



A whole lot of fuss about
LifeNavigator

Calendar A human-centered approach to a concept for a mobile application helping individuals to better fit their values and preferences into their everyday life

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Abstract

This thesis is an exploration of a design solution that could help individuals to better fit their values and preferences into their everyday life. As a starting point the concept of LifeNavigator, a mobile application that would use combination of selected data from chosen sources to make context-aware suggestions, is used. The concept is furthermore set to examine people's reactions on replacing searches with suggestions in order to leave room for more spontaneity.

Through looking into related research, and using people-centered methods: probes, scenario-based interviews and a workshop, the concept is reflected upon. The goal has been to search for important qualities that should be kept in mind when designing an application to this fragile and personal context. The secondary issue concerning changes in the practice of searches travels as an underlying theme, mostly as support for the primary research question.

As a result, eight qualities were found: control, independency, richness of content and functions, trust, community, providing motivation, context awareness and on-demand. Based on the research on query-free information retrieval and information agents, similar preceding ideas were found, but existing solutions that are comparable to the suggestions made by LifeNavigator, were not discovered.

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I Introduction

The topic for this project was inspired by a drive with my husband's uncle who had his car navigator on but refused to follow the instructions it gave to him. He had taken this drive many times without any navigating system and the route suggested would to his knowledge take a lot longer than the route he knew. This of course turned out to be caused by the wrong settings; he had selected the shortest instead of the fastest route. The conflict raised in me an idea that what if we had such navigators but for our life and only decades too late would discover that our unhappiness was caused by the wrong settings?

First this all was a little mind play and a start for a short science fiction story. But it kept haunting me as a thought and started surprisingly making more and more sense. More situations followed where I could see a use for such a thing and in the end the idea seemed not so far fetched after all. Just as heading to the airport with a car can be divided into turns and distances, in my opinion life consists of many practices and routines that can be broken down into little actions. The quality of one's life lays mostly not in our values and goals, but in the way we manage to put those into use in our little actions.

In my opinion, the digital applications and computers are already offering many ways to improve the quality of one's life. We can use calendar (for example iCal or a calendar of a mail application) to plan, search engines (for example Google or Dogpile) to help us to make delicious food, instant messenger (for example iChat or MSN messenger) for connecting with our friends and so on. Why couldn't these tools also provide us ways to make decisions in the moment instead of planning a head and looking up information through search engines? All the mentioned applications provide us useful ways to make our life easier but unfortunately quite often they give us information that can quickly become not valid. They force us to make plans and stick to them, but instead of making us stick to our principles they only emphasize the action-level. Without even noticing you end up completing tasks and in the end you have forgotten how and why you wanted to complete those tasks. As an example for most of us it is not the same, which store we go to or which brands of cereal we buy, even though as an action "buy cereal" sounds very simple. Since computers are meant for computing, they could actively constantly compute new choices and opportunities for us and by doing this, help us to live every moment the way we prefer.

I started this process by toying with the idea of a personal (life) navigator system; this has led me to the previous thoughts. For some such tool could be an ideological personal trainer, to others a digital consciousness, an impulse assistant or an opportunity manager. In short: an

application that combines user's schedule, plans, to-do lists, data from user's intelligent home/vehicle, position, values, preferences, financial situation, social contacts and other existing data (through for example internet, GPS, RFID and Bluetooth) to assist and possibly make suggestions that help the user to live the life he/she wants to live.

This master's thesis starts with this short introduction to offer the reader an insight to the origin of the concept of LifeNavigator, and it continues with the research objective and motivation, from which I move on to describing the design space in the chapter Context. As the concept is so central in this thesis, chapter LifeNavigator introduces the reader, in more detail, to the original concept, showing how such an application could be configured, what information it relies on and what it requires from the user.

Chapter Design and Research approach introduces the material I gathered during the study through the probes, interviews and workshop. Chapter Looking back concludes this thesis by presenting a series of important qualities and criteria that need to be taken into consideration in the design process of such a personal application, I also make an analysis of the implications that the existence of such applications might have.

1.1 Objectives

This thesis has its origin in two different thematic issues. The main one is the broad issue of fitting one's values and goals to one's everyday life (and vice versa). My research question is: what are the important qualities to bear in mind if one should design a mobile application for an individual in that struggle? To more easily approach this problem I use the idea of LifeNavigator, an application that could make it easier to live according to your lifestyle and values by combining needed data for context-aware suggestions. The goal is not to design an ultimate concept for such a tool but to map and examine through people-centered approach what qualities should be considered while designing such a tool and what might be the possible implications if such tool would come to exist. The research methods that were chosen for this work were probes, scenario-based interviews and a workshop.

The second issue in this thesis is an exploration on possible changes in the practice of making searches for information retrieval in everyday life that the proposed context-aware suggestions of LifeNavigator could bring. I use the LifeNavigator as a tool to examine people's reactions and thoughts on this issue. I introduce the existing visions of agents (Maes) or information management assistants (Budzik and Hammond) and query-free information retrieval that relate to this idea and examine if the time would now be right for

bringing these previously software related visions into the context of mobile users navigating in daily situations.

These two issues are discussed in the everyday life context, but excluding work related features and practices in depth. I have chose this approach because there are already a number of existing tools for work-related planning and enough stakeholders interested in designing tools for that purpose. My thesis does not deal directly with consumer activism or activating citizens as such, even though these fields can be seen very complementing to this concept and are definitely important themes to be considered in future development.

1.2 Motivation

In 1999 I started my studies of what was then called Webmedia. The reason for choosing this field were the possibilities for making the world a bit better place. Internet had already then enabled many worldwide movements that before were not possible and today one could bring together a huge demonstration by sending SMS. Another reason was the freedom and openness that the webmedia studies offered. Not only has the web made it possible for a growing number of people to become content producers but this new medium seemed to be free compared to its predecessor such as film. The “older” mediums appeared to be restricted by very strong rules as a discipline but seemed also more tied to the material back then (before the digitalization of film for example).

Time has passed and the rules of web- and interactive media are being constantly written down. The openness and freedom can be questioned, but at the same time platforms are changing and while shifting into mobiles, ICT is becoming almost omni-present in many Western countries. This has been a new inspiration for me and driven me to use mobile phone as the platform for my design work. Not only is it more accessible to people than computers but it also is more personal and “on people’s skin”. Mobile phone used to be a rather closed platform, however the new breed of phones, for example those with Symbian operating system, have now made the dimension of mobile phones become more open to people to create applications and do reconfigurations as well.

The omni-presence of these tools has made me believe that this medium could be more than just the communication and media tools they are now. Maybe they could help us as individuals to live the life we want and free us at least for some part from the planning and remembering that living in hectic pace of today requires. Values are in constant public discussion, but too often values are forgotten when daily chores are wearing us out. Why

can't we harness the calculating powers and memory of our devices and get more space for focusing on other things in life?

This has been my motivation for this design and research process and the foundation for the concept of tool like LifeNavigator. The purpose of such tool could be for me personally to make sticking to my principles easier, however as a designer I want to try to maximize the freedom of usage and give wide possibilities to the users to decide it for themselves what the purpose for them should be, as they anyway will do so. Maybe some want to save money and others live the hip-life of a certain film star to every possible detail. We all have to have the right to be in charge. In everyday life we just might need a little bit of help to make it happen. That is why through this process of concept design and human-centered design, I want to examine how such an organizational tool should work in order to really empower people in their everyday life and what are its limitations.

1.3 The context

The following paragraphs will draw a picture of the context that my thesis project is designed for. Some things are already possible now, but LifeNavigator will probably be better understood and adapted into practices in the near future. As an approach this can be a very risky one, since we cannot predict the future accurately. But as I will explain in the upcoming paragraphs, with the direction of technological development and with policy makers in both national and European level making a great effort to make the premises of an ubiquitous society happen, it can be seen worth taking the risk.

The mankind of mobile

New technologies are increasingly influential in our daily life. For many of us, it is the mobile that wakens us to a new day instead of an alarm clock. In addition to educational and entertainment purposes, we communicate, plan and capture our lives through new technologies. As Tekes report (2006) states, we are witnessing the sixth media revolution taking place, mobile phones and PDA's are becoming the key element for ever more people to join the movement towards this shift to the local, open and social technologies. More people in the western world will be literally open and social, if Nokia's estimation that in year 2010, 70% of teenagers are always on, will come true (Thackara 2005).

Mobile phones are the first media to be so widely spread and almost always with us. According to a recent survey conducted in Britain with more than 16 500 adult mobile users, 65 % of people feel frustrated when losing their phone. Especially amongst younger respondents the thought of losing their phone causes anger and feeling of isolation and being

out of control. This makes the role of a mobile to its owner very different from other media. In Western countries especially, it is a very private medium that serves as a platform for social practices that are constantly under construction. Not only do people not like to lend their phone, even to their friends, but also it has replaced television in importance for users between 18 and 24. Most respondents also felt that mobile phones have improved their quality of life already as a mainly communicational tool.

Locative technologies

Mobile phones and especially the relatively new third generation of phones have indeed made our lives easier in many ways. They let us reach and be reached, offering us a variety of ways to communicate with each other (from sending an sms or email to video calls or animated messages) and help us in planning our daily activities, even let us do banking and give us guidance. Still, with the cell tower technology, GPS receivers, Bluetooth, RFID tags and wi-fi or mesh networks, these phones could do a lot more. Location based services seem to be the next big thing contributing to changes in practices caused by mobile phone use, *“according to the market research firm Frost & Sullivan, the American market for location-based applications of all kinds will grow from \$90 million last year to about \$600 million in 2008.”*(NY Times, June 28th 2006)

Various navigation applications keep popping up in the market and some phones have already a GPS receiver built in them. These navigation software work very much like the ones for vehicles, as they are mostly targeted to people with cars, which raises a question what they could do for people using other transport methods? Different requirements have to be taken into consideration, as the interaction methods and often also the types of information needed are different for walking or sitting in the bus than for bicycling or driving a car. Also the nature of the application is much more personal when one uses it from the private communication devices and this seems to me has not been given too much thought in the applications that I have tested, Wayfinder and Nav4All.

Other types of location awareness have been harnessed by the mobile blogging services. One can send images or video from one's mobile and those will be tagged with the location either with geo-tag or cell-id. Since people start to have devices with a lot of possibilities, services could now be introduced that use those possibilities for something useful.

It certainly will not stop at the capability to identify and communicate one's location. According to Eija Kaasinen, who researches mobile services, the direction is to provide something more comprehensive into our daily lives: *“Location aware services are a concrete step towards*

context-aware services.” So not only will this type of applications know where we are, probably they could know also what we do.

Ubiquitous tomorrow?

Compared to for example Japan, Finland has a lot of catching up to do in mobile services. In the Japanese society the shared vision is “looking beyond mobile, with the keyword being ubiquitous, i.e. that computers become integrated with our environment, making everyday things around us connected and intelligent.”(BergInsight 2005) The ubiquitous computing trend means according to its inventors something opposite to virtual reality, because “where virtual reality puts people inside a computer-generated world, ubiquitous computing forces the computer to live out here in the world with people.”¹

The Major Trends in Computing

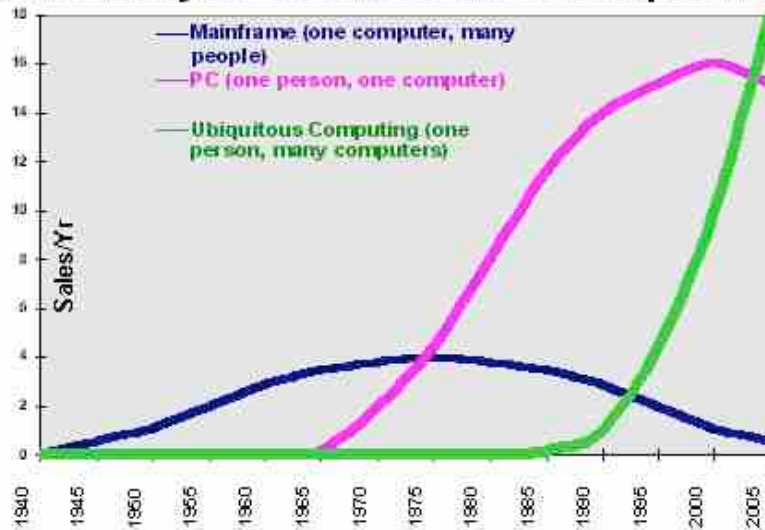


Figure 1 This trend graph has not yet become reality in Europe

<http://sandbox.xerox.com/ubicomp/>

Mark Weiser at the Electronics and Imaging Laboratory in Xerox Palo Alto Research Center (PARC) first introduced the term ubiquitous computing in 1988. It started as a research program and its content developed from computer walls into calm computing. The group's vision could be shortly described as follows: computation would be embedded into our environment and “everyday objects would enable people to interact with information-processing devices more naturally and casually than they currently do, and in whatever location or circumstance they find themselves.” This vision has been carried out most loyally in Japan and especially Tokyo, which is said to be the “huge ubicomp testing Lab”. By 2010

¹ <http://sandbox.xerox.com/ubicomp/>

Japan is supposed to have communication, networks and databases ready that make the “ubiquitous world” a reality.

Certainly this “Asian model” has raised already a lot of interest in Finland, and as stated in the publication *Uusi arjen tietoyhteiskunta* (Helsinki Institute of Information technology, HIIT, 2006), TEKES is putting together a report on ubi-Asia, the Asian model and how it could be adapted in Europe, where these issues are not solely in the hands of corporate R&D, as the case has been in Japan. The direction in Europe, also on the official level, is now similarly towards a ubiquitous society, u-society. Plans are being made so that it will be possible nation-wide in the future. This will mean creating faster, country-wide (or EU-wide) optical network, wireless local and short range networks and various sensor technologies combined with locating technologies, all in which the traffic will be based on IP infrastructure. On the software side the direction will be towards open, component-based architectures and the hardware that we will be using for accessing these networks will be getting smaller and more complex. HIIT’s report describes the development of the new everyday technologies *“will move forward with smaller steps but on wider front when computer science reaches and pierces people’s everyday life and makes multiple innovations possible”*:

Looking to the future with people in mind

Previously I introduced some key concepts present in political and technological discourse about what the technological context could be when thinking about the future. Ubiquitous, location aware technological environment partly already exists. In this situation it would therefore not make sense to design a new device or system, but rather a service or application that can scale to the environment that it is being used in.

Why is it then important to look further ahead when designing or discussing people’s practices? So far the development has been very much dictated by technological innovation. Tekes report states that: *“From the Finnish point of view, the next generation is the first, in which we are –or could be- in charge of the development, not just adapting to it”*. This could also mean that development could be dictated by people’s practices or the future services that are needed, not that the practices and services need to adapt to the technology at hand. The u-future that we are building needs to be built on the terms of people, not technologies. The new applications, quoting Tekes report, need to have *“a place in people’s lives and practices.”*

In this design process it has been taken into considerations in the methods used: I have used people centered qualitative methods, such as probes, scenarios and interviews to find out more about people’s lives, practices, fears and wishes related to issues like life management

and the concept of LifeNavigator. The whole concept has a basis on my personal experiences and needs and the methods used in this process have been selected in order to create distance to this (maybe too) personal approach and to get a wider spectrum of practices and needs for an enriched end result.

Services overcome useless gadgets

As briefly mentioned above, the ubiquitous society calls for services or supporting platforms for services instead of appliances, since those are already taken care of in the R&D departments of large manufacturers. The focus on services seems to be coming up in many future visions, also John Thackara in his book *'In the bubble: Designing in the complex world'* (2005) emphasizes the importance of creating demand-responsive services with design mindfulness instead of *"mindless development"*. He lists the requirements for this mindfulness: being aware of the consequences of our design actions (let it be cultural or ecological), giving humans active role instead of treating them as factors, delivering value to people instead of delivering people the system, treat content as something we create and not just buy, don't treat place, time and cultural differences as obstacles but as positive values and lastly; focus on services, not on things. With the last requirement he encourages designers to *"refrain from flooding the world with pointless devices"*.

This thesis and the design process has been inspired by Thackara's book and his belief that ethics and responsibility could inform our design decisions without creating too much constraint on the technical and social innovation we do. Especially some of the ten themes "In the bubble" is divided into can be seen as complementary to this thesis. These themes are not *"around fantastical science-fiction future"*, but about everyday life as lived at this very moment. The relevant themes for this paper are speed, situation, location and smartness and they have been a great help in finding a basis for the design process in actual issues of today, but still, bearing in mind the technological reality of tomorrow.

The role of services and applications is becoming more important as the resources on this planet cannot support producing more gadgets that are designed for a sole purpose. The success of services can be already seen in cases like YouTube, which was bought by Google for the price of 1.65 billion (in stock). Services can bring people together in a wider manner, they can be more open and accessible than most products. They also allow people to personalize products and with a wider set of revenue methods they can be adapted to different needs and price categories. This is why LifeNavigator, even though envisioned as an application, would rely heavily on a great variety of services around it and this strong relationship should be taken into account while designing the application.

From Thackara's book one as a designer can find a lot of tips for staying on the right track, designing for a better world. As he points out in the book, by quoting Viktor Papanek who in his book *Design for the Real world* had stated that industrial design as a profession is one of the most harmful occupations in this world; those days most individuals, not only designers, were unaware of the state this planet was getting into and nowadays many, designers included, are trying to do all that is in their power to fix it. Change has been taking place; designers are no-longer solo artists in creation of a masterpiece. As Thackara says: *"complex systems are shaped by all the people who use them, and in this new era of collaborative innovation, designers are having to evolve from being the individual authors of objects, or buildings, to being the facilitators of change among large groups of people."*

Design under construction

Kari-Hans Kommonen, the leader of ARKI research group in the University of Art and Design's (Uiah) department Media Lab has been discussing the changes that digital technologies have brought to the area of design. Just as Thackara, he emphasizes that digital design is not done solely with the help of computers, but it is always tied to the social context where it operates: he recognizes effective and meaningful design as a social activity, where the designer is only one actor of the many (Kommonen 2005).

Similar voices can be heard elsewhere as well. '*Changes in the field of design*' is the title of the second chapter of Tuuli Mattelmäki's dissertation *Design Probes* (2006), the book that is one of the main references for this thesis. That chapter describes well how many of the issues that I have mentioned in this context description have influenced the design practices. As the products are changing from being only objects towards including experiences, functions and services, the practices need to be adapted to produce end-results that take this into account. This has been acknowledged also in the curriculum at Uiah, where Mattelmäki completed her doctoral degree, with courses dealing with service and experience design.

The research group ARKI has taken into account this need for more knowledge of various fields that the broadened concept of product requires, by working in multi-disciplinary teams. Researchers in ARKI have also bared future and people in mind ever since it was first founded as the Future Media Home project. Project description stated already then: *"project has studied the possible consequences of digitalization for everyday life, from a people centric point of view."*² This thesis has been made as part of the ARKI group's ADIK project and the influence can be seen in the way of looking at practices and using human-centered

² <http://fmh.uiah.fi>

methods in this research. In the ADIK³ project "[w]e are interested in how people, through their practices, transform and complement new tools; and how new tools give room to the emergence of new practices." ADIK is funded by Tekes and other partners of the project are Nokia and Elisa.

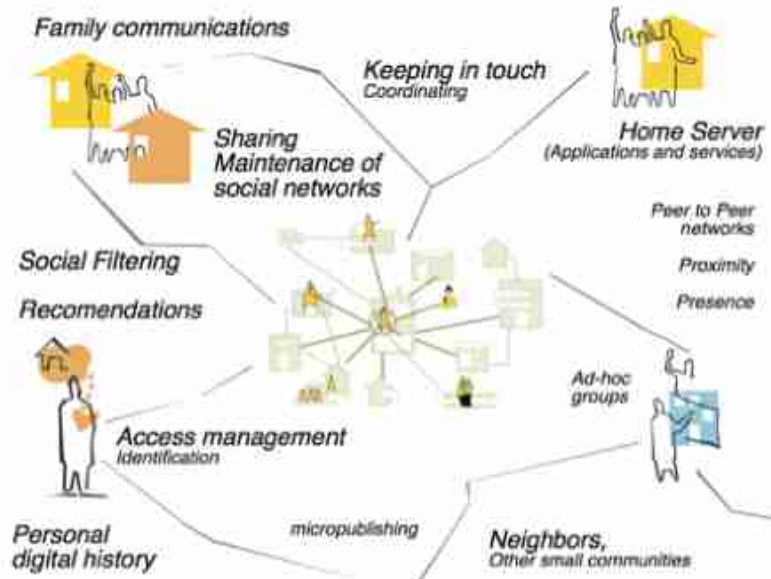


Figure 2 ADIK themes of interest

ADIK is interested also in developing the practices and methods that are taking place in their research. One of the objectives of the project is to “*explore, conduct and refine methods and practices for future oriented co-design approach*” which has worked as a foundation for this thesis as well. As an exploration starting point in ADIK research, there is an effort made to produce descriptions of needs and practices, then to develop, present and evaluate new product and service concepts and lastly the goal is to use future oriented co-design approach while doing the previous. The working methods have been well fitting to this research as well, but I have been free to make my own decisions when choosing the approach and methods I use.

Context as the design space for LifeNavigator

LifeNavigator’s personal nature and the way that it could silently or loudly be present in the twists and turns of one’s life, make it essential for it to be located in an individual medium as mobile. As mobile phone has already conquered such an important place in people’s lives, it

³ <http://arki.uiah.fi/adik>

would also not make any sense to try to create a new gadget to battle for space in a person's life, or pocket. Not to mention the environmental effects of yet another physical product.

The context also explained shortly the reasons for using the methods that I selected for this research. It cannot be denied that mobile has taken an important role in our daily lives and the personal nature it has makes it very suitable tool for approaching more personal fields of life than just communication, media consumption and waking up.

2 LifeNavigator

2.1 Introduction to the concept of LifeNavigator

This chapter is dedicated to explaining the concept more in detail. The description is divided into two sub-chapters; Setting up the LifeNavigator, which focuses on the logic of the application and the work it setting it up would require from the user, and LifeNavigator in action, which describes how such suggestions would influence existing practices of searching, how the context-awareness should work and what kind of requirements should be taken into account in interaction design for such application.

Original concept description

In the beginning the concept of the LifeNavigator could have been shortly described as follows: it would be an mobile application that gathers data from chosen sources (such as user's calendar, reminders, account information) and keeps making suggestions for the user's next move according to the parameters set by him/her. People would decide what kind of suggestions they want to have from the LifeNavigator by setting certain parameters to best describe the priorities in their life. These parameters could be such as time saving, shortest distance, social, cultural, accessible, ecological, cheapest. The only limitation is that it can be used as a way of processing information by the applications, eg. it can be communicated with a clear format and a value. People could also choose their trustees (let it be friends, fashion magazine, NGO or supermarkets and other companies); sources of information as well as end-users of the information they themselves would like to share with others (for example defining who can access their shopping lists or locate them).

Helps us to live the life we want
by taking our values of
preferences into our daily actions

Makes constant suggestions
(Helps us to get rid of searches that often produce
outdated data as well as result in making unnecessary
plans)

LifeNavigator
original concept

When wanted, it could fill our
empty moments with the
pleasures of the real world, not
the virtual one

Takes in consideration the
chaotic nature of life,
lets us live in the moment

This type of application could certainly be used in various different ways, for one it saves time or money, for another helps to live ecologically sound life and for a third it can help them to socialize with their friends or interest groups as much as possible. The quality of such concept would be in the multitude of levels it could work in, from practical route solutions and sales shark to being the spider that spins the social nets for us. With the new generation of media users who already constantly have at least one foot in the virtual world, this application would make the connection with the real world more interesting for them.

Unlike many applications on mobile devices that target on filling moments (like waiting for a bus) with using them (playing games, sending SMS for example), this application would make an effort to not only save us from having to unnecessarily wait for things (unless that is something the user prefers) but also activate us to see and experience the surroundings and maybe even to meet our friends.

On the practice level this application would help us to get rid of constant searches and planning ahead when we don't want to/can't really plan. Constant feeds of suggestions, more subtle mode of giving us information and combining the necessary information from other devices would let us stay on top of the routine tasks in our lives better without trying to make us believe that life could really be managed. This could result in less stress, more time for things that are important to us, and living more in the moment.

The technical setting of LifeNavigator

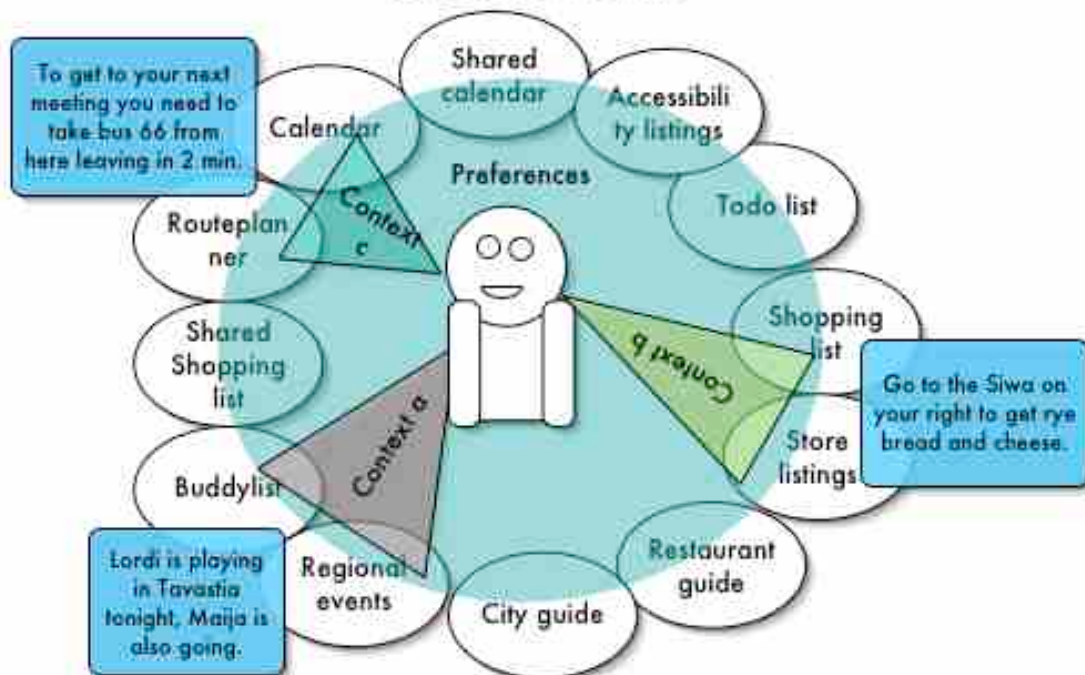
In order for a concept to work out in reality and to find place in people's practices, there has to be a need for it amongst the users. In addition designer needs to make sure that there is a suitable platform for it that is available to great enough quantity of people and that there is nothing like it out there yet. This can all be difficult with a new concept for next generation, as

Mäkelä and Battarbee have discovered in their paper *Applying Usability Methods to concept development of a future wireless communication device –case in Maypole (1999)*.

