The goal is to either upload as nice trails as possible, if they get high ratings they will end up on the top list and the user can also end up on the contributor top list if they contribute many nice trails. If the user experiences many nice trails they will also end up on the explorer top list. Since other people must rate your trails high in order for you to get there it is a reward of the tribe but also a reward of the self.

The *Experience* concept relies on that the rewards of the tribe will be enough for people to be motivated to share their trails. That the ratings, comments and questions that the trail hopefully will get will be enough variable rewards for the users to contribute their trails. The *Trails vs place* concept is based on the same variable reward of the tribe as the *Experience* concept. The difference here is just that it has the possibility for the users to either search for trails or special places. Since it was identified as a big difference between the two activities of running and hiking, runners want a trail or route whilst hikers often want to have a certain goal. Something special to see on the trail or some nice place to visit or something to do, such as have a picnic somewhere with a great view for example.

7.3 Evaluation of the Overarching Deign Proposals and Concepts

The different concepts and the overarching design proposals was evaluated in focus groups with some different intended users as well as in a Pugh matrix. During the focus groups the users got to discuss what they thought about the different design proposals and concepts. First they got to see the start screen from the concept *Experience* without getting any more information before than that they should help to evaluate some design proposals for the project (see figure 22). They were asked what they thought that the application could do as a way to confirm that first time users could grasp the purpose and functionality of the service. Then the participants got some general information about the service and the idea behind it and after that they got to discuss all the different design proposals and concepts. The sessions was then concluded with a discussion about which concept they preferred. This evaluation was carried out two times first in a group of two people and then also in a group of four. In an attempt to reach out to more people for feedback a survey with the same structure was sent out to nine people of which four answered. The focus group protocol and the survey can be seen in appendix 11 and 12.
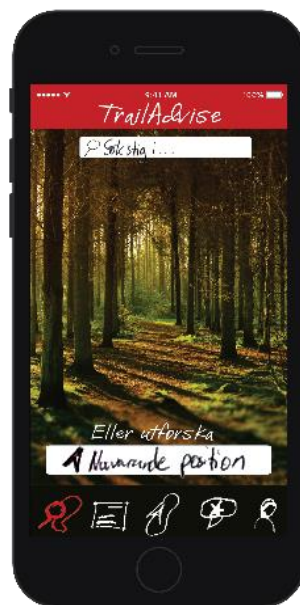
Figure 22 The start screen from the concept Experience

All the people that participated in the evaluation was able to grasp the main purpose of the application, that one could find trails and information about them. Most people also understood that the application used the GPS so that hey could get some sort of help from that as well.

Regarding the overarching design proposals the intended users in general thought that they where good and made sense. However some important aspects was raised such as the important of being able to be anonymous when uploading a trail, being able to edit the trail afterwards and being able to get information about different historical places when coming close to them for example. When it comes to the three different alternatives of application design of the search result most people preferred the one with much textual information and only a small picture of the map. Due to that it is very informative and that they can press the map if they want to look closer at it.

The tracking of new trails and the navigation was considered to be good and easy to understand and use. The intended users confirmed the previous concluded information that many do not want to use their phones for tracking so they raised the importance of being able to import GPX files. They also thought that the concluding screens in both cases where the user is asked if they want to share their trail, rate or add pictures or places was good and that they was presented to the user at the right time.

The subjects generally liked all the concepts, some different types of users was however identified. Some people wanted to have the simplest concepts, *Experience* and *Trail vs place*, because they did not feel that the other two would give them anything. No one was particularly fond of the *Top list* concept. There where however some people that wanted to have the *Challenging* aspect combined with the *Experience* concept because that they thought that it would be fun. However they were aware of that that might be more directed towards training applications and that it might make the service "to much". Another thing that was detected was that the Swedish word for contributed "bidragande" was a bit unclear and hard to understand. It was therefore decided to change the name to private and published (privata and publiserade in Swedish) trails and places in stead of own and contributed. It was also stated that it was appreciated to have a nice picture from the nature at the start screen, something that also helped them to understand what the service was about when they first opened the application.

In general the people that participated in the evaluation expressed that they thought that it was a good idea and something that they thought was useful.

The concepts was also evaluated in regard to how much the different persona types would appreciate them, elements from the Hook model and the most important requirements in a Pugh matrix. The concept *Trail vs place* got the highest score (see appendix 13). Mainly because the requirement that the concept should be differentiable was valued high and since this concept was considered to be the concept that is most different from services and applications that focuses on performance.

7.4 Proceeding Work

Since there are so many mobile applications available for training it is very important with differentiation and simplicity. It is therefore crucial to take a step away from performance and focus on experience instead. Therefore the concept *Trails vs place* will be developed into the final design of the conceptual interface. The pros with the concepts *Top list* and *Challenges* is that it triggers the rewards of the self and the tribe a bit more than the other to concepts. But hopefully the variable reward of the tribe in form of ratings, comments and questions combined with an interest of the nature and to share knowledge with others will be enough to motivate people to share and contribute their trails.

The next step in the process is to create the detailed design for the interface for the different devices. Some questions that has to be considered during the future design phases is how the information should be presented in the best way and if the interface are communicating its functionality. It is also crucial to know if the user understands how to use it.

The detailed user interface will be created for smartphone, smartwatch and the web. Since it only is a conceptual interface the resolutions has been decided to fit an iPhone 6 and the Sony Smartwatch which has the resolution of 375x667 and 320x320 respective (SONY, n.d). The web interface will be created in 1920 pixels wide screens but since the most common desktop resolution in Sweden is 1366x768 pixels (StatCounter, 2015) the content will be optimized for that screen size as well. Also the minimum target area for tappable objects on mobile devices is 44 x 44 pixels (Apple Inc., n.d) and also the text on smartphones should be 11 points minimum (Apple Inc., n.d)

The guidelines for the detailed design of the user interface can be seen below. A complete list of design and requirements from the overall design can be seen in appendix 14.

- High contrast between text, icons and background
- Consistent design
- Use a restricted colour pallet with few different colours
- Simple and clear icons
- Use nature pictures in order to motivate people to explore nature
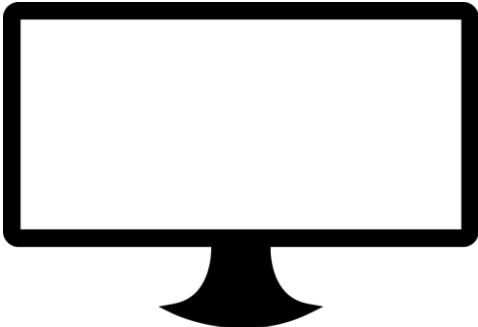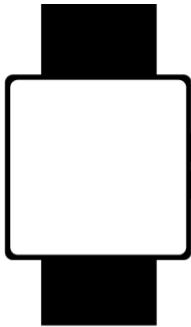
8 Detailed Design
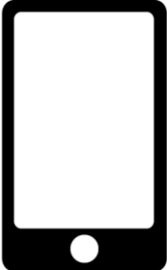
This chapter will present the process of creating the detailed user interface design, however the final user interface will be presented in the chapter The Final User Interface.

The intended users of this service wants to get a nice nature experience. Or they are in the mood for experiencing something new. The problem is that they do not always know where they can go in order to get it. They also feel insecure about how long time it will take and what they can expect from the route. Therefore many people often take the same routes, they know what to expect and how the outcome will be. Therefore this service will serve as a source of inspiration and information about close by nature trails and places. It will facilitate for the users to explore and find these places. It will also serve as a way for the users to document their experiences, both with maps, routes, special places and photos. Which they then can choose to share with friends and to the service database. This chapter will present the functionality present on the different devices as well as the evaluation of the detailed interface.

8.1 Functions Available on Different Devices

As mentioned earlier the available functionality differs a bit depending on the device. The smartphone application is the interface where the most information and functionality should be presented on the smallest screen. This is why this interface will get most focus of the three different interfaces. Overall most of the function regarding search, inserting information, rate and share places will be available on both smartphone and on the web (see table 1). However the smartphone application also offers the user to track trails and navigate trails as it can be used on the go. The smartwatch will also have these functions but since the screen size and navigation possibilities is very limited there this is the only functions that should be available on that device. As it is the only ones that will be beneficial to have on such a device. For the web it should also be possible to add GPX files from another device as well as some additional editing possibilities since many users prefer to track their activities with other devices.

Table 1 Table over which functions will be available on which device

Smartphone	Web	Smartwatch
Search trails and places	Search trails and places	Add a place
View and insert information about trails and places	View and insert information about trails and places	**Track trail**
See activities	See activities	**Navigate trail**
Rate, comment, ask and answer questions	Rate, comment, ask and answer questions	
Share places and trails	Share places and trails	
Add a place	Add a place	
Track trail	**Add GPX files**	
Navigate trail	**Edit the trail**	

8.2 Evaluation and Validation of the Detailed User Interface

In order to makes sure that the most important tasks performed in the interface runs smoothly a couple of key tasks has been identified and listed beneath. These key task originates from the main functionality of the service listed in the Identification of Requirements of Usage chapter. The key task scenarios has been used more as a way of identifying important tasks performed in the service and to make sure that their flow has been evaluated in order to make sure that these tasks are easy to conduct and than nothing important is missing. These key tasks are tasks that people would conduct quite often and also tasks that are crucial that people perform in order for the service to be successful. The evaluations was conducted with prototypes of the interfaces created in InVision, a web based prototyping, collaboration and workflow platform.

Key tasks:

- Search and save new trails or places to explore
- Navigate existing trail
- Track a new trail
- Add a place
- Publish places and trails

Some tasks that are not as crucial but still important has also been identified and listed underneath:

- Review an exciting trail
- Add a new trail with GPX file
- Ask a question about a trail or a place
- Share an adventure with friends on social media

All identified tasks was evaluated regarding ease of use, understanding and navigation by the designer in order to make sure that they made sense and would be easy for a user to conduct. This was performed on all the different devices where the tasks was applicable.

A smaller usability test of the interface of the smartphone was also conducted with five intended users between 17 and 51 years old. In order to evaluate the usability of the interface the users where asked to conduct the following tasks once using the application. The tasks they where asked to conduct was based on the key tasks identified.

- I want you to find and save a trail that are as close to here as possible
- I want you to navigate a saved trail
- I want you to track a new trail
- I want you to publish the trail you just tracked
- I want you to add a new place

The intended users that got to test the service was informed that they where not the one being tested, and if they did not know how to conduct something it was not their fault. This in order for them to feel comfortable in the test situation. They were also encouraged to think out loud when conducting the tasks in order to elicit important information. Afterwards they where also interviewed briefly to get an understanding of their overall impression of the service. Due to time limited time the documentation of the test was only conducted in the form of notes. This evaluation was very brief and only gave some indications of what users thought of the interface. It was conducted in order to be able to make one more iteration in order to be able to improve the interface a bit more but a more thorough usability test would be needed in the future development of the service.

8.2.1 Result of the User Evaluation and the Impact on the Design

All subjects were first time users and they all managed to conduct four of the tasks they where given quite easily. They all managed to find and save a trail, navigate a saved trail, track a new trail and add a new place. To publish a new trail however was a bit tricky, only one user managed to do this successfully without help or hints. This task would probably have been easier to conduct if they would have been asked to track and publish the trail at once, however this was not the case. This since it was desirable to investigate if they understood where their trail ended up and how to find and publish it. But in general all key tasks was easy and fast to conduct. However it was noticed that the learnability was good since the subjects easy picked up how they were supposed to do and after some tasks was conducted or if they did them again they navigated the application very fast and easy.

Regarding the first impression of the application the subjects seamed to be able to grasp the purpose of the application and the overall functions quickly. They could understand that it had something to do with nature and trails fast and they understood that they could use the application to conduct the four functions on the start screen. Which basically is the key functional in the application. The different tab bars was harder to understand just by looking at them but they will probably be explored by the user as they start using the service for real and once they pressed the different tabs they understood what content and purpose they had.

After conducting the evaluation with intended users some minor changes where made to the interface based on findings during the evaluation. There was some terms that where changed in order to make them clearer and some navigation was also changed. Overall the result was considered to be quite satisfying since the most important tasks was easy to carry out and they could easily grasp what the application was about once they opened it. A list of the result form the detailed design can be seen in appendix 15.

8.3 Requirement Fulfilment

After a compilation of all the different requirements from the different phases of the process and eliminating similar ones in order to investigate the level of requirement fulfilment the final interface reached the following result can be shown. Of all the requirements 84 percent was fulfilled (see figure 23). Three requirements was considered to only be partly fulfilled. These where:

- Make it easy to explore new trails, eliminate the insecurity about how long time it will take and where they will end up
- It should be easy and fast to upload trails
- It should be easy and fast to edit trails

They where only partly fulfilled since the approximated time it will take to run or hike a specific trail was not included due to technical and personal restrictions which makes it hard to implement. Also since it was found to be a bit tricky for first time users to upload trails it was only considered to be partly fulfilled. Based on that information it was also considered to judge the editing of trails the same way since it has the same nature and there are many different types of information present.

Three requirements was also marked as not investigated/future work which was requirements connected to real usage of the service and more detailed design that will have to be investigated when a more functional prototype is present. The list of all requirements and their level of fulfilment can be seen in appendix 16.
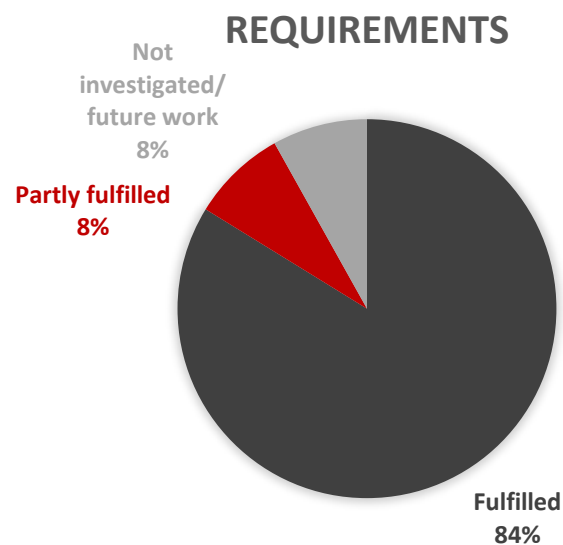
Figure 23 Pie chart that illustrates the degree of requirements fulfilment in the final interface

9 The Final User Interface

This chapter will present the final conceptual interface for the new GPS service as well as the overall ideas of how this service should work regarding the interaction with the users. As in the rest of the report the main focus will be on the interface for the smartphone application but the interface for web and smartwatch will also be presented briefly.

9.1 How New Users and Existing Users Will Be Triggered to Use the Service

The service will have an amount off different triggers that gets new users into the service but also some that reminds existing users to use the service as it is crucial for its success. When it comes to enticing new users they might have a friend that have used TrailAdvise and posted their hike on Facebook and then by a simple click they gets sent to the TrailAdvise page. Hopefully they will be enticed and explore the service from there.

For persons that already are users the app icon on their phone works as a trigger, but in addition to that the user can get notifications about newly published trails and places as well as if something has happened on their published trails. If the user choses to ignore the notification the red unread notifications symbol will appear in the left corner of the applications icon which also will entice the user to visit the application when they have time, even if only is in order to make the red icon disappear. However it brings the user to the service and when they are there they might find something else that they think is interesting.

Hopefully the users will develop some internal triggers as well, the idea is that they should open the service when they feel the need to explore nature or experience something new. But also if they are in the mood of sharing their experiences in the nature. Another trigger might be if the user is bored, that is one of the ideas with the news feed, then they can use the service to brows thorough the latest published trails and places and hopefully find something interesting.

In order for it to be easy for possible new users to check out the service it should be possible to use it for a while without registering an account. So that they can get a chance to check it out before deciding if they want to join. But as soon as they try to save, track or navigate trails or places they should be asked to register. In order for this to be as easy as possible for the user to do they should get the possibility to register through Facebook. This since the possibility to register via an existing Facebook accounts have made it possible for companies to eliminate several steps in the registration process (Eyal & Hoover, 2014). However it should also be possible for a new user to create a new account with their email address if they prefer that. So basically it is possible for new users to search for and look at trails and places without signing up but when they try to do something that is connected to their profile such as save, rate or track they get asked to register. In that way new users get a chance of checking out the service without commitment and they do not leave the page solely because they are not motivated enough to commit to the service before they get a chance to check it out.

9.2 The Start Screen

When the user opens the application on their phone the start screen provides the user with the most important functionality namely search, navigation, tracking and add a place (see figure 24). The reason to have all this functions available at the star screen are several, one is that it provides first time users with visibility over the most important functions. The other purpose is since these functions probably will be the most used once they will be easy to access quickly for the user. If they for example just want to mark a location they can do that by pressing the button in the lower right corner, easy and effective.
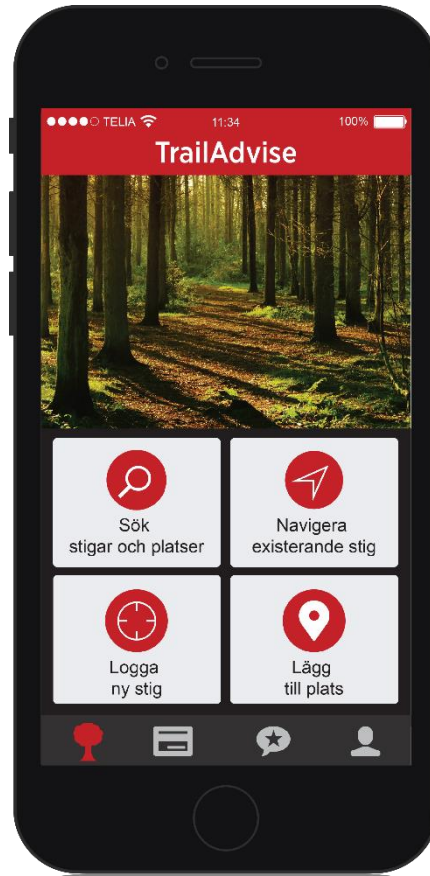
Figure 24 The start screen of the smartphone application

The tab bar also allows a first time user to get a faster understanding of what they can do in the application and it also provides fast and easy to access navigation for all users. The first tab icon is a tree which symbolises that this is the tab to use when wanting to explore nature. The second one is the news icon where the user can check out the newest published trails and places. The second rightmost tab icon brings the user to the activities, if the user has published a trail and someone has saved it or asked a question about it this is where the user will get information about that. The rightmost tab is the profile tab there the user can find his or her trails and places.

9.3 The Search Function and Information about Trails

One of the most important functions is the search function, therefore the user can access this function directly from the start screen by tapping the top button on the left side (see figure 24). This will bring the user to the screen seen in figure 25, here the user can either type in a specific city, area or place to search for or they can choose the search based on their position. The next step is to choose if they want to search for trails, places or both (see figure 26).

Figure 25 The second step in the search function where the user chooses to insert some search phrase or search based on their current location
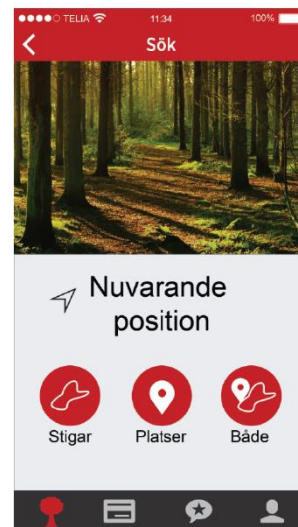
Figure 26 The third step in the search function where the user chooses if they want to search for trails, places or both

The result for a search for trails in the current position can be seen in figure 27. Here it is possible to filter and sort the results in the top. By pressing the map icon in the top corner it is possible to see the results plotted on a map as well as once location. In the listed search result the information the users thought was most important can be seen namely distance, elevation, ground and environment. The location of the trail is also shown and how far away it is from the users current position.

It was decided to only have the location of the trail instead of a specific name since they often tend to be quite personal and may not make sense to a larger amount of people. If the trail has gotten any rating they are also shown together with how many that has rated it in order for the user to get an understanding of what other have thought of the trail. If the user would already here be convinced that it is a trail they have to check out sometime it is possible for them to save it directly by pressing the star icon, once the trail is saved the icon becomes red (see figure 27).

Figure 27 The search result of a search for a trail in the users current position

There is a small picture of the route plotted on a map also the main reason for that is that it makes it possible for the user to see how the trail goes and if it is a round trail or if one has to run and turn around. Here it is also indicated if the trail has pictures and/or information about it with the icons in the corner of the map (see figure 27). This in order for the user to be able to know if there is more interesting information to find out about the trail.

If the user wants to know more about a trail they just tap on that trail and gets to the screen shown in figure 28. Here the location of the trail are shown in the top bar. Below that a tab bar where the user can save the trail, ask a question to the person that published the trail, share it with friends on social medias of by text and mail, mark the trail as experienced and also get navigation if wanting to experience the trail right now. The reason that the user can mark a trail as explored is since many intended users do not like to bring their phone with them. When they check that they have explored the trail they also get asked if they would like to rate the trail. If the user already have saved, or experienced the trail those icons will be red in order to indicate that. In the top of the content part of the screen is the route plotted on the map again, if the trail has photos taken from it they can be seen here by swiping the picture. It is also possible to tap the picture to get to see it in full screen, when the route plotted on the map is shown in full screen the different places located along the trail are also shown on the map. Below the picture is the most important information again with an addition if the trail has a specific trail marking. The elevation in this screen is the total elevation of the trail, if pressing the arrow next to it a more detailed elevation graph will appear.

The next section consists of a description of the trail written by the publisher (see figure 28). The publisher can also have written a specific description of how to get there which can be shown by pressing the arrow. Furthest down in this section is the picture and name of the publisher of the trail, if that person chooses that he or she wants that, is shown. One can also chose to be anonymous if one wishes.

The next section shows which types of places that are along the trail with different icons. Some of the interesting places that should be possible to mark with icons are fireplaces, attractions, parking lots, bus tops, view points etc. a compiled list of all the different places that was found to be interesting during this project can be found in appendix 17. Here it also shows if there are more information about them and/or pictures and the user can choose to press one if they want to know more about it and then gets sent to the detailed information about that place. The search result for places and the detailed information about a place can be seen in appendix 18. Below it is also shown by icons if the trail is appropriate for wheelchairs, strollers and/or children.

Figure 28 The detailed information about a trail

The last section shows the comments and questions people have made about the trail (see figure 28). One would also be sent here if pressing the rating icon in the top of the page. Below there it is possible to rate the trail and add pictures.