The technical description in this thesis will not go into detailed choices in standards or programming languages, but more gives direction where to head when starting the actual design process. As quoted in the paper of Mäkelä and Battarbee, Scholtz and Salvador believe that it is best in the design process to separate the product definition (what the product will do) from the product design (how the product will do it). Developing new software products, Scholtz and Salvador use a model they have developed, called *Systematic Creativity*. The model consists of two parts, of which the part “engineering ethnography”, is very close to the methods I have used and will explain later in this thesis. It is based on the idea that designers visit users in their own environment and also interview them with rather unstructured questions. Even though my thesis is definitely more focused on the product definition and using similar methods to collect user requirements, in this subchapter I will introduce a bit of the product design as well.

Great part of the information and services that LifeNavigator would need in order to work properly already exists. The internet is full of ways to access timetables, maps, restaurant reviews, store listings, addresses and so on. Similarly available are location or presence information services, via which one can share their present location or status, for example context phone applications like Jaiku or sharing your status with people near to you by Bluetooth. Nokia with their Sensor offers similar possibilities. The biggest problem is that most of this information is not standardized so that other applications could understand and interpret them better. Taking information out of one of these systems and using it for another doesn't always go without problems. One also needs to first find these services and then decide which to use and sometimes even first install them in their phone.

Retrieving information from trusted sources according to preferences and context



I envisioned that LifeNavigator could rely on architecture similar to a service manager, a concept introduced by Sanches-Nielsen, Martín-Ruiz and Rodríguez-Pedrianes in their paper *An open and dynamical Service Oriented Architecture for supporting mobile services* (2006). Even though in the paper they address a lot wider focus, all kinds of services from translation to mobile shopping, the service oriented architecture they have sketched provides a suitable platform for the LifeNavigator. Service managers work as intermediate entities between mobile devices and service providers, acting as servers for the mobile phones and as clients over the network of services. This architecture has many benefits, it is a lot lighter for the mobile browsing, as the phone doesn't have to run the service applications. Also, it allows the service providers to create, update and change services at anytime, eliminating the need for programming them into the client application. This also frees the mobile users from using only pre-defined services as it supports better dynamic service discovery. With the framework for describing and discovering webservice both individual users and all kinds of service providers can manage their information online as well.

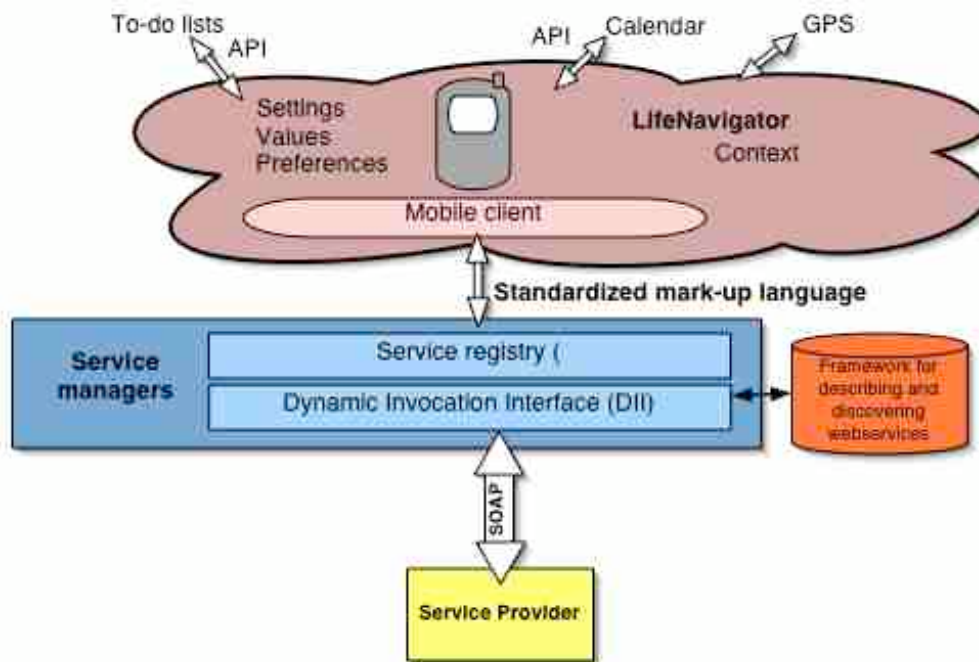


Figure 3 Illustration of the possible architecture of LifeNavigator (based on Sanches-Nielsen et al.)

Even though it might first seem that this architecture, suggested and tested by Sanches-Nielsen, Martín-Ruiz and Rodríguez-Pedrianes is already working very much like the LifeNavigator, there is one key difference: it doesn't take into account the values or preferences people have. This is why LifeNavigator as an application or intermediate service is needed. It brings together or manages the information received and makes requests according to the needs and preferences of the user. Similar to LifeNavigator, more personal approach is supported by Shijun Yu et al. in their paper User Profiles in Location-based Services: Make Humans More Nomadic and Personalized (2004). They emphasize that *"Humans cannot be satisfied anymore simply by rich and exact access to the information. They look today for the more dynamic and personalized services on the move."* The architecture they suggest gives also support for existing feasible solutions to use as a basis for making LifeNavigator a reality. I will not introduce it here in more detail as it does not bring any added value compared to service manager architecture.

With this short description I do not tend to state the actual or conclusive technical architecture of LifeNavigator, the programming language that should be used or the functions it would have and how. There can be technical problems in the service manager architecture that I have suggested as a structure for LifeNavigator and I leave here various issues open. This is intentional in this research at this stage, as this thesis is not about building LifeNavigator or even creating a working prototype.

I feel confident of this choice for approach; these kind of explorations are necessary to put people first and technology second. This thesis is about people who took part in my effort to look deeper into this concept and their needs and worries related to the thoughts and wishes raised by the concept that is addressed with the title LifeNavigator. During this research I have also become more certain that this approach is very reasonable, as the development of mobile services goes on and the solutions for this type of application if not yet exist, will exist soon. My main interest is to keep the values and preferences in the discussion and I feel that the methods and approach I have chosen provide the way I can add most to the future development.

2.2 Setting up the LifeNavigator



Figure 4 Pictures taken by the probe participants

You're in charge

At home Marjatta changes the SIM-card and turns on the phone. Address book was already copied by the store, but now she has to set up the LifeNavigator. She heard from her friend that it takes almost half an hour, but it is supposed to be worth it. Marjatta is not very familiar with technical things. so she's a bit worried how this will go. She opens the application and it starts guiding her through the process.

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She is still a bit skeptical about this whole thing. At least she won't be like those teenagers who use LN to keep themselves busy and social every minute. She made the settings so that she gets suggestions only when she asks for them. And she will be able to turn it all off when she wants.

Scenario 10, page 95

In this chapter the logic behind LifeNavigator is explained. By logic I mean the information sources that it is using and how the user regulates the use of them. I have used here snippets of the scenarios I made (all the scenarios can be read in full length in the subchapter 3.7 Interviewing) to illustrate how things that are being discussed relate to the possible user. What I want to underline in this chapter is that the user needs to explicitly make the LifeNavigator fit to his/her needs. It does not guess what is important to you based on your credit card information or calendar, because then it would only be enforcing the life style one is having without causing any reconsideration of them. Setting up an application like LifeNavigator requires some work in order for it to be useful and personal and probably one does need to adjust the settings later as well.

The setting up probably would be done via web interface. This way it will be easier to use and one can get better overview of the decisions one makes when a bigger screen and a mouse are available. It is possible that the service provider one uses could influence the choices one has, so I envision that free versions will also be downloadable from the internet. Another way of setting it up would be to get the settings from your friend, who already did an elaborate set up, copy or import them and adjust them for one's personal choices. In any case the choices have to be comprehensive and every step has to be made visible and protected, as one is dealing with rather private issues and information. This issue was explored during the participatory process and if you are interested to get a better overview which settings and values are important according to the probe and workshop participants, see subchapters 3.7 and 3.8. When taking a bit different point of view to the application, from the information provider's side this would result in a need for some standards for the information production. These standards are discussed in the subchapter Choose the information sources you need and trust.

What is important to you?

First Marjatta selects three most important things to her: family, being in the nature and Finnish products. That was easy, she thought. Then she has to put them into an order. First it seems difficult to compare these things, but after a bit of thinking, she keeps them in the order she selected them. I can always change them if this doesn't work out, she thinks.

Scenario 10, page 95

The functionality of the concept of LifeNavigator depends on knowing what is important for you as a user. If you think you value friendships very high, but actually like more to be on your own and not be bothered by your social circles, you will end up discovering this dilemma while using LifeNavigator. It cannot make you happier, it can only help you to stick to what you think is important to you. The value of it lies in assisting the user to get their everyday actions and decisions better reflect their values and preferences, not in making the user a better person as such. The effort of figuring out what is really important remains with the user.

Setting your values and preferences

Small actions are crucial building blocks for desired life and therefore also for the type of tool I have started to sketch with this concept of LifeNavigator. Still people don't always see the importance and effect of them. It can be especially hard to see how well these actions or choices actually reflect the values one has. To start first with another question from the designer point of view: what are the values behind the design effort I'm trying to make? In 1999, in his MA thesis work relating to the topic, designer Samu Mielonen draws attention to the fact that in design it is often thought that designing is "a pursuit to improve the world in an objective manner" when actually "designer is always the source for values which in turn drive decision making in design practice". That's why in this paper and design process the act of having to make some clear decisions about one's values is fundamental, but also problematic. As Samu Mielonen says, "activating values has proven to be a problematic exercise, What are values, how do we access, use and refine them? How can they be rendered visible?"

Irma Levomäki describes this difficulty of touching the issue of values in the publication *Welfare state and knowledge society. The complexity of values in the knowledge society* (1999). Firstly she emphasizes their meaning: "The importance of the reflection on our values lays in the fact that values are in any case always present in our lives. They can be better or poor, conscious or unconscious, but they are always there. And since they have a great role in our life ruling our actions and influencing the way we use our strengths, they are important to reflect and assess in a conscious manner." Mielonen too emphasizes meaning of values as

they can be recognized as *“those beliefs or principles, which their holders consider as guiding principles (for living) and upon which they try to act.”* He also discovered that baring one’s values publicly can be considered to be embarrassing, so the trust has to be established in order for people to reveal their values to the LifeNavigator.

Thus the problem of getting hands on values remains. *“The usual methods (for researching values) are asking from people (interviewing, polls) and observing people’s behavior. Both methods are problematic. By asking you might only find out people’s imaginary virtues, which they are not ready to defend in reality (such as environmental issues, which often in reality are sacrificed for economical interests). On the other hand, if you try to guess people’s values based on their actions, it is also problematic since these actions might be far off from their actual values and goals. People don’t always succeed in living according to their values.”*

Levomäki continues about one of the main issues with life management. One needs to be able to be honest to oneself and set their values as they really are. These of course can change during one’s lifetime, which needs to be supported by the system.

As there hasn’t been too many value-enhancing tools introduced, and yet I feel a need for such thing to exist, it made me wonder is the present time then different what comes to values? *“As cultural beings people are value driven and make judgments and decisions based on different evaluations of situations, actors, motives and expected results”* states Mielonen. In the old days the social control was probably so strong that it made sure people (at least in public) would do what was considered to be the right thing according to authorities. Nowadays, as researcher Helena Helve, who researched Finnish youth and their values, has discovered, the values are scattered and different subcultures follow different values. Youth of today don’t seem to have clear core values, but *“competing preferences that people choose from according to their needs and situation they are in”*. There also seems to be great complexity in their values; they value individualism and independency, but they would also need some authority to bring back law and order so that the right values would be brought back to action.

Should or could the application then be that “authority”? Even if it would calculate suggestions according to individual preferences and situations, it still would in some subtle ways tell you what to do. Maybe in order for it to fit to people’s lives it could work so that if certain criteria are met, you could be less social or in other situations you could be more environmentally friendly (so your priorities also would change a bit in exceptional situations). Nevertheless, as a designer I cannot force things on people and no tool can really guarantee to prevent negative behavior or even type of use, even if it has been a value that the designer tried to embed in the design. As Mielonen said, activating values even in a design process can be problematic. Still, as long as the tool can enable *“a positive type of use rather than trying to*

prevent a negative type of use” and support people in discovering their values privately it is already a step a better direction. Either way, this application would not “force” certain life ideologies upon the user, since the only suggestions it would give are only practical tips (“At the next bus stop you can get off and find fair trade coffee on sale in the corner store) and not moral advice (“you should start a new relationship”).

For some people values sound like something very vague or righteous, and as discussed before, there are some problems in defining them. Something more easily approachable could be taste and style, which philosopher Kari E. Turunen groups as a third category of values (First are the three genuine values: truth, beauty and goodness, followed by virtues, such as honesty). Taste and style would fit to Turunen’s third category of values, “*the preferences*”, and they cover things like property, traveling, honor or health and they usually have some kinds of direct goal. These goals can be either concrete (computer) or abstract (art).

In the era of the internet, the subcultures are flourishing, and especially younger people are rather strict when classifying themselves into different marginalized groups. The distinction between groups can be made according to music taste or dress-code, but in both cases it is often encompassing the whole life style of that person, limiting, at least in big enough cities, also the social circles one belongs to. Internet has offered a great platform for belonging to a subculture even when living in the periphery of Finland. You can socialize and shop according to your taste and it is possible to consume media that fits your style or taste. But this doesn’t stay only in the virtual domain; many special interest groups are also meeting in the real life.

Other relevant preferences

After the main preferences are set, it is probable that one should also do more practical personalization as well. In what radius from your home or work would you need suggestions? Are you very busy and need only reminders to be more effective? Or maybe you are a teenager who is eager to get constant suggestions and is willing to change their direction or mood on the fly. People also vary a lot in their taste on interaction methods or one might have limitations, for example if you are visually impaired. Selecting the interaction methods is therefore also important. The navigation and other mobile applications can give both good and bad examples on how this kind of settings are made available for the user. Main issue in the end is the availability of different options and the possibility to change the settings when needed.

Choose the information sources you need and trust

Then she can choose the trustees; people, communities or other sources (magazines, organizations) that she trusts for providing her with data for the

suggestions that LN gives her. She chooses her family and relatives, but also Suomen Latu and Kodin Kuvalehti.

Scenario 10, page 95

In order to provide suggestions, LifeNavigator would need to have access to a large information base: maps, listings and timetables - not to forget the user's personal data. Even though great amount of information exists online, the use of it for LifeNavigator's purposes doesn't go without problems: the information types vary and the variety of providers is not easily managed. Which information can we as individual users trust?

Trusted sources of information

Activating one's values and preferences can go quite wrong if the sources of information are wrong. Ethical can mean different things to different people and so can trendy. This is why in the LifeNavigator concept one also can choose the sources for the information one wants to use for forming the basis for the suggestions. Some data of course could be accepted automatically or more easily, such as the official maps of the city or models of public buildings. Especially in the workshop (see 3.8 Workshop for more details) it became obvious that participants are very cautious about the information sources. None of the participants in the workshop for example trusted the ministry of environment, so it can be very difficult to do any preset choices for the information providers and it seems to be most suitable to provide means for user's to select these sources themselves.

Nevertheless, all of the information necessary for the LifeNavigator cannot only rely on being produced solely by people who the user knows. Living in the society together with other people, everything boils down to a certain amount of trust we put in the hands of strangers. That is rarely a comfortable feeling and especially in the beginning, the idea of all encompassing LifeNavigator might feel frightening. On the other hand, for example when eating in a restaurant and asking for, lets say non-lactose meal, you just need to hope and trust that your wish is followed and milk and butter are left out.

As it later became evident in the workshop, some information that is more strictly data like is also easy to trust. Timetables for example are something that even the most critical people will probably not need a second version of. But there are other kinds of similar data as well: 3D models of cities that are built for planning or monitoring purposes, traffic and air-condition reports, to mention a few. It is important to note that not all of it is offered to free use of course. However currently in many places like in the United States and United Kingdom there are actual movements to "free" public data so that everyone can use it. This has meant releasing the postal codes through people typing them in to a public database. Normally agencies funded by the government own these data and they sell the rights to use them to

taxpaying companies and individuals, where as now, and probably even more in the future, people work together to provide a free option for those who need this information.

There is also a great deal of information that is already shared and need no movement to free it. Some of course is advertising funded, but also restaurant listings, such as the openguides.org offer this type of information for free. Most stores are more than willing to share their location and other information in order to reach a larger clientele. Amount of information available is therefore not the issue, the challenge for LifeNavigator is to give true possibility of choice of trusted sources offered as well as a need for new ways to create data that is not tied to a certain file type and can be interpreted by computers.

Personal information

Another important part of the information that LifeNavigator needs in order to make suggestions is the personal data that it gets from users calendar, to-do lists, bank information, pace meter.. Sometimes this information is already at the reach of the user, like with the calendar, but there is also information that user produces but cannot fully access and modify, like the shopping statistics. Similarly to the free-data movement, some consumers would like to access their shopping data that is collected when using different client cards, but now it is only possible in limited ways from the store's own system and the information cannot be exported to other services. With the new devices individual can produce various data of him/herself, such as health related information: Suunto's pace meter business is blooming and Ipod has entered the health sector together with Nike to provide exercise guidance with personalized background music. The interest for using technology to these purposes or producing such data of oneself course varies from user to user.

The access to the information is not the only issue that relates to the use of personal data. Individual might have access to his or her calendar data, let it be work or private, but what is lacking is the synchronizing and sharing possibilities for these different calendars. Sure there are solutions, but many issues still remain to be unsolved. For example, user is then often limited to certain calendar solution or operating system and switching the calendar provider can be rather elaborate. Mac offers iDisk to commute your desktop with you and similar solution, just taken a bit further; "Ghost desktop" has been discussed online for a while already. Ghost would not only let you work with your files where you want but also capture your life with video and other formats. This direction towards sousveillance, invert surveillance, is a step further from the LifeNavigator, but still useful as a mind opener.

Sharing information

In addition to accessing information, let it be public or personal, one should be able to share information with the selected groups of people. Most obvious shared items could be to-do lists

and calendars between two spouses, but you could also share your location or status, as well as recommendations. This has lately been one of the key features of any service or application that has been developed: people have the need to share things they do with others, even outside the organizational issues like getting shopping done. Sharing connects us to others, both to those who are close to us but to strangers as well. Web 2.0 offers good models for different kind of sharing methods, these can be seen for example in popular services like del.icio.us and pocket, which are bookmark sharing services. Another approach is offered by task sharing services, like widely used Google spreadsheets or even Amazon's Artificial Turk, where one can ask others to complete some tasks for a small reward. All these give good direction for LifeNavigator's design.

Importing preferences

In some applications, such as Adobe Photoshop, the user can import settings when importing a new file into the application. Similar idea should be considered with LifeNavigator to let that part of the users who are not interested in spending lot of time on the set-up get by a bit easier. If the standards are well thought, this should not be a problem. If this is possible with images, most certainly it will possible with text based data. Then there has to be a usable solution for being able to choose only some of the imported preferences as well, to make sure user doesn't override their previous settings unintentionally.

Standardizing the information production

One of the fundamental issues to be solved in order for such an application to work is the standardizing of information production. How the information should be created so that different devices and systems can effectively interpret it. As most of the information LifeNavigator would need in order to work already exists, we should now just have more useful metadata or tagging system for it. With the already existing tags like geo tag that describes the location of an item, the direction is already set. Other existing technologies, such as RSS-feeds should be also taken into consideration to make the information production efficient, useful and easy to access for those who are interested (when the information is intended for sharing).

Table 1 Examples of information types for creating a standard

	Type	Example
Name	Text	Harry's pub
Locations	Geo	49.2;-123.4
Opening hours	Time	Mon-fri:10-18, sat: 10-15
Descriptions	Keywords	Ecological
People	ID	Number/nickname
Products	Selection of categories	Washing product
Services	Selection of categories	Chinese restaurant
Evaluation	Number	1-5

These standards can then be used in the the sorting of information in quite similar manner to Yu et al.'s architecture that was mentioned earlier. They present examples of user profiles, where preferred restaurants, transports and so on can be chosen, as follows :

```

<xs:element name="DynamicData" type="DynamicDataType"/>
<xs:complexType name="DynamicDataType">
<xs:attribute name="ValidityData" type="xs:dateTime" use="required"/> <xs:sequence>
<xs:element name="Interests" type="Interest"/>
<xs:element name="PrefferedRestaurant"/>
<xs:element name="PrefferedTransports"/>
<xs:element name="Time Constraints"/>
</xs:sequence>
</xs:complexType> .....
<xs:complexType name="Interest">
<xs:sequence>
<xs:element ref="Museum"/>
<xs:element ref="Sport"/>
<xs:element ref="Chinese Food"/>
</xs:sequence>
</xs:complexType>

```

Such examples work as good starting points for developing standardization and openness, but this example seems a bit too simplified to work on the level that LifeNavigator is supposed to working to fully live according to some values or preferences.

Defining your social network / Social functions

It is Thursday afternoon and she's getting off the school. She immediately checks her LN where to head so that she can be with her community members. It is a warm autumn day and she gets instructions to go to the nearby park. Five minutes later she's with her friends and talking about the newest film that is opening on Friday.

Scenario 7, page 90

To be truly involved in people's everyday life, LifeNavigator should encompass also the social part of people's lives. Sharing your whereabouts is often the first thing people communicate when talking to each other on the mobile. Why not make it easier to know if your family members or friends are near by?

Shared presence

The book *Human, place and time: towards the principles for designing an interface for personal navigation* (Lankoski et al 2001) defines social navigation is *"the kind of personal navigation services through which an individual can perceive his/her social environment in physical world and be in contact with it."* In this book, the article Social navigation and location information, written by Inger Ekman and Anu Jäppinen, describes rather well the issues related to the social functions of LifeNavigator.

In the article the results of the design process for a personal navigator application are introduced. In the Jäppinen and Ekman (2001) divide the information provided through an social navigation service into three levels: information about individuals, information about groups formed out of individuals and thirdly, anonym background information, that is used for describing movements of bigger masses of people. All these information types would be beneficial to LifeNavigator, used for different functions like finding company to go to a concert or checking is there a queue in the bank.

In mobile operator Vodafone's future vision the idea that LifeNavigator would also carry on is phrased as follows: *"We all belong to all sorts of communities: family, neighborhood, profession and shared interest. In the future the ability your ability to interact with these groups will be even greater, with mobile services removing the physical constraints and allowing you to interact with friends, family and colleagues whenever and wherever you want."* "Yet, in the slick flash scenario the means for belonging are not that great: you share moment via video call.

More interesting steps towards connecting with the people that important to you have been taken. Jaiku, the context phone allows you to communicate your location and the context you are in, let it be work or leisure. Of course we can go even further. Quick scans for some company to catch a movie in your social network and subtle ways to inform others about your next move or that you are craving for a cup of coffee need to be supported. Now these require a chain of messages and often are restricted by thoughts of the other party being in a busy meeting or somewhere else important. Nokia has provided one solution, the Nokia Sensor, which is a free Bluetooth-based social scanning application with a support for messaging and profiles.

Sharing your presense results evidently in changes in your social presense. You have to develop new rules about who you want to see and when. Inviting people for coffee works a bit differently when you start knowing where your friends are and what they do. For example the research of Kranz et al. about Ubiquitous Presence systems (2006) they discovered that when people do not explicitly update their current status, it leads quickly to annoyance from other user's side. As they say in the paper, important issues have to be solved: *"It is clear that in such settings the issue of privacy and control are essential and to be addressed."*

Privacy

Location based services need the location information otherwise they are useless. Social navigation systems are completely relying on sharing the location information. This means some compromises from the user in the privacy level as discovered in the Ubiquitous presense system research: *"By sharing information with others a user is inevitably giving up some privacy."* When talking about privacy I here refer to the third dimension of privacy: informational privacy, which deals with the gathering, compilation and selective dissemination of information, and not the personal or territorial privacy.

Most of the users are willing to share information about themselves for social network's benefits, but as pointed out by Kranz et al., are often not fully aware that even seemingly limited information can give rather accurate information about the user's routine if accumulated over time. This means that even your IM status shifting between on-line and off-line can provide somebody with information about you coming and leaving work. With internet use, Dieberger(1999), quoted in the book Human, place and time (2001) on the other hand has noticed that people feel that while using the internet nobody is interested in their information as there are so many others using internet as well. It will take some time to get such trust in to services that are based on location information, especially as they are within a more personal medium, the mobile phone.

In the existing applications the most common model of privacy control is that you either share-don't share, show-don't show. In addition to this you can set different rights to different, pre-known communities or people. One approach that is introduced by Ekman and Jäppinen is that there is also other form of important information that can be shared without direct link to the person it relates to: location information that is separated from the individual. This type of information is important for offering personalized services that require information about greater masses of people in order to provide useful recommendations.

With the social software movement, there are a growing number of enriching projects that look at this issue from a wider perspective. One is the research on Real time searches in Local Social Network (Faaborg et al, research is on-going). They discovered that the user has to have a variety of options offered for sharing information, without making it too difficult. It is important to have even a possibility to be asked in every occasion what to do, share or not, since even this may sound as very strict option, it probably enhances sharing as it makes the sharing more transparent and the user feels that they can control the situation.

	Yes	No	To trusted	Ask
Make my location public:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Make my status public:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Make my calendar public:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Make my shopping list public:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 5 Sharing options adapted from the paper Real time searches on a local social network

There are existing guidelines for designing with privacy in mind. Kranz et al. give useful insights in their guideline that can be read in the paper Ubiquitous Presence system. There should be a clear conceptual model that helps user to understand when, where and how his or her privacy issues are touched. User should be given easy means to override and manipulate implicitly collected context information as well as switching-off the system. The system should have enforced information symmetry, so that if user goes offline it is not possible for him or her for example access other people's status information, or users should be able to see whether who has checked them upon. In general, accessing other people's context and presence information statistics should be made difficult. Paying attention to all these aspects with a bit more wide spectrum than just location information and status, the system has already quite well thought privacy mechanisms.

Kobsa (2002) gives very descriptive advice for taking privacy issues into account in services that involve personal data and personalization:

- Make personalization a clear purpose of your service. This may improve the accuracy of the data needed for personalization purposes and will also facilitate the next guideline.**
- Provide comprehensive and intelligible advance notice to users about all data that is to be collected, processed and transferred, and indicate the purposes for which this is being done. This is likely to increase users' trust in the application and is mandated by virtually all privacy laws.**
- Obtain users' informed and voluntary consent to processing their data for personalization purposes**
- Provide organizational and technical means to allow users to inspect, block, rectify and erase both the data they provided, and especially the assumptions the system inferred about them**
- Provide security mechanisms that are commensurate with the technical state of the art and the sensitivity of stored user data**

I find these "rules" very relevant for LifeNavigator-kind of application or service and they should definitely be taken into account in the possible future development of LifeNavigator.

Conclusion

In this sub-chapter I described the issues relating to LifeNavigator's set-up. With enough consideration given to privacy issues and user control, the design should also enable use of selected sources as well as offer support for creating content and sharing personal information to a chosen degree. In more general level the availability of personal information to the user (such as the consumption data of all kinds) and developing a clear standard for information production are issues that require solutions. Technical obstacles for the last mentioned do not to my understanding exist. This leaves the field open for new players with a willingness to develop open solutions to solve this problem.