This particular order that the information is presented in is based on how interesting it would be for different people. The most interesting information is put in the top, both runners and hikers would probably be interested in reading the descriptions. However the information about which places there is along the trail will most likely only be interesting for hikers so they can continue scrolling to get the information. Regarding the comments they are in the bottom but they can be accessed easy from the top by pressing the rating icon since that information will be interesting for all users. The tab bar is also present in all screen except for the one which displays the detailed information about the trails to provide quick and easy navigation. However it is not present when viewing the detailed information about trail and places in order to be able to display more of the content.

9.4 The Navigation Function

The navigation function is possible to access from different ways but the fastest and easiest way to access it is through the start screen, when tapping the navigation button there the user will be sent to a screen where they gets asked what they want to explore (see figure 29). Here the user can chose between to explore one of the closest trails, a saved trail or a trail that passes a saved place. If wanting to explore a trail it is quite basic, the user gets sent to a page that displays the trails and when they find the one they want to explore they just presses the navigation icon (see figure 30). In this result of all the trails the information about trail markings, if any, are shown since it is good to know when exploring the trail. Since the service wants people to explore as many trails as possible the unexperienced trails gets showed at the top. The trails that already are explored are marked with a tick icon (see figure 30). It is also possible to get sent to the detailed information about the different trails by taping on them.

Figure 29 The second step in the navigation function where the user gets to choose if they want to explore one of the closest trails, a saved trail or a saved place
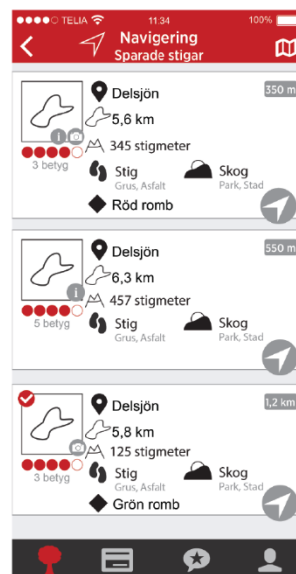
Figure 30 The saved trails the user can choose to navigate

If wanting to explore a place all the different saved places are shown and the user can check out which trails that passes by them by pressing the grey button to the right on every place (see figure 31), then they gets sent to a pace similar to the previous one. In the screen that is shown in figure 31 the user can also get more information about each place by tapping it and getting to the detailed information about that place. In figure 32 the detailed information about place are shown, which one also could reach if searching for places. If pressing the navigation button here or the button called "Förbigående stigar" which means passing trails the user will be sent to the page in figure 33.
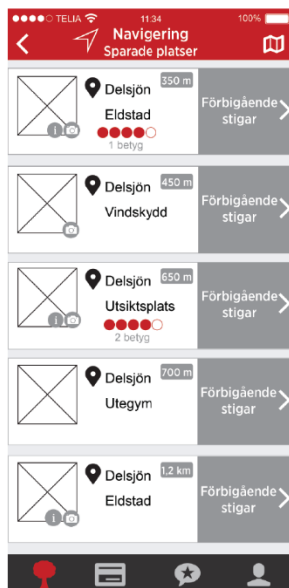
Figure 31 The saved places the user can choose to navigate, the grey button to the left brings the user to a list of all the trails that passes by
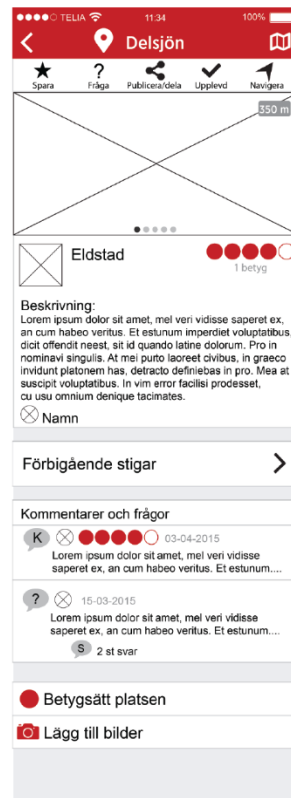
Figure 32 The detailed information about a pace
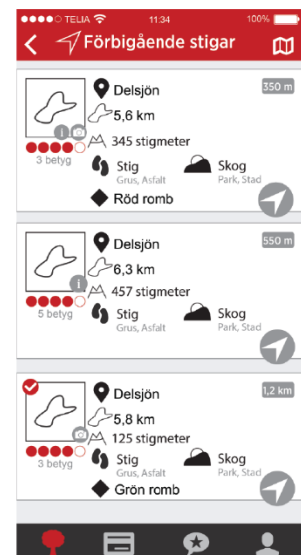
Figure 33 List of all the trails that passes by a specific place

Once getting to the actual navigation the distance covered and remaining together with a progress bar can be seen in the top as well as the time (see figure 34). It was decided to not show the speed or pace since the focus should be on experience and not performance. However the time was decided to keep since it can be good to know for how long time one has been out. The area and length of the trail navigated can be seen in the top bar, here is also a settings icon to the right where the user can chose how much they would like to be interrupted when exploring the route. It is possible to chose if one wants to get voice, sound and/or vibration information when something happens such as if there is a very steep turn or if they are getting to far away from the trail (see figure 35). It is also possible to choose if wanting to get notifications when coming close to interesting places.
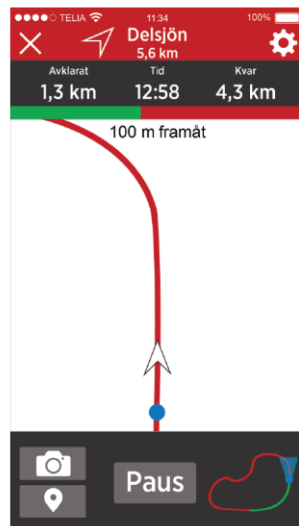
Figure 34 The navigation function

Figure 35 The possible settings during navigation

The main area shows where one are, the blue dot, and the next hundred meters of the trail. The idea with this is that it is impossible to know where all the trails in the forest are so it is not technical possible to say "turn right when the trail splits" so when the trail splits the user can take out his or her phone and see how the trail goes and based on that be able to know what trail to take. In the lower area of the screen there is buttons to take pictures, add places, pause the navigation and also one that gives a overview of the entire trail, something that people that are used to using physical maps wants. If the user wants to have the navigation in full screen they can just tap the main content area (see figure 36). By taping the overview of the trail it switches place with the new hundred meters (see figure 37), if wanting to switch back it is just to tap again. This is also possible to do when not using the full screen mode.
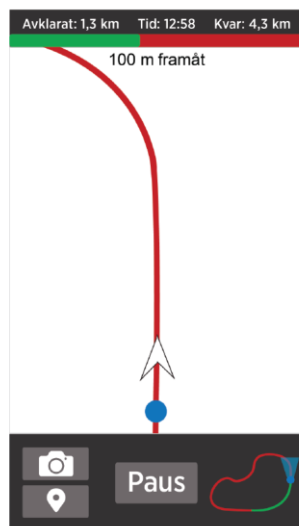
Figure 36 The full screen navigation
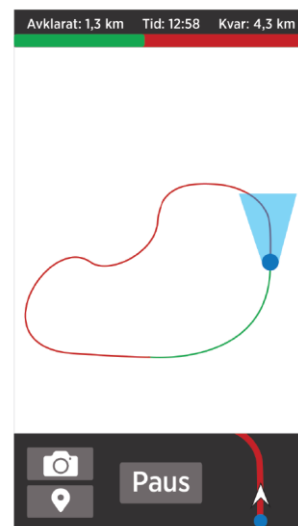
Figure 37 The full screen navigation with overview of the trail

 If the user decided to get notifications about interesting places they will look like the screen in figure 38. Where it says in 100 meters and then the information about what type of place it is. Here the user can either press the close button or press the content area to get sent to the detailed information about that place if wanting to get more information about it.
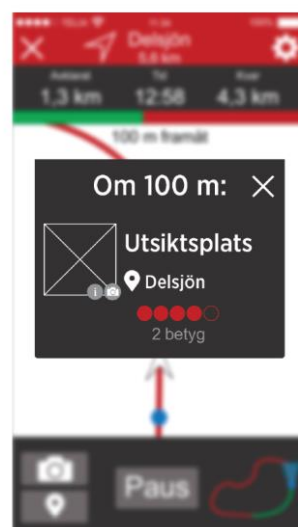
Figure 38 Notification about interesting place when navigating a trail

When the navigation is complete the user gets sent directly to a screen that says that the navigation is complete and asks if they would like to grade the trail (see figure 39). Here it is easy for the user to just insert a grade and send it but it is also possible to insert a comment as well if they whish to. If they do not want to rate it they can press "Nej tack" which means no thank you in the bottom or "Senare" which means later if they do not have time right now. Then they can get a notification later reminding them to rate the trail.

Figure 39 The rating page displayed after navigating a trail

9.5 Track a New Trail and Add a New Place

When wanting to track a new trail one taps the track button on the start screen and gets sent to a screen which shows ones current location, the strength of the GPS signal and a start button (see figure 40). When the tracking has started the length and time can be seen in the top of the screen. In the content area the user can see where he or she has walked and there is also buttons for stop, pause, take pictures and add a place in the bottom of the screen (see figure 41). The tracking screen are designed to resemble the navigation screen as much as possible in order to create consistency in the service. Once completed the user can chose to insert a description of the trail. The data collected by the app such as area, length and elevation is already there (see figure 42). If the user took pictures and added places they are shown here as well. When the user presses saves the user they get the information that their trail now is saved under their private trails. They also gets asked if they would like to publish the trail to TrailAdvise or if they want to share it with friends (see figure 43).
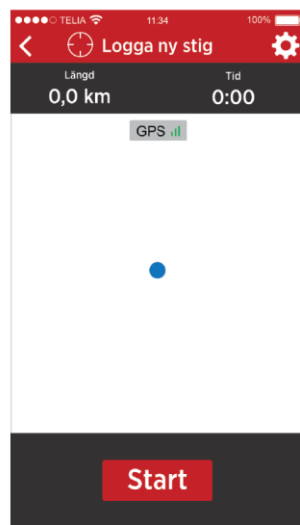
Figure 40 The start screen of the tracking of a trail

Figure 41 The screen after tracking 300 meters

Figure 43 When saving a trail the user gets asked if they want to publish it or share it
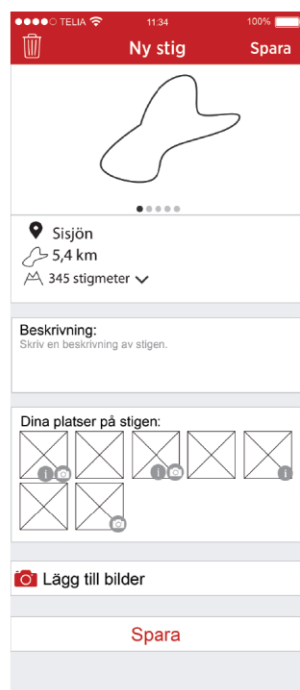
Figure 42 The tracked trail before the user has entered any information

If they choose to publish it they get to add some additional information that are useful for other users such as what type of ground it is and what environment it is in (see figure 44). Here they get to choose one main ground and environment type but also some other occurring types. They gets asked if there is any trail marking and how they would like to describe the trail. Here the text they entered, if any, in the previous step are present as default but it is editable if they would like to have another text for the publication of the trail. Since some intended users expressed the need to be able to publish trails anonymously they can choose that here. They can also get more information about it by pressing the information symbol. The default is to not be anonymous. They can also fill in a description of how to get there and if it is suitable for wheelchairs, strollers or children. The user can also chose to publish the places and pictures taken here by pressing the second lowest button or they can just press "Publicera" to publish the trail. If they also want to publish places and trails they gets sent to a page where they get to mark which of them they would like to publish (see appendix 18). When publishing places they will get asked if there are any photos taken from that place, if they took any photos during the tracking. If they only publish photos they will get asked if the photo is taken at a specific interesting place, here it will also be possible to choose "nice picture" as an alternative if the photo only is a nice nature photograph. Then it will not appear as a place, just as a picture from the trail.

Figure 44 The publishing screen where the user gets to insert the information they would like to publish

When wanting to add a place without tracking or navigating a trail the user just presses the add a place button on the start screen and then gets to verify the he or she wants to add the place in their current position. Then they get to choose what type of place it is and then they get a question if they would like to insert more information about the trail now, later or not at all (see figures 45-47).

Figure 45 The second screen when wanting to add a place, the user should confirm that they want to add the place in their current position
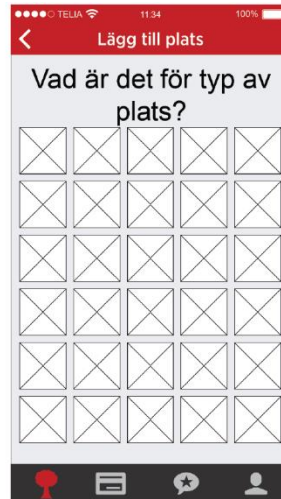
Figure46 The third screen when adding a place, the user should choose what type of place it is by pressing one icon

Figure47 The last screen when adding a place where the user gets asked if they would like to add more information about the trail now, later or never

9.6 The User Profile

The user trails, places and photos are collected in their profile which they can get to by pressing the rightmost tab in the tab bar (see figure 48). In the top bar the users chosen profile name is shown, there are also a settings icon in the top bar where the user can make personal settings. Here the user can choose what types of places one likes to get notifications about when navigating and if they want to get notifications when someone publishes something for example. Below the top bar is a round profile picture and information about how many trails and places the person has explored, published and also how many persons that has saved his or hers published trails. This is a way of motivating and trigger people to explore and publish many trails and places.
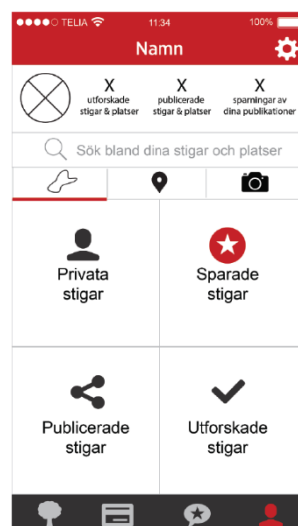
Figure 48 The users profile page

The trails and places are divided into four groups namely private, saved, published and explored. Under the private trails all the trails the user has tracked by them self is collected. The date they where tracked are shown as well as an icon if they have published the trail to TrailAdvise (see figure 49). The saved ones show all the information one gets when wanting to navigate a trail since the purpose of saving a trail is to some day explore it. Therefore the short cut to the navigation is shown here also, as well as an icon if they already are explored (see figure 50). The public trails show rating, how many that has saved it, made comments and asked questions (see figure 51). Since that probably is the most interesting information for the user to get about the published trails. Under the explored trails all the trails one has tracked by the self, navigated or marked as experienced are shown (see figure 52). All the trails here represent the amount of explored trails shown on the profile page. All the wireframes for the smartphone application can be seen in appendix 18.
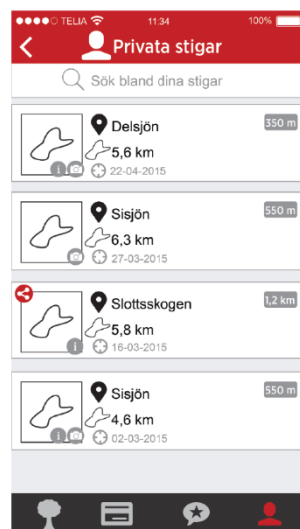
*Figure 49 The users
private trails*

*Figure 50 The users
saved trails*

*Figure 51 The users
published trails*

*Figure 52 The users
explored trails*

The fact that the user can store interesting trails and places under their profile can be seen as the first investment the user probably makes when starting to use the service which makes the possibility that they return higher (Eyal & Hoover, 2014). This action is very easy to do and is a great first step for the user. They will also invest time and energy if they choses to track and add own places which then gets stored in their profile. This provides the user with an added value of having an easy and simple way of storing their adventurers at one place together with photos, places and information about the route and a description of the adventure. The user can also share his or her adventure with friends or family in an easy way and with the service by publishing it. When the user share their adventurers more people will get in touch with the service which will make the chances of getting new users higher.

Figure 53 The news feed tab
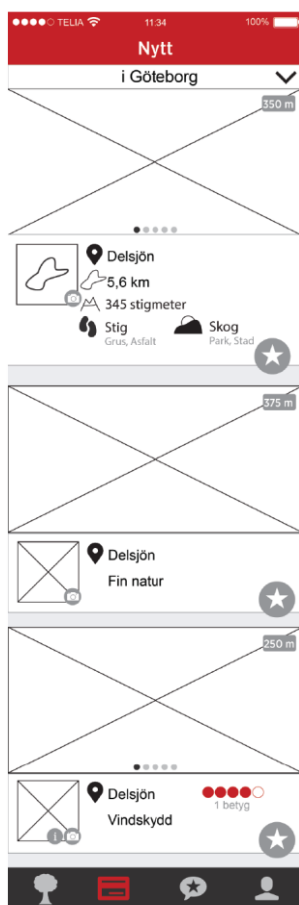
9.7 The Rewards

In order to entice the users to create a habit of using the service and in that way make it more successful some different elements that creates variable rewards has been implemented. One of which is the news tab in the tab bar under which the latest published trails are shown (see figure 53). This is both a way of making the users turn to the service when they are bored just to check out if there has been any new nice trails or places published in their area. But it also provides the user of a variable rewards of the hunt which will make them keep scrolling since they occasionally find something that interests them. In the *Trail vs place* concept this page had different tabs namely trails, places and both but it was decided to remove them in order to reinforce the feeling of the variable rewards when the user has to scroll through all different types of new publications.

Another variable reward mechanism regarding the tribe is the possibility to publish trails and then get social acceptance through ratings, comments, questions and that the user gets to know if someone has saved trail or place he or she has published. The total amount of people that has saved one persons trails and places are shown on their profile page which serves as a motivation and acceptance counter for that person. Which also is shown on the profile page. This is a way of motivating people to publish their trails and places, people get triggered of the variable rewards they might get through ratings, savings and comments. Once they have published a trail or a place they can follow it under their published trails and places and see how many people that has saved it, rated it, commented it and asked questions about it. In order for the user to keep track of all these activities the application has a activity tab in the tab bar under which all the activities on once published trails are can be seen (see figure 54). There is also a tab called "Du" which means you where the user can see their own activities as well as if something has been added on a trail or place they have saved (see figure 55).
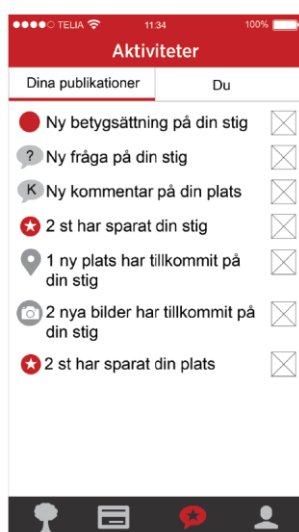
Figure 54 The activity tab for the
users publications

Figure 55 The activity tab for
the users own activities

Once something happens here the user gets a notification, if having that setting, which will trigger the user to use the service. If the user choses to ignore the notification a little icon will be shown on the app icon in their phone reminding the user that something has happened that they have not checked out yet which also triggers them to open the application. This triggers the users longing to complete things, the variable rewards of the self (Eyal & Hoover, 2014). The user will feel the need to check out what has happened even if it only is to get rid of the icon on the application icon in order to feel that they have completed something.

9.8 The Interface for the Web

As previously mentioned the interface for the web holds much of the same functions as the smartphone application. The difference is that the functions navigation and tracking has been replaced by adding a trail with GPX files and to edit the trails.

The home screen in the web interface can be seen in figure 56 and it features a search function and the latest published trails. In the navigation bar the tabs Profile and about TrailAdvise are present.
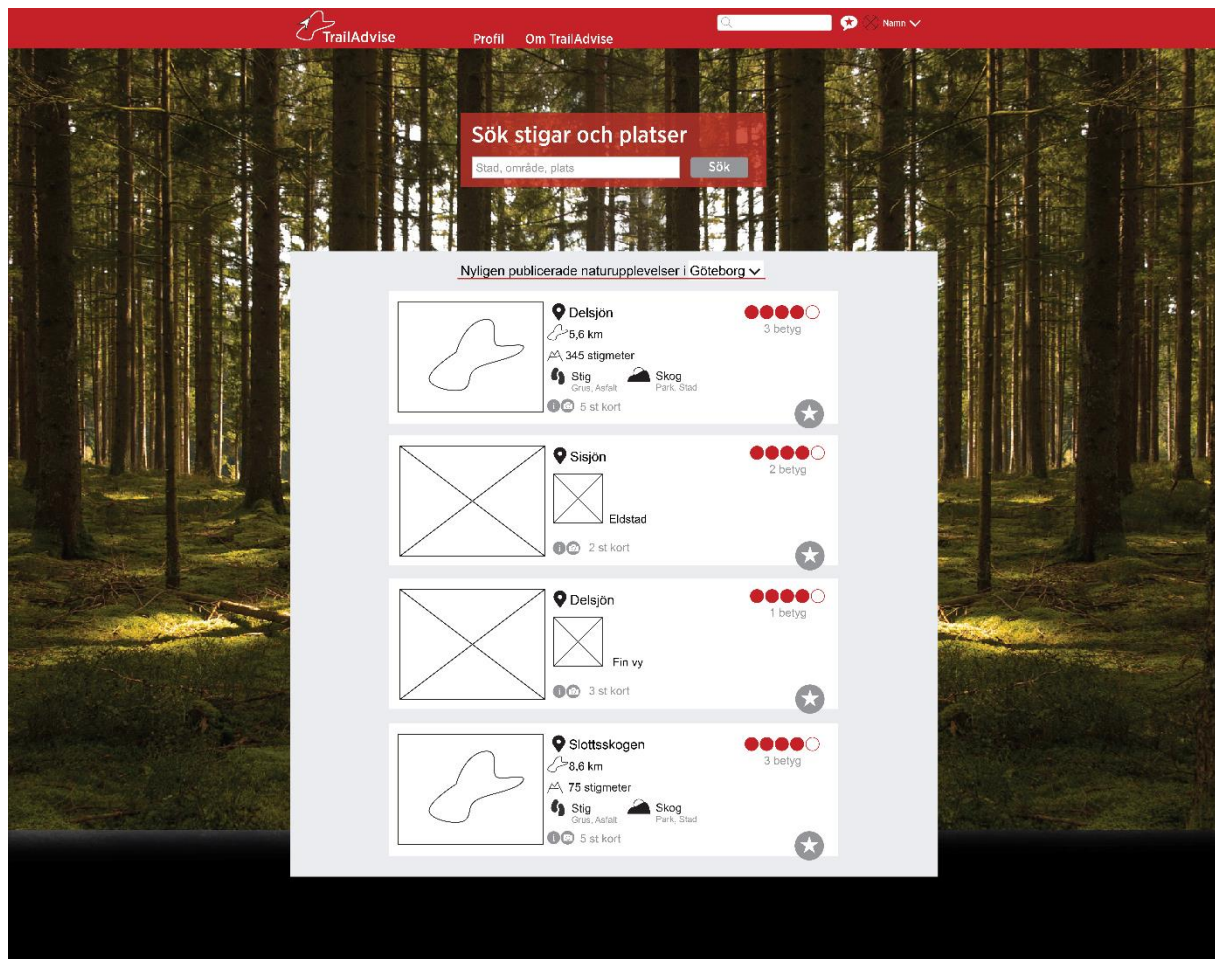

Figure 56 The start screen on the web

Once entering a search phrase the interface looks like in figure 57. Here all the different nature experiences in Gothenburg are showed. To the left the user can filter the result by trail or place, length, ground, environment, and places a trails should have and if it should be suitable for something special. Since either trails or places is chosen in the top of the filtering field both trails and places appear in the search result. If the user was to choose to sort on places the filtering appearance would change and it would only be possible to filter on different types of places one wants to see. Over the list of results it is possible to sort the results after newest, closest and ratings.
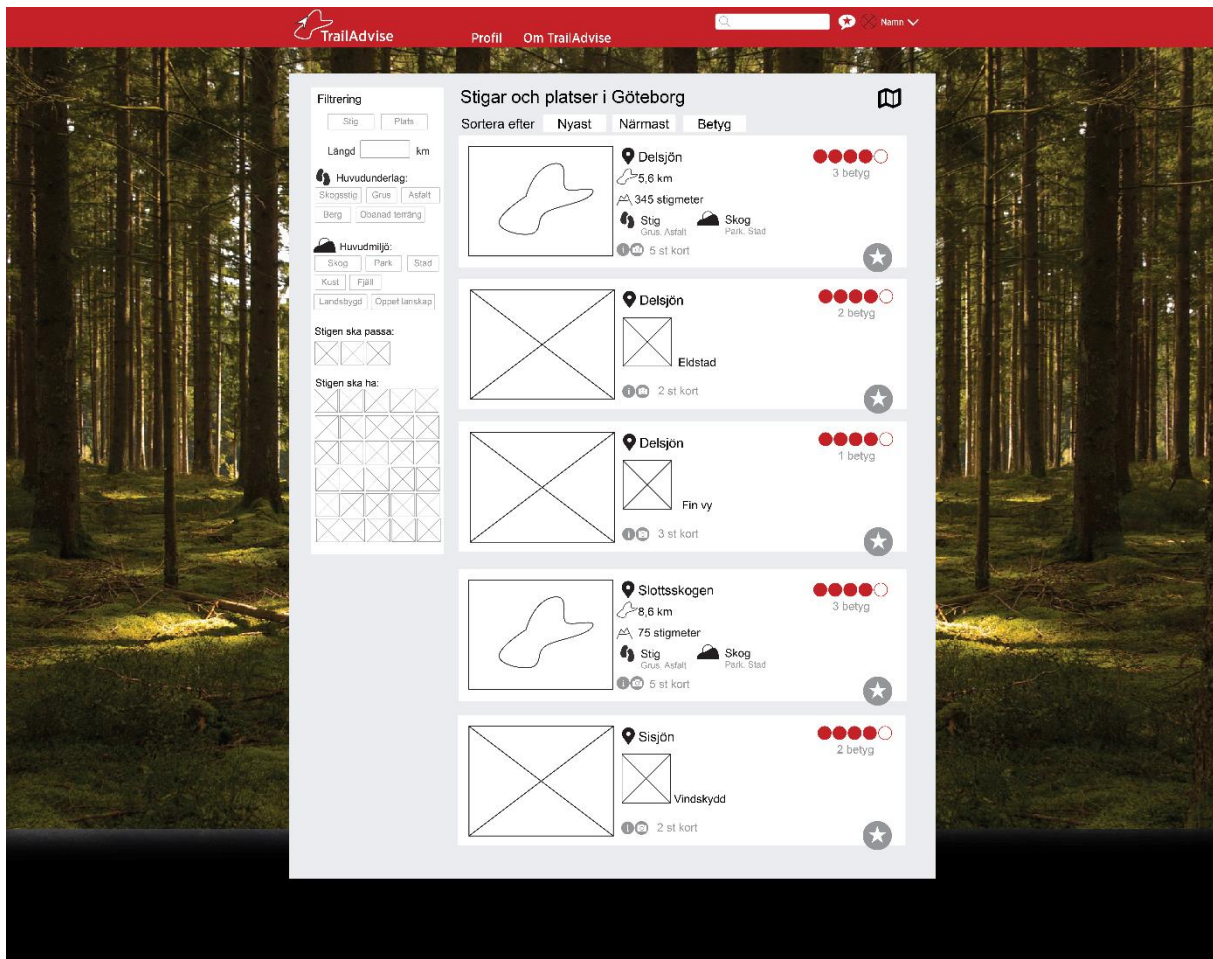
Figure 57 The search result and filtering and sorting possibilities on the web

The same goes for the profile page (see figure 58). The difference here is that there are two additional options in the lover part of the navigation bar to the left namely "Ny stig" and "Ny plats" which means new trail and new place. Once pressing the new trail page the user gets to upload a GPX file and then he or she get to the page where they can insert information about the trail. Here they get the possibility to edit the trail and to save and publish the trail or just to save it as a private trail. When it comes to adding a place they first get to mark the position on the map, then chose what type of place it is and lastly insert information about it. All the wireframes for the web can be seen in appendix 19.
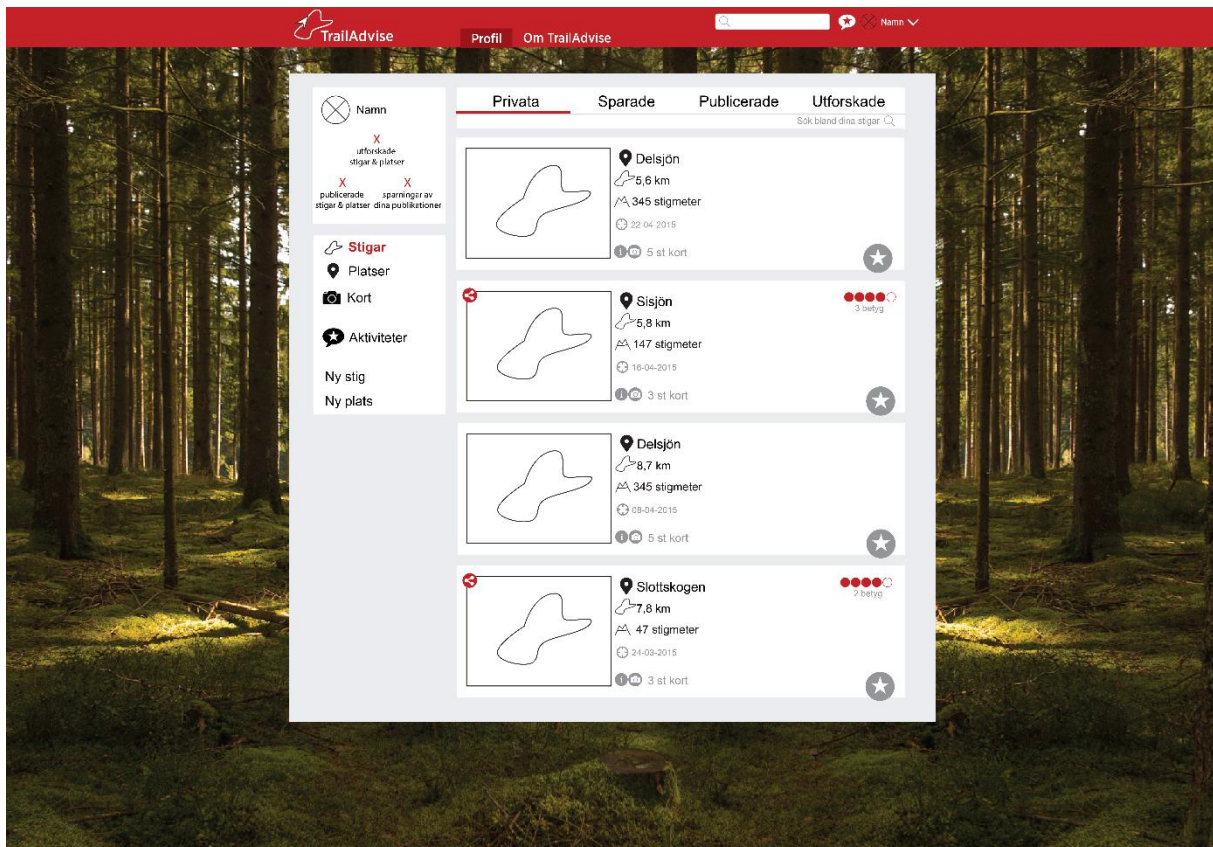
Figure 58 The profile page for the web

9.9 The Interface for the Watch

As previously mentioned the watch has very limited functionality due to the minimal screen and navigation possibilities. The functions available can be seen at the start screen (see figure 59). The possible actions is to navigate, track a trail, add a place and change the settings. Where the possible settings is the same as for the settings one can make under the navigation settings in the smartphone application.

Figure 59 The start screen on the smartwatch

When navigating a trail the user only gets to chose between navigating one of the closest trails or a saved trail (see figure 60). Short information then appear about the trail, it is possible to switch between two pages to get the most important information that the search result on the other devices offer (see figure 61 and 62). It is also possible to press the trails to get all the detailed information about them.

Figure 60 The second step in the navigation function where the user gets to choose between navigating one of the closest trails or a saved one
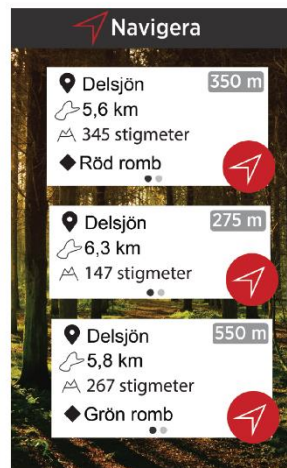
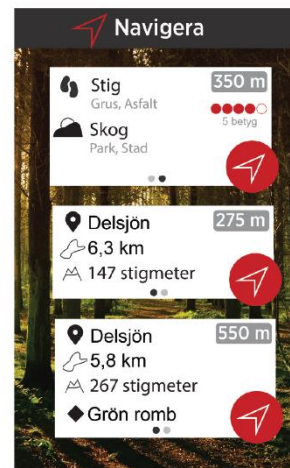*Figure 61 The list of trails the user can choose to navigate*

Figure 62 The extended information about the trails the user gets when swiping the previous screen

Once choosing one trail and starting the navigation the screen in figure 64 is shown where the distance and the distance bar is at the top of the screen, the navigation information is in the middle and the time in the bottom. There are also a small symbol in the lover left corner where the user easy and effective can mark a position during the activity. To pause or stop swipe to the left or right (see figure 63 and 65).
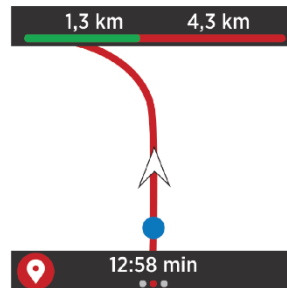

Figure 63 The pause button in the navigation

Figure 64 The navigation screen

Figure 65 The stop button in the navigation

An example on a notification message can be seen in figure 66. The user can swipe it to remove it or press it to get to know more information about that place. The tracking of a new trail works very similar to the navigation and the interface for it can be seen in appendix 19 together with all the wireframes for the smartwatch.
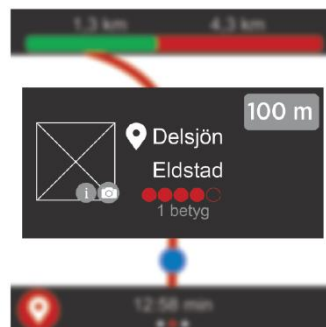

Figure 66 A notification message about an interesting place

10 Future Work

This is only a conceptual interface where much work lies ahead but the main functionality and content has been identified and visualised in the final design. However much are yet to be decided and designed before the real application can be released. The underlying technical solutions are not ready yet but under construction and then everything has to come together before the service can be released.

10.1 Future Functions

Since this is a digital service there are endless possibilities to keep develop and change the content and functions subsequently. The interface now has the focus of being as simple as possible only featuring the most important functions and information needed to make the service successful.

One idea that might be good to implement once having a good user base with habitant users is to implement a status of the ground for example. So that it is possible for other users to know if the trail is good or if it is very muddy right now for example. This idea was not chosen to be included at this point since it might not be update that often when the users do not have the habit of using the service and it might come of looking a bit unused if there only is a status update from four weeks ago. But when the service is up and running and if users are using the service when they are out in the trails it could be a good idea to add something like this.

Another thing that might be possible to add when the service has been used for a while is the approximated time, when enough people have taken the trail it might be possible to add an approximated time for running and hiking the trail based on pervious users times. Once having a good trail base in the service, a function showing the shortest way back might also be a good idea if the user gets tired or if something happens when they are out navigation a trail.

When a user shares a trail it could be a good idea to have a function that allows the user to mark a meeting place, in that way a user can share a trail to a Facebook group or to a friend and it is easy for everyone to know where they are supposed to meet up for the adventure.

The challenge element form the concept *Challenges* was chosen to be eliminated in the detailed interface, the purpose with that idea was to motivate and trigger people to share and built upon the service. It was however decided to not be included in order to be more differentiable and only focus on the experience and not on performance and achievements. However it is possible to add it in the future if it is discovered that people do not contribute as much as wanted. However it might be desirable to try and add some variable rewards into the challenges as well in order to trigger the users more.

It would also be good to have the possibility to import routes from other services such as Runkeeper and Endomondo in order for those users that like to use those performance applications to use them to track the trail but then have the possibility to insert in into TrailAdvise and share it with others.

10.2 Further Development of the Service

Some future work regarding the interface that are important to think about when designing the real service:

- Use clear but non obtrusive feedback when the user successfully conducts something, like saves a tracked trail or publishes a place.
- When contributing something to the service there should be some sort of thank you message in this feedback as well, however it is important that the user feels appreciated but not distracted by the feedback.
- The interface and its navigation must be adapted for different platforms such as Android and iOS.

It is also important that the service gets tested on real users iteratively in order to make sure that it is easy to use and that it functions as desired.

10.3 How to Make Users Revenue-generating

How to be able to make a profit from the service has not been the main focus during this project, the main focus has been on how to design the service in order for the users to appreciate it. However this question has been in the background during the entire project and some ideas has been found and will now be presented.

When users have created habits of using a service the company gets greater flexibility concerning pricing. When usage of a service increases over time, so does the users willingness to pay for the service (Eyal & Hoover, 2014). This is why it might be a good idea to let the users use the service for free in order to get a habit of using the service without having to pay anything. But then also offer functions that the users have to pay to get access to. Evernote, the note-taking and archiving software is free to use but they offer upgrade features for a price which many devoted users are paying fore (Eyal & Hoover, 2014). This is why it would be a good idea to offer the users to use TrailAdvise for free but pay for extra features such as the possibility to download a description of the trail or to be able to download a GPX file of a trail to use on another device. Other possible extra features is to get the possibility to create a slide show to post on social medias of the experience or to be able to view and follow trails off line.

Another idea of how to get profits is to use the news feed as a way of letting companies that wants to reach out to runners and hikers post different things there. It could be articles, advertisement or invitations to different events for example. However this does not get to take over the feed, the user must not experience that the news feed only is advertisement and the posts there must align with the users interests.

11 Discussion

In this chapter the project in its entirety will be discussed. The discussion is divided into three parts which will cover the result and challenges of the project, the process and methods used and how helpful they where and finally a discussion about the sustainable aspects of the service.

11.1 Result and Challenges

The goal with this project was to create a conceptual interface for a new GPS service based on the target groups needs and habits. User studies was conducted and based on them the deliverables, conceptual wireframes for web, smartphone and smartwatch was created. The final interface covers a service that provides users with important information about trails and places in the nature and it also helps the users navigate them and to share and store their nature experiences. It also includes some elements that will motivate and trigger the user to participate and build upon the service as well as hopefully creating a habit of using the service. It is easy and fast for people to rate trails and places, they also get variable result when they upload a trail or a place in the form of ratings, comments, questions and amount of savings which will create a sense of social acceptance for the publisher. It also allows users to use the service when they are bored since they can browse through the latest publications in their search for their next nature experience. The interface fulfilled all the important requirements found during the first phases in the process such as being differentiable, communicate its functionality, provide important information and functionality and being easy to understand and use. Since there are very many different applications available it is important to be differentiable which in this case was created through solely focusing on the nature experience and not on performance.

The interface clearly communicates its most important functions since first time users could easily identify and understand what they could do with the application, this due to that these functions was made very visible. Most of the important functions was also easy for users conduct. This is important considering the increased phone application fatigue and decreased adoption rates. Consistency in the service was also created through using similar behaviours and elements for similar tasks. Due to the current trend of flat user interface design the affordance of buttons etc. are lower. But due to the fact that very many applications are using flat designs the mental models of the users can be assumed to have been adopted to this design principle. However the buttons in the interface have somewhat rounded corners in order to make the affordance some what higher.

The user studies showed that many runners did not like to bring their phone since they thought that it was too inconvenient which is a bit problematic for this service, at least before the smartwatch becomes more common. Still all the people from the target group would benefit from getting the search function since they feel that they wold like to experience new trails and places but feel that it is hard to find. So if they discover this service and think that it is helpful and easy to use, hopefully they will be motivated and triggered to contribute by tracking their own trails and publish them to the service. The feedback form of ratings, comments, questions and savings will hopefully also entice the users to contribute with their trails and places.

The wanted effect with the service was to make people experience as much nature as possible. The service in it self, since it facilitates for people to find nice nature trails, will probably make people experience more nature trails. The counting of how many places and trails one user has experienced on every users profile page will hopefully also trigger users to try and experience as much as possible. The navigation function helps the users to explore new trails since it facilitates for them to find and feel secure about where they are and where they will end up. This also makes it easier for people to explore new trails since it makes it so much easier and eliminates much insecurity.

Regarding how the final interface will be used and appreciated by the personas. Hopefully all the different functions in the service will be used of all the different persona types, however some of the functions and information is more adapted and will be more appreciated of the different personas. The basic information about the trails will be appreciated by all personas. However the everyday hikers and the adventurers will be more interested in the different places along a trail and they will also use the search function for specific places. If the accessible runner do not want to bring their phone they can use the service to find inspiration about where to find new trails. Maybe they will bring the phone the first time or maybe they read up on the route before heading out. Then they can use the function of selecting a trail as experienced when they get home and they get the opportunity to contribute by rating it. This function also applies to the devoted runners as they like to run with their own GPS watches, as well as the wilderness enthusiasts that do not like to be disturbed by their phone at all when they are out hiking. Since the devoted runners use their own GPS watch the function to allow people to import a GPX file has been added on the web to allow the devoted runners to track a trail using their own watch.

The most important information about trails according to the users has been included in the service. However some information such as approximated time and level of difficulty had to be excluded since it is to individual and hard for the publisher to estimate. But this might be something that can be added in the future, at least for the time aspect but it is a bit problematic since people will both run and walk the routes which will result in very different times. This is also connected with one of the biggest challenges in this project, since the users them self have to create all content and information there is a limit of how much information one person has the energy to put in. One does not want the user to not publish a trail due to that he or she has to put in to much information but on the other hand the other users want to know as much as possible about the trails and places. So this balance regarding how much information a user should need to put in about a trail versus what information people want and need has been an issue during the entire project. One solution that has been considered is to have open trails and places where anybody can edit the information about the trail but then it raises the question if that really would motivate people to upload their own trails if they do not get solely credit for it. So it was decided to give the publisher the credit in order to motivate and trigger people to upload their trails. If other users has any information they would like to add they can do so by commenting the trail or place.

11.2 Process and Methods

The process used in this project is somewhat different from the regular product development processes. Other development processes is more sequential where different data gathering and user study methods results in one list of requirements that gets used when creating and evaluating the solutions. In the process used in this project the result from the data gathering and user studies has ended up in different lists of requirements and guidelines with different focuses namely user needs, requirements of usage and overall design. This has provided a more flexible way of working where the result of different methods has been used in different stages of the process. It has also provided a continuous documentation of requirements and guidelines for the next coming phase which has been very helpful. It also provided an iterative process where one continuously filled in new and improved information in the lists. These lists also helped to make sure that every important aspect of the project was covered. The only difficulty with this process was that it was hard to wrap your head around that one could use the same methods and the result from for example one interview in different lists of requirements and guidelines as that is usually not the case with the regular development process.

Regarding the methods used the interviews and the surveys was probably the most beneficial as they provided both qualitative and quantitative information abut the users which served as a base for the entire project. The personas and the context scenarios mostly served as a way of communicating the users to the stakeholders in the project. The elimination matrixes used to choose among many different ideas was very helpful in order to handle and evaluate so many different aspects. To be able to create a high-fidelity prototype that almost works as the real product was also very helpful since it provides a very real user experience which makes it easier to identify flaws in the design. So to use the prototype and just go through the most common tasks in the interface provided much information and many mistakes and things that could be better was discovered and could be fixed before the final interface was created.

11.3 Sustainability Aspects

Since a digital service like this does not involve any physical parts that have to be manufactured it does not have a big ecological impact concerning materials and energy. Therefore the sustainability aspects in this project will concern hypothetical effects of usage of the service mostly. If the service gets used on a users mobile phone for a long time it will probably require quite much battery, however this has a very low impact in the big picture. This service will however enable for people to get out in the nature and experience it which has some good consequences. The exercise and the clean air is good for the health of people and also the increasing awareness of the beautiful nature might get people to not throw as much trash in the nature but be more considered. It can be argued that if this service becomes successful people how are interested in getting information about the nature will only need this service and do not need to get to different stores or locations to by maps or search the internet to try to find information about good nature experiences which could decrease the sustainable impact. However the biggest sustainable impact from this service is in regard to public health as it facilitates for people to get of the city streets and run and walk in the nature instead which is not only good for their health but also for the city traffic.

11.4 Gained knowledge

During this project I have learnt a lot, the most profound knowledge is related to human habits and how they are created in relation to digital products. Something that I found very interesting and that I think is very important to have knowledge about when developing these types of services. I have gained knowledge about how and why certain design element affect humans, which can be good to know in order to be able to implement in different context where it is important that the users creates habits around using certain products.