2.3 LifeNavigator in action

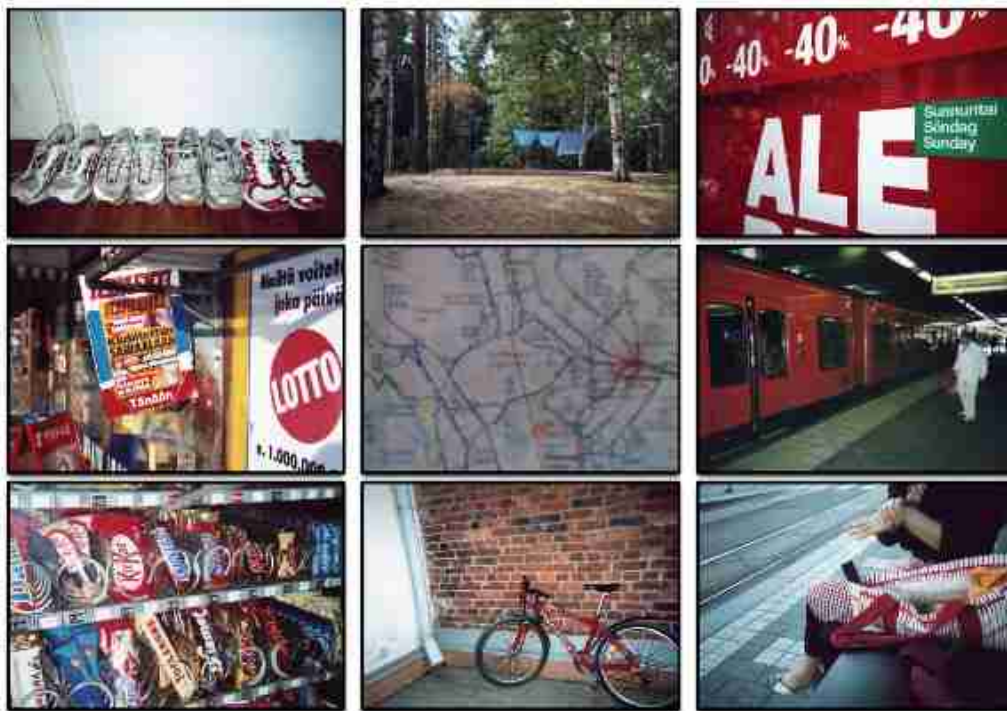


Figure 6 Pictures taken by the probe participants

LifeNavigator at your service

This chapter describes from the users point of view how the LifeNavigator could work and goes more into the issues related to using such a tool. Starting from the context awareness, moving on to the suggestions, this chapter covers the areas of using computers for persuading as well as the issues related to interaction methods.

Under the title Suggestions you can also find the discussion concerning the practice of searching and what relevant discussion there has been around that topic.

Sensitive towards your life: context aware and adaptive

The LN can see from her location that she's at her daughter's place and therefore she will be moving around with a pram. Normally LN would look for parks that are popular amongst elderly people and where you can play petanque, but now it will look for the parks that the family normally uses and guides her through routes that are accessible with a pram.

Scenario 9, page 94

In order to be able to make relevant suggestions, LifeNavigator should be context aware. According to Pascoe (2001), there are four ways of being context-aware: first is mediating the context information for the user, second adapting according to context, third utilizing contextual resources and fourth augmenting context. Dey et al describe the context as the physical, social, emotional and information status (1999). LifeNavigator should be able to adapt according to the context and be aware to the different statuses that Dey et al list. It is also vital that it would use the information of spatial contexts; the technical, social and physical surroundings and that it would recognize long-term and short-term context (Shen et al. 2005).

Context-awareness is a problematic issue, as it relies on the intelligence of the machine. Machines have a great capability to make calculations but giving them the skills to interpret situations and settings is more challenging. The types of information machines are provided with to make these interpretations is crucial in this matter. Some context information leaves less room for interpretation, making their context-awareness work better (especially more closed environments and situations, like museums). But for example while moving in the city, an individual is likely to switch quickly between different statuses, such as meeting, shopping and reading newspaper. These changing contexts are more difficult for the application to learn to recognize and therefore require input from the user as well. It should also be bared in mind that, as it was discovered in the Jacobs et al.'s research around the user experience of a decisions-theoretic shopping guide (2005), some of the users have a desire to understand the recommendations the system they use makes to them. Here balance is the key word:

finding a way to combine context awareness with user input in an effective and usable manner would most likely result in best solution.

In addition to these, more or less compromise solutions between context awareness and elaborate, descriptive searches, there have been other efforts made to solve the issues relating to artificial intelligence. Computers lack the commonsense knowledge that humans develop during their life and there has now been means to give some of this understanding to machines as well, which could benefit the development of the context aware searches, for example. As a part of the Commonsense computing project in MIT, the project team collected commonsense facts from the general public via an Open Mind website. This had resulted in over 700 000 facts after its founding in 1999. This project differed from similar artificial intelligence projects, like CYC, since it didn't use a formal logical structure meaning that *"the information didn't use a standardized vocabulary with strict definitions for each component of the common sense knowledge."*

Lieberman, Faaborg, Espinosa and Stocky examined in their paper Common Sense on the Go: Giving Mobile applications an Understanding of Everyday Life, what giving mobile devices the access to Common sense knowledge would mean. Their purpose was to give the device understanding of the context of the user's current situation and by doing so *"allowing them [mobile devices] to understand the semantic context of situations and statements, and then act on this information."* This would result in reducing *"the need for explicit input because the machine can make better guesses about what user might want"*. Common Sense can take better advantage of contextual information (time, location, preferences, personal data and partial recognition) as it can *"better understand the implication of context for helping the user"*.

The context awareness is a hot topic for some years already and the mobile computing with its limited interaction methods and omni-presence has definitely speeded up the development in the area. After looking at different ways to approach and develop the context awareness of devices, it seems to me that it is a topic that will need solutions also from the hardware and operation system, not so much from LifeNavigator as an application. Certainly, the awareness has to then be supported by the application as well and by connecting various data from location information to calendar data and people next to you, it should add to the context awareness of the device by default.

Frees you from searching: Suggestions

She does her shopping and while she is packing her groceries, she decides that she wants to have a glass of wine before delivering the beer load to Pekka. She tells that

to her LifeNavigator and gets back on her bicycle. After a crossroad LN suggests to her a wine bar on the parallel street.

Scenario 1, page 81

The original concept of LifeNavigator lies on subtle, constant suggestions based on the context, direction and other data that is provided to the application. Idea for this functionality rose from the lack of options for avoiding actively searching for things and being suggested instead. In this subchapter I will introduce some of the research that has been already done around this topic of query-free information retrieval and active agents and explain more in detail my view on the usefulness of the practice of conducting searches.

I continue from a bit different point of view with a little story: A cold winter day in Helsinki and I'm on the bus 75 to head home from the center. I had to wait for the bus, since they only go three times in an hour, and am finally warming myself up while looking through the window at the white city. I pass a nice coffee place and think to myself that it would actually be nice to go there now. Just before pressing the button to halt the bus I start hesitating: But when is the next bus then? Is there going to be a connection home? I decide not to get off since I'm now safely on my way to home and start feeling my toes melting.

The practicalities stopped me from living in the moment and I know I'm not the only one who it happens to. What if we would be free from thinking about the next bus or looking up train connections? What if we could have a tool that could provide us with the connection information and let us focus on living in the moment?

Search and find or be suggested: Shall we search no more?

For many people, life without Google or other search engines seems like an impossible idea. Their role in everyday life has already gone beyond their sole purpose. As stated in a blog I came across: "*search engines are Life Management tools*". The statement is based on the observation that one not only performs searches for a recipe to make food according to it, but also uses the search as tool for a great meal. The author of the blog even throws into air the idea that Google could make Life management into its main business. At least it has already become an archive of the trends and news, with Google zeitgeist.⁴

Yet, even with the success of the search engines, there lies a problem in their practicality. Search engines are very useful for looking up data for more stable purposes such as facts

⁴ <http://www.google.co.uk/press/zeitgeist/archive.html>

about history or help biology homework. Unfortunately, a great deal of search results becomes outdated or invalid in the high paced and ever changing situations of everyday life. That is where the need for topical (relating to something that is of particular interest at the moment) information is emphasized. Timetables, restaurant queries, maps of destination, all can be very practical tools for planning ahead, but if something surprising happens, the material one looked up before hand is often of very little help. With the locating technologies, we should be able to get rid of completing multiple queries, printing out results and planning so much ahead. We should be able to get accurate, valid and context-aware data when and where we need it.

At the moment making a search with a mobile is very elaborate. Not only does making one search take time, mostly due to the limited interaction methods that small keys and screen offer, one needs to more often than not additionally do multiple searches while moving about at the same time. After this procedure comes still the comparing of the results before one can make decisions to base their actions upon. The search engine has at hand very little supplementary information to the keywords given unless you have personalized your search engine. Right now the search engines work with the principle of making queries with keywords, offering the possibility to use restricting symbols, categories or keywords. Some are made more intelligent by giving them access to the search history or letting people personalize their search window. But the context or location information is not taken into consideration in these searches, which forces the user to provide it in the form of keywords. This is not as straight forward as it sounds since the user is very likely to conduct few searches before realizing which of the context information is relevant, as it is all too obvious information to the user. For example if you are hungry in Berlin, you usually want to find the closest open restaurant that fits your taste and budget, meaning that keywords "restaurant Berlin" are not likely to do it for you very quickly. Other information like time, opening hours and need for accessibility with a wheel chair or pram sets more requirements for the results that are crucial for a successful query, but are so self-evident for the user that are likely to be forgotten from the first search conducted.

The validity of the data and choosing the right keywords is not even the only problem with searches and changing hardware settings. Doing elaborate searches, which with mobile that can be as short query as: vegetarian restaurants Helsinki, have at least in my own experience been very frustrating. Just opening the browser and getting to type the address for the search engine takes too much time, not to mention getting the results and browsing through them on the small screen to find the relevant information.

Approaches to the searching and suggestions

The difficulty of searching and possibility of context aware suggestions has been addressed by others as well. Suggestions for solutions have been developed especially in the context of office applications, which offers a more manageable environment for experimenting on this topic. In their paper Query-free information retrieval, Peter E. Hart and James Graham introduce *“a paradigm, in which queries are constructed autonomously and information relevant to the user is offered without explicit request.”* Although they are focusing on a fielded system FIXIT that was designed for the service technicians or customer support representatives of a copy machine, there are some useful discoveries they made in their work. The goal of their project was to make an effort *“to liberate the user from burdensome informational retrieval activities”*, so even though the context is somewhat different, the goal has been the same. As they had been designing for rather limited environment, I looked further to find projects done in more similar context and found CIA.

CIA, a system envisioned by Jason I. Hong and James A. Landay in the paper Context /Communication information agent, *“is a proactive software agent that uses context and human-to-human communication to help find and deliver the right information at the right time.”* CIA is more relevant for this paper than FIXIT as it is designed for people as social beings and not just for interacting with machines, but it has also in many ways a different focus: the prototype was built for a meeting context. There are valid points they make, as the relationship people have to the information. They categorize it into four different types: *“1) information a person would have searched for manually, 2) related information the person already knows, 3) serendipitous information the person doesn't know and 4) completely unrelated information”*. They focused on the first type but in my project the focus is on the two firstly mentioned types of information. They also phrase well the key issue with such suggestive retrieval method: how to *“balance the utility of the information with the disruption it would cause to the users”*, originally suggested by Horwitz and Maes. I addressed this topic in the interviews and it certainly needs a lot of consideration in the design stage of such application.

For solving the previously described problem of elaborate keyword based searches that become invalid, one possible solution could be shifting to context and location aware searches or even “suggestion” based data-mining that are close to the ideas presented in FIXIT and CIA. With these suggestions I mean that searches (when on the move with your device) would be conducted constantly so that all the information that is available about the user's goal, context, preferences and values is taken into account and then suggestions are made accordingly.

Lot of these projects have not gone further from the office applications or travel guide prototypes. Nowadays there is a lot of focus on developing different ways to complete searches on audio-visual material, but what about information that has location data or context-aware searches? There are several options to choose from when performing searches: search engines for semantic web, searching according to the source type, new ways of linking the data together, or using visual maps for finding information but mostly the context awareness in search engines limits to the advertising that is based on your search words. Businessweek titled their article fittingly: "*The battle for Mobile search*" (February 20th, 2007). They point out that it is not self-evident that Google will be the leading search engine in the mobile dimension. Different revenue mechanisms and the fact that users are even less willing to spend a lot of time completing searches and getting list of links in return than they are with PC's. They point out that people want an answer to their problem, not a huge selection of search results.

Unfortunately the article doesn't focus too much on the fact that there is an obvious need for doing mobile searches where your location influences the results, but also the comparison between the results should be supported, search history stored, recommendations taken into account. There should be new angles taken towards searching and the suggestions I described could offer one possibility for such an approach.

Activates your preferences and values

Coffee would be nice, he thinks to himself and looks into LifeNavigator for suggestions. Sure he has seen many coffee places next to Esplanadi, but he prefers living in a more ethical way. So LN, knowing this, suggests him a nearby coffee place that serves organic fair-trade coffee, and is conveniently on his route to his meeting.

Scenario 2, page 83

LifeNavigator helps you to live according to the things you find important. Sometimes this means finding the shortest or fastest route, sometimes it can assist you to find a bar you like and sometimes it can remind you to buy that toothpaste that you like but cannot find in your corner-shop. The level of use and results all depends on the user's choices, but the logic behind is the same for everybody. It helps us to not to give in to the routines that we don't want or to control the hurry when it starts influencing our choices too much.

Captology: using technology to persuade

Why would we then need a computer or application to activate our values or preferences? Can we really not manage to do those ourselves? Personally I have noticed that with the memory capacity and calculating powers I have, in everyday life I don't stick to my principles because I either excuse myself to buy not fair-trade coffee due to the hurry or lack of

information of places that serve it or just simply forget to buy more ecological washing powder when next to a store selling it. If I could be reminded or advised to choose better, I would do so and be happier as a result.

No tool can solve the inner battle an individual has with him/herself and values. This issue was discussed in the sub-chapter What is important to you? But after an individual has found answer to that question, is he/she left alone to act accordingly. Could we not get a helping hand at the busy times of today? I don't seem to be the only one feeling that we could make an effort to harnessing the machines to make us do the right thing more often, to make sure we remember to stop at the market hall to buy some organic vegetables while we are near by. The book *"Persuasive Technology: Using computers to change what we think and do"* by B.J.Fogg supports this approach.

In this book B.J.Fogg describes captology as *"design, research, and analysis of interactive computing products created for the purpose of changing people's attitudes or behaviors."* Sounds first a bit frightening, but the book addresses an important issue and the ethical aspects relating to it. The author is, similarly to me, not talking about decisions like divorce or not, tell or lie, but about helping people out when they feel like starting smoking again or other practical issue like that.

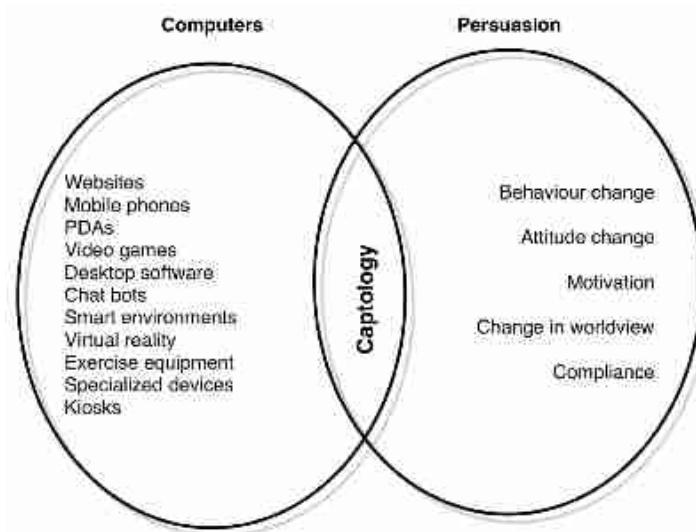


Figure 7 Image from the book Persuasive technology

From the book it also comes quite soon clear that as an individual would use LifeNavigator to persuade, or more accurately motivate or help, him/herself, the ethical issues related to captology are not very relevant. Certainly with the preference sharing option or other kind of add-ons you could also persuade others to live according to your worldview, but the awareness towards one's values and preferences is so present in the tool that persuading other users in an unethical manner seems difficult.

The advantages of computers over human persuaders are listed in the book. The six qualities are: being more persistent than human beings, offering greater anonymity for the user (or in some cases target), managing huge volumes of data, using many modalities to influence, being easily scalable and omni-present (ubiquitous). In the case of activating one's values or preferences all the mentioned are meaningful qualities. The fact that you can have 24/7 assistant for yourself that is personalized for your needs and private use offers a great value for the user. The amount of data that is available over the network and served to you according to your need and in the modality you have selected for that context makes many things a lot easier. The scalability is important for offering an individual experience for the user and the ubiquity is a quality that is necessary for such an everyday life tool that is used in ever-changing contexts.

The book also offers a functional triad, a nice way to look at LifeNavigator through. It divides technologies into three categories based on the way they persuade. These are presented in the image below as all these should be, if possible, present in the final design of LifeNavigator.

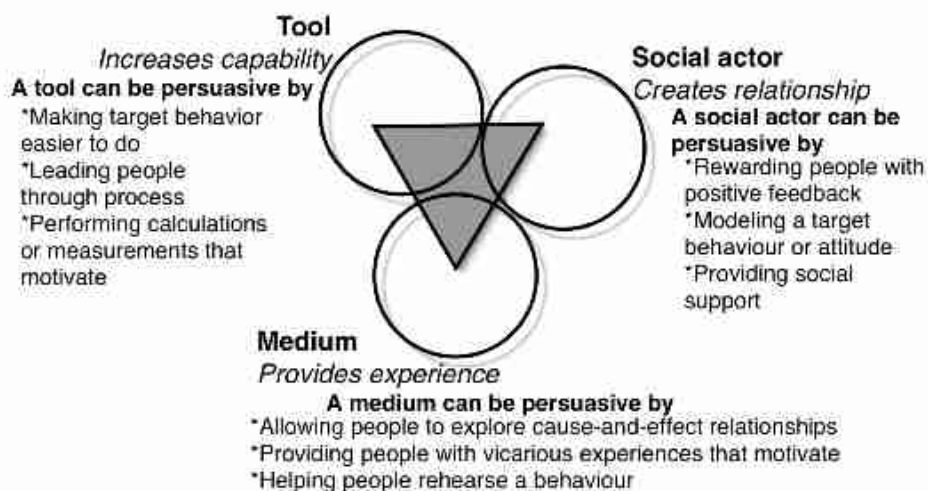


Figure 8 Functional triad by B.J.Fogg

Even if one would find the term persuasive off-putting, this book by B.J.Fogg offered me support on the approach that I have taken interest in, how could we enforce values in the small actions. It is very likely that we will in the upcoming years read about and probably also experience ever more persuasive uses of computing technologies. With the concept of LifeNavigator I wish to show that these uses could be something more positive than marketing or politics.

Supports spontaneity

On Sunday evening Heikki waves goodbye to his girlfriend, who is boarding the train to Joensuu. He walks in his longing thoughts to his regular bus stop and only then remembers to tell the navigator he's heading home. Next bus is only in twenty minutes, so LN suggests to him he would go look at the free exhibition at the railway station. Sounds interesting he thinks and follows the instructions there. It turns out to be photographs of skateboarders and there are even a few really good shots.

Scenario 3, page 83

One of the titles in Eija Kaasinen's User needs for location aware services (2003) is Planning versus spontaneity. This title relates to an issue that I have come across while developing the concept for LifeNavigator and especially the aspect of suggestions that it could provide. In this subchapter I will look into can people really plan, how and why they plan and how this all relates to the LifeNavigator.

Planning versus acting

In the preface of her book Plans and situated actions (1987), Lucy Suchman draws attention to how western people often prefer to make (or at least claim that they make) a plan in order to reach a goal, mostly because abstract, scientific thinking is valued in our culture and we want to appear smart in the eyes of the others. In the book the comparison is made between a Truksee navigating on the open sea, focused on reaching his goal, and a European navigator, who is set to stick to the course, planned earlier. What Suchman discovered in her study is that actually the cultural difference is only on the surface; both navigators react in the situations according to the context. This is, according to Suchman, because *"however planned, purposeful actions are inevitably situated actions (actions taken in the context of particular, concrete circumstances)"*.

Suchman continues that as *"the circumstances of our actions are never fully anticipated and they are continuously changing around us"*, we must all in fact act like the Truksee navigator. Whether the "mobile nation" of today has already grasped this mindset and stopped pretending to be following a plan, is yet to be seen. To give some insight on the current situation, a survey called Survey on Wireless works that was conducted during year 2005 in 15 market areas with over 3000 people by Proximity worldwide and BBDO, showed results that people rely on their mobiles to have more spontaneous life. According to the survey, 44% of the respondents prefer to make last minute plans via mobile phone. In United Kingdom 61% don't like agreeing on a specific meeting place, but call their friends when close by. Almost 80 percent of the respondents call their friends to find out their location. When asked for the use of the phone in general, the most common ways of using the medium were not

only communication and entertainment, but also planning related usages such as “*content that helps me to get where I’m going or helping me to get the most of where I’m going and helps/reminds me to do things I didn’t have time to do.*” At least the mindset doesn’t seem to be too far off from Suchman, who states: “*Plans are best viewed as a weak resource for what is primarily ad hoc activity.*”

Joanna Saad-Sulonen touches this topic in her thesis *Mediaattori - Urban Mediator A hybrid infrastructure for neighborhoods* (2005). She describes well how people try to win time but the capacity we have to make calculations is just not enough. “*We are often struggling with time, while going from one place to another and we devise tactics to help us make up for any lost time: having just missed our bus and knowing there won’t be another for the next 15 minutes, we try to remember if other buses go in the same direction, or if we could combine the routes of two buses to reach our goal quicker. Mental images of bus routes, locations of bus stops and faint recollections of bus schedules come rushing through our minds. We then make decisions, on the go, based on our memory or simply on chance.*”

These tactics and strategies Saad-Sulonen vividly describes show how life cannot be planned or managed, but still we every day make many efforts to do so. Yet the meaning of these plans should be fully understood. As Suchman points out: “*Stated in advance, plans are necessarily vague, insofar as they must accommodate the unforeseeable contingencies of particular situations.*” Still, plans are made and as long as we need to stick to a shared time system, also known as *kronos*, we must set that alarm clock and be at work or in a meeting at certain hour. During holidays we often shift more towards *kairos*, our lived concept of time, but even then we need to stick to a shared time concept when using public transport. Giving up shared time units would easily result in lot of problems, but at the same time sticking to it easily becomes a problem as well. We tend to lose time in trying to plan how to spend our time in the most efficient way.

Of course managing one’s life goes beyond sharing the time. Making lists, choosing college, planning our careers, housing options, holidays, using birth control, each are different ways of making an effort to make our life to be what we want it to be. Some are issues that this thesis is not going to touch, since they are so called directional goals. They are “the big picture” for most people, like living a happy life. To make this big picture come true, one needs to find ways to implement it in small actions and that’s the level of planning that LifeNavigator makes an attempt to touch.

Sometimes making plans, big or small, is needed, but with the ever-changing nature of life, we should be better supported in the situations when all the plans have turned outdated or not usable. This is where LifeNavigator could step in as the solution. Instead of us realizing that

we missed our bus and now have to come up for a new solution, the suggestions could keep us informed more frequently and avoid these situations where you have to “re-plan” everything. While LifeNavigator would keep solving the arising problems, the user would just follow the suggestions and be free from the stress that problem situations usually cause.

Getting things done, reaching goals

As mentioned earlier, LifeNavigator works in the level of small actions, reminding us, guiding us to places and connecting us to people who are important to us. Therefore it could also easily support achieving personal goals; let them be concrete or more abstract as Kari E. Turunen earlier described them.

Using tools for planning can be very useful when setting rational goals that are also known as for example to-do lists. A computer can understand these goals as well, because it is accurate data that can be measured with 0 or 1 (is something completed or not), they are under the goal setter's influence, they have a due date and they are written in present tense⁵. These small actions often also add to making bigger term goals happen. For example completing certain tasks at school well and in time can help one to achieve a career that they want through getting them first graduated. Sometimes these goals don't work to anything bigger so directly, but certainly for example taking the trash out can benefit your love life when living in a relationship. It is up to the individual to envision which actions add to which result.

Why would then LifeNavigator be any better than writing a list on piece of paper or setting a mental goal for yourself? I would like to here share a maybe seemingly off-topic article from Attention Deficit Disorder Resources by Kathleen Nadeu that confirmed many of my thoughts on the usefulness of such a mobile application. Attention Deficit Disorder is a disorder which results in problems with attentiveness and therefore people diagnosed with it experience often even more difficulties with taking charge in their life. In the article doctor Nadeu describes why using a planning tool is so essential for helping an individual to get the things they want to do also done. The article is titled *Using a Day planner as Life Planner* and it describes the usage of a calendar and to-do lists in an effective way. The reason why I chose to present this article in my thesis is that I found few other life management applications but they are mainly making profit on people who are lost with their life. This article describes just the principles of taking charge without emphasizing a certain product to be used in the process.

The first thing on Nadeu's list of rules is Learn to have it with you at all times, which with a mobile application, at least in Finland is already taken care of. Second issue, write everything to your planner, is also more easily solved in the digital domain as it refers to the shared

⁵ http://www.bambooweb.com/articles/t/i/Time_management.html

calendars and transferring data to all of them, as well. The author also underlines the importance of to-do lists, but at the same time makes a clarification that daily plan is only the to-do list of today, not more. There could be many handy solutions for selecting the to-dos for the upcoming day in the digital domain. Nadeu gives other wise advise in her article but draws in the end the attention to this: Make sure your daily action list is in line with your true goals and values.

I want to wrap up this sub-chapter with a quote from her last paragraphs where she touches very closely to the idea of LifeNavigator:

"If you use a day planner well, it works for you, you don't work for it! Remember, your day planner should be a tool to plan a life that is as gratifying and meaningful as possible.

Creating action plans, learning to estimate time, assigning time to tasks may sound rigid and limiting, but remember—you're in charge.

Once a week, take a look. Are there chores that you can combine and streamline? Eliminate? Have you put the positive "to do's" in your daily action plan? Talk to a friend, take a walk, practice the piano, read a book?" At least for me this is very close to the way LifeNavigator should be used. It phrases well the relationship the user could have to the application as tool: the user makes it into his /her servant, re-evaluating the situation and the settings every now and then.

Makes interacting on the run tolerable

After a while they start heading home. Leena says she really needs to go to the toilet. Leila knows that it is still quite a distance before they are at home, so she asks the LN for advice for closest public toilet. She feels relieved when they make it in time. Finally they can head home, Leila thinks to herself, but then she hears her navigator reminding her that she's soon passing a store and on the shopping list there are margarine, yoghurt and apples.

Scenario 9, page 94

With a mobile application the demands for the interfaces and interaction methods are a lot greater than for a webservice; limited size causes already many restrictions but the use situations in various environments make the designing even more challenging. I will in this subchapter go briefly through these issues that relate to interacting with LifeNavigator.