 I have also learned a lot about how to create wireframes in an easy and affective way as well as how to prototype high-fidelity digital prototypes for web and smartphone which is very useful when evaluating digital interfaces with users as well as communicating ideas with stakeholders.

12 Conclusion

The conclusions from this project is concerned with both the final result of the project as well as the experience of working with the project and important observations regarding the process.

- The result of the project is a conceptual interface for the new GPS service based on the target users needs as well as the functions that needs to exist in order for the service to work and be successful.
- The final interface satisfies both the needs of runners and hikers, this is possible since it solely focuses on the nature experience and not on performance. Something that also makes the service differentiable form many other existing services.
- The final interface also includes variable rewards for the user in form of a news feed and the possibility to get social acceptance and appreciation. Those elements are meant to make the users create a habit of using the product, something that is crucial for the service to become successful.
- Since I performed the project alone I was very flexible, but in spite that it was hard to book meetings with both users and stakeholders in the project. It is crucial to plan for these meetings in advance and start booking them in time. However something that was found to be very useful and time saving was to conduct interviews over the phone, this also made it possible to interview people that was not located in Gothenburg.
- This project gave me the possibility to be a part of a real project where other technical parts of the service has been developed in parallel which has been very interesting to take part in. However I have worked one my own most of the time in the project. All the technical solutions for how this service will be able to work is not yet ready but it will be interesting to see how the service will become in the future. Hopefully this work will serve the project with important insights of what the users needs and how to make them regular users of the service.

13 References

Literature:

Bligård, L.-O. (2015) *Utvecklingsprocessen ur ett människa-maskinperspektiv,* Göteborg: Chalmers University of Technology.

Bligård, L.-O. and Osvalder, A.-L. (2010) *Methodology for prediction and identification of mismatches in the interaction between user and artefact,* Göteborg: Chalmers University of Technology.

Bohgard, M. et al. (2010) *Arbete och teknik på människans villkor.* 2nd ed. Stockholm: Prevent.

Böhmer, M. et al. (2011) *Falling asleep with Angry Birds, Facebook and Kindle: a large scale study on mobile application usage.* Stockholm, ACM.

Cooper, A., Reimann, R., Cronin, D. &andNoessel, C. (2014) *About Face- The essentials of interaction design.* 4 ed. Indianapolis: John Wiley & Sons.

Correa, T., Hinsley, A. & de Zúñiga, H. (2010) Who interacts on the web?: The intersection of users' personality and social media use. *Computers in Human Behaviour,* vol. 26, nr 2, pp. 247-253.

Danowski, J. & Zywica, J. (2008) The Faces of Facebookers: Investigating Social Enhancement and Social Compensation Hypotheses; Predicting Facebook and Offline Popularity from Sociability and Self-Esteem, and Mapping the Meanings of Popularity with Seamantic Networks. *Journal of Computer-Mediated Communication,* vol. 14, nr 1, pp. 1-34.

Eyal, N. & Hoover, R. (2014) *HOOKED How to Build Habit-Forming Products.* London: PORTFOLIO PENGUIN.

Jarvenpaa, S. L. & Staples, D. S. (2000) The use of collaborative electronic media for information sharing: an exploratory study of determinants. *Journal of Strategic Information System,* vol. 9, nr 2, pp. 129-154.

Java, A., Song, X., Finin, T. & Tseng, B. (2007) *Why we twitter: understanding microblogging usage and communities,* San Jose: ACM.

Johannesson, H., Persson, J.-G. & Pettersson, D. (2004) *Produktutveckling- effektiva metoder för konstruktion aóch design.* 1st ed. Stockholm: Liber.

Law, J. (2009) *A Dictionary of Business and Management.* 5ed. Oxford:Oxford University Press.

O'Connor, Z. (2011) Colour Psychology and Colour Therapy: Caveat Emptor. *Color Research & Application,* vol. 36, nr 3, pp. 229-234.

Rogers, Y., Sharp, H. & Preece, J. (2011) *Interaction Design- Deyond human-computer interaction.* 3 ed. New York:Wiley.

Smith, A.,(2011) *Why Americans use social media,* s.l.: PewResearch.

Stadium. (2009) *Svenska folkets träningsvanor och inställning till träning,* s.l.: Stadium.

Web source:

Alger, K. (2015) The best GPS running watches. *Wareable.* http://www.wareable.com/fitness-trackers/the-best-gps-running-watches (2015-04-08).

AllTrails, Inc. (2015) AllTRails Hiking & Mountain Biking Trails, GPS Tracker, & Offline Topo Maps. *Itunes Preview.*
https://itunes.apple.com/en/app/alltrails-hiking-mountain/id405075943?mt=8 (2015-01-22).

Apple Inc. (n.d.) Content Views. *iOS Developer Library.*
https://developer.apple.com/library/ios/documentation/UserExperience/Conceptual/MobileHIG/ContentViews.html#//apple_ref/doc/uid/TP40006556-CH13-SW1 (2015-04-09).

Apple Inc. (n.d.) Color and Typography. *iOS Developer Library.*
https://developer.apple.com/library/ios/documentation/UserExperience/Conceptual/MobileHIG/ColorImagesText.html#//apple_ref/doc/uid/TP40006556-CH58-SW1 (2015-04-09).

Eyal, N. (2012) Want To Hook Your Users? Drive Them Crazy. T*echcrunch.*
http://techcrunch.com/2012/03/25/want-to-hook-your-users-drive-them-crazy/ (2015-03-23).

Globalis, (n.d.) Befolkning i städer. *Globalis.*
http://www.globalis.se/Statistik/Befolkning-i-staeder (2015-04-10).

Google, Inc. (2015) Google Maps*. iTunes Preview.*
https://itunes.apple.com/en/app/google-maps/id585027354?mt=8 (2015-01-23).

Kendrick, J. (2011) Are you suffering from app fatigue? *ZDNet.*
http://www.zdnet.com/article/are-you-suffering-from-app-fatigue/ (2015-05-21).

Lamkin, P. (2014) RunKeeper now supports GPS on Android Wear and Sony SmartWatch 3. *Wareable.*
http://www.wareable.com/android-wear/runkeeper-now-supports-gps-on-android-wear-624 (2015-04-08).

Martin, C. (2014) What is a smartwatch? Wearable technology explained. *TechAdvisor.*
http://www.pcadvisor.co.uk/buying-advice/gadget/3498629/what-is-smartwatch/ (2015-01-28).

McDannald, J. (2015) The Best GPS Running Watch. *The Wirecutter.*
http://thewirecutter.com/reviews/best-running-watch/ (2015-01-23).

Nielsen, J. (2012) Usability 101: Introduction to Usability. *Nielsen Norman Group.*
http://www.nngroup.com/articles/usability-101-introduction-to-usability/ (2015-06-02).

Prospero, M. (2015) Best Smartwatches 2015. *Tom's GUIDE.*
http://www.tomsguide.com/us/best-smartwatches,review-2156.html (2015-01-28).

Rao, N. (2014) Using Back-End Design to Create Customizable Front-End Mobile Experiences. *UX Magazine.*
http://uxmag.com/articles/using-back-end-design-to-create-customizable-front-end-mobile-experiences (2015-01-29).

SONY (n.d.) SmartWatch 3 SWR50. *SONY*
http://www.sonymobile.com/global-en/products/smartwear/smartwatch-3-swr50/specifications/ (2015-04-09).

Stables, J. (2015) Best smartwatch 2015: Apple, Pebble, Samsung, Sony, LG and more. *Wareable.*
http://www.wareable.com/smartwatches/the-best-smartwatches-in-the-world (2015-04-08).

StatCounter (2015) *StatCounter Global Stats.*
http://gs.statcounter.com/#desktop-resolution-SE-monthly-201403-201503-bar (2015-04-09).

StatCounter (2015) *StatCounter Global Stats.*
http://gs.statcounter.com/#mobile_resolution-ww-monthly-201403-201503-bar (2015-04-09).

TripAdvisor LLC (2014) TripAdvisor Hotels Flights Restaurants. *iTunes Preview.*
https://itunes.apple.com/en/app/tripadvisor-hotels-flights/id284876795?mt=8 (2015-01-23).

ViewRanger (n.d.) All-in-one: Trail Guidebook – Navigator – Adventure Hub. *ViewRanger.*
http://www.viewranger.com/en-gb/features (2015-03-04).

Images:

Al_HikesAZ (2007) *Mount Baldy - USFS said the trail was not maintained and this is what they meant.* [Electronic image]
https://www.flickr.com/photos/alanenglish/890454029/in/photolist [Accessed 2015-02-25].

Dannenberg, V. (2010) *Paddler* [Electronic image]
https:/www.flickr.com/photos/bayfan/4872350600/in/photostream [Accessed 2015-02-25].

Edgeplot (2002) *Hikers* [Electronic image]
https:/www.flickr.com/photos/edgeplot/14283270/in/photostream [Accessed 2015-02-25].

GrejGuide.dk (2012) *DSC_0471.* [Electronic image]
https://www.flickr.com/photos/77591574@N02/8098216921 [Accessed 2015-02-04].

Heiko Hartsuijker.nl (2014) *HeikoHartsuijker_Houffatrail2015_-0276.* [Electronic image]
https://www.flickr.com/photos/35499300@N06/15969225672 [Accessed 2015-02-04].

Heiko Hartsuijker.nl (2014) *HeikoHartsuijker_Houffatrail2015_-0290* [Electronic image]
https:/www.flickr.com/photos/35499300@N06/15784161987 [Accessed 2015-02-25].

Judge, D. (2014) *25.7.14 Sumava Forest 50*. [Electronic image]
https://www.flickr.com/photos/donaldjudge/14746826145 [Accessed 2015-02-04].

Sachmann, J. (2006) *PC's Girls - Black and Blonde.* [Electronic image]
https:/www.flickr.com/photos/sachmanns/161878298 [Accessed 2015-02-25].

1 A compilation of the different competitors analysed in the competitor analysis and the functions they offer

Types		Features				Social aspects			Comments
		Track & Store Training	Find trails	User created	Navigation	Social interaction	Share on Social Networks	Compete/ compare with friends	
GPS Watch		✓		✓					
Mobile applications conected to specific GPS watch	SUUNTO M	✓	✓	✓		✓	✓		Possible to search for and save trails that others have added on the web On trails avalilbe in the app
	C	✓		✓		✓	✓	✓	
	GARMIN	✓		✓			✓		
	POLAR	✓		✓			✓	✓	
Mobile applications using the phones GPS to track activities		✓	✓	✓		✓	✓	✓	Search for trails only on the web Can also add them and see them in the app
		✓	✓	✓	✓	✓	✓	✓	Search for trails only on the web Can also add them and see them in the app
		✓	✓	✓		✓	✓	✓	Search for trails on the web, in the app one can only see and follow saved or neraby routes. The follow does not seams to work?
	funbeat	✓	✓	✓		✓	✓	✓	Search for trails only on the web Not awalible in the app It is also possible to blogg and discuss
Mobile applications for tracking and finding hikes	GARMIN	✓	✓	✓	✓		✓		Possible to search for trails, one must have a Garmin GPS watch to add routes
		✓	✓	✓	✓		✓		Possible to add and follow trails Not avalible for iPhone
		✓	✓	✓			✓		Only trails in North America avalible
	h+	✓	✓		✓		✓		Store the hikers adventurers Not avalible on the web or on the computer
		✓	✓	✓	✓	✓	✓		Download and use maps
Maps for navigation			✓						
					✓				
TripAdvisor				✓		✓			
TrailAdvise		✓	✓	✓	✓	?	✓		

2 Perceptual mapping of the competitors
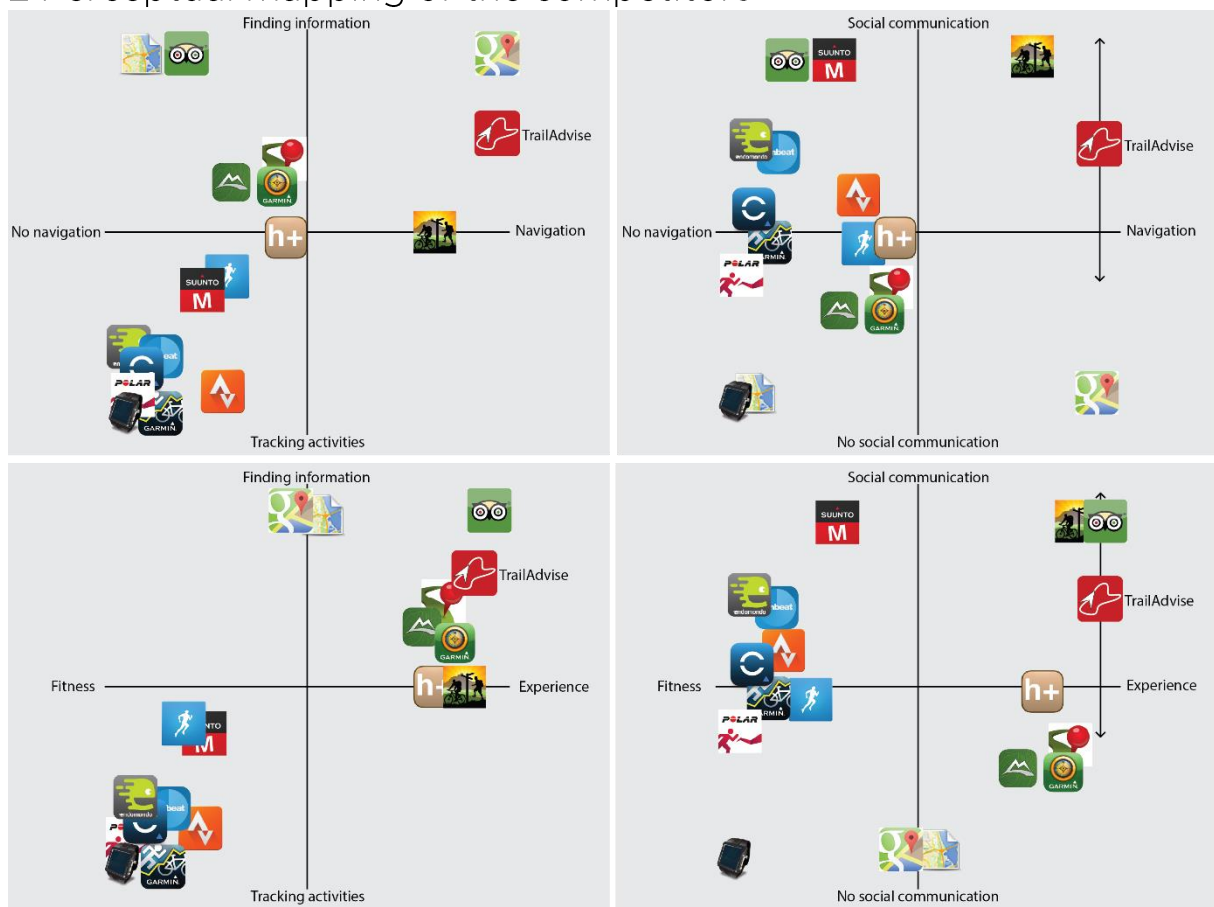
3 List of questions discussed in the first interviews

Intro trailrunners:

Jag heter Minna Kristiansson och jag läser sista året på teknisk Design på Chalmers och jag håller på att göra mitt exjobb (för Jakob Edholm.) Just nu håller jag på att undersöka hur och varför folk springer och vandrar ute i naturen för att få en grundläggande förståelse för vad de finns för behov, så det är därför jag vill genomföra denna intervju med dig. Så jag tänkte bara att vi kunde diskutera lite kring lite frågor som jag har. Är det okej om jag spelar in intervjun bara så att jag inte behöver komma ihåg allt vi säger?

Att fråga/diskutera:

- Om de känner Jakob: Hur mycket vet du om projektet?
- Ålder, Bor
- Vad brukar du träna?
- Var brukar du springa/vandra? Terräng/asfalt?
- När, hur ofta, brukar du springa/vandra?
- Hur långt?
- Varför tycker du om att springa/vandra?
- Använder du någon GPS verktyg eller app när du pringer/vandrar?
  - Vad är bra med det?
  - Använder du dig av ruttplanerar applikationen?
  - Varför/ Varför inte?
  - Använder du appen och/eller web?
- Har du med mobilen när du springer/vandrar?
  - Brukar du lyssna på musik?
  - Brukar du ta kort eller filma när du springer/vandrar? Med mobil eller kamera?
- Hur bestämmer du var du ska springer/vandrar?
  - Vad är viktigt/avgörande?
- Hur hittar du nya stigar?
  - Är det önskvärt? Vad är viktigt?
- Brukar du springer/vandrar själv eller tillsammans med någon/några?
  - Varför?
  - Hur håller ni kontakten?
- Använder du sociala medier? Hur i så fall?
  - Brukar du posta träningspass/vandringar (med app), kort?
  - Vad är viktigt?

Enkät för löpare och vandrare

Jag håller just nu på att genomföra mitt examensarbete. Jag undersöker hur folk rör sig ute i naturen för att får en få en grundläggande förståelse för vad det finns för behov för att sedan kunna bygga vidare på detta. Jag hade därför uppskattat om du ville hjälpa mig genom att svara på frågorna i denna enkät. Den består av 19 frågor, efter frågorna finns det även ett fält där du kan fylla i en eventuell kommentar om det är något mer du vill berätta om angående respektive fråga. Tack på förhand!

1. Kön

○ Man

○ Kvinna

2. Ålder

3. Bostadsort

4. Jag brukar:

☐ Springa

☐ Vandra

☐ Orientera

☐ Cykla

☐ Paddla

☐ Klättra

☐ Utöva lagsport

☐ Styrketräna

☐ Gå på pass på gym

☐ Övrigt:

5. Är du med i någon klubb/förening kopplat till dessa aktiviteter? I sådana fall vad för typ av klubb/förening?

Fortsätt »

20 % ifyllt

Enkät för löpare och vandrare

Sida 2 av 5

6. I viken miljö brukar du springa/vandra?

	1	2	3	4	5	
Alltid i stadsmiljö (Alt asfalterad väg om du ej bor i stan)	○	○	○	○	○	Alltid i naturen

Ev kommentar

7. Hur intressant skulle du tycka att följande information skulle vara att få om en ny rutt?

	1=Inte alls intressant	2	3	4	5	6=Mycket intressant
Om det finns buss- eller spårvagnshållplats i närheten	○	○	○	○	○	○
Hur långt det är till den	○	○	○	○	○	○
Om det finns utomhusgym	○	○	○	○	○	○
Om det finns fiskemöjligheter	○	○	○	○	○	○
Om det finns restaurang	○	○	○	○	○	○
Om det går att tälta	○	○	○	○	○	○
Om det går att komma fram med barnvagn eller rullstol	○	○	○	○	○	○
Längd	○	○	○	○	○	○
Kommentarer från andra angående rutten	○	○	○	○	○	○

Om det finns rastplats	○	○	○	○	○	○
Höjdkurva	○	○	○	○	○	○
Om det finns toalett	○	○	○	○	○	○
Om det finns vindskydd	○	○	○	○	○	○
Om det finns badplats	○	○	○	○	○	○
Vad för typ av underlag som förekommer, skogsstig, grusväg, asfalt, obanadterränd	○	○	○	○	○	○
Betyg andra har gett rutten	○	○	○	○	○	○
Om det finns parkering	○	○	○	○	○	○
Svårighetsgrad	○	○	○	○	○	○
Om det finns elljusspår	○	○	○	○	○	○
Om det finns några speciella sevärdheter	○	○	○	○	○	○
Om det finns eldstad	○	○	○	○	○	○
Vad den är i för typ av miljö, skog, kust, bostadsområde…	○	○	○	○	○	○
Ungefärlig tid det tar att gå/springa rutten	○	○	○	○	○	○

Ev kommentar

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« Bakåt   Fortsätt »

40 % ifyllt

Enkät för löpare och vandrare

Sida 3 av 5

8. Hur intressant skulle det vara att se följande från intressanta nya rutter?

	Inte intressant alls	Lite intressant	Ganska intressant	Mycket intressant
Stigen plottad på en karta	○	○	○	○
Kort tagna från stigen	○	○	○	○
Betyg andra gett stigen	○	○	○	○
Kommentarer andra skrivit om stigen	○	○	○	○

Ev kommentar

9. Brukar du/ni ha med mat eller fika att äta utomhus?

○ Ja

○ Nej

○ Ibland

Ev kommentar

10. Vad använder du för att navigera dig när du är ute i naturen?

☐ Jag tar oftast vägar jag kan sedan innan

☐ Jag har läst på om vägen innan

☐ Fysiks karta

☐ Digital karta och GPS

☐ Jag rör mig i någorlunda kända områden där jag tar lite olika vägval beroende på vad jag känner för

☐ Övrigt: [_____]

Ev kommentar

11. Hade det varit intressant för dig att få lättillgänglig information om nya stigar och leder?

○ Ja

○ Nej

○ Kanske

Ev kommentar

[« Bakåt] [Fortsätt »]

60 % ifyllt

Enkät för löpare och vandrare

Sida 4 av 5

12. Hur brukar du ta dig till dit du brukar springa/vandra?

☐ Bil
☐ Kommunaltrafik
☐ Går/springer
☐ Cyklar
☐ Övrigt:

Ev kommentar

13. Skulle du kunna tänka dig att dela med dig av dina rutter och stigar till andra?

○ Ja
○ Ja men bara till vänner
○ Kanske
○ Nej
○ Övrigt:

Ev kommentar

14. Brukar du vandra/springa själv eller tillsammans med andra?

	1	2	3	4	5	
Alltid själv	○	○	○	○	○	Alltid med andra

Ev kommentar

15. Brukar du logga dina aktiviteter?

Alltså använda dig av någon typ av GPS för att registrera var och hur långt du rör dig etc.

○ Ja

○ Nej

○ Ibland

Ev kommentar

16. Vad använder du dig av i sådana fall?

☐ GPS-klocka

☐ GPS-applikation i mobilen

☐ Vanlig GPS

☐ Övrigt:

Ev kommentar

« Bakåt   Fortsätt »

80 % ifyllt

How interesting do they find the following information about trails?

■ Runners ■ Hikers

Not interesting at all   Very interesting
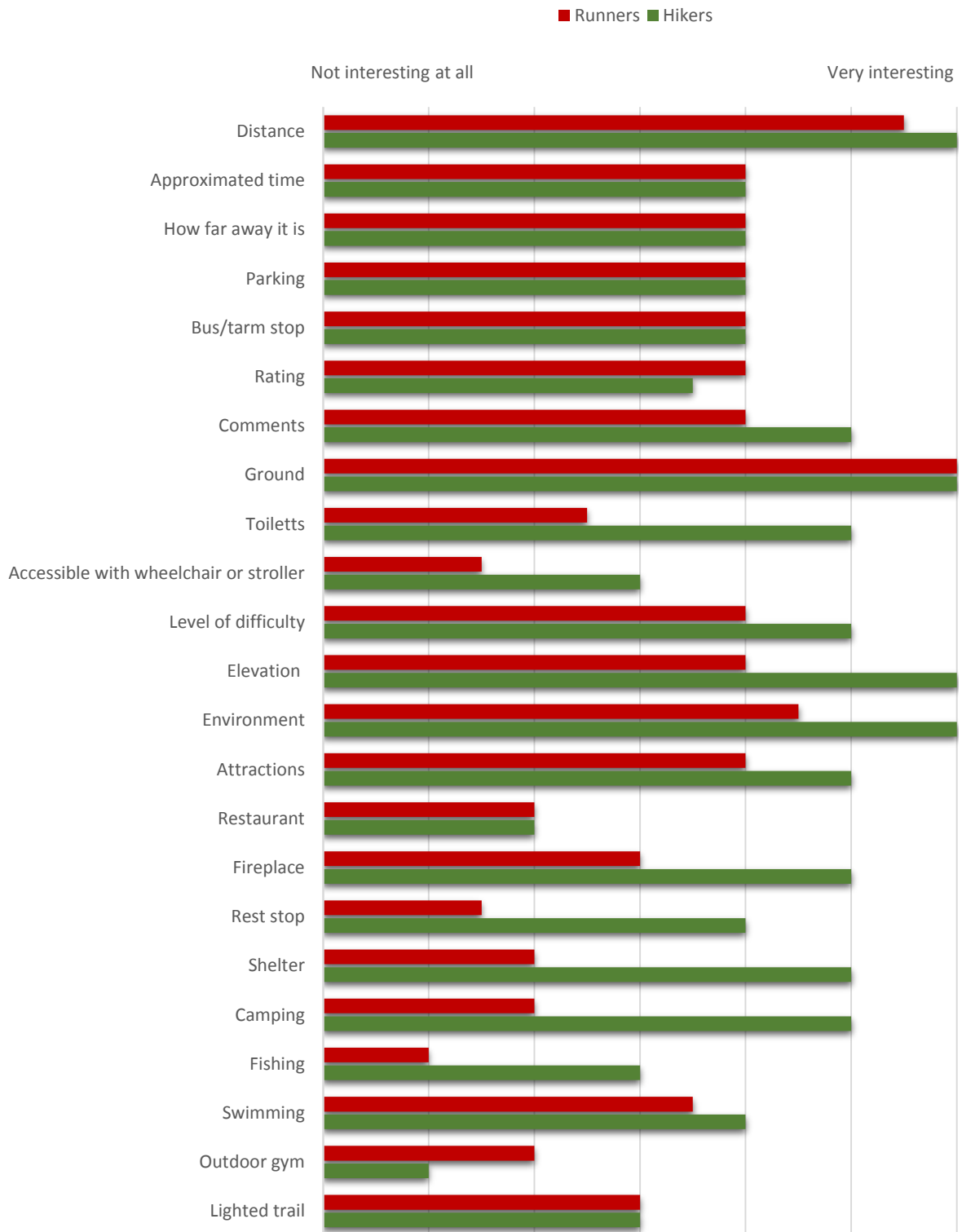
How interestingt do they find the following inforamtion about the route?

Not intresting at all   Very interesting

Map	
Pictures	
Ratings	
Comments	

■ Runners ■ Hikers

Runners

31%

69%

■ Both Runs and hikes   ■ Either Runs or Hikes

Hikers

46%

54%

■ Both Runs and hikes   ■ Either Runs or Hikes

Total

41%

59%

■ Both Runs and hikes   ■ Either Runs or Hikes

5 Result from the survey 3(7)

Do they eat out in the trails?

How do they get to the trails?

How do they navigate?
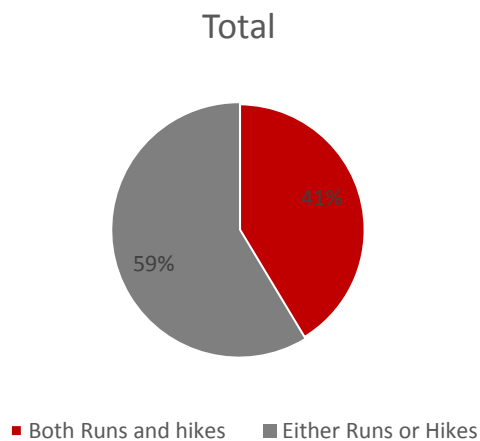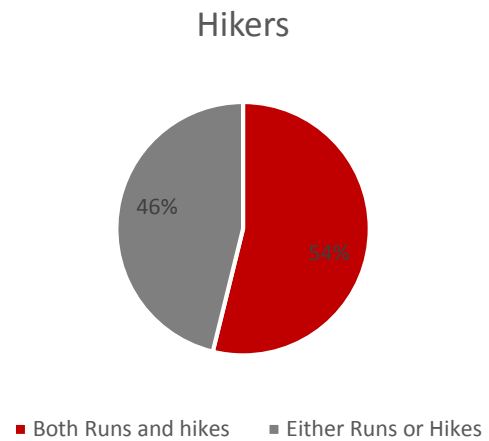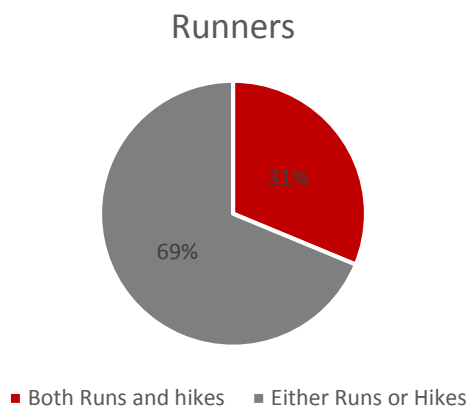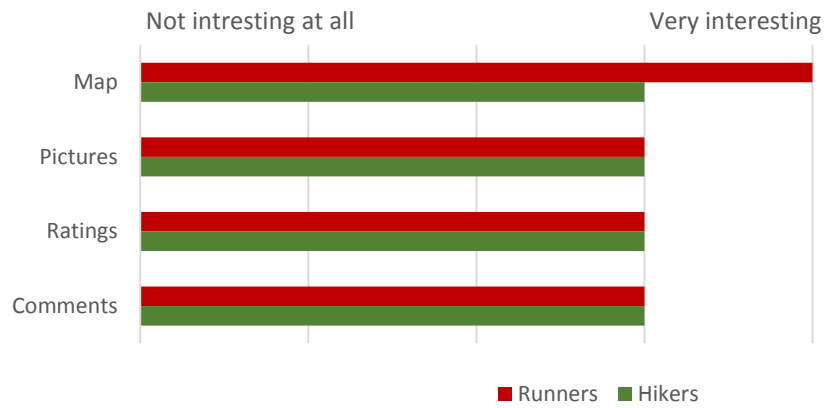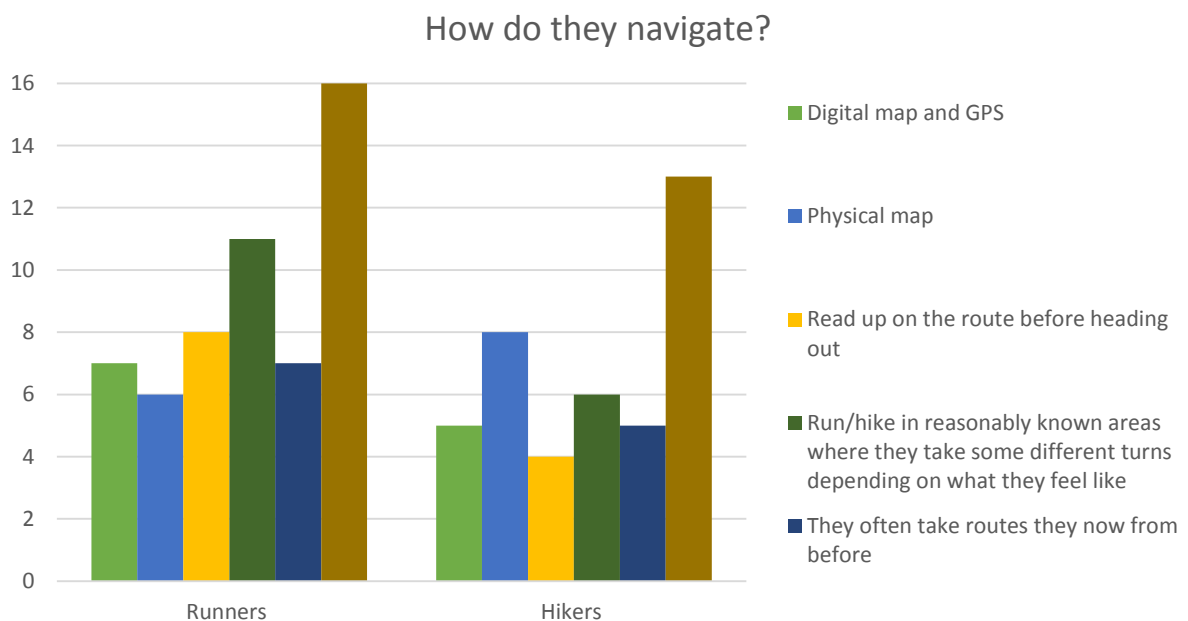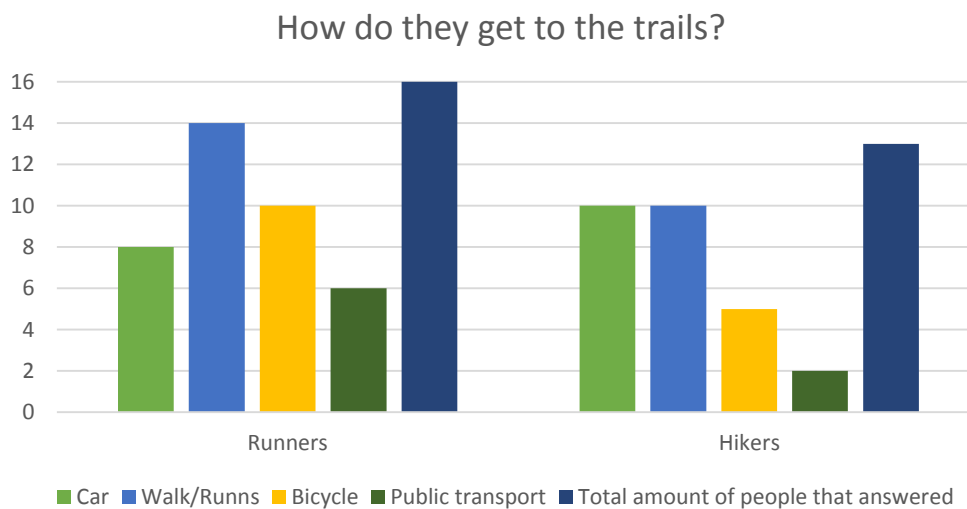
Would it be interesting to get easy access to information about new trails?
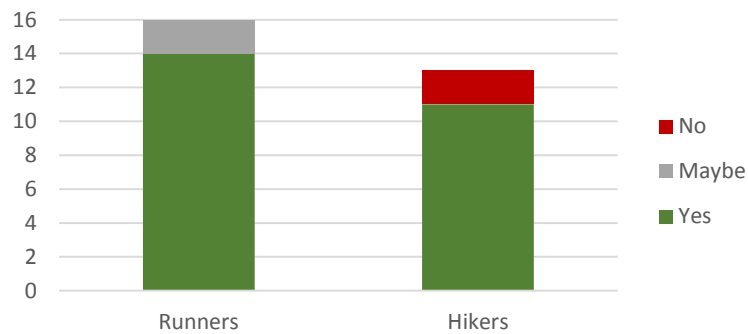
Would they share their trails?
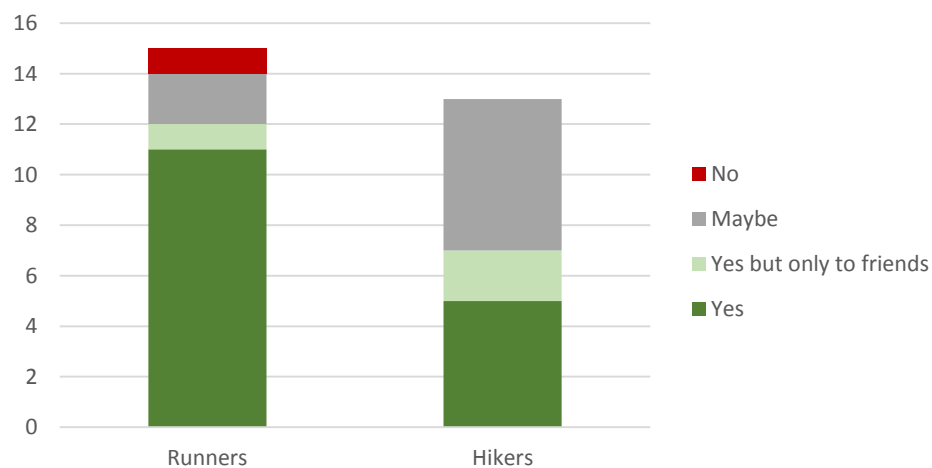
Do they track their activities?
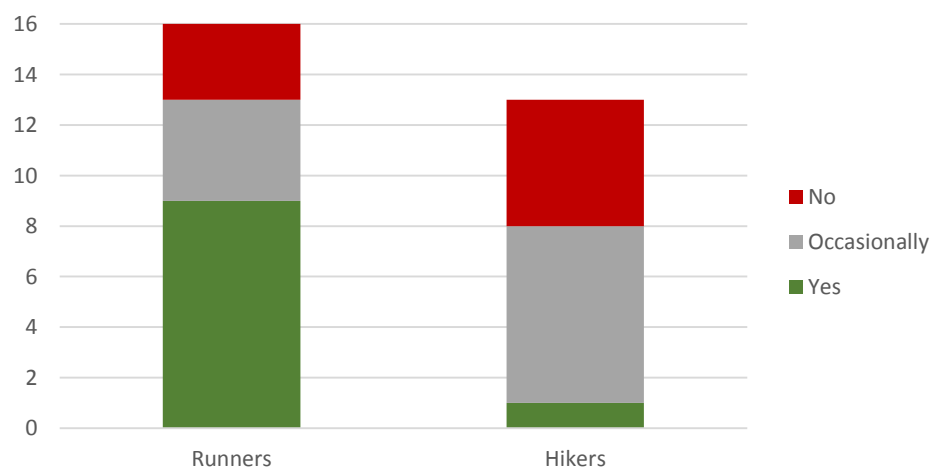
What do they use to track their activities?

Do they bring their phone?

What do they use their phone for?

How do they communicate their pictures taken on the routes?

What do they use their phone for?

How do they communicate their pictures taken on the routes?
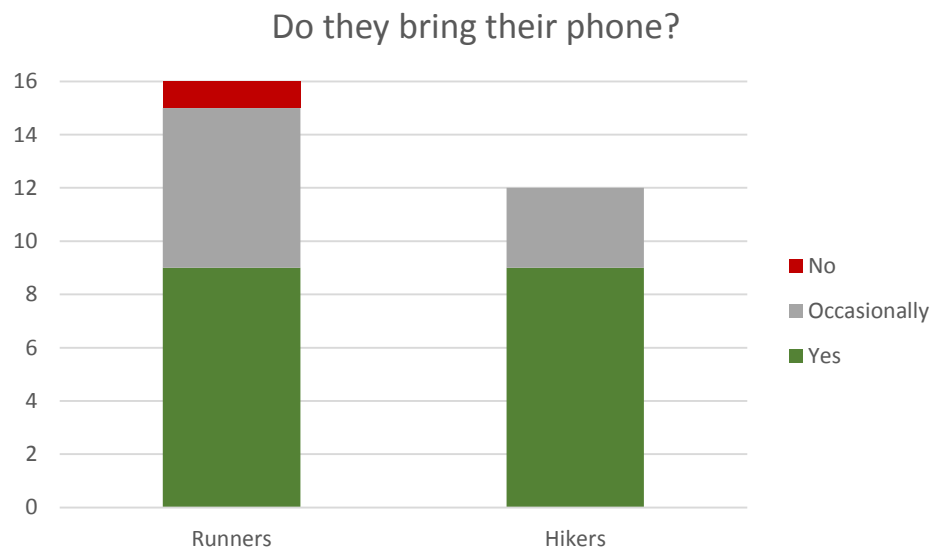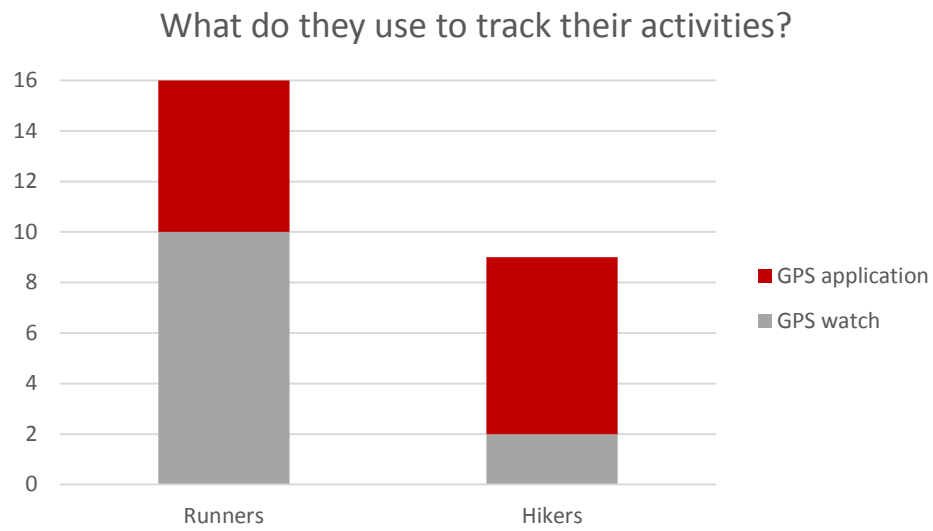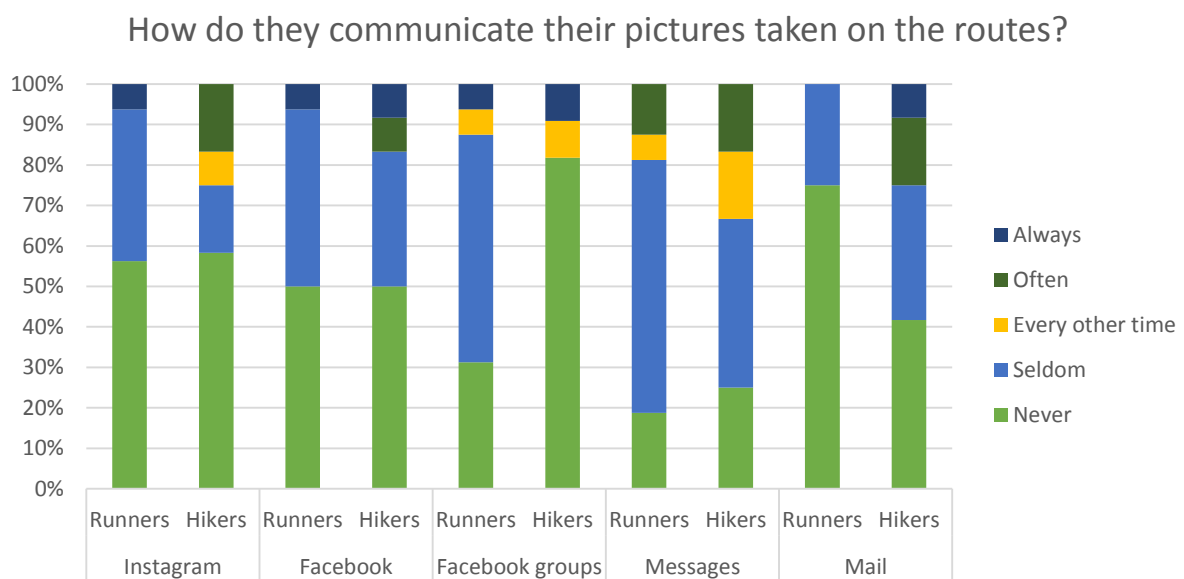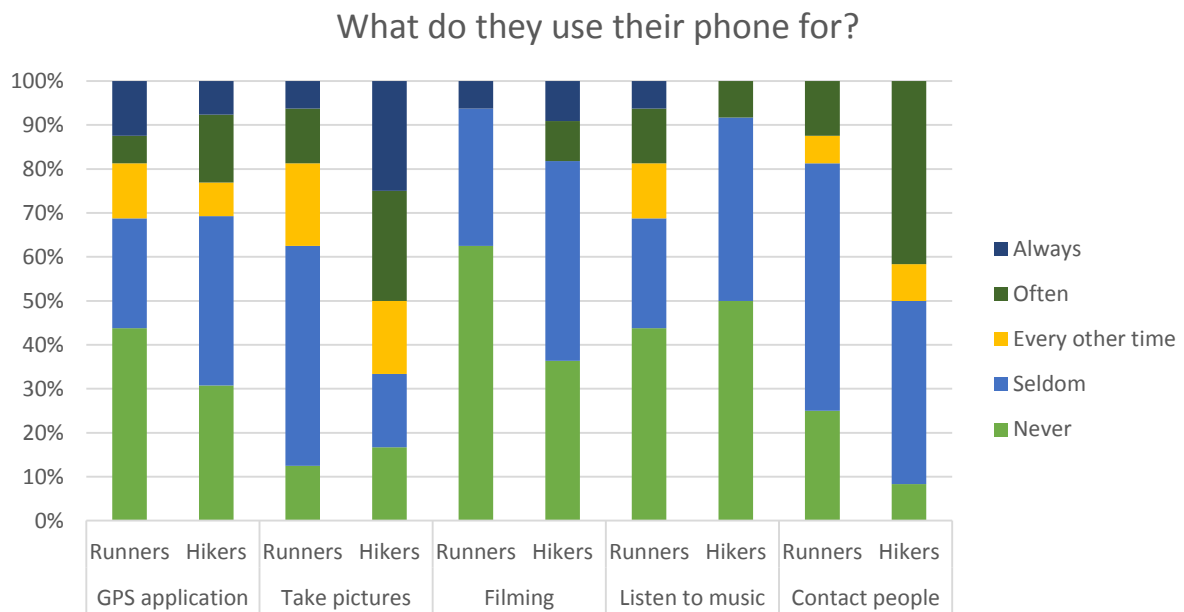
6 User profiles 1(3)