Adaptive and usable interaction methods

Interface is in the center of any human-computer interaction, even when it is done so well that user doesn't pay any attention to it. There are various definitions for interface, but I use here the following definition from Chi, used in Eeva Pilke et al.'s Aktiivinen Käyttöliittymä: *"an input language for the user, an output language for the machine, and a protocol for interaction."*

User interface also provides the means for input and output, allowing people to manipulate the system and the system to produce the effects of the manipulation.

The interfaces for technology use have been always going through constant development and changes, starting from the physical interfaces moving to graphical user interface and now again shifting to tangible user interfaces. In mobile devices the physical constraints for the interface are often small screen, small keys that are placed close to each other but also voice commands and vibrations which can be used to make the usage easier. Most of the usability limitations with mobile services lay in the hardware itself. Touch screens, dedicated keys and navigation keys are all attempts to solve some of these issues. Additional challenge to the interfaces is the need for adaptiveness. The mobile operator Vodafone states on their website in their future vision: *“Mobile service interfaces will understand and adapt to how humans interact. By taking clues from the human body and understanding the situation and emotional state of the user, the computer interaction will be proactive, easy and efficient.”* Sounds like a good setting for LifeNavigator, but is unfortunately still only a future vision.

Even though the envisioned LifeNavigator’s suggestions could be a workaround for solving some of these usability issues (as typing in searches would no longer be always necessary), it would be better if the future devices where LifeNavigator would operate were designed with improvements in the interface. Of course the interface of LifeNavigator itself should also be designed with care. Marmasse and Schmandt in their paper *Location-aware information delivery with comMotion*, summarized the areas that they received feedback issues for their application as hardware, speech input, precision and alert timing as well as alerts and data. All these are also interface issues that LifeNavigator would have to solve, preferably without repeating the mistakes of preceding similar applications.

Good starting point for designing better interfaces is the guideline of the center for Universal Design and other usability guidelines. This way all the user groups can be taken into account at once, resulting in better user experience for everyone.

Input and output methods

The mobile phones already support various input and output methods, such as keypad and voice, and visual feedback (text, animations, images and video) and sound. Unfortunately people are not so familiar with all of the possibilities, resulting in the multimodal interaction not being used as much as could be possible. Multimodality should be explored and taken advantage of in the design of LifeNavigator, as it would benefit all users, but especially people with disabilities. This direction is acknowledged by the commercial actors in the field as well. Vodafone states on their website: *“Various access devices and interaction methods need to be supported –from traditional keyboards to voice-control headsets, body sensors and gesture*

interpreters – one for each context or situation". Similarly with LifeNavigator, using different input and output methods according to context and status should also be supported.

Interruption

The output choices made in system's design are in the center of user experience; how quickly does the system respond, how are things presented and how does it inform the user that his/her attention is needed? If LifeNavigator would work on the basis of suggestions, solutions are needed for balancing between useful tips or reminders and constant interruption caused to the user. This issue has come up within the research projects around agents and query-free information retrieval, too. It has also been researched that how knowledge-based work is influenced by interruption, and as a conclusion they discovered amongst other things that commonly used mail applications that notify the user when new mail arrives causes serious interruptions to work and *"the findings from this research suggest that this instant notification feature should be disabled in order to avoid exacerbating the number of interruptions knowledge workers experience."*(Speier et al. 1997) Ten years later the interruptive message has become a tiny icon, yet the interruption is hardly abolished (how many of us still open the mail to check whose email caused that little envelope to appear?), but it has become more ignorable.

Of course the whole idea of suggestions would be lost if with LifeNavigator equally strict approach would be taken to limit interruption but maybe other efforts can be made to make the use of the application a pleasant, not irritating, experience. As interruption means different things to different people in different moments, the easiest way I could see to solve this is again giving the user control and means to customize the tool and, similarly to mobile phones, support various statuses (silent, meeting and so on). Using an already familiar way of controlling the way the tool informs the user of arising possibilities or alerts of important appointments and offering a variety of options does seem like the suitable way to solve this issue.

Supporting learning

Often when navigating devices are discussed amongst people, the issue of becoming too dependant on it comes up. As navigating systems guide you from place to place, it is certainly possible that the user never learns these routes and therefore cannot form a better understanding of the space or environment s/he is moving in. This issue should definitely be taken into account, but the need for worry is not as big as one might first think. Using a navigating system does not necessarily result in the user not learning the routes, quite the opposite.

As Laura Erni explains in her article Aktiivinen muuntuvuus oppimisen tukena (Active adaptation as a support for learning, published in the book Aktiivinen käyttöliittymä, 2000):
“With the help of active adaptations, applications can acknowledge each learner’s personal needs when application can for example adapt according to user’s skills and learning style. Active adaptation can also support the reducing of cognitive load on user and help to offer optimal learning experiences for the user.” She emphasizes that humans are always actively trying to create an order and understanding of their surroundings *“-thus to learn.”*

3 Design and research approach to the LifeNavigator



3.1 Introduction to design and research approach

In this chapter I will introduce the methods that I used in this research: the concept as a communication tool, the blog as a diary, the probe kit, scenario building, interviews and the workshop as approaches to the people's practices. All the mentioned methods are here shortly described and when there has been material gathered through the methods; the results are also analyzed. The only exception is that the scenarios are shown only together with the interviews instead of together with the description of the method, as they communicate there better their meaning to this project.

3.2 Concept as a communication tool for future envisioning

Concept design, defined by Turkka Keinonen et al (2003), is an action in which new ways of doing things and new ideas are sought. This must happen detached from the strict, technical or temporal preconditions, and free from short-term goal of sales returns. In the introduction I explained how this thesis lies on the very loose concept design that originated from a car ride. Also other research projects have been working closely with concept design in order to play with future potential, prompt reactions and map interaction between concepts and people for the benefit of academic community and companies (Gaver and Martin 2000).

The concept of LifeNavigator that I developed and introduced shortly in the beginning of this paper has been the driving force behind this thesis project. Yet, as it is not developed into a prototype or a mock-up, its meaning for this thesis is mainly to work as a communication tool for discussing the practices, issues, possibilities and implications that the existence of such a tool would result in. As the approach for the LifeNavigator concept was very personal, based on an idea and personal observations, there was a need for widening the perspective during the rest of the process, in order to really achieve some relevant observations on people's existing life management⁶ practices, how their values are in action and what their needs are for a tool relating to these areas.

What comes to this kind of a combination, putting together a thought through concept with efforts for human-centered or even co-design, one can say that the result has definitely not been co-design at its best, but nevertheless an important dialog between the concept and the

⁶ I use here the notion of life management as I have not found a better term for describing all the activities that relate to the use of LifeNavigator (scheduling, reminders, prioritizing, logistics, social relationships)

possible users offering a great overview for me as the designer. A lot of reading material has given me better insights to related research and works, but they have not been able to provide such an excitement as analyzing probes, conducting the interviews or running the workshop.

In the starting point of this research I stood with my both hands tightly wrapped around the concept, filled with questions and hunger for learning a lot about the design process. Only during this process I've learnt to let go and realize that no matter what intentions I have for my work, it is always in the hands of other people what they want to do with it or which practices they would develop around it. I hope through this process description this revelation is mediated to the readers as well. It has also become clear that this paper is not about the preliminary testing of this concept but about the process of discussing related issues using the concept as a communication tool, which results in putting the concept more into the background and giving more space for important discussion related to it.

3.3 Using a blog as a process diary

From the beginning of the thesis project I started using a weblog⁷ as a process diary. I found it a very useful way to communicate to my tutor what I am at the moment working on and what material I have gathered. I made postings of interesting articles and other texts, but links I collected mostly to my del.icio.us account. The blog was open for anyone but the only comments I got were from my tutor Andrea Botero Cabrera. As I started working more elaborately on the written part, the blog lost its meaning, but worked still as a reference to what I had done and thought about during the process.

When the thesis writing process intensified I discovered the usefulness of the blog even clearer. After re-organizing the text many times the blog offered a glimpse to the starting point, when I needed it, to get my thoughts sorted back to the original state. I agree with Maximilian Madile, who in his paper *Weblogs as a means of marketing communication* praises blog in process or project management: *"It is not only an efficient documentation tool, but also supports to reduce entry barriers for new project members."* Even though I did not get to have too much experience of the latter part of his comment, I agree that the blog served very well as a tool to reflect on the previous and take a few steps back from the point that the source material had taken me. It also linked well the visual material I had collected to the actual thoughts and events that had taken place at the time of the posting of the material.

⁷ <http://mlab.uiah.fi/~hniemi/blog>

PhD students Torill Mortensen & Jill Walker phrase the benefits of blogging in their paper *Blogging thoughts: Personal publication as an online research tool* (2002):

"Both of us experienced that writing the thesis became easier and writing more focused after we started blogging." I share their view and add that with me blogging worked as a gateway or smooth start to the actual writing process and it provided me with the feeling that I have gotten things done even though it sometimes seemed that I had only been focusing on the theoretical aspects instead of doing something more concrete.

3.4 Probe kit

Probe as a tool in design

One of the goals of this project was to familiarize myself with some design methods. There are many ways to go about when choosing a method, but as the topic of my research is very personal and requires information about the users that is rather private, I was looking for something richer than strict quantitative studies. I have personally found human-centered, emphatic methods very inspiring and while working for ADIK I had a great opportunity to use the experience the other group members had in using a co-design approach. From the vast sea of human-centered design methods, one can still choose very different approaches. In the division that Hanington makes and Mattelmäki (2006) quotes, human-centered design methods are divided into traditional, adapted and innovative according to what the interpretation and analysis of material tends towards. To give an example, market research is in the traditional end of the axis and Velcro modeling is in the other, while video ethnography remains in the middle as a part of the adapted methods.

As I was looking for patterns, themes and affinities, but also wanted to get a peak at people's lives in order to understand their point-of-views better, I chose probes as my main data gathering method. This method was developed as a part of Cultural probe study in 1997 and the developers used it in the Presence project (Gaver and Martin). In this project they needed a method to get information about the locations where they were about to be co-designing with elderly people. Bill Gaver, who was one of the developers, describes their needs for such a tool: *"The probes broke with the scientific methodologies, instead pursuing a design approach seeking inspiration, not information."* This approach was successful, providing them with a lot of rich material. Gaver comments how they learnt that probes have to be specifically designed for each occasion: *"For this reason we prefer to think of the cultural probes as embodying an approach to starting a dialogue with people, rather than methodology to be emulated in detail."* In my project the probes were used in a bit different situation, compared to the Presence project's design outcome that was more open and the material was used for inspiration only.

After the Presence project there has been various variations of probes method, from original cultural and domestic probes to residential and technology probes, with emphasis shifting from finding inspiration to informing researchers to even field testing technology. I have looked into the Presence probe material as well as various probes done at the University of Art and Design (Uiah). At Uiah, probes have been most actively looked into in the Smart products research group at the department of product and strategic design. The Luotain (probe) part of the research started in 2002 and they completed various projects that were realized in co-operation with companies like Suunto and Nokia.

Tuuli Mattelmäki, who I mentioned in the Context chapter, has been working closely with most of the probes done at the Uiah. Her dissertation *Design Probes* (2006) offers a great tool kit and information package for anyone interested in the topic. During the research I did on the probe studies, I found this more accurately set, empathic probe, which she refers to, to be the best way for getting the material I need for my research.

Why probe?

Mattelmäki summarizes the four reasons to use probes: inspiration, information, participation and dialogue. The paper *Mobile probes* (Hulkko, Mattelmäki, Virtanen and Keinonen 2004), also now part of the Mattelmäki's dissertation, sums up the core of the probes approach: "*to give people (possible future users) tools to document, reflect on and express their thoughts on environments and actions*" These are all good reasons for choosing this method, but at the same time, the aim of my research is very similar to one of the aims of the previously mentioned Technology probes: "*inspire designers and users to think about new uses of technology and reflect about their everyday activities in new ways.*" What I developed later could be seen to be a mixture of different elements with different emphasis from these probes that were mentioned.

In addition to the above mentioned more general ones, I had three main reasons for choosing this method for this particular design process. Firstly, there was a need to find out about people's daily rhythm, social networks and values that are all very private issues. Therefore people could more easily share these things when they can feel they are in charge of the capturing of their lives. The diary-like book that probes often have, would encourage them to share things that they might have not been willing to share in front of the camera, or if I had been shadowing⁸ them. This also allowed them some time to think about situations and how

⁸ Shadowing is a ethnographic method used by Iacucci, Kuutti and Ranta (*On the Move with a Magic Thing: Role Playing in Concept Design of Mobile Services and Devices*, 2000)

they felt in them, but as the tasks were done daily, the reflection would not become too distant from the actual behavior that took place.

The second reason to use such method in this stage of the process (after creating a concept) was to get distance from my original idea and get detailed data that could still “shake” the concept but also quite likely give some confirmation of my pre-set ideas about daily life that I have developed through my own experiences.

The third reason for me was that probe as a method also measures the willingness and interest of people to discuss these issues. If nobody would have filled it or answered the questions it would also tell me a lot about the individual's interest in this topic.

Designing the probe package

“The probe kits are not commercially available and there is no ready made pattern for designing a probe kit or tasks.” (Mattelmäki 2006) Even though she emphasizes that there is no ultimate way of applying probes, Mattelmäki offers a handy step-by-step guideline for applying probes. Leaving room for improvisation, she divides the process into five steps: tuning in, reaching out to the target group, designing the probes, probing, applying other methods and lastly, the methods of interpreting the material. On top of these is the logistics of probes, but it can also be seen as part of probing.

Mattelmäki's dissertation was not out yet at the time of designing the probe kit for this project, so I did not follow the guideline in this order, but my probing has a lot of similarities to this guideline. I will describe here the tuning-in and designing the probes. The reaching out to the target group is under the title Finding the people, applying other methods you can find scattered in Building scenarios and Interviews and the interpreting the material titles Looking at the probe material and Interviews.

Tuning in

While tuning in, the purpose is to carefully consider the aim of the study (Mattelmäki 2006). In this project it was to find out why people often do not live according to their values or preferences. I wanted also to map what was important to them, how their plans were different from reality and whether this good was or bad. Mattelmäki quotes Froukje Sleeswijk Visser, Pieter Stappers, Remko van der Lugt and Elizabeth Sanders (2005) to clarify how the aim needs to be stated: *“It is essential in formulating the objective that it be a question of the user in particular, his or her experience and the parts of it, not a product to be designed.”* This is what I also thought while making the booklet, so that I was focusing more on the practices of people that relate to this topic of values and routines, but not directly about the original

concept I had. As the concept was based strongly on personal impressions, I used my personal knowledge also in the probe design process, which is seen complementary to user studies by Kontro (2005).

“Tune in both on meeting the design challenge and on an empathic understanding of people.”(Mattelmäki 2005) As the context of the design challenge was dealing with issues such as location, context, surprising situations, I was in the beginning looking into the new ways of probing that were described in the paper *Mobile probes* (Hulkko et al. 2004). In the cases that they present were similarities to the data I was looking for. They had started from digital ethnography, as they state to be envisioned by Masten and Plowman (2003), and taken the advantage of the possibilities that new technologies can add to traditional design ethnography. As it is also the case in my research, they had often a need for having people to complete probes in mobile contexts. In their paper they call for more contextual interactive probing tools and this would have benefited my process as well. The capability to capture location and ask people questions on the run would’ve added the data I needed and mobile probes also make it easier *“to remotely and simultaneously observe several users, to automatize the sorting of the data and create digital user databases.”* Unfortunately the mobile probe that they then later tested was out of my reach and not doable in the schedule I had.

Creating the probe kit



As the mobile probing was not suitable for this project, I looked into other probe kits and decided to create a more traditional package with a diary-like booklet, maps and camera.

These are all objects that are common in probe kits. In the beginning there was also an intention to make postcards as seen in many probe packages before but that was later integrated into the booklet itself.

Diaries were chosen since they, according to Hulkko et al., are *“claimed to reduce the retrospective reflection and to gather more contextual data in comparison to interviews.”* It is a method that deals *“with temporal processes and their change or issues associated with the events and meanings of daily life”* (Mattelmäki 2006) and therefore it made a very important part of this probe, dealing with everyday actions. Since a lot of emotional reflection (such as feelings of guilt) relates to the issue of values, the diary was very suitable, as it *“is a typical probing instrument focusing on routines and feelings.”* (Mattelmäki 2006)

Photography, and especially self-photography, gives according to Hulkko et al. the observed people control and therefore the resulting images *“illustrate the users perspective in the world.”* Mattelmäki (2006) sees the value of photography in seeking meaningful prospects in the user’s life. They can be also very useful in later interviews and communicating the results of the user study to for example designers or clients. In this probe the photography was targeted to bring visual interpretations of the topics that can be sometimes difficult to express in words or ask directly in the interview. As Mattelmäki(2006) says, *“things pictured produce a personal view”*, offering me an angle to more easily approach topics that are considered to be quite private,

These private questions were also addressed in the open questions that were in the booklet instead of on illustrated postcards where they have originally been presented in cultural probes. Mattelmäki sees the value of open question in the way they can make people tell small stories and express their opinions.

Maps were added to get the information that was first thought to be achieved with mobile probes: location and routes. Of course this way I could not so easily link the events to the context, but I still considered it to be important. Mattelmäki states: *“map exercises are very approachable, particularly when they are meant to represent actual places.”*

The final structure of Elonkirjuu

The booklet was titled Elonkirjuu, a little wordplay with three Finnish words. Elo is dialect word for life, elonkorjuu is harvest and kirjuu is dialect for writing down. The title sounds almost like harvest but actually literally means something like writing down your life. Personally I wanted to have a title for the booklet, so that it focuses on what it is all about, just writing things down about your life instead of naming it something like LifeNavigator or something similar that already hints that maybe they should only write down things they feel are relevant to that

topic. The broader approach suits also the idea of looking at the people and not the product that is being designed. (Mattelmäki on Froukje Sleeswijk Visser, Pieter Stappers, Remko van der Lugt and Elizabeth Sanders (2005))



Figure 9 Anna Salmi binding the booklet

After discussions with the graphic designer Anna Salmi who worked with me for the realization of probe package, we decided to divide the tasks according to weekdays to give the participant a pace for filling the booklet. Since the kit was to be filled during the hot summer month of July, we wanted to put a lot of effort into making it appealing to work with. Fresh colors were chosen and images were made in a humoristic manner. At the same time the booklet was designed so that it could be easily taken with you to the beach or coffee place and that it would not fall apart after being one day in the backpack of a participant. The work with Anna Salmi went very smoothly and she gave good insights into using visualization to support the tasks and the filling process.

The first part of the booklet was meant to be a soft start-up to the week but also work for me or other readers as an introduction to the participant. There were various tasks in which the participants could describe themselves, their social networks and even meaning of life. There was also a short mapping task for the existing tools they use for managing their life and how well these tools work together. The purpose for this task was that in the interviews it would give a good starting point when looking at the complexity of existing practices of life management.

The questions and tasks I had designed so that they a) provide me data on daily routines and changes that occurred, b) give me an understanding of the participants motivation to analyze their life and values and c) get a clearer idea of what people see important in life. This meant

filling in daily the planned schedule and in the evening the schedule as it actually took place. Participants were also asked to write down problems they had to solve during the day and the solutions for them as well as lists they did during the day. The map, or “locating”, tasks that participants had to fill during three days, were firstly to see how distributed peoples routes and actions are and secondly to see how broadly they know the city.

The other tasks that were divided according to weekdays but could basically be completed when participant saw mostly fit, included the previously mentioned open questions and photography tasks. Open questions were directed so that they give participants a chance to tell about their views on issues such as “*What is hurry?*”, “*My perfect day*”, “*Where do bad habits begin?*”. Photography tasks were designed so that the tasks would be inspiring but at the same time quite straightforward. Tasks such as *Time eater* or *Time saver* were set to find out about the methods or tools people use for time management. On the other hand, tasks such as *My commitment*, *Expensive dream* or *Guilt*, were more open and left room for expressing one’s values and philosophy.

The booklet also included an Elonkirjuu key ring, that was meant for reminding people about the probe tasks. In some previous probes there has been reminders such as a note to be attached to the hall mirror, with a greeting: “Have a good day! Yours, Väinö”, a glass to listen to the sounds of a house by pressing it against the wall or a pin, that served as an exercise companion. The reminders are there to “*suggest that the participant has some exercise to do.*” (Mattelmäki 2006)



Figure 10 The Elonkirjuu package (Booklet, camera, pencils and key holder)

Finding the people

Since probe, being a qualitative method, produces usually a large amount of data, it was decided to limit the number of participants to six. Mattelmäki (2006) recommends not getting too big of a target group for a probe study for various reasons. In addition to the time-consumption of making and interpreting probes, she also reminds that: *“as little as one individual is sufficient to point out a need or a potentiality to base the solutions concept on”* and also, referring to Silverman(2000): *“qualitative research including probes tries to describe and understand the phenomenon and individual people.”* With this in mind, I approached people via email through University of Art and Design’s mailing list in order to quickly spread the word about this research.

Hi!

We’re looking for people who are living in Helsinki and preferably working during July to participate in a research dealing with everyday schedules, choices and practices. The research lasts for one week and participant use this time to complete various tasks during their daily routines. Tasks vary a lot and through them you can possibly learn about yourself while providing us with important data. You also would need to take part in two interviews which we can schedule so that it suites you the best. If you’re interested in taking part in designing a future application, please contact us. Especially if you know people older than 35, who might be interested in this research, please let us know. This research is part of my final diploma work and Arki research groups Adik project.

I would gladly answer any of your questions and tell more in detail about this research.

Best regards,
Hanna Niemi-Hugaerts

This email, originally in Finnish, gave me altogether 8 people that wanted to participate in the research. As the point was to find out about people’s daily routines the timing was quite bad, it was the holiday season in Finland and this resulted in less possible participants. To the people who showed interested I sent some additional questions about their age, education, work, how long they have lived in Helsinki, what they do on their free-time, what are two most important things to them, how spontaneous they feel they are and are there particular communities or mediums influencing their lifestyle or values.

Unfortunately out of the eight people one female, who happened to be one of the clearly older people had to cancel participation due to tight work schedule and another male just stopped being in contact, so I was left with six people. There were two men; one 44-year-old (P6) and one 27-year old (P3), and four women; 34 years (P5), 32 years (P1), 29 years (P4) and 25 years (P2). If I had gotten more interested participants, I could have done some selection (to involve more men, people of different ages or look more into their preliminary answers to the questions I gave them) but I was quite happy to at least have some people that are over 30-

years old. Mattelmäki (2006) estimated that adequate size for probe study is 5-10 people, so I felt that the amount was satisfactory for the purpose.



Figure 11 Probe package

All the participants had higher education, although some had not graduated yet. They used the internet on a daily basis, but only one of them could be described as an expert on ICT. None of them had a 3G phone and all of them used mobile only for calling, sms, reminding and as an alarm clock. They were interested in taking part in this research because of the topic dealing with choices you make and practices of everyday life. Two of them had either just done their thesis or were processing it, so they also wanted to help out by providing data for me. Only one of the participants was familiar to me before hand, rest I had never met before.

The participants took part in the study in different weeks of July and I personally delivered and picked up the booklets.

Looking at the probe material

The participants were very thorough with filling in the Elonkirjuu-booklet. Only one participant left pages unanswered, others had written almost as much as there were room on the pages. When picking up the packages I made some questions about the package. Feedback for the tasks was very positive, only some of the picture tasks had been too difficult. This is also partly explained with the fact that participants had all been in an art school at some point in their life and therefore were quite ambitious with photographing. Especially the use of disposable camera was found quite problematic, since they could not control the end result as much as they wanted.

I will now go through the material in more detail, but it is important to first mention that this material was used as a tool to get deeper into these issues together with the participants, not as a result as such. As Mattelmäki (2006) says, *“the diary notes and photographs can constitute tools for the interview situation and the participatory design workshops.”* In this case the probe material was used to create scenarios to be discussed in the interviews and to help to create an understanding of the individual participants. *“What is individual about this person? What preferences, goals, wishes and habits does she or he have?”* Answers to similar questions that Mattelmäki makes were searched for from the material received through probes and the analysis can be read in the following pages.

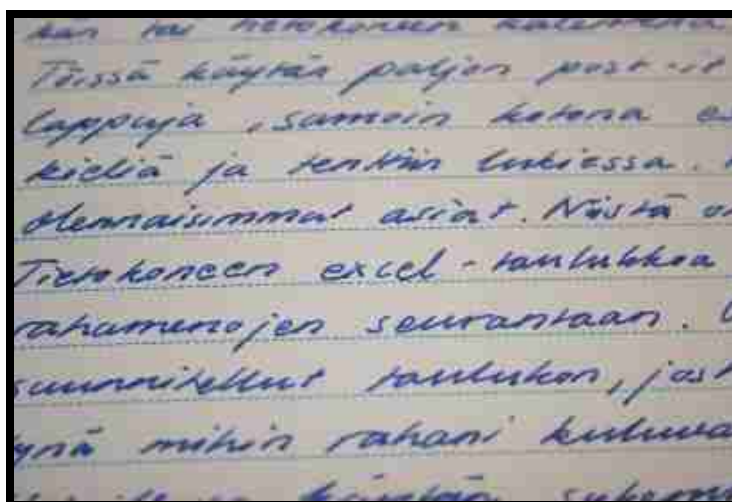


Figure 12 Completed task

What is your life philosophy constructed from?

One of the preliminary questions that I asked from the participants prior to selecting them was that what are two things or values that are important to them. This topic was continued in the probe by asking the participants to describe what is their philosophy of life. Two of them had religion as an influential element in their life, and they as well as the others mentioned family or close friends as one of the most important things. Ecological values came up from two people and the rest of the things mentioned varied from *“small everyday things”* to *“living a mellow life”*. Work was also mentioned, at least meaningful work. One participant had even drawn a graph to represent the life philosophy that individual rights cannot exceed the ecosystem's rights.

Analyzing the calendars

Participants had written their planned activities in different accuracy, since while giving them the booklet, I advised them to be as accurate as they see is meaningful. It was clearly seen that it was summer period, because all of the participants had some kind of weekend trip during the week they participated. This had also resulted in less useful data from those days,

as it was clearly a special occasion and not comparable to the other five or six days they took part in the study. Certainly weekends are always different, but now I could not get valid data about the more normal weekends.

I focused in the analysis of the calendars mostly on the differences between the plans and the actual events. The task of marking their feelings had been left unnoticed from some participants, which of course limited the analysis for that part. After going over their daily planned and actual schedules, the only changes were some cancellations of hobbies, car breaking down, not waking up to the alarm and some impulsive actions, like going to the cinema all of a sudden. As there was not more detailed description on these issues, I didn't really get too much out of this task, but I was able to use these situations later as examples in the interviews.

Location information through maps

As the original purpose of the probes was to get more on-location information about the events that take place in people's lives and where, the maps were included in the package. The ideal situation would have been to use the mobile probe, but as that was not possible and since it would've been too much work for the participants to keep constantly track of their whereabouts, there were three map exercises included in the probe.