Accessible runners

Background:

- Age: 22-50 year old
- Both male and female
- Lives in a city in Sweden
- Likes to perform different types of exercise

Running Characteristics:

- Runs about 1-3 times a week often depending on season
- Runs to get exercise and because it makes them feel good and because it is so accessible
- Prioritizes accessibility over experience
- Usually runs in the city but prefers the nature
- Runs on trails occasionally
- Runs on trail located in forested areas close to the city
- Prefer to run with other but most often run by them self because it is simpler and faster
- Is not that interested in technical gadgets and sport gears
- All of them does not log their workouts
- Most often they don't bring their phone
- They often run the same route or in the same area
- Finds new trails to run from taking new turns on known routes or through running with friends
- Decides where to run based on the environment, the weather and the level of difficulty

Activities, Goals and Movites regarding TrailAdvisor:

- Activity - The user will probably mainly use the service to search for new trails to explore, they might occasionally add a new route or use it to navigate the new trail
- Benefit – Being able to find new interesting routes, gets complementary route information
- Goal – To be able to run in accessible nature environments
- Motive – A desire to experience nice nature trails in their neighbourhood

Devoted runners

Background:

- Age: 22-50 year old
- Both male and female
- Lives in a city in Sweden
- Puts much time into their running

Running Characteristics:

- Runs 4-5 times a week
- Runs because they enjoy it and they like to perform
- Prioritizes nice experiences
- Prefers to run on nature trails over city streets
- Runs on trails regularly, usually 4 times a week
- Runs on trails located in forested areas close to the city
- Often run together with others
- Likes technical gadgets and sport gears
- Log their training with GPS watch to keep track of them some also share and compare with friends
- Some bring their phone and some don't
- They sometimes runs a route that is set before but it also happens that it is just an area that are decided and then they runs as they feels like there.
- Finds new trails to run from friends or by exploring new routes when running
- Decides where to run based on a predefined workout purpose, it can be short or a long run, or practising running in hills or interval

Activities, Goals and Movites regarding TrailAdvisor:

- Activity - The user hopefully creates and adds new routes and communicates these with friends, also finds and follows new trails
- Benefit – Being able to find new interesting routes, gets complementary route information
- Goal – To get a nice nature experience while running in an environment that fits the purpose of specific workouts
- Motive – A desire to experience nice nature trails and be able to share that with friends

Wilderness enthusiasts

Background:

- Age: 20-70 years old
- Both male and female
- Lives in Sweden
- Likes to hike and perform different activities in the nature

Hiking Characteristics:

- The hiking frequency differs between seasons but from 1-4 times a month
- Hikes with as much wilderness felling as possible
- Goes on daily hikes or stay over night in the nature
- They bring food that they cook and eat in the nature
- Navigates with a physical map
- Can not rely on their mobile phones
- They take pictures on their hikes
- Usually take cars to the trails
- Most often hikes with their family
- Usually bring their phone even if they can not rely on that it will have battery
- Goes on mountain hikes once a year

Everyday hikers

Background:

- Age: 20-70 years old
- Both male and female
- Lives in Sweden
- Likes to hike and perform other exercise activities

Hiking Characteristics:

- Hikes about 1-2 times a week
- Prefers to hike in the nature, but often end up on gravel roads because of accessibility
- Goes on daily quite short hikes
- Sometimes bring food to eat in the nature
- Sometimes log their activity with a mobile application
- Take routes that are close to home or where they can park their car
- Hikes with their family or alone
- Sometimes take pictures of the family or the nature
- Always bring their phone
- Appreciates if there is something special to see on a route
- Thinks that it is important to know how long the route is

Adventurers

Background:

- Age: 30-50 years old
- Both male and female
- Lives in Sweden
- Likes to hike, paddling, climbing, biking, and other outdoors activities

Hiking Characteristics:

- Hikes about one time a week on the weekend
- Hikes in the nature, usually not close to big cities
- Goes on daily hikes or stay over night in the nature
- They bring food that they cook and eat in the nature
- Read up on the route before
- They take pictures and film their adventures
- They log their adventurers and share them with friends
- They bring their phones even if they do not always will have battery
- Usually take cars to the trails
- Most often hikes with friends
- Uses the web to get tips and find new exiting routes to explore
- Creates Facebook events for different adventures
- Thinks that it is important that there is something special to see on the route
- Thinks that it is important to know how challenging the route is
- Thinks that it is important to know how long and how long time the route will take

Wilderness enthusiasts (cont)

Activities, Goals and Movites regarding TrailAdvisor:

- Activity- Get information about interesting routes, can get linked to places where they can by maps or rent cabins
- Benefit- Being able to explore the trail a bit before to plan and know what to expect from the hike
- Goal- To get a nice wilderness experience
- Motive- A desire to get a exciting wilderness hike

Everyday hikers (cont)

Activities, Goals and Movites regarding TrailAdvisor:

- Activity - The user will probably mainly use the service to search for new trails to explore, they might occasionally add a new routes
- Benefit – Being able to find new interesting routes, gets complementary route information and navigation
- Goal – To have a nice time in the the nature with their family
- Motive – A desire to experience nice nature trails in their neighbourhood

Adventurers (cont)

Activities, Goals and Movites regarding TrailAdvisor:

- Activity - The user will add new routes with interesting places and pictures
- Benefit – Being able to mark different interesting places in a easy way and be able to share that with others, also to get a place to store all their adventures in text and pictures
- Goal – To share, discuss and compare their activities with others
- Motive – A desire to share their experiences with others

7 A compiling list of the different goals, characteristics, needs, etc for every user sub-group 1(2)

Accessible runner

Goal: Exercise to stay healthy

Characteristics:

- Runs because it is accessible
- Wants trails that are close to home
- Does not log their training
- Often run by them self
- Time constraints

Need: Find nature trails close to home

Value:

- Easy access to valuable information that makes it easier for them to explore new trails

Activity: Search for new trails, get guidance on them?

Devoted runner

Goal: To run a certain workout with a certain outcome, get some social affinity

Characteristics:

- Runs together
- Wants to perform
- Often run in the nature
- Important with experience

Needs: Trails with nice experience where they can perform certain workout sessions

Value:

- Find new places to explore, share good places to run with like minded
- Get a compilation of fun training sessions with friends (in photos)

Activity: Search, get navigation, add, share

Everyday hiker

Goal: Get exercise and fresh air

Characteristics:

- Hikes to get exercise and fresh air
- Wants to see something spectacular
- Stops and eats
- Takes pictures

Need: To find nice nature trails in their area to explore

Value:

- Easy access to valuable information that makes it easier for them to explore new trails
- A memory storage
- Easy to share info and pictures with loved once

Activity: Search for new trails, get guidance on them?, add trails

Adventurer

Goal: Experience, share and compare adventures

Characteristics:

- Social
- Takes photos
- Logs
- Share and compare with like minded

Needs: Show off, store and compare their experiences

Value:

- Can add places and easy show of their adventures
- A memory storage , get a place where all of their adventurers are compiled
- They can share them with friends and family.
- They can share their knowledge with others

Activity: Upload and share their adventures

7 A compiling list of the different goals, characteristics, needs, etc for every user sub-group 2(2)

Wilderness enthusiast

Goal: Get a wilderness experience

Characteristics:

- Wants to be as far away from the civilisation as possible
- Does not rely on their phone
- Uses physical maps

Needs: Find places with as much quiet and nature as possible, find info and see trails to compare and decide where to go, find maps and plan where to camp etc.

Value:

- Gets a better idea of what to expect before?
- A memory storage, compile their hikes with text and photos
- Easy share it with loved once

Activity: Search and find information

8 List of design statements, requirements and guidelines from Identifying User Needs 1(3)

Design

Problem: Main Problem

Specified and described main problem:
- There is no easy way for people to get access to information about nature trails in their neighbourhood which makes it less likely for them to explore the nature

Specified and described effect:
- Get more people to experience and share nature trails

Structure: Context, user and stakeholders

Specified and described context:
- Since the service is available in a mobile application the context of use is very broad. The user can search for trails whenever, either on the go or at home in peace and quiet. It will also be used on the run or hike on the trails. However the use of device may differ.

Specified and described intended users:
- Intended users is people who likes to spend time in the nature, it includes both runners and hikers

Specified and described stakeholders:
- Project management
- The developing team
- Nature and tourist organisations

Function: Values and abilities

Specified and described abilities in the hms:
- Contribute people with information about trails and nature places
- Store different information about trails both the users own and in the service database
- Help people navigate trails

Specified and described customer and user values:
- Easy access to valuable information about trails
- Easy to find new exciting trails to explore
- Easy to navigate the trails
- A good way to store the adventures
- Easy to share the experiences with friends and family

8 List of design statements, requirements and guidelines from Identifying User Needs 2(3)

Design (cont)

Activities: Intended use and lifecycle

Specified and described intended use:
- The service is to be used whenever the user wants to find information about trails, it can be on the buss, at home or on the way to the run or hike.
- The service is to be used when tracking new trails
- The service it to be used when wanting to document and save once adventures
- The users should contribute with their own trails that they have logged with the application or with a GPS watch
- The service is to be used when sharing trails to friends
- The service is to be used when needing navigation when exploring a new trail

Specified and described relevant phases in the lifecycle:
- Development
- Marketing
- Downloading and purchases of the application
- Usage
- Continues development and growth

Implementation: Possibilities and limitations

Specified and described possibilities:
- Big possibilities since there is not a service that supplies this in a relevant way today
- Good possibilities since many people is engaged in outdoor activities such as hiking and running
- Possibility to grow with the help of the users since they can insert their own trails
- Possibility to grow and develop the service
- People usually have many different mobile applications

Specified and described limitations:
- There are very many mobile applications available
- The success of the application depends on that user activity, that users uploads their own trails etc.
- Many users does not like to have their phones with them when they explore nature
- The technology for how the service shall work is not ready
- The mobile application has to be very direct and clear with what it does
- No existing application has succeeded with this type of functions
- Needs to be downloaded and used of many users in order to be successful
- Hard to make it profitable

8 List of design statements, requirements and guidelines from Identifying User Needs 3(3)

Requirements
Objective
System objective/effect objectives: • The service should facilitate for the users to be able to enjoy nice nature experiences in their neighbourhood and on vacations Level of usability: • A user should within 20 seconds be able to find and get basic information about nice nature trails or places in their location or on another chosen destination.
Needs
Needs from users and usage: • The applications should be easy to use on the go • The users should be able to add places and take photos while tracking or navigating trails • The user should be able to get basic information such as distance and time when tracking or navigating trails • The interface should trigger and motivate the user to explore nature • Display information about the distance of the trails • Display information about the ground on the trails • Display information about the environment the trails is located in • Display information about the elevation the trail has • Provide information about different interesting places • Make it easy to explore new trails, eliminate the insecurity about how long time it will take and where they will end up • Be able to share their experiences on social medias and via messages and email • Users should be able to benefit from the service even if they do not want to have their phone with them while running or hiking • The users should be able to register through their Facebook accounts as well as having the possibility to register with an email address Needs from stakeholders: • Be able to develop • Be profitable
Guidelines
Usability guidelines: • The service should only have the most important functions and they should be represented in an understandable and effective way so that the user understands the purpose and how to use it. • It should be very easy and clear how to use it.

9 List of design statements, requirements and guidelines from Identifying Requirements of Usage 1(4)

Design
Problem: Usage Further specification of main problem: - How should the service be designed in order to facilitate for users to explore the nature? Answering of questions for future design phases: - How should people be motivated to contribute with their own trails? - What information is important for them regarding the trails? - What should the tracking function track? - How should the off-road navigation work?
Structure: HMS Specified and described HMS: Specified and described central abilities for the elements in the system: - User: Characteristics, vision, technical knowledge, motor skills - Smartphone: Limited screen space, used on the go - Web: Input methods include keyboard and mouse, at home - Smartwatch: Very limited screen space, used on the go - Friends and family: Vision, Interests - Nature and tourist organisations: Vision, technical knowledge, motor skills
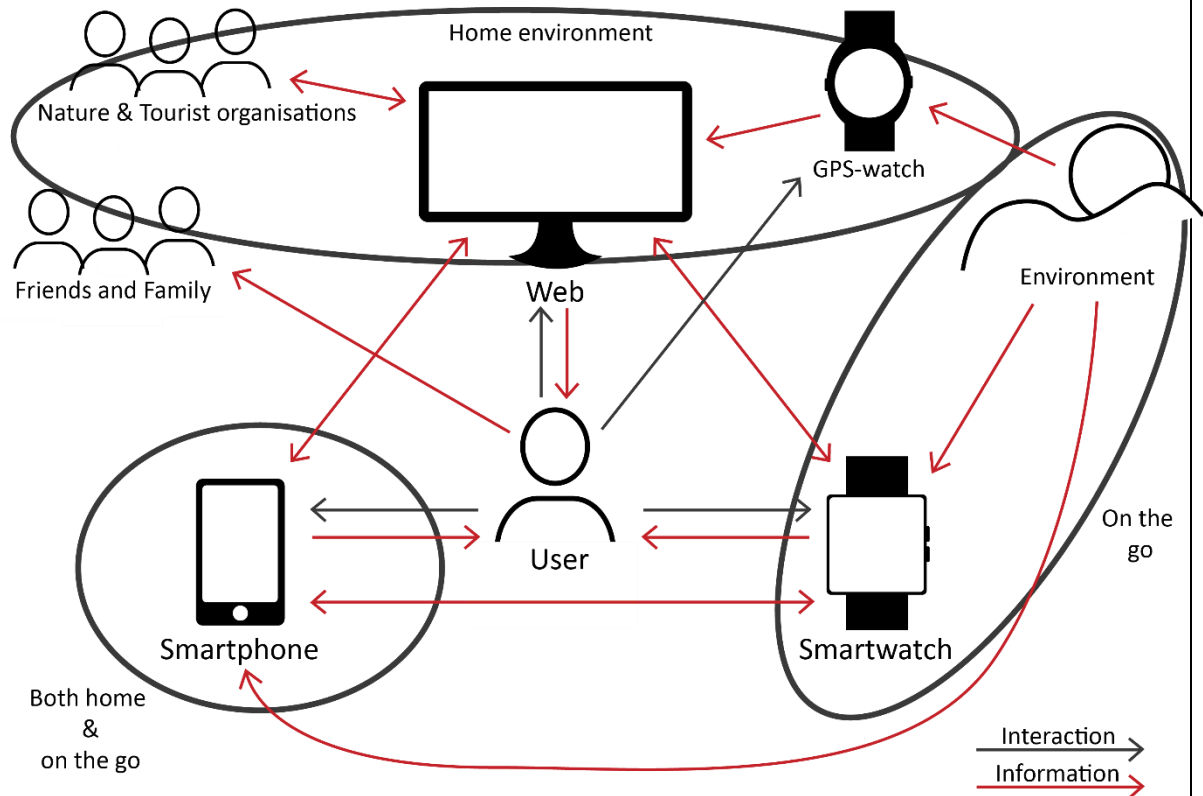
9 List of design statements, requirements and guidelines from Identifying Requirements of Usage 2(4)

Design (cont)

Function: System functions

Specified and described functions for the HMS:

- Enable people to **search** for trails and get valuable information about them
- Enable people to **track** own trails
- Enable people to **upload** and **store** their adventures
- Enable people to **share** their trails with friends and to contribute with their own trails to the service
- Enable off-road **navigation**

Specified and described the distribution of functions between the human and the machine:

Human	**Machine**
State search criterions	Present search result
Start and complete tracking of routes	Collect data about the route
Contribute their routes	Enable people to contribute their routes effortlessly
Complete routes with information, places, photos	Enable people to insert information, places, photos
Explore new routes	Offer navigation
Rate and comment routes	Allow users to rate and comment routes

Activities: User assignments

Specified and described assignments for the user:

- The user should browse for new trails
- The user should track new and own trails
- The user should contribute with their trails to the database or share with friends
- The user should add information about trails(text, places, photos, reviews, comments) both to own and others trails
- The user should explore new trails with the navigation function

9 List of design statements, requirements and guidelines from Identifying Requirements of Usage 3(4)

Design (cont)

Implementation: Possible solutions

Describe possible solutions for the interaction:

- Use touch interaction
- Use mouse and keyboard
- Use voice communication

Describe possible esthetical solutions:

- A red colour theme- makes the user feel energetic and want to explore
- A green colour theme- represents the calm and soothing nature
- A user interface that looks really nice with much pictures- can be harder to navigate and understand
- A user interface with both nature pictures and big and clear buttons- gives the user motivation to explore and is easy to use
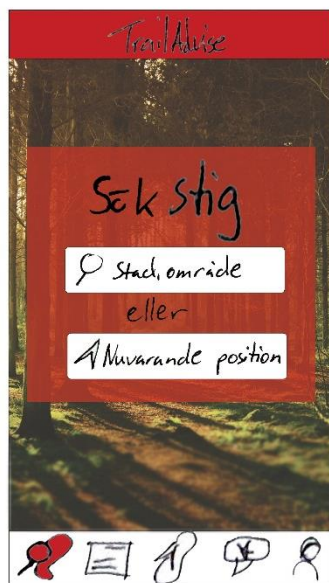
Red colour theme with big and clear buttons
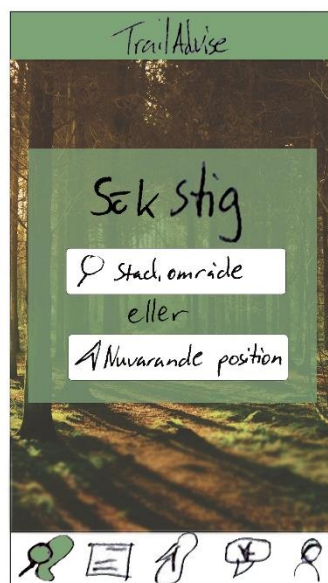
Green colour theme with big and clear buttons
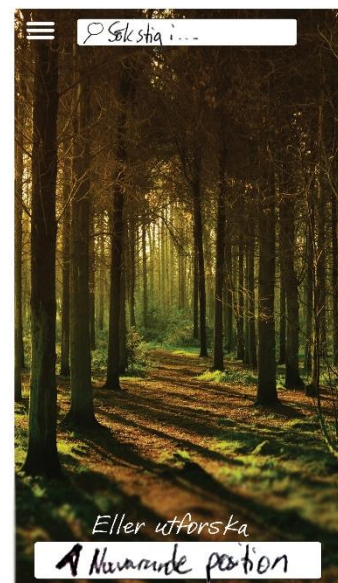
Focus on nice pictures

Specified and described chosen technical concept:

- A digital service available on the web and as a application in smartphone and smartwatch

9 List of design statements, requirements and guidelines from Identifying Requirements of Usage 4(4)

Requirements

Objective

Usability objectives:
- First time users should be able to grasp the main purpose of the service within seconds
- It should be easy and fast to search trails
- It should be easy and fast to track trails
- It should be easy and fast to upload trails
- It should be easy and fast to edit trails
- It should be easy for users to explore new trails
- The user should be able to explore the service fast and without commitment
- It should be fast and easy for users to register to the service

Benefit objectives:
- The service should provide useful information about trails to runners and hikers
- The tracking should provide hikers, and accessible runners with the information they want from the activity

Requirements of usage

Requirements from usage:
- The applications shall be easy to use on the go
- The applications should be able to use it with one hand in a noisy and moving environment, for example on the buss. (Smartphone application)
- The applications shall be possible to use with specific smartphone gloves

Requirements from users:
- Be able to read text
- Be able to press different buttons
- Be able to insert information

Requirements from market:
- Be differentiable
- Communicated functionality

Requirements from production:
- Be able to develop

Guidelines

Guidelines for usability:
- Easy to see different buttons/functionalities
- Easy to navigate the service
- Easy to understand how to use the service

Guidelines for aesthetics:
- Coherent interface design
- Coherent colours that provides the right feeling
- The service should clearly express the most important functionality the first time a user opens it

10 Elimination matrixes 1(6)
Legend: Ratings from 1-3, A=All, R=Runners, H=Hikers, N=None

Information	Accessible runners	Devoted runners	Everyday hikers	Adventurers	Wilderness enthusiasts	SUM	Appreciated by	Decision	Comment
Distance	3	3	3	3	2	14	A	Yes	
How far away it is	3	3	2	2	2	12	A	Yes	
Elevation	3	3	3	3	3	15	A	Yes	
Environment	3	3	3	3	3	15	A	Yes	
Ground	3	3	2	2	2	12	A	Yes	
Interesting places	1	1	3	3	2	10	H	Yes	
Map	3	3	3	3	3	15	A	Yes	
Pictures	2	2	2	2	2	10	A	Yes	
Approximated time	3	1	2	2	2	10	A	?	Difficult to implement
Ratings	3	3	3	3	3	15	A	Yes	
Comments	3	3	3	3	3	15	A	Yes	
Questions	2	2	3	3	3	13	A	Yes	
Level of difficulty	1	1	2	2	2	8	N	?	Difficult to implement
Appropriate for weather	3	2	1	0	1	7	R	No	
Accessible with wheelchair/stroller	0	0	2	2	1	5	H	Yes	Accessibility
Appropriate for kids	0	0	2	2	1	5	H	Yes	Accessibility
Status of the ground	3	2	2	1	1	9	A	?	Future?
Different level of points on the nature	3	3	3	3	3	15	A	Yes	
Warnings	2	2	2	2	2	10	A	?	Future?
If someone is responsible for that route, contact info	2	2	2	2	2	10	A	Yes	
Information about wild animals	0	0	2	2	2	6	H	No	
Information about flowers	0	0	2	2	2	6	H	No	
Things to bring	0	0	3	2	2	7	H	No	
Equipment to use	0	0	2	2	2	6	H	No	
Shoes to use	0	0	2	2	2	6	H	No	
Mobile connection in the area	0	0	1	2	1	4	H	No	
If there are other hikers/runners on the same trail	0	0	1	1	3	5	H	No	
How many that has experienced the route	2	2	2	2	2	10	A	?	

What running competition it resembles	2	3	0	0	0	5	R	No	
What type of running session it is good for	2	3	0	0	0	5	R	No	
Watch a preview	2	2	3	3	3	13	A	?	Future?

Search	Accessible runners	Devoted runners	Everyday hikers	Adventurers	Wilderness enthusiasts	SUM	Appreciated by	Decision	Comment
Map over the area	3	3	3	3	3	15	A	Yes	
Appropriate routes based on weather	3	2	2	1	1	9	R	No	
Different categories, level of difficulty, much hills etc	2	3	2	2	2	11	A	No	
Top rated on the top of the list	3	3	3	3	3	15	A	Yes	
If there are other hikers/runners on the same trail	1	1	2	1	3	8	H	No	Safety reasons

Filter on	Accessible runners	Devoted runners	Everyday hikers	Adventurers	Wilderness enthusiasts	SUM	Appreciated by	Decision	Comment
Length	3	3	3	3	2	14	A	Yes	
Ground	3	3	3	3	3	15	A	Yes	
Elevation	2	2	3	3	3	13	A	No	Difficult to implement
Environment	2	2	3	3	3	13	A	Yes	
Interesting places	1	1	3	3	3	11	H	Yes	
Approximated time	3	2	2	2	1	10	A	?	Difficult to implement
If it is a circular trail or if it has one start and one end	2	2	2	2	2	10	A	No	Not necessary to filter on

Tracking	Accessible runners	Devoted runners	Everyday hikers	Adventurers	Wilderness enthusiasts	SUM	Appreciated by	Decision	Comment
Speed(Automatic)	3	3	1	1	0	8	R	No	
Distance(Automatic)	3	3	3	3	3	15	A	Yes	
Time(Automatic)	3	3	2	1	0	9	A	Yes	Good to know
Elevation(Automatic)	3	3	3	3	3	15	A	Yes	
Route plotted on a map(Automatic)	3	3	3	3	3	15	A	Yes	
Add-Place	1	1	2	3	3	10	H	Yes	
Add-Take photos	1	1	2	3	2	9	H	Yes	
Add-Meeting point	2	3	1	3	0	9	R	No	
Notification when coming close to a interesting place	2	1	3	3	3	12	H	Yes	

Navigation	Accessible runners	Devoted runners	Everyday hikers	Adventurers	Wilderness enthusiasts	SUM	Appreciated by	Decision	Comment
Vocal navigation	2	2	2	2	0	8	A	Yes	
Be able to see where you are	3	3	3	3	3	15	A	Yes	
Closest way home	3	3	3	3	3	15	A	No	
Completed distance	3	3	3	3	3	15	A	Yes	
Remaining distance	3	3	3	3	3	15	A	Yes	
Bar with completed/remaining distance	3	3	3	3	3	15	A	Yes	
Notification when coming close to a interesting place	2	1	3	3	3	12	H	Yes	
Allow an overview when navigation, like a regular map	2	2	3	3	3	13	H	Yes	
Vibration and warning sound	1	1	2	2	2	8	H	Yes	
Two different sounds	3	3	3	3	0	12	A	No	
Only vibrations	1	1	1	1	2	6	H	Yes	
Get navigation there and home	3	2	1	1	1	8	R	No	

Profile	Accessible runners	Devoted runners	Everyday hikers	Adventurers	Wilderness enthusiasts	SUM	Appreciated by	Decision	Comment
Having a own profile, save his/her own routes/adventures	2	1	2	3	2	10	H	Yes	
Diary for hikers and adventurers	1	1	1	3	2	8	H	No	
Own routes	1	1	1	3	2	8	H	Yes	
Saved routes	3	3	3	3	2	14	A	Yes	
Contributed routes	2	2	2	2	2	10	A	Yes	
Explored routes	2	2	2	2	2	10	A	Yes	
Mark routes as explored	3	3	2	2	1	11	R	Yes	
Storage of how far one has moved	2	2	2	2	2	10	A	?	
Ratings	2	2	2	2	2	10	A	Yes	
Comments	2	2	2	2	2	10	A	Yes	
Likes	2	2	2	2	2	10	A	?	
Pictures	2	3	3	3	3	14	A	Yes	
Get information when people complement once route	2	2	2	2	2	10	A	?	
Get information when someone uses once route	2	2	2	2	2	10	A	No	Safety reasons
Get info about how many has taken once route	2	2	2	2	2	10	A	?	
Get different rewards/statues based on different things	2	2	1	2	1	8	R	?	
Some sort of goal with the profile	2	3	2	3	1	11	A	Yes	
Route high score list in different areas	2	2	2	2	2	10	A	Yes	
Own the route posted	2	3	2	3	2	12	A	Yes	
Hiker of the week	2	2	2	2	2	10	A	?	
Ranking of how many routes one has posted	2	2	2	2	2	10	A	Yes	

Rewards for sharing much- different levels of users	2	2	2	2	2	10	A	?	
Get more functions when adding routes	1	1	1	1	1	5	N	No	
Friends get to see when shared one route	2	2	2	2	2	10	A	?	
Add friends	2	2	1	2	1	8	A	?	
Find friends to hike with	2	2	1	2	1	8	A	?	

Overarching functions	Accessible runners	Devoted runners	Everyday hikers	Adventurers	Wilderness enthusiasts	SUM	Appreciated by	Decision	Comment
Distress	1	2	1	3	3	10	H	No	
Notification when it is not allowed to start a fire	1	1	3	3	3	11	H	No	
Have links to information about fire, "allemansrätt", nature reserve	1	1	2	2	2	8	H	No	
Be able to complement others routes	2	2	2	2	2	10	A	Yes	
Link to Facebook	2	2	2	2	2	10	A	Yes	
Latest posted routes	2	2	2	2	2	10	A	Yes	
Contact the creator of the route	1	1	2	3	3	10	A	Yes	
Different modes for running, hiking regarding type of information present	?	?	?	?	?	-	-	No	
Notification when someone adds a new trail near you	3	2	3	1	1	10	-	Yes	
New pictures all the time	-	-	-	-	-	-	-	Yes	
Get listed directions before heading out	2	2	1	1	2	8	R	?	Hard to implement
When sharing to some persons, be able to add a meeting point	2	2	1	3	1	9	R	?	
See places and get routes suggestions of how to get there	2	2	3	3	2	12	H	Yes	
Advertisement in the a news feed	-	-	-	-	-	-	-	?	
Inputting their interests so that they can get targeted advertisement	-	-	-	-	-	-	-	?	

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11 Focus group protocol

Jag håller ju på med mitt examensarbete och jag skulle vilja ha rean hjälp att utvärdera några utav mina idéer. Så ni kommer att få se lite olika skisser som ni får diskutera med varandra vad ni tycker om dem utifrån vad ni själva hade velat att de skulle vara. Går det bra om jag spelar in diskussionen bara så att jag kommer ihåg allt som sägs?

- Om ni öppnar en app som ser ut på följande vis, vad tror ni man kan göra med den?

Jag håller på att utveckla en tjänst som heter TrailAdvise. Målet med tjänsten är att underlätta för folk att ta sig ut på naturen och på så sätt göra att fler människor kommer ut och upptäcker naturen samt att man delar med sig av sina stigar till andra som vill utforska dem.

Det ni ska få diskutera nu är först några övergripande förslag på information, sökning, filtrering, sökresultat, loggning och navigering. Jag har även tagit fram fyra övergripande koncept med lite olika funktionalitet som jag skulle vilja att ni diskuterar kring.

Denna visar hur det skulle kunna se ut på webben när man söker efter stigar i Göteborg.
- Så jag tänkte att ni kan diskutera vad ni tycker om denna utformning, vad som är bra, dåligt, om något fattas eller är onödigt.

Denna skiss visar hur samma funktionalitet skulle kunna se ut i telefonen.
- Vilket av de tre förslagen på appdesignen tycker du är bäst? Varför?
- Vad tycker ni om filtreringen och sorteringen?

Detta är den information man får om varje stig på webben och i appen.
- Vad ni tycker om denna utformning, vad som är bra, dåligt, om något fattas eller är onödigt.

Nästa övergripande utformning är loggning av ny stig.
- Vad ni tycker om denna utformning, vad som är bra, dåligt, om något fattas eller är onödigt.

Här är ett förslag på hur man skulle kunna ha utformningen av navigationen.
- Vad ni tycker om denna utformning, vad som är bra, dåligt, om något fattas eller är onödigt.

Nu har vi kommit till koncepten, det första heter Experience.
- Vad tycker ni om detta koncept, bra, dåligt?

Nästa koncept heter Topplista
- Vad tycker ni om detta koncept, bra, dåligt?

Det tredje konceptet kallas för Utmaningar
- Vad tycker ni om detta koncept, bra, dåligt?

Det sista konceptet kallas Stig vs Plats
- Vad tycker ni om detta koncept, bra, dåligt?

Om ni kollar på alla fyra koncepten, här är en bild på alla startskärmar
- Vilket koncept tycker ni var bäst, eller vilka delar/funktioner skulle ni helst se i appen om ni fick välja?
- Vilken startskärm tycker ni bäst om? Varför?

Utvärdering av ny tjänst

Som ni redan vet så håller jag på att genomföra mitt examensarbete som går ut på att undersöka
behov och beteenden hos vandrare och terränglöpare. Målet med studien är att öka
tillgängligheten till naturen genom att göra det lättare för människor att hitta nya och spännande
naturupplevelser i sina närområden. Jag har nu genomfört den första fasen, de vill säga den
undersökande delen och skulle nu vilja ha din hjälp att utvärdera mina idéer på hur detta skulle
kunna gå till. Det hade därför varit väldigt värdefullt för mig om du ville kolla igenom denna enkät
och beskriva vad du tycker om respektive förslag.

Kön

○ Man

○ Kvinna

Ålder

Bostadsort

Jag brukar

☐ Springa

☐ Vandra

☐ Övrigt:

Funktionalitet av app

Om du öppnar en app som ser ut på följande vis, vad skulle du tro att man kan göra med den?

Fortsätt »

33 % ifyllt
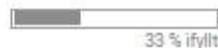
Utvärdering av ny tjänst

Övergripande design (Sida 2 av 3)

Jag håller på att utveckla en tjänst som heter TrailAdvise som ska finnas på webben och som en app för telefoner. Med denna tjänsten ska man kunna söka efter intressanta stigar, logga sina egna stigar och kunna dela med sig av dem och lägga till foton och intressanta platser, så kallade POI(point of interest) vilket kan vara en sevärdhet, grillplats, vindskydd eller liknande. Om man har hittat en intressant stig så ska man också kunna få navigationshjälp när man utforskar den. Man har också en egen profil där man kan spara stigar. Denna tjänst ska växa genom att användare lägger upp sina egna stigar och delar med sig av dem så att tjänsten hela tiden uppdateras och växer. Målet med tjänsten är att underlätta för folk att ta sig ut på naturen och på så sätt göra att fler människor kommer ut och upptäcker naturen samt att man delar med sig av sina stigar till andra som vill utforska dem.

Jag skulle nu vilja ha din hjälp att utvärdera några designförslag som jag har tagit fram. Först är det övergripande förslag på information, sökning, filtrering, sökresultat, loggning och navigering. Jag har även tagit fram fyra övergripande koncept med lite olika funktionalitet som jag skulle vilja veta vad du tycker om.

Vi börjar med de övergripande designförslagen.

Sökning på webben

Denna skiss visar hur det skulle kunna se ut på webben när man söker efter stigar i Göteborg. Man kan se vad man kan filtrera och sortera stigar efter. Den visar också vilken information man får i sökresultatet, alltså stigen plottad på en karta, var den är, hur lång, höjdmeter, vilken typ av miljö den är i och vad den har för underlag. Samt vad den har fått för betyg och hur många sevärdheter det finns på stigen. Vad tycker du om denna utformning? Är det något du saknar eller som verkar onödigt?

Sökning i appen

Denna skiss visar hur samma funktionalitet skulle kunna se ut i telefonen. De tre översta visar tre olika förslag på hur man skulle kunna visa sökresultatet, med olika fokus på bilder och information. De två nedre visar hur man skulle kunna filtrera och sortera i appen. Vilket av de tre översta förslagen på appdesignen tycker du är bäst? Varför? Är det något du saknar eller som verkar onödigt vad gäller sökresultat, filtrering och sortering?

Information om stigar

Detta är den information man får om varje stig på webben och i appen. Högst upp kan man spara stigen om man vill utforska den i verkligheten, man kan också ställa en fråga till den som lagt ut stigen, dela den till vänner eller markera den som upplevd, alltså att man redan har gått/sprungit den stigen. I detta fall finns det fem foton från stigen, den första som syns på skissen visar stigen plottad på en karta med POIs (de fyrkantiga rutorna) och sevärdheter(den gröna och gula markeringen). Under denna finns sedan olika typer av information så som var stigen ligger, hur lång den är, höjdskillnaden i meter, vad för typ av miljö den ligger i och vilket typ av underlag den har. Vad tycker du om denna utformning? Är det något du saknar eller som verkar onödigt?

Loggning av ny stig

Nästa övergripande utformning är loggning av ny stig där man börjar med att trycka på start. När man väl har börjat logga så kan man se hur långt man gått och hur länge, man kan även markera en POI och ta kort. Samt pausa eller stoppa loggningen. Man ser även hela tiden hur man har rört sig på en karta samt var man är. Efter att man trycker på stop kommer man till en sida där man kan lägga till information om stigen så som typ av miljö, underlag och en beskrivning av stigen. Här kan man även lägga till kort som man tagit med kameran på mobiltelefonen. När man här trycker på spara så kommer man till en sida där man får frågan om man vill dela stigen med andra användare av TrailAdvisor eller om man vill dela den på Facebook eller Instagram. Vad tycker du om denna utformning? Är det något du saknar eller som verkar onödigt?

Navigering av befintlig stig
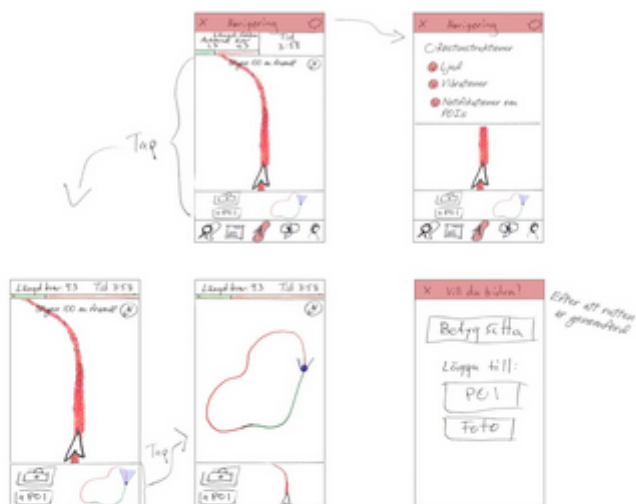
Här är ett förslag på hur man skulle kunna ha utformningen av navigationen. Man kan se total längd samt hur långt man kommit och hur långt man har kvar samt hur lång tid det har tagit. Man kan även lägga till POIs och ta kort direkt i appen. I mitten ser man hur stigen ser ut de närmsta 100 meterna för att veta hur man ska röra sig den närmaste framtiden samt åt vilket håll man ska om stigen delar sig. Nere till höger ser man hela stigen samt vilken bit man har gått och vilken man har kvar. Man ser även vart man är någonstans. Under kugghjulet finns det olika inställningar man kan göra för navigeringen, man kan ha röststyrd, att den ger ifrån sig ett ljud när något bör uppmärksammas t.ex. att man ska svänga mycket eller att man kommit för långt bort ifrån stigen, man kan också ha att den bara vibrerar. Man får även välja om man vill ha notiser när man är i närheten av någon POI. Om man trycker en gång i mitten av skärmen får man navigeringen i helskärm. Man kan även trycka på den lilla stigen längst ned till höger för att få den som stor bild istället. När man har genomfört stigen så kommer man till ett fönster där man blir tillfrågad om man vill betygsätta stigen eller lägga till POIs eller kort för att bidra. Vad tycker du om denna utformning? Är det något du saknar eller som verkar onödigt?

« Bakåt   Fortsätt »

66 % ifyllt

Utvärdering av ny tjänst

Koncepten (Sida 3 av 3)

Koncept Experience

Nu har vi kommit till koncepten, det första heter Experience. Det går ut på att försöka motivera användaren till att komma ut och upptäcka så mycket som möjligt. När man öppnar appen kommer man till fönstret längts till vänster, där man kan söka efter stigar i en viss stad eller område eller i närheten av var man är. Det finns även en sida där man kan se de nyast stigarna i sitt område eller i en speciell stad. Sedan kan man utforska naturen genom att antingen logga en ny stig eller navigera en existerande. Det finns en sida som heter aktiviteter, där får man upp om någon har betygsatt, kommenterat eller ställt en fråga om någon av de stigar man lagt upp, man kan även se sina egna aktiviteter under fliken du. Sista fönstret är din egen profil där det står hur många stigar du har utforskat och hur måna du har bidragit med. Här kan du även se dina egna stigar, dina favoritmärkta stigar samt alla dina kort. Finns det något du gillade med detta koncept? Något du inte gillade?

Koncept Topplista

Nästa koncept heter Topplista, i detta koncept får alla stigar olika höga naturpoäng beroende på hur fina dom är vilket bestäms av vad de får för betyg. På förstasidan finns det högst upp en sökruta där man kan söka efter stigar, nedanför den kan man se de nyaste stigarna i olika områden. Nästa flik är olika topplistor på stigar, folk som är ute och rör sig mest i naturen samt vem som lägger upp flest nya stigar. Man kan även ändra i vilket område man vill kolla på. Utforskarsidan, aktivitetssidan och profilsidan är i princip likadan som i det tidigare konceptet, enda skillnaden är att man ser antal utforskade och bidragande naturpoäng istället för antal stigar. Finns det något du gillade med detta koncept? Något du inte gillade?

Koncept utmaningar

Det tredje konceptet kallas för utmaningar, för att det finns olika sorters utmaningar man kan genomföra för att få olika utmärkelser. Även här är förstasidan en kombinerad sök och nyhetssida med något annorlunda design. Nästa sida kan man se utmaningarna samt de man redan har klarat under fliken genomförda. Utforskningssidan och aktivitetssidan är samma som tidigare. Profilsidan visar nu antal genomförda utmaningar och nedan kan man med hjälp av flikarna se sina egna stigar, sina favoritstigar och stigar man delat med sig av till tjänsten samt sina kort. Finns det något du gillade med detta koncept? Något du inte gillade?

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Koncept Stig vs Plats

Det sista konceptet kallas stig vs plats för att man kan välja om man vill söka på antingen stigar eller platser eller båda två. Detta val får man alltså göra efter att man har valt i vilket område man vill söka i (se pilarna). Om man hittar en intressant plats man vill besöka så får man sedan stigförslag på stigar som går förbi där. Under nyhetssidan kan man välja om man vill se allt nytt eller bara stigar eller bara platser. Utforska samt aktiviteter är även här samma som övriga koncept. Under sin profil kan man här se antal utforskade och bidragande stigar. Man kan även se sina stigar, platser och kort. Under stigarna och platserna får man sedan välja om man vill kolla på sina egna, favoritmärkta, bidragande eller utforskade.

Vilket eller vika koncept tycker du var bäst? Varför?

Har du någon övrig kommentar?

« Bakåt   Skicka

100 %: Du är klar.

Skicka aldrig lösenord med Google Formulär

13 Pugh method

	Concepts			
Criterias	Experience (Ref)	Top list	Challenges	Trail vs place
Accessible runners (w=2)		0	+	0
Devoted runners (w=2)		+	+	0
Everyday hikers (w=2)		0	0	+
Adventurers (w=2)		+	+	+
Wilderness enthusiasts (w=1)		-	-	+
Variable reward (w=1)		+	0	0
Tribe (w=1)	14-04-2015	+	0	0
Hunt (w=1)		0	0	0
Self (w=1)		+	+	0
Differentiable (w=4)		-	-	+
Easy (w=3)		-	-	-
Sum +s		7	7	9
Sum 0s		5	5	8
Sum -s		8	8	3
Net score	0	-1	-1	+6
Rank	2	3	3	1
Further development	No	No	No	Yes

14 List of design statements, requirements and guidelines from Overall Design 1(6)

Design
Problem: Technical architecture Further specification of main problem based on technical concept: • Which type of information and functions are necessary to give the users right information and motivate them to share their trails? Answering of questions for future design phases: • How should different information be presented in the best way? • Does the interface communicate the functionality? • Is it easy to understand how to use it? Specified and described central design variables: • The most common mobile phone resolution worldwide is 320x568 and 360 x 640 pixels (StatCounter, 2015) • The iPhone 6 screen resolution is 375x667 pixels • The most common desktop resolution in Sweden and worldwide is 1366x768 pixels (StatCounter, 2015) • The Sony Smartwatch 3 has a screen resolution of 320 x 320 pixels (SONY, n.d) • Minimum target area for tap able objects is 44 x 44 pixels (Apple Inc., n.d) • Text on smartphone should be 11 points minimum (Apple Inc., n.d)

Function: Machine functions
 	
Specified and described overall control options for the human:
 	
• Web(from computer)
    o Use keyboard to insert and search for information
    o Use the mouse to navigate
• Mobile application
    o Use touch to insert information and navigate
    o Use the buttons on the phone to excite and change volume
• Smartwatch application
    o Use touch to insert information and navigate
    o Use the buttons on the watch to navigate?
 	
Specified and described overall information to the human:
 	
• What actions are available
• Where one are in the program
• Information about trails

14 List of design statements, requirements and guidelines from Overall Design 2(6)

Design (cont)

Activities: Overall interaction
Specified and described overall interaction:
• Search
    o Insert text criterion for search
    o Or explore current location(mobile)
    o Scroll among the different trails
    o Save, share, navigate or ask a question about trails
• Brows newly added things
    o Scroll among newly added trails, photos and places
    o Change location and information displayed
• Track new trail
    o Start tracking
    o Pause and resume tracking
    o Take photos while tracking
    o Add places when tracking
    o Stop tracking
    o Add information about the trail
    o Save the trail
    o Chose if the user want to share the trail in any way
• Navigate trail
    o Chose trail to navigate
    o Explore the trail
    o Take photos while navigating
    o Add places when navigating
    o Chose if wanting to rate the trail and/or add photos and/or places
• Publish trails and places
    o Publish trails and places to the service
    o Get comments, ratings and questions about the trails
    o Grade explored trails
    o Add photos and places
• Store
    o Store own trails with text and photos
    o Store explored trails
    o Store saved trails
    o Store the trails one has published to the service

Design (cont)

Implementation: Overall design

Four different concepts with some different purposes and ways to try to motivate people to both explore the nature and share their own trails have been created.

Specified and described overall user interface:
All four concepts has the same foundational user interface and navigation. The main navigation is a horizontal tab bar in the bottom of the screen with five different tabs in the form of different icons. These icons and their functions differs a bit from concept to concept.