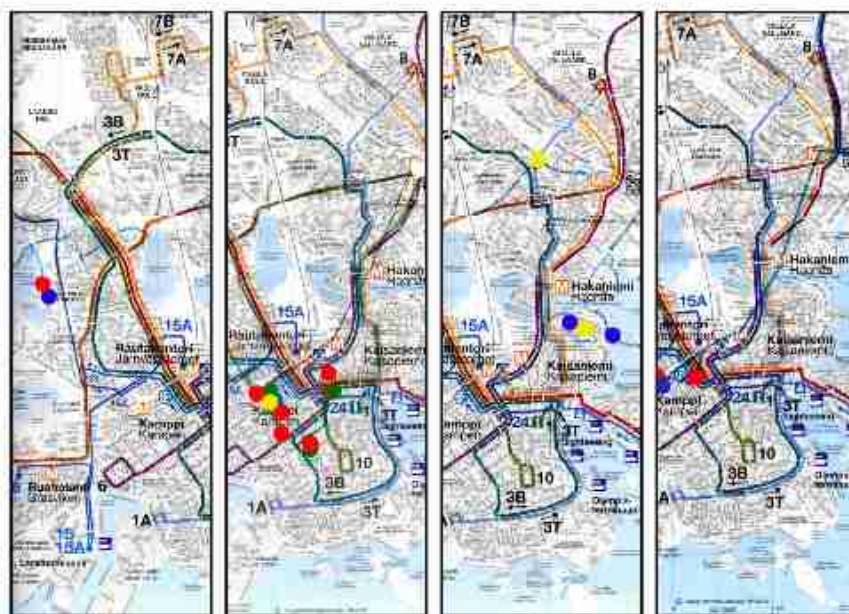


Figure 13 Examples of the completed map exercises

Two of the tasks were to mark with little stickers and color pencils the routes that they took and places that they had been to that day. This exercise was a slight disappointment from my side, as it became difficult to look at the information it provided in way that would offer me

relevant insights. When comparing the maps I regretted that we didn't stick to the original idea to make this exercise on overhead-projector transparencies, which would have made comparison easier. One clear result was that people follow same routes daily but their activities are often scattered. Their socializing takes place in various places and depending on their transport method the routes are either daily same (bus) or they vary a lot (on foot /by bicycle).

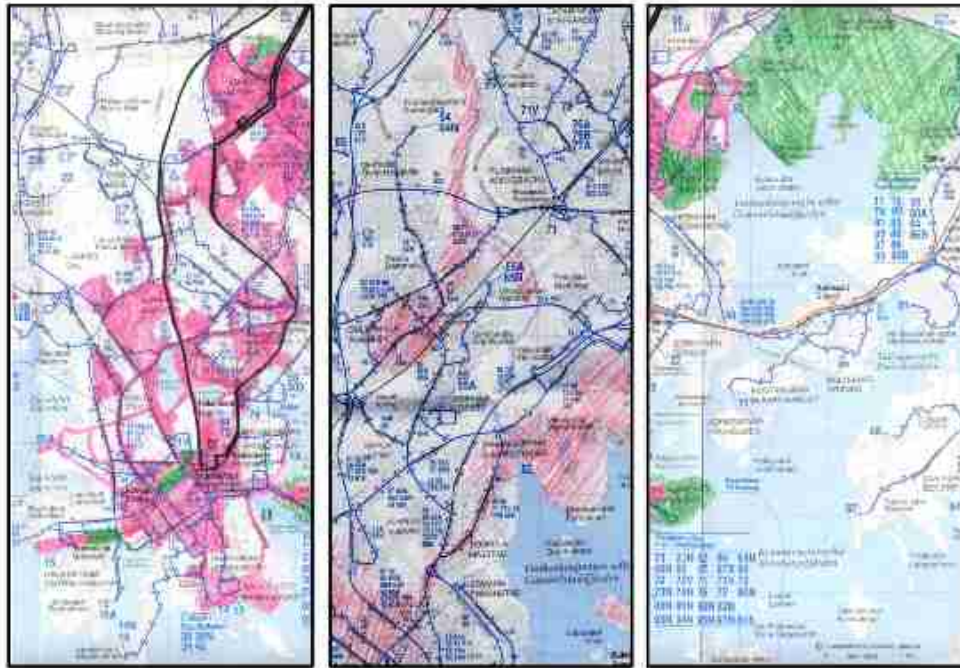


Figure 14 Examples of the results of the other map exercise

A third map was given to get evidence to prove my hypothesis right or wrong. I had thought that the navigator could suggest something interesting for you to see even when you only had five minutes to spare. This was based on the hypothesis that most people are limited to taking same route daily and already the parallel street could offer something interesting to see. This was proven to be quite wrong, since all the participants had colored very large areas that they felt they knew very well. Certainly this might be a problem caused by how the task was explained, or what it means to people to know a place very well. However this caused some reconsideration on the original idea that it could be possible to offer people something new to see when there is not much time to be spend on commuting.

Mapping the problems and solutions

In order to get a real idea of the problems people have in everyday life and especially what practices have developed around solving them, participants were asked to daily write down their problems and the solution they had for such problem. There was couple of examples given in order to direct the participants to more relevant problems: *“I was looking for a shoemaker during lunch hour and found one from the yellow pages. I was almost late from a*

meeting, because I got lost. I called my brother, who gave me directions to the right place. I was thinking which restaurant I could take my grand mother, I looked up a suitable place from an online restaurant guide.” The purpose was to avoid problems such as “Does God exist?”, since the tool would probably have very little means to solve such issues.

The probe participants listed various problems (a compiled list of all mentioned is shown in **Appendix 1**) and the LifeNavigator, as suggested in the original concept, could solve more than half of them. Some things on the list are not equally relevant, but at they are all shown in the appendix to clarify that the concept is not claiming to solve all problems people come across, even if it can appear like that in the concept description.

Daily lists



Figure 15 Pictures of the lists from the probe

Daily lists had also a reserved spot in the booklet. Some people copied items from their list to that space while others attached the actual list. There were mostly to-do –lists and shopping lists. Some people said they only keep lists in their head, but for most the list was used as a reminder, even though they might then forget to check the list when it would have been necessary. Post-it notes were a common place for lists, especially for the lists people made at work. Since many participants made a little trip during the weekends they had made a specific list for that, to remind them to pack everything.

This list exercise proved that lists are used in practice a lot but they are not often remembered in the situation that they should be used. Using mobile for reminders can help in this if the remembering is related to certain time, but even that doesn't solve the problem, as in most cases the list should be used in certain location (store/school/work).

Technology is useful, life hectic: results of the open questions

In the probe there were some direct questions that gave the participants a chance to speak up about issues related to the design process. I will here share some of the answers to them. The questions in the titles are the same that were asked from the participants in the probe.



Figure 16 Alarm clock of a participant

What is hurry?

Hurry can be described as limitation or lack of time for all the things one would like to do. Often you hear people saying that they are too busy to do the things they would actually like to do. This question was asked in order to hear it from people that hurry is not always something unavoidable. Still, at the same time, in changing situations, it's not possible for an individual to for example smartly recalculate a new route to get somewhere on time. LifeNavigator's purpose is to help out in this, as it has the capacity to make calculations that make the time use and logistics more efficient.

This hypothesis turned out to be true, all of the six participants mentioned that we have ways to avoid hurry. At least the factors causing hurry were clear: *"Postponing, making too tight schedule, getting going too late, disorder, promising to do too much."* The importance of knowing how long things take was mentioned: *"..for example unrealistic expectations of how long it takes mentally/physically to move from one thing to another."* It requires lot of effort to make a good schedule for yourself, as stated by one participant: *"Promising too much.. or organizing the whole day's schedule so full, because I hate stressful tiny things that are not taken care of. There's just too many things that you want/have/ feel is necessary to do."*

Does technology run your life or help you to run it?

Purpose for this question was to find out how people see the existing technologies and their role in their life. If the attitudes would be very anti-technology, people feeling that technology is already taking over their lives, the whole idea of navigator would sound to them very frightening. On the other hand, if they see technology very handy and they have better trust towards it, the idea is a lot more easily understood and accepted. As could be expected, the result is something in between.



Figure 17 PC of a participant

One participant was using different tools to simplify things and to save time and money: *"In this life situation technology helps to control life, to save time in many ways. Especially maps on the internet, corporate websites (for information) and email are part of my daily life. Computer has replaced mobile phone in my life. Skype keeps my phone bills low. Pulse meter takes care that I'm in the right condition and mobile phone wakes me up at the right moment. I still feel that all these rather make my life easier than restrict it."* The concept of power was clearly addressed in the question, who is in charge? This was important to all of them, as one participant puts it: *"But I also know how to turn everything off when I have free time."* The following describes the overall attitudes quite well: *"Technology helps to manage my life: mobile phone is a great invention since you can reach people on the move and for example in problem situation call for help or re-organize your schedule in short notice."*

What is freedom?

In the original concept there was an idea that the application could free you from being stressed about being late. You could feel free as long as possible until you really need to get

going to your bus or next meeting. This question tries to take a step back: what is it actually to be free in the first place? There was also interest to hear which elements are vital to the state of being free, as there might be possibilities to elaborate those elements into the concept at a possible realization phase.



Figure 18 Participants pocket calendar

Since this question was part of Saturday's tasks, some people had left it unanswered as they were at a festival or visiting friends. The results were not quite as useful as I expected but some related themes came up. The most important and true comment was from a person working in the health-sector: *"To be healthy is to be free"*, but the comment *"To be able to plan independently your schedule and work. Independency is freedom. Making decisions and living accordingly, not according to what you think other people want you to do"* is slightly more to the point for this project, giving also support to the mindset at the original concept.

Other questions

There were also other tasks in the probe package, but I will not go through each question here, as they can be seen from the probe package itself. From this research's perspective I did not anymore find those questions so useful after I had seen the answers they had resulted. Looking back at the designing of the package, there was maybe a bit too wide range of questions, but I also feel I could not know this when making them and leaving them out on the other hand could have turned out to be a big mistake.

Photography exercises

The tasks that were given to the participants included a disposable camera for capturing different topics by the means of photography. These pictures were meant to be used as an inspiration and also to visualize the interview questions. Unfortunately the results were not as interesting as I expected, partly due to the bad quality caused by the camera and partly

because the task titles, even though meant to be open, turned out in the end to be either self-evident (everybody takes very similar pictures) or not relevant (the idea behind the title given was too broad).

On the other hand, the value of these images could be higher in the actual phase of realizing this project, as there is then need for inspiration for logo, name, functions and so on. It would be very interesting to see how a bigger team could use this material.

Conclusion of the probe as a method

After doing probing I can say I got a good overview of probes as a design research method. It was very useful method for this research, but if I could do it again, I would pay more attention to some things. First of all, the diary exercise that in the beginning felt like the most important one was not accurately enough set in order to get more meaningful results. When making the probe, it seemed very important to leave it open so that I would not influence the results too much by giving a focus for it. Now I feel that I lost some important things that people themselves did not feel that important. I also think that if I would do this again, I would use the mobile probes approach, as it could give more detailed information by capturing the context the entries are made in.

The photography exercises could then be done with the camera phone as well, giving the participants more control on the results they want to submit.

I think that the probe also suffered a bit from the broad subject that I have at hand. Even with the open questions I did not get very deep into any of the topics, which has for my understanding been the case with most of the probes done before here at UIAH (dealing with health for example). This I would do better by narrowing down on the open questions, as I anyway got more useful answers related to the topics those questions dealt with at the interviewing stage.

What worked well was the understanding the probes offered on the participant that was very useful for the interviewing situation. This I could not have reached with other methods, at least not any that I could think of. More about this issue in the chapters Interviewing and Scenarios.

3.5 Mapping of commonly used tools for life management

To familiarize myself with the field that this concept would step into, I did some mapping of related works and products. Of course, as mentioned already in the concept description, completing actual benchmarking is difficult when talking about a future product. During this study it became obvious that there are many pieces that are needed for LifeNavigator already

up and running, but nothing exactly like it or even applications or services taking values clearly into account. In the following I will introduce some bits and pieces of solutions, starting with the more commonly used tools.

Mapping of existing tools for organizing your life



Figure 19 Some of the pictures are taken by the probe participants

Much life management related practices have existed ever since the concept of shared standard time was generally accepted in Britain 1840 for the sake of rail-travel. As it is not possible to list all the tools that have been so far developed for organizing your life, I sum up here the results of the probe that was done as a part of this research. In the probe there was one task that was targeted for mapping the existing tools and practices that people have for life management. They were given a set of options, but they were also free to add more. The purpose was also to see how well they feel these tools work together (is it possible to synchronize or does one fill the same data for many tools).



Figure 20 Fridge door as a message board

The options they were given included calendar, mobile phone, wall calendar, computer, fridge door (for notes), to-do list, shopping list, alarm clock, Routeplanner -website and work calendar. Most participants used almost all of these tools in various ways. The synchronizing seemed to be bit difficult concept, as people seem to be so used to the existing situation that they cannot really think that paper calendar and laptop even should work together.



Figure 21, Probe task, image©Anna Salmi, 2006

Other tools that the participants mentioned were similar items such as post-its and migraine diary, or more specific applications such as Excel or reminders in the mobile phone. The very active sports person mentioned also pace meter and one participant felt that newspaper and radio are important part of her life management. For those who do artistic work, a sketchbook had a significant role in their organizational arrangements. Routeplanner got praised a lot, but other web-based services were not mentioned except for one participant who uses Friendster and Ringo to remind her about important birthdays.



Figure 22 Pacemeter of a participant

Even though participants didn't mention many online organizing tools, there certainly are plenty. From various shared calendars to contact management and so on. These tools are quite similar to the paper versions in the sense that you write things you need to remember. So instead I looked also into these, commonly American, "get a better life" websites and

services. Even though the approach of these tools can be questioned, looking into them turned out to be a good idea nevertheless, as they also enforce the importance of setting your values straight and then moving hierarchically to smaller actions that are easy enough to complete. More about these tools under the title Life Management tools.

Shared calendar



Figure 23 Shared calendar of a participant

Shared calendars in digital form have found their place in many workplaces. But shared calendars have existed a lot longer in paper format, as a wall calendar in the family's kitchen or long holiday list at the work place. Visual overview of the up-coming period gives a good tool for negotiating about time consumption, but also helps with setting common goals, as everyone can see how their effort ties to other people's effort in completing the task at hand. At work place this can be a project and at home this might be something as simple as agreeing about who's dropped off first when carpooling.

What paper calendar is not supporting very well is taking the information to another platform, such as personal calendar. Lot of duplication work is required and when changes occur, one needs to remember to make these changes to each calendar involved. People solve this problem in unique ways; they always design and integrate their own systems for organizing things. The practices related to this type of planning and especially how they shape the social relations between family members are nicely described in the paper *Artful Systems in the Home* (2005) by Taylor and Swan. In digital domain some problems are solved partly by synchronizing option, which makes things a lot easier, but should always still leave room for that designing people want to do themselves. Also important thing to notice is that at least when looking at the probe participants, none of them was sharing their private calendar digitally and only one did it at work.

Shared shopping list

Lot of family's organizational issues relate to food and especially to remembering to get all the things needed to the fridge. Often this negotiation takes place when making the list or when in the store. Jouni Linkola in the ADIK project has researched this negotiation in his paper *Home communication –But was the task solved?*(2006). He clarifies the importance of shopping list as a mediator for food communication. *“While it is the tool of remembering, it is a tool for analyzing and prioritizing one's needs. At the same time it offers an opportunity for conversation over consuming patterns in a family.”* On top of this, the more accurate the list is when going to the store, the more efficient that time spent for shopping is, as no-one needs to put their time into going again for a thing that was forgotten.

Many online stores already offer the possibility to share a shopping list with other people. For most of us this is something familiar from weddings, the couple makes a wish list (often to a specific store) and this is meant not only to make it easier for the guest to come up with an idea for a present but also to guarantee that couple gets things they need. This of course has had a huge impact on the practice of giving presents. Remembering a person on their special day has been seen having a lot more value than just being something unpleasant and difficult, or has this practice really changed during these years?

In everyday life the emotional attachment to the supermarket shopping is rarely so big that one would not want to make it as fast and efficient as possible. At least this seems to be the case in families with children. Certainly there is other kind of shopping, that has more the pleasure tied to it, where people go shopping in order to have a relaxed time (often even with their friends). In that case the shopping list is not equally needed, as the ultimate goal is not the purchase of certain goods but looking for good deals, window shopping or spending time away from home.

Life Management tools

What was shortly mentioned earlier, during the mapping of related works for this project I have gone through various life management websites and found software that is partly designed for similar purposes as the concept of LifeNavigator. I tested them only on the surface, mostly to see which is their approach to managing or improving one's life. Even though these tools can be seen as a scam, promising too much too easily, they all had some things in common. They all require a lot of work in the beginning. One has to first of all think about what is important to him/her (big goals), then break these into smaller actions and finally to-do lists.

From looking at these tools I got convinced that people are willing to do such work, because they feel they need a change or improvement in their life and priorities. After that work is done, the computer can easily run the reminders and provide the user with overviews on their life and time consumption. In all the applications the life stays in the hands of the individual and computer acts more or less as the calculative force that us humans are not always so efficient at.

Unfortunately I didn't get to test any of the PDA applications that are on the market, such as LifeBalance that I tested then on PC only. I see that mobility is crucial for these applications in order for them to really be part of making a difference in everyday routines. Using PC of course offers better possibilities to get an overview of the situation as it has bigger screen and making changes is easier using a mouse or equivalent, which should be acknowledged in the LifeNavigator concept as well by letting the user do the changes in set-up via web-interface. What PC or web-interface doesn't support well are the moments when something unexpected happens and the PC is far out of the users reach or time doesn't allow using five minutes for searching something.

3.6 Building scenarios

Based on the probe results and informed by my own experiences, I wrote scenarios (look for the full scenarios in the chapter 3.7 Interviewing) to be used in the interviews. Writing scenarios is a common method when there's a need to discuss a new technical solution, but they are also quite problematic method due to the fact that they usually give the reader an impression that everything goes very easily and suggested futuristic solutions works well. The point was after all not to only get positive comments from the participants but also to hear their criticism and ideas how certain things could work better.

John Carrol gives guidelines for writing scenarios in the book he edited, *Scenario-based design –Envisioning work and technology in system development*. He sees scenarios as new vocabularies that enable discussions and characterizations of designs in the terms of envisioned activities of the intended users. What he emphasizes is that these vocabularies should be accessible to the users themselves in order for them to be able to help designers to define the technology they will use. Carrol points out that the focus of the scenarios must be on the user and his/her activity; what it all means to the user and it must identify the motivations of him/her. He also sees it is important to explain the results in terms of the user's motivation and expectations.

To get more out of the scenarios, I purposely tried to also write out the more negative aspects of this concept. For example, when starting to use such tool, one would have to think through his/hers values and preferences and this would certainly take some time. Also, often these suggestions can be not so appealing at that very moment; you would have to go through a few before finding something suitable. As an impact on the social situations you might need to consider each parties suggestions, which would result in changes in the communication between the people involved. This was also what Carrol encouraged; it is important to explain the performance in sufficient detail so that *“design implications can be inferred and reasoned about”*.

Some things reoccur in more than one scenario with a slightly different emphasis or tone in order to see what are the limits for different functions. Such situations were familiar to Carrol, and he didn't see repetition as a problem: *“It's not a problem if one scenario encompasses, extends, or depends upon another; such a relations may reveal important aspects of use”*.

I cannot claim that the scenarios that I wrote on the foundation of the probe material were perfect, some functions could've probably been described better and working on them in a team could have been useful. Yet, as the results of the interviews show, they worked out well as the vocabulary between me and the participants, providing me with the material I needed.

3.7 Interviewing



Figure 24 Interviewing equipment

In-depth, semi-formal interviews were chosen to get to discuss the concept with people and also get more information about things that were left a bit open in the probe. In this interview type the researcher has a list of question, but it's not necessary strictly followed and the outcome is not pre-known. This interview method works well for the research in question, because, according to Emerald Insight *"As with all qualitative techniques, it is best used for issues which are less amenable to precise measurement, and which may be more complex or affective."* Most of the interview time was dedicated to going through the scenarios and questions related to them (Appendix 3 shows the planned questions and scenarios).

Even if the results of the probe seemed first not as useful as I had expected, in the interviewing situation they showed their real value. Through the probes I had achieved a better understanding of each participant, the booklet served as a crash course to the life and personality of the people filling it. This enabled me to customize the interview and make accurate questions if the scenario didn't first cause reactions. Like Mattelmäki (2006) had discovered: *"The interviews in the probe studies draw on the probing material from any given interviewee, which makes it possible to be prepared and structure the interview in advance"*, with the exception that I did not restructure my questions for participants. I only changed the order of scenarios so that I could start with some more related issues that varied according to the person in question.

Introduction to the interviews with probe participants

The interviews were completed with four participants. One of the probed people had not filled the booklet very much and was therefore left out of the interviews, as he seemed too busy. Another participant unfortunately graduated and moved away from Helsinki, which made interviewing a bit difficult. This meant that I interviewed one 44-year-old male (P6), and three women; 34 years (P5), 32 years (P1) and 25 years (P2). In addition I made one short email interview with a 13-year-old girl about the scenario dealing with teenagers.

The interviews lasted one and half hours per person and were done either at their home or at the Media Lab. Interviews were started with some questions about the probe, especially the organizing tools they mentioned in one of the exercises (Look chapter Related works /Existing tools for organizing life) and what kind of practices relate to these tools. This served us a warm up for the interview and gave a common ground for the interviewer and the participant. The organizational tools built a nice bridge to the next topic, life management. This notion was discussed with them, since it has been a very problematic one during this research process due to the implications that it has. The chaotic nature of life where people get terminally ill and you can be killed in a car accident can hardly ever be fully managed, nor it should.



Figure 25 Calendar of a participant

Surprisingly the participants found this term not so problematic. Health-sector worker commented, *“I have noticed that life can not be managed in that sense”* (P5), clarifying a thought that most can agree, yet participants told they have intentions to control things to the extend that is possible for them. Life management was certainly seen as quite modern concept, but it had found its place in people’s lives. Life without management turned out to be something you try to avoid, *“Otherwise you loose control.”* (P2) It was present in people’s lives when they *“could choose which projects to do and sometimes tackling with yourself for getting*

things done” (P1), when they were “writing down exceptions (to routines)” (P6) or “writing down things to remember, foreseeing things so they wouldn’t always be left for the last minute.” (P5)

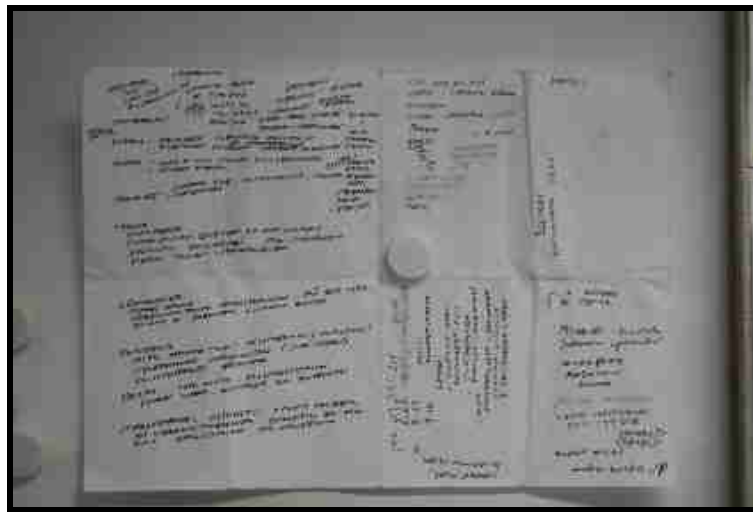


Figure 26 Notes of a participant

Opening up the concept title for discussion

Since the concept had not been given a final name, the working title LifeNavigator was used. As this name is not in my opinion very good (but for the flow of the scenarios a name was nevertheless needed), I wanted to make a clear distinction that it is only a working title. It seemed also necessary to map the reaction of the participants to this title, to be aware of the effect it might have on their view on the scenarios. First reactions were rather positive, “sounds interesting. -- It should not be too complicated but yet complex enough”. (P5) The name on it’s own without explanations seemed to raise also negative feelings: “It frightens me -- in the sense that somebody, like that if my boss could plan things in my behalf to get more results out of me. – that who is in charge? There are all kinds of guides to get more friends and power. In the end it means you need to trim yourself to be accepted by the others.” (P6)

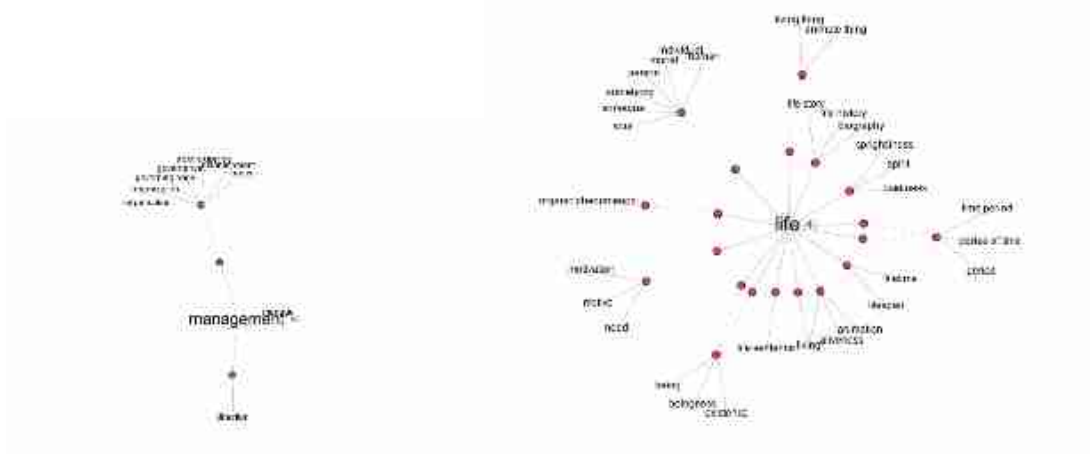


Figure 27 Visual thesaurus visualization of terms management and life

After clarifying that it is a working title the attitude changed a bit, since “—if I had known it’s a academic project. It’s a completely different thing than if a consult in a company party comes to explain about such concept.” (P6) For another interviewee the title related to “*scheduling and to how to tack in your own life*” (P1), which is already quite good description of the concept. “*It reminds me of making things easier, simplifying things. How in this awful flood of things you can find relevant things.*”(P2) All participants got curios of what LifeNavigator actually was, so in that sense this question also worked as a motivator for the following scenarios.

After the preliminary questions the ten scenarios were introduced. Participant read the scenario and it was followed with a set of questions. There were no images or video describing the scenario. In general the participants showed lot of interest to the scenarios even though their reactions varied from enthusiasm to skepticism. The questions were targeted to map not only the attitude, but also how the participant could envision the scenario in their daily life or which problems they could see such a solution would eliminate. Also the different levels of the concept were tested in the scenarios, from subtle suggestions to a controlling partner to whom you need to tell your whereabouts. This worked rather well and caused strong reactions from participants when they felt the concept went overboard.

The interviews resulted providing me with most feedback about the concept. As there were ten scenarios, dealing with various aspects of the concept, the outcome and comments of the participants is where most is to be learnt.

Scenarios in the focus

Scenario 1: Guides through and reminds you

The first scenario was meant to show four features of the application: navigating, shared shopping-list, suggesting and recommending.

It was placed in to the everyday life situation and especially to the transferring point where one leaves the workplace and identity to his/her free-time and personal life. It also addresses the issue of interaction method with the headset, giving people something easy to comment, as it is the first scenario. There are elements that definitely are present in everybody’s life, such as shopping-list and a need for relaxation. This gave a good opening for discussing shared lists and their possible role in people’s life as well as the existing practices related to this issue.

Guides through and reminds you

Maija leaves her workplace in Kallio and hops on her bicycle to head home. Sun is shining and she feels happy for all the work she got done today. She puts on

headphone set, leaving her other ear free to hear the sounds of traffic. Bicycling in Helsinki requires full attention. She turns to right and follows the bigger road.

Her mind wanders to what she should do tonight, until a voice says: "Shopping list reminds you to pick up two packages of cat food, orange juice, bread and beer. Alepa is on your right in twenty meters." Aha, Pekka (her boyfriend) has added beer on our shared shopping list, there must be some sports on TV tonight, Maija thinks and parks her bike in front of the store. She does her shopping and while she is packing her groceries, she decides that she wants to have a glass of wine before delivering the beer load to Pekka. She tells that to her LifeNavigator and gets back on her bicycle.

After a crossroad LN suggests to her a wine bar on the parallel street. She thinks she knows the place in question and that her friend described it pricy and cold atmosphere. She follows the instructions only to discover it indeed was the same place. So she keeps bicycling further. Soon she hears new suggestion of a beerhouse with a terrace two blocks further. She follows the instructions and after turning around the corner she already can see a cozy looking terrace. She parks her bicycle and sits down.

While looking at people strolling in the street on a warm summer day, she feels happy for her new discovery and the joy of a glass of good red wine. Before leaving she leaves her comment about the place, giving it four stars out of five and adding it to her favorite places.

The intentions of this scenario worked out rather well. Headset caused immediate reactions: *"Did I understand correctly that from the headphones you would not hear any music?"*(P5) or *"Personally I don't like too much the headphones, since they isolate you from the rest of the world"* (P1). More general reactions to this scenario were: *"It has a good feeling to it – [Many similarities to my life like] bicycling, thinking about what is in the fridge, what to get from the store, getting an idea to have a glass of wine"* (P1) Also more skeptical comments were given: *"Sounds, how should I put it..awfully technical..or..—On the other hand I'm very pleased with many [technical] things, all that exist, like Routeplanner and such..it just is such vision that probably will work in the future..but now it sounds strange."* (P4) After the discussion relating to LifeNavigator and Life management concepts this scenario *"raises positive thoughts, you're yourself in charge"*(P6)

As said earlier, one point was to create common understanding for discussing the shared shopping-list. Shopping related problems came up, the scenario reminded people of their own experiences: *"like those times when I'm in the supermarket and don't have a clue what I should buy"* (P6). Three of the participants were living with a partner; two of them also have a child living with them. In their opinion shared shopping-list would be useful, even the single participant, who normally doesn't use shopping lists, stated *"sounds handy"* (P1). The existing practice seemed to be *"calling from the store to ask my partner which rice is better"* (P6). More irregular items, such as toilet paper or shampoo, were often forgotten first multiple times until remembered, even though people *"write it to (my) calendar"*(P4), so *"it would be handy*

that you could tell somehow 'Remember toilet paper' and then when you're in the store you could be reminded." (P4) Some problems that related to this were family members' different diets that had resulted in separate shopping lists and the role of one family member (often the woman) as the official list maker.

The discussions resulted in some clarifications in the original concept. First of all there has to be a lot of consideration put into the interaction methods and way of receiving information from the application. Also the lists would have to be rather accurate, since people are very precise of even the yoghurt they like. For some people the spontaneity would also require company, so this should be supported as well.

Scenario 2: Helps you to find what you want

The goal of this scenario is to point out that people could use personalized, context aware suggestions when looking for things. It is emphasized that the person in the scenario is not in very familiar environment and he's restricted by a schedule. He also has his preferences what comes to the services or products he needs, which was meant for a discussion starter for people's likes and dislikes as well as for thinking about the content providers they would trust or find useful for the information they need. What comes to LifeNavigator's features, this shows how it is aware of your schedule. Other more hidden features included location and time awareness. There's also a subtle opening for discussion about big city and the continuous learning process that goes with living in a large city which you cannot grasp immediately and where services keep changing.

Helps you to find what you want

Teemu is walking in Esplanadi to go to a meeting in Eira. He moved to Helsinki two years ago from Turku and he's still finding the city a flux. He misses the feeling of knowing your kind of places and being able to walk from one place to another. In Helsinki there's just so many things happening and interesting places to see that he didn't used to know where to begin.

He's looking at the massive old trees in the park and realizes that he still has some time to fill before the meeting. Coffee would be nice, he thinks to himself and looks into LifeNavigator for suggestions. Sure he has seen many coffee places next to Esplanadi, but he prefers living in a more ethical way. So LN, knowing this, suggests him a nearby coffeepiece that serves organic fairtrade coffee, and is conveniently on his route to his meeting. Half an hour later he enters the meeting feeling good for being able to stick to his taste and principles, but also energetic after having a nice cup of fresh coffee without a worry how to find his way to the meeting and being late.

First reactions to the scenario were again quite positive, but as it was placed in working time it seemed to have more of maximum efficiency ring to it. Still, the usefulness of such thing was recognized: *"Sounds efficient, but leaves time for yourself .. the time that you have here is not wasted on drifting around or finding the place but it can be used for relaxing at the*

destination." (P1) All the interviewed people had lived in Helsinki at least 3 years, still all but one felt there was a need for support in finding interesting, and especially new, places. Even when the home city was familiar enough, LifeNavigator was seen useful when visiting a new city, since you "*feel lost for quite long.*" (P5)

As in the scenario the man has preference for living ethically sound life, the participants were asked what kind of preferences they have what comes to places or products. Two of them found the scenario very fitting. One saying "*that kind of thing would be nice, drinking fair-trade coffee myself, that you could choose more ethical products*" (P2) and the other mentioned that she often buys "*organic products..it would be nice to know where to find those products.*"(P1) Other elements that came up were the style of a coffee place or restaurant depending on the context (quick lunch, dinner with in-laws, craving for pasta). One interviewee didn't mention places he prefers but "*I have places I don't want go to..like places where people can cut in line with some [VIP]card*"(P6) Similar approach came also from another person: "*I'm not picky about what kind of food to eat, but I prefer independent restaurants to chains.*" (P1)

As a related work⁹ done here in Media Lab came up in the discussion "*this reminds me of Consumer gadget, although I don't really know exactly how that works*" (P6), the interviewee started already envisioning the working logic of the LifeNavigator, which they heard only in scenario 10, "*[With consumer gadget] I was thinking that you should be able to tell [the application] your values and it should then tell you the points a certain product gets and not a long list of information.*" (P6) "*Using it in the actual situation should be very simple, so that it really makes your life easier*" (P6)

Last issue that was discussed was the trusted sources of information. Again, maybe due to the ethical approach in the scenario, participants didn't find this a problem. As mentioned in the original concept, people are in charge and "*it's your own value driven choice which source you trust, let it be Unilever or Greenpeace*" (P6). Most felt that NGO's could provide the information that they would first collect, but also state institutions such as VTT were mentioned.

Scenario 3: Lets you live your life and be spontaneous

Here the purpose is to get the focus to the existing practices that are involved in using public transport (looking up schedules, waiting, unexpected things happening) and on the other

⁹ Wesa Aapro, Consumer Gagdet, 2006. A mobile application that by reading bar code of a product can give information about its background and company that made it.

<http://kulutuskapula.org/>

hand what kind of new practices this would create in social situations and how people would feel about these new practices as described in the scenario. The description of interaction with the LifeNavigator was written to receive comments and raise new ideas in the participants.

Lets you focus on living your life and be spontaneous

Kirsi is wrapping up her work at the office and tells LifeNavigator she's heading home. Navigator advises her to get going in five minutes and she does so. Just before turning to the road that leads to the bus stop she hears a familiar voice calling: "Kirsi, is it really you?" She turns to look who can it be and is delighted to see her high-school friend Tiina. She tells LifeNavigator she's busy and engages herself fully in catching up with her old friend.

After standing outside in the cold for five minutes, they decide to go somewhere for a cup of tea. Both take out their mobile phones and look what LN suggests. Kirsi's navigator's suggestion sounds better to both of them, so they let her LN guide them to this place. Two hours later they realize it is time to head home. Kirsi tells LN again that her direction is home and she gets instructions for the connections to go home. She finds out they can still have ten minutes for saying good-bye.

Kirsi heads to the bus stop and soon sees the bus coming. She's happy that this cold winter day had such a nice ending and inspired by seeing an old friend, adds to her to-do list organizing a party for her high-school friends.

The role of the LifeNavigator received immediate reactions: *"If I would meet a friend, I wouldn't have the energy to tell some device that I've met a friend."* (P5) Other commented: *"This starts sounding like StarTrek, really high-tech"*(P1) One participant's first reaction was that this was very familiar sounding situation to her and *"[this device] would suite very well for me, it would help and make things easier, if you're looking for example for new things, so that you wouldn't be so tied to your own routines."*(P2)

When asked about their feelings towards negotiating about what to do using the LifeNavigator as supporting tool, feelings were quite neutral. One pointed out that *"It could be possible [situation], since it's already happening now, using internet to check things. Because I rarely go to a pub if there's no live music."* (P6) Implications that such practice would have raised ideas: *"It's of course quite interesting situation here that you might have philosophical problems since different profiles provide people with different suggestions."*(P6) This neutral comment describes quite well the reactions to the role of the LifeNavigator in this scenario: *"It sounds ok [to use the LifeNavigator to make decisions with a friend] since then it works as a tool"* (P1)

The other issues, waiting and looking up bus connections raised many opinions. With Finnish weather conditions in mind, one commented: *"It's smart [that it lets you use the waiting time for what you want], of course requiring that the reality works with it."*(P6) People already had developed practices to avoid missing the transport connections if they for example realize

they have to return to home to get something. People were either just walking to the bus stop without certainty of next bus arriving soon, especially those who live almost in the center, or write at least the last connection down. Only one person used timetable book and she used it mostly when going to new places, as she could easily follow from it how many stops there still are before she has to get of.

From these answers it was quite clear that the application should be as context aware and adaptive as possible, so that the user would not have to do lot of work to keep the device up to date. Especially this is important when there's a sudden change of plans. Personally I found it surprising that people found the use of LifeNavigator in decision-making situation with a friend an interesting possibility.

Scenario 4: Lets you focus on your surroundings, not in the snake-game

The fourth scenario addresses the existing practice of filling empty moments with mobile games. As one of the aspects for the concept was to get people more aware of their surroundings, instead of sinking deeper into their devices, the scenario suggests an alternative for such behavior. The role of the application as active suggestion giver is shown, but on the negative aspect the attention of the reader is drawn to the interacting with the device: how should it know where you're heading and what other options could there be?

Lets you focus on your surroundings, not in the snake-game

Heikki is 29-year-old literature student who lives in Oulunkylä. He has a girlfriend, who studies in Joensuu.

On Sunday evening Heikki waves goodbye to his girlfriend, who is boarding the train to Joensuu. He walks in his longing thoughts to his regular bus stop and only then remembers to tell the navigator he's heading home. Next bus is only in twenty minutes, so LN suggests to him he would go look at the free exhibition at the railway station. Sounds interesting he thinks and follows the instructions there. It turns out to be photographs of skateboarders and there are even a few really good shots. When it is time to walk back to the stop, the navigator tells him to get going.

On the bus his mind wanders back to his girlfriend and he decides to call her and tell her about one of the pictures that reminded him how he tried to teach her to skateboard.

First we discussed about their relationship towards waiting. Answers varied from getting anxious if having to wait for five minutes to actually looking forward to having to wait, as it offered a great possibility to not to do anything for the person. *"Sounds realistic, this is exactly what I could do if I would have some extra time"* (P6) describes quite well the attitude to scenario in general. All felt that getting more info about small exhibitions and environment art would be something they are interested in, like *"that exhibition of large photo prints behind*

Lasipalatsi" (P2). Reminders of looking for particular shopping items, such as special book from a better bookstore, were also mentioned as a preferred use of waiting time. In everyday context you easily forget about these possibilities or tasks when you're close to the venue or store.

Participant, who actively reads Helsingin Sanomat and especially the local pages of it, felt that she *"often doesn't make it to things I've seen in the paper and decided to go to because I don't have time—so when you sometimes have some extra time this kind of thing would be handy."* (P5) Even though she liked the idea, she didn't find it non-problematic either: *"[I would like it] That somebody could remind me of all these events – on the other hand I would like to also know about other things than the LifeNavigator would tell to me."* (P5) For this person she would prefer making the selection for the reminders herself, for example while reading the newspaper and pointing the device to interesting things but also the system like *"Amazon books that recommends to you the kind of books that you read."*(P5). Another participant would trust the weekly Nyt magazine that comes with Helsingin Sanomat.

According to the feedback it is important to let people be in charge of deciding how to use their free moments, let it be just staring at their toes without being bothered or reminding them to run to a store. The choices of sources need to be enabled for the user to make and recommendation systems, or using your social network as an information source should be supported.

Scenario 5: Gives you the route information that fits to your needs

This scenario offers an understanding to the unexpected changes that occur in life and how such occurrence can create completely different needs than one had before. Reason for this is not only to show the accessibility supporting side of the LifeNavigator but also show that even if it first seems that you get to know a city by living there, things can change, for example when you have a baby and start moving about with a pram, making you a beginner in your home city's transport system.

Scenario also gives a possibility to discuss the shared lists again, this time being to-do list.

Gives you the route information that fits to your needs

Taneli has lived all his life in Helsinki, but he got into motorcycling accident last summer and has been in a wheel chair ever since.

Taneli is just returning from his wheel chair salsa practice and tells his LN he's heading home. Following the instructions, he is guided to an accessible route to his bus stop. When almost passing Sokos, LN reminds him that he has on his to-do list watching Brokeback Mountain. He's instructed to nearest movie rental that is accessible and he has a membership for. Luckily one is almost next to his bus stop. He picks up the movie and gets on the bus that is a low one. He thinks to

himself how he would've managed with his new situation without the LN. A city so familiar to him was now full of surprises and obstacles, but with LN and accessibility listings he was able to avoid most of the problematic situations.

One participant had just recently discussed this topic with her friend who had told her how difficult it sometimes is to move around with a pram. This had made them think it in a bit wider spectrum: *"With a pram you can think that this is just a short period in my life, so I can stay at home but if you're in a wheelchair, you cannot just stay at home all your life.—so this sounds really good."*(P1) Participant also continued that *"it would make others think about this issue [accessibility], like shop owners, so you could get on this list that your store is easy to access."*(P1) Working closely with elderly people, one participant stated: *"This is very close to my heart—accessibility. Of course every place should be reachable by everybody, but that's just not the reality – so it would be good that you got be guided to the right route."*(P5)

Scenario made most participants think about people with children, but also new aspects came up: *"This makes me think for example about moving with a pram, and also came to my mind that when you buy, since we do not have a car, so when you buy something bigger, it would be nice to know that the tram is not one of those that have really narrow doorway."*(P2) The issue of learning routes and then sticking to them was mentioned: *"often you just take the safe and familiar route until someone shows you like "lets go from here" and then you're all surprised like "can you go through here as well?""*(P2)

After reading already five scenarios, participants started to loosen up and get more ideas about possible usage for the Navigator in similar situations: *"Sometimes after a spinning class you're so tired and then you're bicycling home and it would be nice to know a route without too much uphill"*(P2) Also ideas like nice walking or jogging routes came up. From the more technical point of view, one participant found it nice that you can change your profile according to your life situation instead of getting new device. A suggestion was made that maybe you could even set the profile of your guests to the device and discover common ground with the help of the device. *"To be interesting it has to be very comprehensive."*(P6)

The scenario managed quite well to communicate the need for accessibility or other specific guidance but didn't result in any chances or clarifications in the concept itself.

Scenario 6: Frees you from worry and hurry

Here we take another approach to the navigator, purpose being to demonstrate how LifeNavigator could make relaxing easier when the constant worry of being late is eliminated to the extend that it is possible. LifeNavigator's guiding functions and the need for such

guidance are also addressed. In this scenario the point was to test again the limits of what LifeNavigator could do by assigning so active role for it that would cause reactions and help me see the limits for each participant.

Frees you from worry and hurry

Matti and Tiina are on their way to a soccer game. They like taking walks, so since they had time they chose to walk the six kilometers distance to the soccer field. They had been at the field once, but then they were coming from a different direction and with a bus. So they use the LN, which knows that they are going to the game, since they had written it in their shared calendar.

They enjoy the landscape and look at interesting buildings. Matti, whose LN they are using, likes to know more about old buildings. So while they pass interesting houses, they hear some short descriptions about them. At a park they sit down for a while, to talk a bit about their plans for the summer.

Time goes by and the LN alerts them that they have to get going in order to make it with slow pace that Matti has as set as a preference earlier. Matti replies that they will walk the rest a bit faster in order to have some more time to sit peacefully with each other. They talk about how nice it is to be able to relax even when going to a place where they never walked to before. No hurry or worry. A bit later LN tells the lovebirds to get going and they walk with fast pace to the field and are just in time to buy the tickets, sit down and enjoy the match.

LifeNavigator being here in a more interfering role, the scenario caused quite strong reactions: *"This is too much, telling what speed to walk and so on. Some reminder that comes once and then you turn it off.. with all these devices it's good to have those moments when you can turn them off."* (P6) Even though one participant felt at unease about having to all the time be active and interested in your surroundings, she was interested in the possibilities this would offer for taking more walks. Now she has to take the bus to be sure she can make it as *"it remains uncertain that can I still make it on foot or do I need to take a bus, then it would be nice to be able to quickly for example type in that if I leave from here can I still make it to Sörnäinen if I have 45 minutes."* (P5)

About finding out more about your surroundings *"the information flood is so awfully big in this world, it would be important to find, or accept the time when you don't do anything"* (P5) as it is important to one's creativity and wellbeing. Other kind of thoughts were raised: *"the description about old houses is something I have often longed for"* (P1) This was seen problematic by one participant *"Who produces the information for public buildings?"* (P6) Participant felt that it might be even interesting to have same route with different information sources or it could be chosen according to your own profile. One felt that there should be the official information from the board of antiques and then you could access the stories told by people by selecting them through the interface.

A topic that this always important when designing new tools that result in changes in people's practices was brought up: *"what then when you trust this or learn to trust this and run your life*

according to this and it stops working? Can you then manage to make any schedules at all?-- Because scheduling is something you learn by doing. That you should be constantly responsible to someone [the navigator] how fast I'm walking..—are you then stressed when you will get the reminder?" (P1)

The reactions to this scenario showed that people vary a lot in this aspect and as it was discovered in earlier scenarios and the original concept, it is most important to be able to provide people with enough choices to personalize the tool for their own needs and taste.

Scenario 7: Be connected to your social network as strongly as you want

For this scenario the goal was to give the participants an idea of how one could share their presence. The person is a teenager, since they are often more tied to their social networks than others. At the same time the relationship between parents and children can be discussed, since one of the most popular locating related discussion topic is that are parents allowed to locate their children. Other features based on shared presence are also shown and the shared calendar is brought up again. Here the role of trustees (the manga community) as an information source is emphasized, as in the previous scenarios the information seemingly came from more official sources.

Makes the connection to your social network as strong as you want it to be

Kiia is a teenager who loves anime and manga. With her friends she forms an active community around the topic in Helsinki.

It is Thursday afternoon and she's getting off the school. She immediately checks her LN where to head so that she can be with her community members. It is a warm autumn day and she gets instructions to go to the nearby park. Five minutes later she's with her friends and talking about the newest film that is opening on Friday. She almost had forgotten to buy the tickets. But luckily LN reminded her about it yesterday evening when she was in the center visiting her grandmother who lives nearby Tennispalatsi. Otherwise she would've been too late, as her friend Taija, since the movie is sold out. Maybe next time I add the tickets reminder to a shared list, since Taija always forgets these things. LN reminds Kiia that she has to get going to back home, since her mother is taking her shopping in Itäkeskus. It was written to their family calendar and Kiia had marked to it that she will join.

An hour later they arrive at Itäkeskus. Kiia is very precise about where she wants to shop. On her shopping list are lots of things for school: clothes, shoes, backpack. They start walking in Itäkeskus, passing by stores. Kiia has told to her LN that she wants to follow her community's taste in things, so when a store that has something from her list is marked by her community members as a favorite, LN tells that to her and she can go look if she finds what she likes.

After an hour of shopping, hunger strikes and they start looking for a place to eat. LN helps them to find each other quickly and then they look what is suggested. Mother's LN suggests some nice pasta place, but Kiia doesn't approve since her community does not recommend it. Her LN suggests first sushi place, but mother doesn't want to eat that, it sounds too strange to her. Second suggestion from Kiia's LN is a sandwich bar, mother agrees with it and soon they sit comfortably in

the restaurant with big plates of food in front of them.

While waiting for the bill, Kiia's navigator tells her that one of her friends is approaching the restaurant. Just some seconds later, she sees one of the newer community members entering. Kiia waves at her and as they leave with her mother, Kiia tells the girl that mozzarella sandwich is very tasty here. Her mother says that she's done with her shopping, but after checking her shopping list Kiia notices that she still has not found shoes. Navigator suggests to her to check tomorrow from the community's favorite shoe store that is in the center. She decides to do that, so they are ready head back home.

This reminded one participant of her previous weekend, when they went with her son to a mall and kept informing each other about their locations via mobile. One person felt that the presence of style is quite strong in the scenarios: *"I don't follow a certain style—but maybe you could set price category"*(P5) *"Sometimes you see in a fashion magazine something nice and wonder where those are sold"* (P5) Another made immediately a connection to her preferences: *"organic, could be one, or green values"* (P1) Similarities were also found by the person who has teenager in the house: *"Very realistic situation that the adult and child will have such a conflict of interest..also fear of who's paying"* (P6) Another parent continued: *"I can understand this, since when I was younger like that, I was very strict, like being vegetarian"* (P5) and participant would see it useful to be able to avoid unethical products.

Again people's opinions varied. One felt that *"I don't really want others to know where I am moving about"*(P5) and the other one saw that it would be useful to have *"The same kind of thing like messenger has other things have that you can set it so that no one knows you're at the computer, that kind of thing could be nice. Sometimes it happens you later discover that 'oh, you were there too, so was I', too bad we didn't come across each other'."* (P5) *"At least the turning it off"* (P1) was seen important. Questions were raised of implications it will have: *"Will this create a need for explaining why it was not on?"* (P6) Health related locating, epilepsy and diabetes came up in the discussion as being something that is always acceptable. *"If I can notify who can be informed, but then I have to remember to turn it off"* (P5) This sounded useful when under your control and especially to find your friends or even jogging company, as one participant envisioned, when in the mood for being social.

One person mentioned that they know a teenager who just recently changed from gothic to hip hopper and could've then needed such a reprogrammable device to support her new lifestyle. I then asked if I could interview her and later this email interview took place two weeks later. Unfortunately this teenager answered very shortly to my questions. She read the scenario and said it sounds useful. Her style effects her choices of stores and other things and she felt sharing some recommendations would be useful, if the people sharing are similar enough. Location information she would like to share occasionally.

As the scenario was situated into a life of a teenager, it naturally didn't sound very familiar to the participants. Location information and sharing it, is always an issue that raises lot of discussion, for and against. Mindfulness towards people's fears is necessary in the design process of LifeNavigator, and easiest solution to solve the issues participants mentioned is to create a transparent system, where privacy issues are taken care of and control remains with the user.

Scenario 8: Finds the time for the things you find important

The eighth scenario doesn't introduce too many new features, but its purpose is to give another perspective to the LifeNavigator. Since this aspect was thought about in the original concept and three out of four participants were quite active in doing sports, it was chosen to be the activity that LifeNavigator makes time for. It could've been any other hobby of course or even saving time for the family. In the last part of the scenario the shopping list is mentioned, but this time in the way that it deals with more special store, which seems to be often forgotten when one is close to one and remembered when sitting on the bus, heading home.

Finds the time for the things you find important

Juhani can be shortly described as the sports guy. He wants to get as much exercises as possible.

On Wednesday morning Juhani wakes up and notices it is only six in the morning. He checks his navigator that suggests to him that he goes to the nearby gym for a spinning class. Great start for a morning! After his class he has to head to work, and as he has written to his calendar that he has a meeting at clients office, the LN instructs him to take his bicycle instead of walking. Otherwise he couldn't make it in time.

Ever since the LN Juhani has almost stopped using public transport, because he can always either walk, run or bicycle everywhere. After his meeting he has a lunch break and LN guides him to a nearby restaurant that serves Atkins diet food. Two years ago Juhani started following this diet, but only now with LN he can also stick to the diet during his workdays. He eats peacefully and has enough time to digest the food before hopping on his bicycle.

On the way to the office he doesn't need the LN, and LN knows it so it doesn't give any instructions, except when he's passing a sports store. Shopping list reminds you to by a pump for the bicycle. "how can I keep forgetting" Juhani thinks and quickly takes care of that. He arrives at the office on time and feels alert after his exercise.

"Excellent idea. This is what I need. Hits the spot" (P2) said the participant who often books her calendar too full and needs to know what's the best way to get from one place to another. The participant who uses the sport facilities of the university that are located around the city said that this would be great way to find out what classes are starting at a certain moment and where. This came up with another participant as well. The existing practice is checking things before hand, making bookings a week earlier and then canceling the day when the class is if it turns out not to be a suitable time. For the participant who has a child this tool seemed very

useful, as she has to always fit her hobbies to which ever time happens to be left when child's hobbies are done. *"I cannot make commitment to certain day and time of the week."* (P5)

One participant who doesn't do that much sports felt that sports could be nice to add to your calendar and the *hyötyliikunta* could be the way. *"Here the exercising has been made too complicated. Other people might look for intellectual challenge in their exercises.. or social interaction"* (P6), so not all sports fan like to make their hobby to take up their day.

When they were asked if technology could actually help to make time for things, the feelings were hesitant, but like one commented: *"If you want to live in this western society, will there be more time without the technologies either?"* (P6)

Common opinion was that technology could help, but there's effort needed. As one stated: *"Could probably help [to make time for friends for example], but then both parties have to respect the commitment."* (P1) One saw the value of such tool when *"you need reorientation"* (P6) in new life situation, yet he felt important that after a while there are routines that don't need renegotiation with the tool, because that makes everyday life meaningful. Ideas that came up were for example supporting a start of a new hobby or things like final thesis project, were you could get directed towards exhibitions, movies or tv-shows that relate to your topic, as well as make time for working on it. Other theme that came up often was to make time for your family or social life. As one innovated: *"Often when I'm passing by a friend's house, or something, I think "Should I go to visit?"*"(P3) but then the participant felt that maybe she would be intruding and felt a need for a way to communicate your status towards other people, for example Welcome or Tired.