Concept Experience
The purpose with this concept is to motivate the user to get out and explore as much as possible. When opening this application the first window one sees is the one to the left, where the user can search for trails in a city or an area or in their current location. This concept also has a news function where all the newest contributed trails, photos and places can be browsed, see the second screen to the left. The screen in the middle shows the exploration function where the user can chose to either track a new trail or get navigation on an existing one. The second rightmost tab is called activities and that is where the user can see if someone has rated, commented or asked a question about a trail that the user has contributed with. It is also possible for the user to see his or her own actions under the the second tab bar called "du". The rightmost tab is the profile and there the user can see how many trails they have explored and how many they have contributed with in the top. They can also search among their trails and find their own trails, saved trails and their photos in the tab bar.

Design (cont)

Concept Top list

In this concept the trails get different scores of "nature points" based on how nice they are which is based on the rating they get, which environment they are in etc. The first window, the leftmost, is a combined search page and below that is the newest trails, photos and places contributed to the service. The second leftmost window is the top lists, the user can choose which location to show the top list in and also chose to see the top list of trails, explorers and contributors. The explore and activities tab is the same as in the previous concept. The rightmost tab is the profile, in the top the user can see how many nature points they have explored and how many they have contributed with. They can also use the tabs below to switch between their own trails, saved trails and their photos.

Concept Challenges

In this concept the user can complete different challenges in order to get different awards. The starting screen in this concept is also a combined window where the user can search for strils in areas or in their current place in the top bar and in the content area the newest contributed trails, photos and places are displayed. The second leftmost window displays the current challenges the user has and a bar under each of them where the user can see the progress. They can also display their completed challenges under the tab "genomförda". The tab explore and activities are the same, the profile window is also quite similar, the difference is that in the top the number of completed challenges are shown.

Design (cont)

Concept Trail vs Place

The last concepts is one where it is possible to search for trails, places or both. The news tab in this concept it is possible to choose if one wants to see the newest trails, places or both. The activities and exploration tabs are the same as previous concepts. Under the profile tab the number of explored and contributed trails are shown in the top and below the user can see his or her trails, places and photos in the tab bar. Below them the trails for example are divided into the ir own, favourites, contributed and explored.

14 List of design statements, requirements and guidelines from Overall Design 6(6)

Requirements
Machine requirements: Requirements for functionality: • The application for mobile device and smartwatch should be possible to use while walking and running • The application for mobile device and smartwatch should be possible to use with phone gloves • The service should be adjustable for all different types of screen sizes for computers, tablets, phones and smartwatches Requirements for usability: • The user should be able to read and interpret all text and symbols from a distance of 60 centimetres • The user should understand the purpose of the application within 5 seconds after opening the application for the first time • The user should be able to understand what different functions the application has within 20 seconds from opening the application for the first time Requirements for aesthetics: • The current tab should be highlighted • High contrast between text, icons and background
Guidelines Guidelines for detailed design: • High contrast between text, icons and background • Consistent design • Use of few different colours • Easy to look at • Simple and clear icons • Use as much pictures as possible

15 Design statements from the Detailed Design 1(2)

Design
Problem: Physical form and user interface Further specification of main problem based on Physical form and user interface: • What concept best motivates the user to explore and share nature experiences but also makes the service differentiable from other existing services on the market? Answering of questions for future design phases: • Exactly what information should be presented to the user and in what order? • How should the different functions work? • What functions should be available on the different devices?

Function: Control and information
 	
Specified and described detailed control options for the human:
 	
• Web
   o Mouse
   o Keyboard
   o Connect a GPS device to the computer with a cable or wireless connection
• Smartphone
   o Finger touch input
   o Press buttons on the mobile
• Smartwatch
   o Finger touch input
   o Press buttons on the watch
 	
Specified and described detailed information to the human:
 	
• Where they are in the program and where they can go
• What actions they can take, i.e. what they can interact with in the interface
• Content information about trails and places

15 Design statements from the Detailed Design 2(2)

Design (cont)

Activities: Detailed interaction
 	
Specified and described detailed interaction:
 	
- Web
    o The user can use the mouse and the pointer to select and press all the different intractable objects in the interface
    o The user will use the keyboard to insert information and to insert search criterions
    o The user can connect a GPS device to the computer with a cable or wireless connection
- Smartphone
    o The user can use their finger to press all the different intractable objects in order to navigate and chose options
    o The user can also press buttons on the mobile phone in order to change some settings such as sound volume
- Smartwatch
    o The user can use their finger to press all the different intractable objects in order to navigate and chose options
    o The user can press buttons on the watch

Implementation: Physical form and user interface Specified and described user interface: See the chapter 9 The Final User Interface   **Designed instructions and manuals:** The service does not have any instructions or learning overlay simply because the service aims at being simple and self explanatory.

16 Requirements and their fulfilment 1(2)

Requirements	Fulfilled	Partly fulfilled	Not investigated /
System objective/effect objectives: The service should facilitate for the users to be able to enjoy nice nature experiences in their neighbourhood and on vacations	x		
Level of usability: A user should within 20 seconds be able to find and get basic information about nice nature trails or places in their location or on another chosen destination	x		
Needs from users and usage: The applications should be able to use it with one hand in a noisy and moving environment, for example on the buss. (smartphone application)	x		
The users should be able to add places and take photos while tracking or navigating trails	x		
The user should be able to get basic information such as distance and time when tracking or navigating trails	x		
The interface should trigger and motivate the user to explore nature	x		
Display information about the distance of the trails	x		
Display information about the elevation the trail has	x		
Display information about the environment the trails is located in	x		
Display information about the ground on the trails	x		
Provide information about different interesting places	x		
Make it easy to explore new trails, eliminate the insecurity about how long time it will take and where they will end up		x	
Be able to share their experiences on social medias and via messages and email	x		
Users should be able to benefit from the service even if they do not want to have their phone with them while running or hiking	x		
Usability objectives: First time users should be able to grasp the main purpose of the service within seconds	x		
It should be easy and fast to search trails	x		
It should be easy and fast to track trails	x		
It should be easy and fast to upload trails		x	
It should be easy and fast to edit trails		x	
It should be easy for users to explore new trails	x		
The user should be able to explore the service fast and without commitment	x		
It should be fast and easy for users to register to the service	x		
Benefit objectives: The service should provide useful information about trails to runners and hikers	x		
The tracking should provide hikers, and accessible runners with the information they want from the activity	x		

16 Requirements and their fulfilment 2(2)

Requirements from users: Be able to read text	x		
Be able to press different buttons	x		
Be able to insert information	x		
Requirements from market: Be differentiable	x		
Communicated functionality	x		
Requirements from production: Be able to develop	x		
Requirements for functionality: The application for mobile device and smartwatch should be possible to use while walking and running			x
The application for mobile device and smartwatch should be possible to use with phone gloves			x
The service should be adjustable for all different types of screen sizes for computers, tablets, phones and smartwatches			x
Requirements for usability: The user should be able to read and interpret all text and symbols from a distance of 60 centimetres	x		
The user should understand the purpose of the application within 10 seconds after opening the application for the first time	x		
The user should be able to understand what different functions the application has within 20 seconds from opening the application for the first time	x		
Requirements for aesthetics: The current tab should be highlighted	x		
High contrast between text, icons and background	x		

17 Table over identified interesting places

Places	Swedish term	Represented in existing hiking/activity guides	Mentioned by the target group
Parking	Parkering	x	x
Bus/tram stop	Hållplats	x	x
Restaurant/Coffee shop	Servering	x	
Fireplace	Grillplats	x	x
Nice rest stop	Trevlig fikaplats	x	x
Shelter	Vindskydd	x	x
Camping	Camping	x	x
Fishing	Fiske	x	x
Swimming area	Badplats	x	x
Outdoor gym	Utomhusgym	x	x
Lighted trail	Elljusspår		x
Toilet	Toalett	x	x
Attraction	Sevärdhet	x	x
Viewpoint	Utsiktsplats	x	x
First aid kit	Förstahjälpen	x	
Hostel	Vandrarhem	x	
Cottages	Stugby	x	
History attraction	Historisk sevärdhet		x
Playground	Lekplats	x	
Birdwatching tower	Fågeltorn	x	x
Dog park	Hundrastgårdar	x	
Information	Information	x	
Other	Övrigt		

18 Wireframes for the smartphone application 1(8)
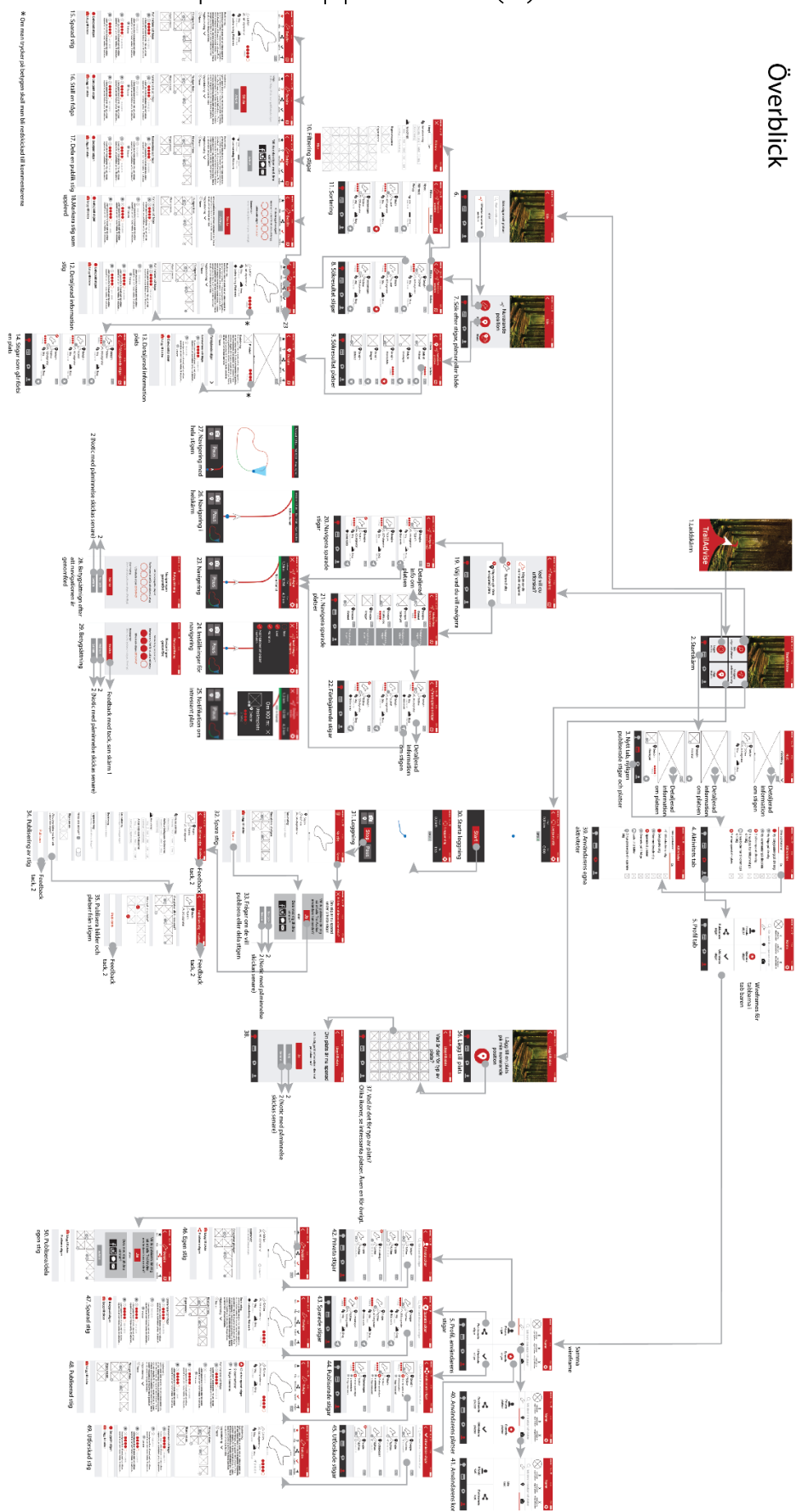
18 Wireframes for the smartphone application 2(8)

Tabbarna i tab baren

1.Laddskärm

Wireframes för
tabbarna i
tab baren

2. Startskärm

3. Nytt tab

4. Aktivitets tab

5. Profil tab
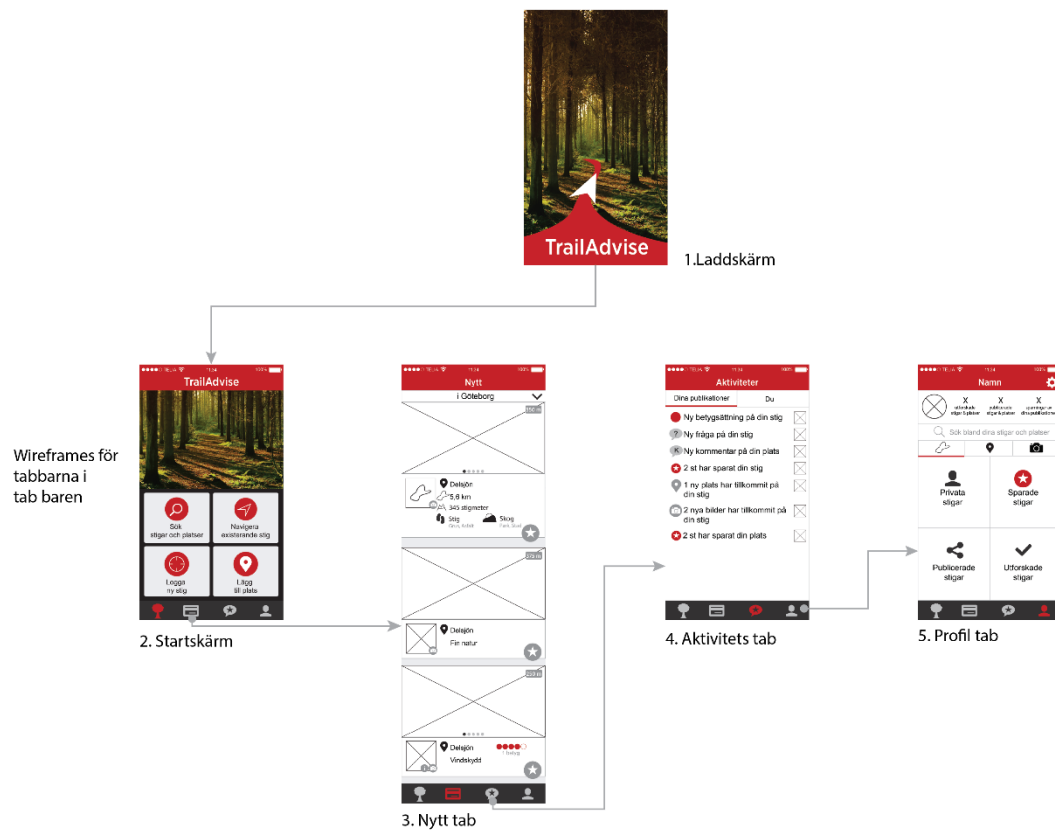
Kommentar ang nya användare:
Nya användare ska kunna använda tjänsten ett tag utan att vara tvugn att registrera sig.
Dock ska de behöva registrera sig när de vill spara, navigera eller logga något. Då skall
de kunna göra det genom Facebook, men även med mailadress om de så önskar.

Sök

2. Startskärm

6.

7. Sök efter stigar, platser eller både

Vid filtrering av platser är det bara olika sorters platser som går att filtrera på.

11. Sortering

8. Sökresultat stigar

9. Sökresultat platser

10. Filtrering stigar

15. Sparad stig

16. Ställ en fråga

17. Dela en publik stig

18. Markera stig som upplevd

12. Detaljerad information stig

13. Detaljerad information plats

14. Stigar som går förbi en plats

* Denna knapp sparar stigen, stjärnorna blir röda när användaren sparat stigen
** Sökresultatet på en karta även användarens position
*** Om man trycker på betygen skall man bli nedskickad till kommentarern
*4 Indikerar om det finns information och/eller kort tagna från stigena
*5 Svep för att se bilderna från stigen, tryck för att se i helskärm, kartan i helskärm visar även platserna
*6 Totalt antal stigmeter, en detaljerad graf finns under pilen
*7 Skall kunna dela till Facebook, Instagram, medelande och mail
*8 Ikoner för rullstolsanpassat, barnvagnsanpassat och lämplig för barn
*9 Ikoner för olika intressanta platser, se intressanta platser
*10 Om användaren filtrerat eller sorterat skall detta indikeras här

Navigera

2. Startskärm

19. Välj vad du vill navigera

Detaljerad info om platsen

20. Navigera sparade stigar

21. Navigera sparade platser

Detaljerad information om stigen

22. Förbigående stigar

27. Navigering med hela stigen

26. Navigering i helskärm

23. Navigering

24. Inställningar för navigering

25. Notifikation om intressant plats

Feedback med tack, sen skärm 1

2 (Notic med påminnelse skickas senare)

2

2 (Notic med påminnelse skickas senare)

28. Betygsättnign efter att navigationen är genomförd

29. Betygsättning

* Symboliserar att stigen redan är upplevd av användaren

** Om stigen har en ledmarkering ses den här

*** Om användaren har aktiverat att de vill ha noticer om platser ser noticen ut som i bild 25

Logga ny stig

2. Startskärm

30. Starta loggning

Här går det att ställa in om användaren vill få noticer om intressanta platser under loggningen

Ta kort
Lägg till plats

31. Loggning

32. Spara stig

33. Frågar om de vill publisera eller dela stigen

2
2 (Notic med påminnelse skickas senare)

34. Publisering av stig

35. Publisera bilder och platser från stigen

Feedback tack, 2

Feedback tack, 2

Feedback tack, 2

Feedback tack, 2

Feedback tack, 2

* Privat beskrivnign av stigen/upplevelsen
** Detta är den beskrivning som publiseras, som default skall den beskrivning som gavs i skärm 32 ges men den skall kunna redigeras.

Lägg till plats

2. Startskärm

36. Lägg till plats

37. Vad är det för typ av plats?
Olika ikoner, se intressanta platser. Även en för övrigt.

2
2 (Notic med påminnelse
skickas senare)

38.

Nytt samt Aktivitet

Detaljerad
information
om stigen

Detaljerad
information
om platsen

Detaljerad
information
om platsen

3. Nyligen publiserade stigar och platser
När något nytt publiseras i närheten
av användaren skall användaren få
en notic om detta om inte användaren
har stängt av detta under inställningar.

Om användaren inte går in och kollar
vad som hänt direkt så syns den lilla
röda ikonen på appikonen tills användaren
öppnat appen.
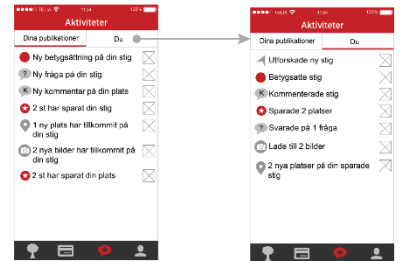
4. Aktiviteter på användarens
publiserade stigar och platser

39. Användarens egna
aktiviteter

Profil

Allmänna inställningar, så som om användaren vill ha noticer om nyligen publiserade stigar, vlika typer av platser de vill få notifikationer om när de navigerar eller loggar

5. Profil, användarens stigar

40. Användarens platser   41. Användarens kort

42. Privata stigar
Visar information om när de loggades

43. Sparade stigar
Samma info som isökresultat, här finns snabbknapp till navigering

44. Publiserade stigar
Information om sparningar, kommentarer och frågor

45. Utforskade stigar
Information om de är loggade eller navigerade samt datum

46. Egen stig

47. Sparad stig

48. Publiserad stig

49. Utforskad stig

50. Publisera/dela egen stig

* Denna stig är publiserad
** Denna stig är redan upplevd
*** Denna stig är en egen loggad stig
*4 I denna baren ska ikonerna vara röda om stigen tex redan är sparad eller upplevd och gråa om de valet inte går att göra, som tex att ställa en gråga till en privat stig

19 Wireframes for the web 1(4)

Översikt
Webb

1. Hemskärm

2. Sökresultat med filtrering och sortering

3. Detaljerad information stig

4. Detaljerad information plats

5. Förbigående stigar på plats

6. Betygsättning av stig

7. Betygsättning av plats

8. Privata stigar

9. Sparad stigar

10. Publiserade stig

11. Utforskad stigar

12. Privat stig

13. Sparad stig

14. Publiserad stig

15. Utforskad stig

16. Egna platser

17. Egna kort

18. Aktiviteter, användarens publikationer

19. Ny stig, importera fil

20. Ny plats, markera läge

21. Kort i helskärm

22. Aktiviteter, användarens egna

23. Insatt information om ny stig

24. Välj typ av plats

25. Insatt information om ny plats

19 Wireframes for the web 2(4)

Sök

1. Hemskärm

2. Sökresultat med filtrering och sortering

3. Detaljerad information stig

4. Detaljerad information plats

5. Förbigående stigar på plats

6. Betygsättning av stig

7. Betygsättning av plats

Profil, stigar

8. Privata stigar

12. Privat stig

9. Sparad stigar

13. Sparad stig

1. Hemskärm

10. Publiserade stigar

14. Publiserad stig

11. Utforskade stigar

15. Utforskad stig

Profil, övrigt

16. Egna platser

17. Egna kort

21. Kort i helsärm

8. Privata stigar

18. Aktiviteter, användarens publikationer

22. Aktiviteter, användarens egna

19. Ny stig, importera fil

23. Insätt information om ny stig

20. Ny plats, markera läge

24. Välj typ av plats

25. Insätt information om ny plats

20 Wireframes for the smartwatch application 1(3)

20 Wireframes for the smartwatch application 2(3)

Navigera

Tryck
Svep åt vänster
Svep åt höger

1. Startskärm

2. Val av navigation

3. Stigar att navigera

4. Stigar att navigera Mer info

5. Detaljerad information stig

6. Navigering

7. Pausa navigering

8. Stoppa navigering

9. Notifikation om intressant plats

10. Detaljerar information plats

20 Wireframes for the smartwatch application 3(3)

Logga
Lägg till plats
Inställningar

1. Startskärm

Navigera existerande stig
Logga ny stig
Lägg till plats
Inställningar

Tryck
Svep åt vänster
Svep åt höger

0,0 km
Starta loggningen

0:00 min
11. Starta loggningen
0,0 km

Lägg till plats på nuvarande position

16. Lägg till plats

Inställningar
Röst
Ljud
Vibration
Notifikationer om platser i närheten

17. Inställningar

0:01 min
12. Loggningen startad
0,3 km

1:58 min
13. Loggnigen efter en stund

0,3 km
Pausa loggningen

1:58 min
14. Pausa loggningen

0,3 km
Stoppa loggningen

1:58 min
15. Stoppa loggningen