Specialty stores where discussed quite shortly. The scenario seemed to be rather realistic, as these special items are often forgotten many times before remembering, *"For example bicycle pump is one thing that I only remember when I need it."*(P6)

One came back to this topic in scenario 7 (I alternated the order of scenarios according to the topics or ideas participants themselves introduced in the interview in order to keep up the motivation): *"That would be really good, since with even simpler things like when noticing in the morning at the shower that we need soon for example shampoo and then you don't remember and you only remember after sixth time and then you have to go especially to the store for it. You often notice at home that I didn't remember it today either. That you share it [with the device] and wouldn't have to use your own memory for it."*(P5, in scenario 7)

This scenario didn't provide too many new ideas, but offered stronger insights about the usefulness of shopping list reminder and need for an ad-hoc information feed.

Scenario 9: Makes adjusting to new environments easy but still exciting

Here we have a scenario that shows how the adaptation of the LifeNavigator could occur when you're going to a city that you maybe visit regularly but don't live there. It is also helpful for discussing where the family boarders are, as here the grandmother has access to some things that probably ten year ago, when the couple had maybe just met, she would not have had.

Makes adjusting to new environments easy but still exciting

Leila is arriving to Helsinki with train to visit her daughter Johanna and grandchildren. Her train is a bit late and her LN is showing her events that she might like that are taking place in Helsinki. Johanna had seen from her LN that the train is delayed, so she is using this time to pick up some flowers, as reminded by the LN. When it is time to get back to meet her mother, LN tells her that. Soon warm reunion takes place and they head home to see the children.

Next morning Leila is babysitting for the children. Since her daughter just moved to a new area in Helsinki, Leila is not very familiar where the closest park is. She tells the navigator she's heading to the park. The LN can see from her location that she's at her daughter's place and therefore she will be moving around with a pram. Normally LN would look for parks that are popular amongst elderly people and where you can play petanque, but now it will look for the parks that the family normally uses and guides her through routes that are accessible with a pram. After a whole hassle with dressing the one and three year old children, they can follow the instructions of the navigator to the park. Smaller baby falls a sleep and three year old Leena starts immediately playing with other children. Other parents start talking to Leila, since they recognize the children. Leila thinks to herself how surprisingly cozy life can be in such a big city.

After a while they start heading home. Leena says she really needs to go to the toilet. Leila knows that it is still quite a distance before they are at home, so she asks the LN for advice for closest public toilet. She feels relieved when they make it in time. Finally they can head home, Leila thinks to herself, but then she hears her navigator reminding her that she's soon passing a store and on the shopping list there are margarine, yoghurt and apples. She smiles: that was pretty smart from Johanna to add me to their shared shopping list members. Have to play that trick when I'm getting older and they visit me.

"It reminds me of the time when I was moving around with a pram, it took some time to learn how to move around." (P3) Participant felt that it would free you from learning all this, since normally in the end you don't even learn everything but stick to the ones you learnt. For one parent the part about looking for a toilet with a child sounded familiar and in her opinion the solution would work well. Another participant related the scenario to planning a trip: *"If you go to visit some new city, I'm going to Brussels and now I have to print this thing from the net, my friend gave some recommendations."*(P1) So compared to existing practice she felt that it *"Sounds really handy."*(P1)‘

The same often solves problems that appear while on the move by calling a friend or family member. For her *"It would eliminate a lot of calling and sending sms"* (P1) The effect of eliminating these calls would not in one participants opinion change the social aspect too

much: “usually the calls are so short, other person at work, you can’t [socialize] too much.”(P1)

Most interviews revealed that people would like to at least test such a solution once, but they would probably want to use it alternatively with other existing systems. It was also seen necessary that you still check out new things without such tool as well.

Scenario 10: Lets you personalize it to your needs, all the way

This scenario is quite different from the other scenarios, since it focuses on the setting up this service. There was a need to make clear that the device, or LifeNavigator, could not be so intelligent that it would guess the users values and preferences nor that it could help you if you don’t know what is important to you. Setting up this application would require quite some work and thinking through your values. Also your calendar and other important dates cannot be guessed but you need to link them to the application. This of course has its benefits as well, since it’s not a completely new calendar that you need to start filling. In the scenario the woman does all this work via mobile, which was meant to hear reactions to that. Could people imagine themselves typing things through the mobile interface or how would they like these things to work?

Lets you personalize it to your needs, all the way.

Marjatta is looking for a new mobile phone. She has decided that she wants one that has LifeNavigator in it. After comparing the prices she chooses the one that has a bit bigger buttons.

At home she changes the sim-card and turns on the phone. Address book was already copied by the store, but now she has to set up the LifeNavigator. She heard from her friend that it takes almost half an hour, but it is supposed to be worth it. Marjatta is not very familiar with technical things. so she’s a bit worried how this will go. She opens the application and it starts guiding her through the process. First she selects three most important things to her: family, being in the nature and Finnish products. That was easy, she thought. Then she has to put them into an order. First it seems difficult to compare these things, but after a bit of thinking, she keeps them in the order she selected them. I can always change them if this doesn’t work out, she thinks. Then she has to set up her calendar. LN offers the synchronizing option, but Marjatta has never used a digital calendar, so there’s nothing to synchronize. But then she remembers that her Työväenopisto courses had codes that let her join the shared calendar and have the calendar automatically updated to her phone. She looks that up and sees the data coming to her LN. She also notices that her family members birthdays are already in the calendar, retrieved from the phonebook. Then LN asks whether she wants to use the navigating guide while moving around. She chooses not when in 5 km radius from home, since she knows her neighborhood well enough. The reminders for shopping list and to-do list she wants, because she likes to get things done when she’s around the stores. Then she can choose the trustees; people, communities or other sources (magazines, organizations) that she trusts for providing her with data for the suggestions that LN gives her. She chooses her family and relatives, but also Suomen Latu and Kodin Kuvalehti. This will be interesting she thinks, feeling still safe since it all seems to be under her control. As the last step, she can share her calendar and shopping lists. She selects to share parts of her calendar with her old friend Pirjo and also her closest family. Shopping list she

keeps still private, but keeps the option to share some things from it with her daughter who lives in Tallinn, and can maybe find those things for her cheaper from there.

After finishing the set-up she feels good for being able to complete that on her own. She is still a bit skeptical about this whole thing. At least she won't be like those teenagers who use LN to keep themselves busy and social every minute. She made the settings so that she gets suggestions only when she asks for them. And she will be able to turn it all off when she wants.. "Anyway, now it is time to get out there and test this thing" with her other hand already in the sleeve of her jacket.

The amount of work didn't scare the participants as they are so used to personalizing things already: *"This is nothing more than like in the old days when you had to retype the whole phonebook to your new mobile, no, to everything you need to, to pace meter you need to set the right settings."* (P2) One commented that techie freaks would definitely do it, others maybe only after seeing somebody else using such device. *"I would, since I'm that kind of person, I put effort to other things as well."* (P5) Most liked this background information, they felt good about *"the choices, for example five kilometer radius and choosing how publicly present you are in the community."* (P1)

Participant added, maybe a bit surprisingly to me, *"Sounds quite community oriented."* (P1) One reacted to the annoying sounding updating, as they felt intelligence was needed but then they continued that people don't often have such strict routine so learning might be difficult. The person using the pace meter a lot felt the need for having some programs saved to the application or some jogging routes and other exercising related choices.

Some issues from earlier scenarios came up: *"I first thought that common calendar for family would not work, but in mobile phone it could work."* (P5) The experience of sending sometimes smses to a wrong person made participants think about the risk of sending your information to everybody in the address book. Questions came up; *"How you stay in control?"* (P5) and *"Where does all this information go to?"* (P6) One saw the connection to the early days of mobiles when many felt that they would start to control their lives but *"I don't think it controls [my life]."* (P1)

The need for it to work on-demand was brought up by couple of participants: *"You would get info when you need."* (P1) Web interface was seen better for controlling and in-put, but they felt there is enough choices for output as mobile now already offers. Sound was seen as familiar output channel: *"Beep, but not that you all the time keep hearing beeping. --Of course it depends on how much you set reminders to yourself."* (P1) This scenario reminded one participant of putting phone on silent and forgetting to change it back to normal: *"You need to always keep updating the status."* (P5)

Deciding the values seemed rather easy: *"I'm quite aware what my values are."* (P1) Of course there are problems to be solved, like the freedom of choice, as *"three is not always enough"* (P5). One commented that it depends on the context what is important. They felt that there was lots of responsibility for the service provider for making the list: *"I always choose the option 'other'."* (P6) As an example of targeting suitable information according to context one participant mentioned: *"If somebody would know that you can get tickets for Mobilehorror sometime, somewhere, it would put full alarm on for me."* (P6) The feeling was that these settings get more interesting in subcultures, as it is already quite easy to get mainstream information.

As it was the last scenario, one participant commented more the use of such LifeNavigator with so many possibilities: *"In the end, of course some people might use a lot, but the great masses don't have the energy to keep updating the information."* (P5) Participant continued that in her opinion people would probably take different parts and use them according to their needs and not so that all would use everything as she has noticed in her own experience with mobile phone.

Some participants acknowledged the fear of one's memory starting to fade with such a device, but they saw writing notes as similar activity and were therefore not that worried. One question was that if LifeNavigator frees you from routines and leaves time for important things, what are those more important things? Again it is important to have the right to personalize, since: *"Some people say they like doing the dishes."* (P6)

Being more descriptive of the use of the LifeNavigator, and especially about the set-up it requires, people had more to comment. What I picked up from the results was the need for being in control of the device, to have enough options to choose from, need for context-awareness to the extend that it doesn't start guessing too much and being on-demand (not overwhelming the user with information they don't want), using the different statuses of mobile phone to control the way the want to interact with the application.

Conclusion of interviews

From the interviews I collected the main themes that kept coming up with most of the participants. In addition to them I also paid attention to the comments about the interaction methods and preferences people gave. The strongest message was the need for being in charge as a user and, relating to the possibility to be in charge, having a good selection of content and functions. Most of the participants were worried that would they learn to trust the LifeNavigator too much.

To summarize the results, the six qualities I perceived from the interviews were Control, independency, richness of content and functions, trust, context awareness and on-demand. I will explain more about these in the *Looking back* chapter under the title *Important qualities*. As quite many possible implications were also mentioned, mostly as fears people had, I mention them in the summary (under the title Implications), together with some issues I have thought about or read from the literature.

3.8 Workshop

In human-centered design, workshops have been used for bringing together people to work on a certain topic. Sometimes the purpose is to bring all the different stakeholders to do hands-on activities on a specific issue, sometimes to get together similar people to produce material on a wider theme. Variety of versions exists and most designers or design teams develop their own ways of doing workshops. Workshops may be used in any stage of the process but for example Tuuli Mattelmäki reports in Design Probes that they are mostly used in the deepening stage and so has been done in this research as well.

Introduction to the workshop with aware consumers /individuals

While the writing process of this thesis was already quite far, it became obvious that more material was still needed, focusing more on the people who are already going through a lot of trouble to stick to their values in everyday life. As the probe participants had on average very positive reactions on the aspect of living more ethically aware life, but had in reality not so much realized that in their own life, the workshop was targeted to the people who have done so.

The workshop was put together rather quickly, in one week, and the participants included people from my social circles and students of Media Lab that fit the profile. All participants were between 25 and 35 years old and two out of six of them were female. Planning the workshop was very straight forward, as it had a very clear goal. The decision was made to use setting up the LifeNavigator as one of the exercises as it would give me additional information on the problems arising from the set-up.

The planning process as well as the running of the actual workshop was done with the support and know-how of Andrea Botero Cabrera, who shared with me her insights and experience of running workshops for co-design purposes. Botero Cabrera has worked closely with elderly people in various workshops in ADIK project and with children in her master's thesis work on digital sandbox.

Preliminary task

The preliminary exercise that was given to the participants was to map the moments when they made decisions they were not really happy about in the light of their values. The material was also used as a tool for introducing people and creating the group spirit by showing that none of the participants was or felt perfect, as even those who have enough knowledge, still are restricted by time and money, and end up making decisions they are not happy about. This worked out quite well; people were sharing many guilt feelings related to daily actions. One felt bad for no longer being a vegetarian, another for downloading music of independent labels illegally. People opened up and I on the other got more material on why people don't stick to their values, signals to those moments where LifeNavigator needs to help people out. To sum up these mentioned moments, they occur when people are short on money or time, the comparison situation between the different options is too complicated or they have social constraints.

Mapping of practices related to value driven actions

In the workshop two exercises were targeted to map the practices, tools and workarounds that people have concerning these value related actions. First one made the participants open their tacit knowledge by describing how they would advice someone who would come to them and ask what they should do in order to stick to the same values. Other exercise was to break into smaller actions the purchase of something to drink in the city.

The results for this were interesting; four key themes that came up where community, information, motivation and what I here call mind control (quoting one participant).

Community

Most people said as their first advice: get to know likeminded people. The benefits for this were of course the enhanced social aspect, but also that such a community of interest withholds such an amount of tacit information that one cannot grasp as quickly through internet as for example through discussion. Other reason was the support it provides on the moments you feel like giving up. Sometimes even the sharing of anonymous data, such as a shopping list, could make people feel that there are others out there that are in similar struggle or sharing the same principles.

In the concept of LifeNavigator this calls for attention to the ways of supporting the community creation and existence, which mostly in the original concept means the possibilities to share information or settings.

Information

Another strong signal was that there is plenty of information for one to use in making decisions but getting or using the information is not always non-problematic either. First of all, some participants felt that they don't necessarily trust the official sources. On the other hand, getting the most recent information was also seen as quite elaborate which made people to stick to the knowledge they had achieved earlier. People made lists based on this information in their heads and weighed each action they took based on the knowledge they had at that moment, and this was seen quite difficult. Information was used also for making so called black lists, lists of things to avoid.

This side was already quite well thought of in the original concept, but it clearly means that transparency and control should be key elements in the final design of such LifeNavigator. Helping people in weighing the options should be supported.

Motivation

This theme came up couple of times explicitly and more often implicitly. Explicitly it was mentioned as watching animal rights videos or reading leaflets to keep oneself reminded why these things are important. On more implicit level it was the motivational support one got from the community around you or sometimes the good feeling you got from bicycling for example. Also the change of perspective was mentioned as a way to get yourself to the right mindset and not letting the world around you to get to you too much. One example of this was given by a participant: look at consumption not as something self-evident, going dumpster diving and joining barter networks instead.

In the concept of the LifeNavigator motivating the user should definitely be beared in mind, and different means for this should be thought of. Community aspect could certainly be one motivator, but different visualizations and overviews could also work.

Mind control

Third theme that came up was mentioned in various ways. For one it was about staying strong in the decision making or purchasing situation. To the other it was the fact that as the information flood is so huge and making decisions often rather complicated sum of information, the final call on what to do was based on intuition. Sometimes this was not a problem to the participants, but they agreed that in the time and money limitations, they made decisions out of their head and didn't feel fully good about it either. I also categorize things like structuring a route plan for yourself in order to remember to visit all the specialty shops for more ecological products or always remembering to carry a bottle of black current juice with you under this theme.

In this way LifeNavigator could take away part of this intuition-based shopping but only in the situations when person really wants so. It could give person a good feeling, as you could more easily stick to your principles with its reminders and route guidance.

Mocking-up the set up and scenarios re-used

Setting it up as seen in scenario 10

After the first exercises we moved to the scenarios and the exercise booklet I had made around the set-up of the LifeNavigator. This meant reading the scenario 10 in small parts, followed by participants individually completing similar set-up on the booklet interface. This was meant for raising the problems and issues related to the set up (**Appendix 2**).

What is important to you?

The participants were given a multiple-choice question to state which qualities are important to them. There was a preset list of options of various levels, giving already some problems to start with. The page included also space for comments.

Already the selection itself was seen problematic as the qualities were of very different levels and sometimes difficult to differentiate from each other (animal friendly/vegan). Some participants suggested that there could be umbrella-categories into which these would be organized. Also three was seen to be too restricting, one should be able to select as many as one wants. The context was mentioned to be important in this, sometimes it influences which qualities are important.

Putting the values into an order was difficult to some, but not to all. Privacy issues were brought up, "how is this information used?" was a question coming up couple of times. Actually the same themes that were mentioned in the scenario based interviews with probe participants came up: control, richness of content and functions, trust, independency, on demand and context awareness.

Which information you trust?

Again the participants faced a preset list of options, although they could add things and define some choices in more detail (for example the choice "Magazine, which?"). Most people selected quite many sources (between 6 and 13), all of them selected "Friends" as one of the sources. To some surprise, only two selected "Family".

A topic of the difference in the type of information provided by the sources was discussed. Use of sources such as Routeplanner, that provides timetable information, was seen non-problematic; where as the ministry of environment was not trusted by any of the participants. The need to add different sources was emphasized and one participant wanted that it would

be clarified which information the suggestion would be based on, each time a suggestion was made. One said that they would trust none of these sources 100 per cent. This again was very similar to the interviews, trust both in the sense of privacy (use of information the user provides) and the information (where does the information come from?).

Defining the activity level and functions?

Here the task was not exactly as it was in the scenario, but its purpose was to provide me more information on the functions or purposes that participants would be interested in using. Of course such a small group does not provide very countable understanding to this, but it gives some direction to thinking which things sound appealing in this technological and cultural context.

Tells me where to go next	1
Tells me the best connection to where I'm going	6
Suggests me things I might like	1
Suggests to me things I might like when asked for it	3
Informs me about sales that might interest me	2
Informs me where the products/services I want are cheapest	4
Reminds me to buy things that are on my shopping lists	0
Reminds me to do things	3
Helps me to find company when I ask for it*	3
Informs me if somebody is looking for my company*	3
Other (Avoiding people and places, possibility to hide totally)	All 1
*Participants clarified that this is only limited to certain people they know	

Here one of the comments was that the interface should be adaptive, so that one only gets those functions that they want, instead of each time having to go through long menus to get to the function you need.

According to the results the participants were mostly interested in assistant type functions, where the user makes decisions and LifeNavigator would tell the route or inform about sales on the products that need to be bought. Half of the participants would like to use it for social navigation or on-demand suggestions.

Defining the social network and sharing

People could with this exercise touch the topic of what they feel is useful to share and to whom they would limit the sharing. Results were quite what I expected, as the attitude towards location sharing in the more aware circles is usually very negative due to the big brother aspect and privacy issues it has. Nevertheless majority of the participants felt

comfortable with sharing calendar and recommendations. One of the participants did not want to share anything and one on the other hand was willing to share everything with anyone, but anonymously. This aspect was probably not very familiar to others, but as stated in the WHICH chapter, the service provider's need for people who are willing to share in this manner is growing when personalized services are offered.

Shopping list With: Family, friends, living companion	4
Calendar With: Close friends, family, living companion	5
To-do list With: Close friends	1
Location With: Family, friends	2
Status With: Family, friends, colleagues (optionally only),	2
Recommendations With: Friends, family	4
Other (Habits, values, restrictions) With: Family, Friends	1

This exercise brought similarly up same issues as the interviews. Trust in the sense of privacy and the use of produced information is important to the possible user. On the positive side, more than half showed willingness to share recommendations, which can be seen as one of the founding blocks for LifeNavigator.

Scenarios in re-use

In the end of the workshop the participants heard the scenarios 2 and 8, as they were closest to this topic. I considered rewriting them to fit better this target group but came to the conclusion that it would be better to get more comments on the scenarios that already exist, as there are so many of them.

This proved to be in my opinion a wrong decision, as the scenarios were describing situations and settings that raised rather negative impressions on the participants. Luckily they did not get stuck on this and we managed to have also very good, critical discussion around the issues described in the scenarios.

Scenario 2: *'Helps you to find the things you want'*, shows the situation where one needs to find a solution fitting to their values in lack of time and information. Some participants liked the idea, but most also saw the negative implications it might have, such as *"in the long term narrowing compulsory behavior"*, where the information comes from or the dependency such tool might create.

Scenario 8: *'Finds the time for the things that are important to you'* came last in the workshop. At this point it could be seen in the understanding that people had created of the concept. Deeper issues started coming up, as even more implications were mentioned: there was worry that LifeNavigator could cause *"isolation in the long run"* as well as *"less communication between people"* There was a lot of discussion around the issue of control *"Do you give away the power to think and plan?"*

Conclusion of the workshop

The workshop was a nice ending for my research and a good human-centered method for this purpose. As it had a clear focus, it was easy to plan and run and as the participants shared similar interests, the atmosphere was pleasant. To conclude one can say that it provided more concrete elements for the important features that I will introduce in the Looking back chapter. I learned a lot also about this research approach and feel that it can be very useful as a support tool for more in-depth interviews and other methods used more in individual basis. This is due to the fact that I felt the one-on-one interviews took me a lot deeper to the topic as I am dealing with so personal areas of people's lives in this research.

4 Looking back

4.1 Introduction

In this final, concluding chapter, I will re-introduce the qualities and features that are important to bear in mind while designing such an application as LifeNavigator. First I want to refer again to the service manager architecture, which was introduced in the subchapter Technological platform for LifeNavigator. In the sketch below I have added the connections that LifeNavigator would have to existing tools and services to show that LifeNavigator would very likely rely heavily on information that is already accessible to people online. But as already mentioned earlier, this integration of different services and information sources together does not go without problems.

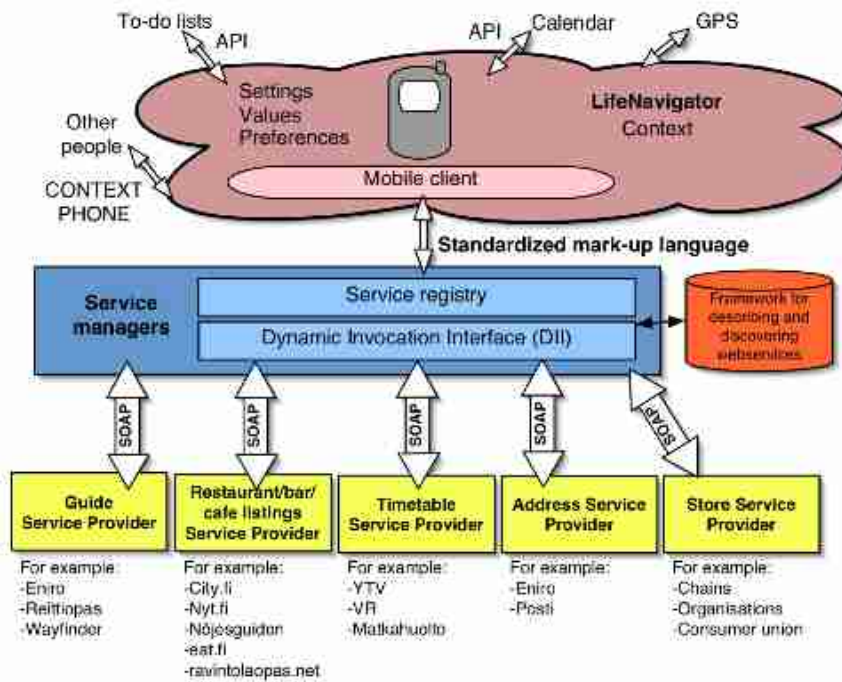


Figure 28 How existing services link to the LifeNavigator

Some of these problematic issues could be solved by this service manager architecture, as it could communicate with various services and users without making them communicate with each other, but others need more general solutions, such as standardization of information.

4.2 Important features/Qualities

As a part of my conclusion, I describe here some important qualities that should be given attention when designing a tool for putting your preferences and values into action. I introduce Eija Kaasinen's user needs categories, in order to compare the qualities I have gathered other similar, but yet different, focus points for such design task. Another important reason to introduce her categories is that I was very glad to discover support for the way I wanted to present my results: a list of important qualities. It seemed necessary to make a reference to one of the many existing examples of having this type of information that some more technical practitioners in this field might find too general, as a result of a research. To give another example of this type of outcome and to not to forget the values, the eight questions, that Jouni Linkola collected in his research with aware consumers, are presented.

Looking to the important qualities of mobile services, but from the more general user point of view, Eija Kaasinen, in her article User Needs for location-aware mobile services, categorises the user needs under five main themes: topical and comprehensive contents, smooth user interaction, personal and user-generated contents, seamless service entities and privacy issues.

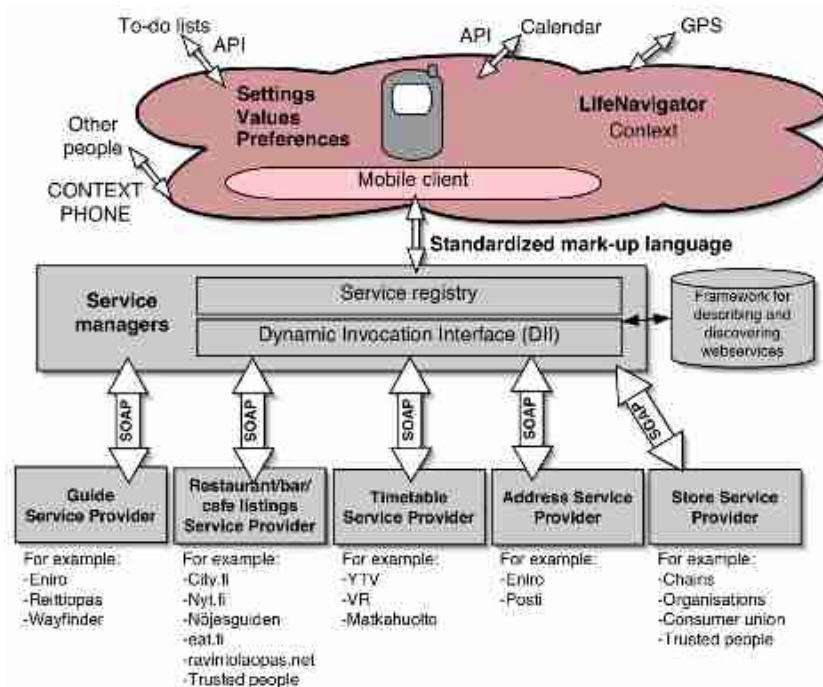
As another angle to a mobile application for putting one's values into action and coming more from the values direction is provided by the eight questions Jouni Linkola drew from his research with aware consumers. Touching some topics that are not equally relevant for the qualities I'm looking for, it has nevertheless mostly similarities to the outcomes of the workshop I ran. These are the eight questions he collected and I have added after each of them which category I feel it relates to:

1. Which information consumer needs and who can produce it? (Information)
2. How does the consumer reach the product information? (Information)
3. Personalizing the information (Information/community)
4. How can consumer compare products? (Mind control)
5. Products or services? (Mind control/Community)
6. Monitoring and managing one's own consumption (Motivation/mind control)
7. Consumer communities: communal consumption (Community)
8. Can consumer have an impact on the world? (Motivation/mind control)“

Even though both Kaasinen's and Linkola's themes are all rather important when designing context-aware tools for putting people's preferences into action, I collected a bit different set of important qualities for this design purpose: staying in control, independency, richness of content and functions, trust (as in privacy and trusting the sources), supporting community, providing motivation, being context-aware and working on-demand.

In the following sub-chapters I go more in detail into these qualities and show with the service manager architecture where or how this quality is taken into account.

Control

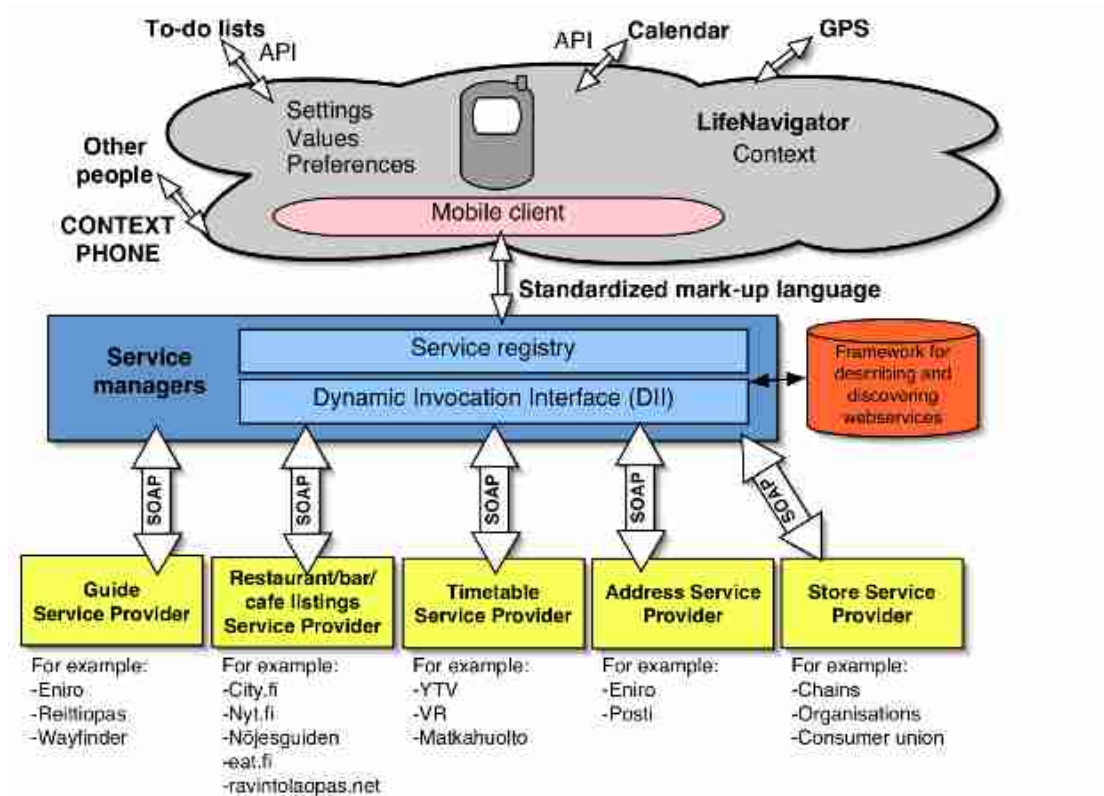


One of the strongest messages I got through both interviews and the workshops was the need for the user to be in charge. This issue comes often up in research around user experience, “*The user should feel and be in control*”(Kaasinen). This means being able to turn the device (or application) off when needed but also the fact that the user is able to personalize and choose the sources and uses of such application. Many felt that when the mobile entered their life many social practices have changed and for quite some time they felt that they were expected to be reachable all the time. After getting acquainted with the mobiles they have become more confident in deciding when they want to be reached and how they use the phone. This knowledge they wanted to bring to the LifeNavigator concept as well.

In the book *The Voice of the individual – the welfare society in a time of communities* (2006), Aleksi Neuvonen and Roope Mokka refer to researcher Soshana Zuboff who describes the birth of new individuals who have in common the need for a voice. These people don't feel satisfied with the channels like work community or political system and find a better way to make a difference in consumption choices. People feel they need a voice to be more in control. This is what the architecture of LifeNavigator could support by enabling people to set their values and preferences and filter the information and services they need. It has to be acknowledged and supported that people change their preferences over time. The control over input and output methods should be enabled. Other important features are turning the LifeNavigator off when needed without it causing a chaos and loss of all important information and being able to choose which functions one finds useful and wants to use. And lastly,

sounding maybe very obvious, a support for selecting between different statuses (for example silent, meeting, at home) is also important in giving the user a feeling of being in charge.

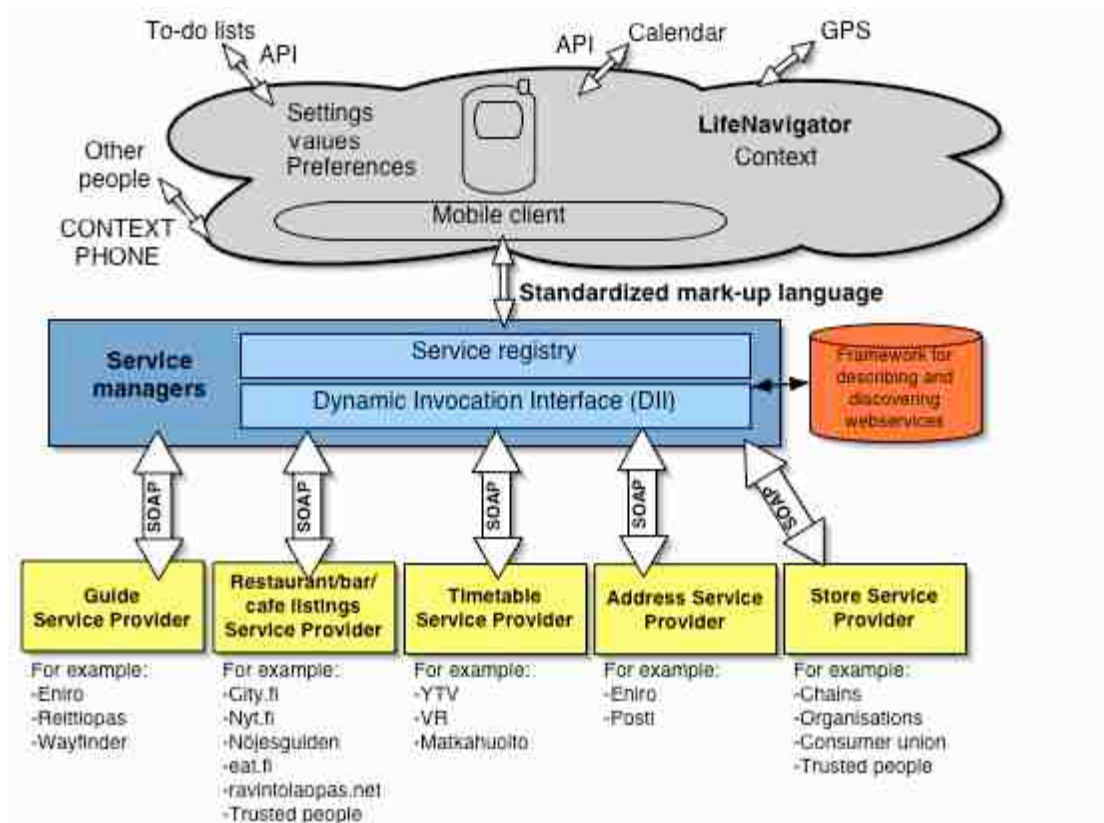
Independency



An issue that was addressed in one of the probe tasks (“Does technology run your life or help you to run it?”) kept coming up in the interviews and workshop as well. An application or tool that would be as encompassing as LifeNavigator could be raises worries that how can an individual stay independent enough while using it. That is why in the architecture it can be seen that LifeNavigator encompasses other tools or applications (for example to-do lists, context phone, calendar, GPS) but doesn’t replace them. So when the need for turning the application off comes, it can be done without also giving up one’s calendar, phonebook or to-do information. Also activating different sets of services should be supported.

In the design of interaction attention should be on the ways it should support developing one’s planning skills, discovering interesting places also outside the system and knowing common meeting places without every time using LifeNavigator to discover them. One way to solve the problem could be different modes for a beginner, who still is learning how to live to their principles and for advanced user, who only maybe needs reminders or assistance when out of their usual surroundings or routines. With navigation software the use of sound and map together in guidance has been beneficial for learning the routes. Similar ideas could be tried out in LifeNavigator too, for example by providing overviews to things that need to be remembered together with map or connected to time frame.

Richness of content and functions



Being rather similar to Kaasinen's topical and comprehensive contents, this topic came up often in discussions with the probe and workshop participants. In addition to being in control, people had all very different idea on what they would like the LifeNavigator to do. Kaasinen's findings support this interpretation: *"The users will need comprehensive information both in breadth (number of services included) and depth (enough information on each individual service)."*

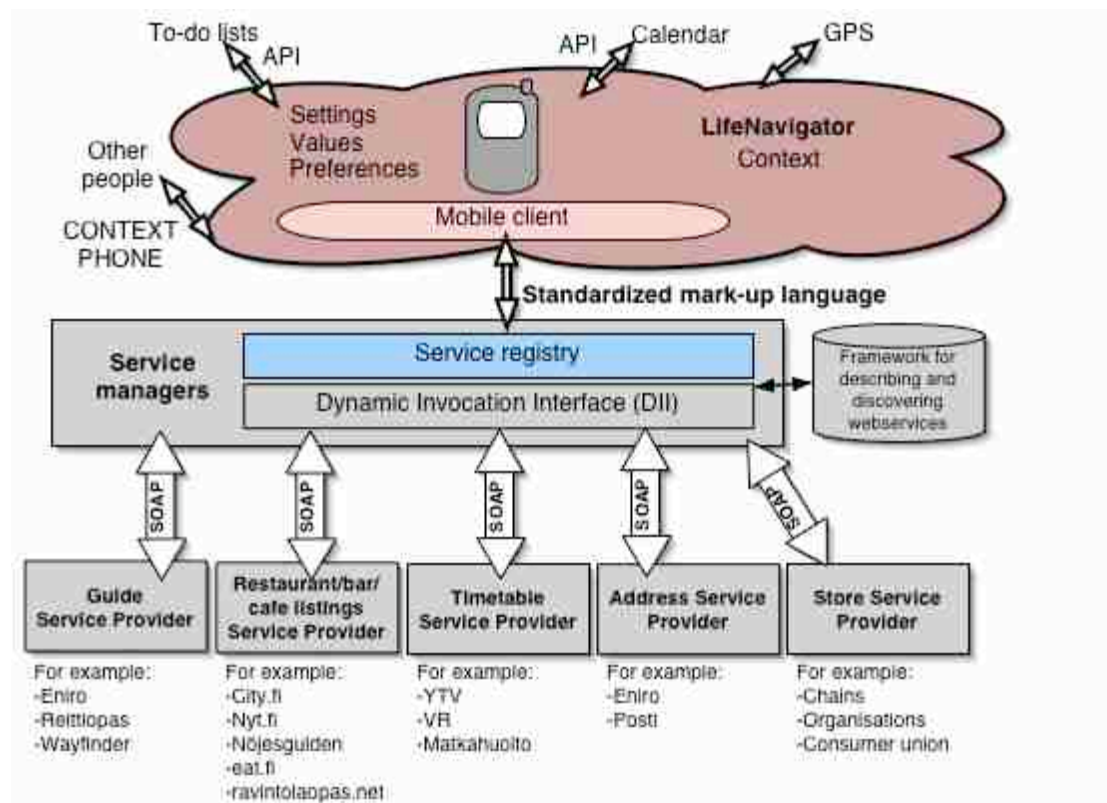
Even though in this architecture the services are not so clearly emphasized as different services, the amount of services available to user is greater and it could be dynamically updated. Still the actual problem of depth that Kaasinen mentions has to be solved already in the creation of the information in three different levels: a) in content productions (shared standards) b) in the way the set-up is done (providing enough choices and ways to import different set-ups) c) support for individuals and groups to share set-ups and information they create.

If one looks at LifeNavigator or some parts of it as a service that is provided, it is important to remember Kaasinen's insight: *"Starting up a service will not be easy; on the other hand, a critical mass of service providers will be needed to get the users in, and, on the other, a critical mass of users will be needed to get the service providers in."* As it came clear in the interviews and the workshop, this type of application or service has to be complex enough to

interest people and to have some value for the user. It has to offer enough space and options for customization to give the user the control they need.

Service manager architecture provides this richness by first of all freeing the user from downloading different applications every time they need a service like, lets say a timetable. With this architecture it is easier to test different services with less effort and less commitment to the service tested. On the other hand, the preferences and values individual selects in the set-up of LifeNavigator already ensure more personal information than using the average services that you come across with search engines, as often the most highlighted services have paid for high placement in the search results. Quoting Neuvonen and Mokka: *“People are tired of mass-market products and public services targeted to average citizen.”* They need ways to stick to their values and preferences and the concept of LifeNavigator is an attempt to fulfill this need.

Trust

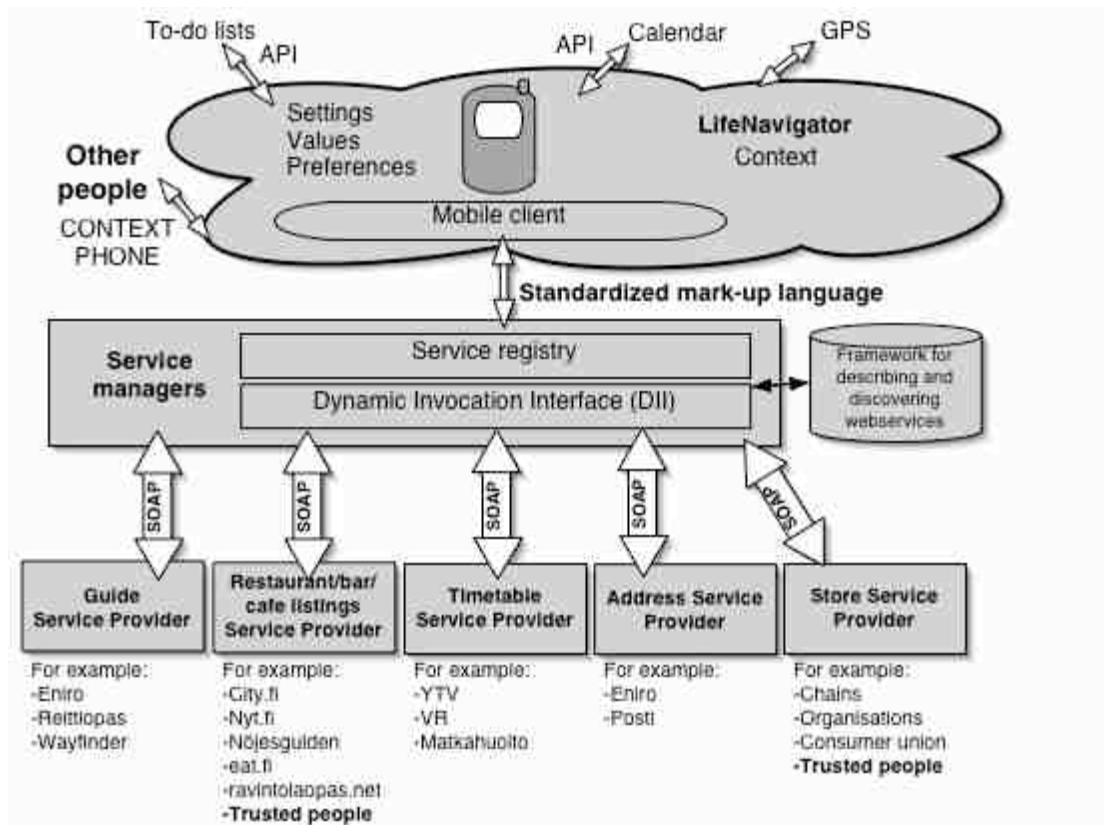


Other design guidelines (Kobsa, Kaasinen) mentioned the privacy issues as one of the themes, but here I felt the issue of trust is more descriptive. It means solving both privacy issues and issues relating to the sources of information, as well as the system itself: can one trust the application enough in order to allow it in the private areas of one's life?

In the architecture of LifeNavigator there are three things that are focused on solving this issue. Firstly, the personal data stays in the phone and is shared only with trusted entities, such as family or certain services. To-do lists and calendar for example communicate directly with LifeNavigator, which makes then calculations and needed searches for information and this process is not shared with third-parties. Location information and other sensitive information could to some extent be handled only on the client side. Also, using the service managers the connection to the individual values and preferences cannot be made, as they are encrypted and handled independently from the user. Yet, as it is with most systems where information is shared, there is always a trade-off between user benefit and privacy intrusion.

Trust also was one of the themes that kept coming up in the workshop. In the interviews people mentioned that some sources they would definitely trust, such as certain organizations, but in the workshop the issue was not that simple. Most of the workshop participants were very critical towards information sources, unless it was something very objective by nature, such as train timetable. Participants wanted the application to be very transparent to the user, so that it would always be clear what is done with the information user provides, who can access it and which source the information comes from. These problems can be solved with solutions where user is always asked for permission to share certain information and on the other hand that information sources are tagged into the information one uses.

Community



With the popularity of social applications, the role of communities has become almost self-evident in services. What would YouTube be without the community around it? Community or communal aspect to values and preferences came also up in the workshop with aware consumers. The need to connect to people who share similar values is strong. One of the first things that was recommended for people who are interested in committing to certain values, was: “get to know like-minded people.” Certainly people have valued communities through out the ages, and as Mokka and Neuvonen see it: *“it’s the way humans are and how they create their identity. We still want to belong as an accepted member to different groups.”*

The communities need to be supported in LifeNavigator and other similar applications, because while the traditional communities weaken we have even greater need for communities that are uniquely communal (Mokka and Neuvonen). As Neuvonen and Mokka clarify its pros compared to public services: *“Peer-support happens in realtime, it’s discursive and personal by nature, full of researched information but also alternatives. This kind of services cannot be received in health care centers.”*

The communities that exist in discussion forums would not be replaced by LifeNavigator but more strengthened by it. An internet forum around certain music style could for example create their own listings of bars or record stores (look in the architecture at Trusted people). Also sharing context or location information would help to create and strengthen communities.

This is and has been of course already happening; likeminded people show their connection in clothing and choice of music. People want to be different together. Neuvonen and Mokka state similarly that consuming has actually become a tool for individuals to express their uniqueness: individuals strengthen their connection to likeminded people through buying food, clothes or place to live. LifeNavigator relies on this behavior of people, providing people a tool to be more in control: speak out louder about their choices; connect stronger to their network of like-minded people.

Providing motivation

The motivation theme came up more in the workshop, people who are sticking to their principles felt that there was need for support to keep them motivated and not feeling hopeless. Part of this motivation can be provided through the communal aspect of the concept, but other ways should be also considered. Mokka and Neuvonen reached similar conclusion: *"Peer-to-peer approach motivates people. Nowadays you need to find and choose your peers yourself, otherwise they won't provide you with motivation."* As a lot of data could be collected about the user, there would be great possibilities for providing overviews and comparisons of one's consumption data or time usage. Other ideas that were raised in the workshop were also quite community related, such as who else is doing something similar, like shopping same products as me, or who would like to join me in doing something (for example bicycling to work or recycling metal).

Even though this aspect is not clearly shown in the service manager architecture, LifeNavigator should provide selection of tools to get an overview of your situation, let it be how ecologically you have been living or how trendy you have been. This would mean visualizations and other statistics, but also ways to compare yourself to your previous month or to others. These are all common ways to use peer-pressure in a positive way.

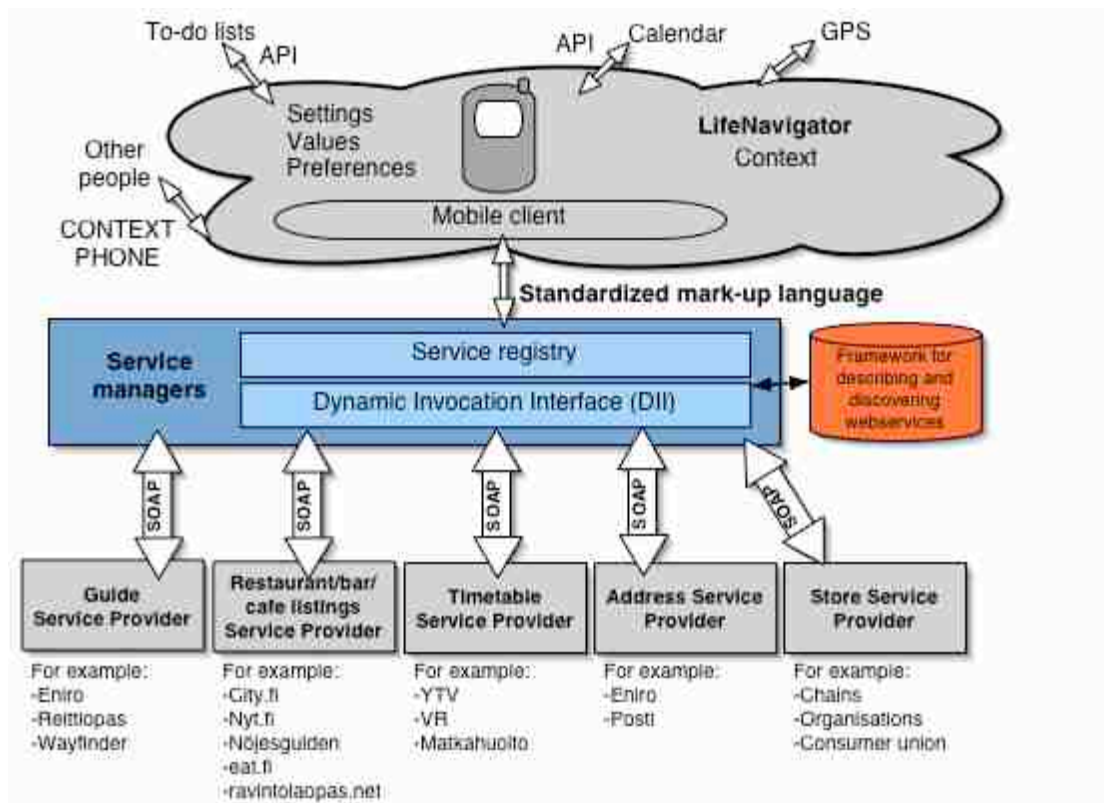
Context awareness

Context awareness is the capability of an application to recognize different contexts and change its behavior to fit that context. For example a mobile application would get from the calendar or location the information that the user is in meeting and changes the phone to silent mode. With LifeNavigator the user certainly doesn't always want or need the same functions. Probably at home you don't want suggestions telling you that go to the local bar or while in a meeting a suggestion to get that toothpaste from the shop next-door. How should LifeNavigator then know that should it use voice commands to guide you to a coffee place or let you check it from the map?

As often mentioned in the interviews, people don't want to keep updating their interaction methods or telling the application what they want or don't want now. Also, while moving in the city this would not be very handy. Kaasinen comments the same issue from the location aware service side, which she sees as a step towards context-aware services: *"Location aware services are different from many other kind of mobile services because they are mobile also in the sense that they are used on the move."* There is just not as much time or possibilities to compare options or interact with LifeNavigator, when moving about. The actual challenge, according to Kaasinen is to create context aware services that are not just for solely one purpose, like they have mostly so far been. Tourist guidance or email application can more accurately use the location information as the context information than application like LifeNavigator could.

In order for LifeNavigator to be really useful it should be possible to teach it the most frequent contexts the user is in and it should learn to recognize them with the help of the GPS, the status that the user has set and the calendar information. Switching between statuses should be simple, otherwise the user feels easily irritated and stops using the application, at least this is the feeling most of the people I interviewed had, when discussing issues like context-awareness, interaction methods and different possible functions of LifeNavigator. But, as Kaasinen also points out, it is a great challenge for a designer to create a solution for personalized location-awareness without relying too heavily on the efforts of the users.

On demand



When looking at the service structure of such application, it became clear in the interviews that it should work on on-demand basis. Participants did not want to be loaded with information pouring into their mobile, most of them stated clearly that they will ask for suggestions or information when they need it. As Kaasalainen also discovered in her research on location aware mobile services, people have quite positive attitude towards providing information with the push-method, but they want to select what kind of information is pushed to them. She concludes that using just location information to determine what and when to provide information or services is not enough, it should be complemented with personalization. That is when it comes very useful to have architecture similar to service manager, where the services are selected by the user, yet they are always easy to discover when needed.

The interviews also showed that people wanted subtle interaction methods to communicate the needs that they have in that moment, which could be solved by designating specific keys, voice commands or even three-dimensional movements to express their needs. These are issues that need to be solved partly in the hardware side as well, or alternatively be provided as add-on gadgets to old mobiles.

4.3 Implications

Whenever a new design enters the world, it always has positive and negative effects on the practices and social relationships of the people. Application like LifeNavigator would probably result in some changes in the practice of planning, remembering and definitely on the role of the mobile phone in the life of an individual using the application. Even though it is not possible to foresee all the implications of this type of application, I have still made an effort to list some of them. This is done by dividing the implications into two categories, one showing the implications for those who would voluntarily or for some other reason not be using LifeNavigator and the other lists implications that would result if such an application would be having a very big role in the life of the user.

When you can't or don't want to have it

Introducing a new system for putting values into action or eliminating searches, just as introducing any new technical system, doesn't come without downsides. With all new technologies the first problem is that there is a gap between those people who are in the new system and those who are not. How to acknowledge those who will not want to or can't afford to have LifeNavigator? The information should be available in formats accessible to these people, which would not be a problem if the information is standardized so that it can serve multiple channels. Then you could even have a printed version of your LifeNavigator (to some extend).

Creative solutions are needed to figure out how for example location information could be accessible to those who want to receive it through internet. Could there be an RSS-feed of somebody's location? Or could there be a phone number that you could call and listen the most recent shared information? In Places to do (placestodo.com) there's for example a simple text message based solution for making queries about for example restaurants nearby.

One needs to also remember that as the independence is one of the important qualities to bare in mind with the design challenge at hand, it could also be seen as a choice that people are free to make: are they in or out with LifeNavigator. Of course this decision to not to use LifeNavigator could in worst case scenario result in social implications, maybe if no one sees your location or status you will not be invited to some get-together. In any case it would hardly be life threatening not to be a LifeNavigator user, just as there are still people living without a mobile phone.

When you can't have enough of it

Navigator led to a sand heap
Helsingin Sanomat 10.10.2006 22:42

"Sometimes it is better to trust your own eyes instead of technical appliances. An eighty-year-old German driver learnt it the hard way when he drove into a heap of sand.

Mister's Mercedes was equipped with a GPS navigator, a device that guides with a digital map to a chosen destination. He took off with his car and followed the instructions given by the navigator very carefully.

A bit too carefully. He drove to a motorway that was closed off due to the construction. In the end his ride led to a pile of sand.

"Driver followed the navigator's instructions and even though there were many warning signs and blocks on the way, he kept driving to the construction site" police told.

The eighty-year-old man was not injured in the accident."
REUTERS

The previous story reveals the implications of relying on a system too heavily; one forgets to trust their own eyes and keeps following the instructions of a system. Similar implications were stated in the paper *Agents that reduce work and information overload* (1994): "*Users can end up relying too much on the recommendation system, and may not enter into the system any new items that they discovered themselves.*" It is also important to create such a design solution that supports learning, so that people's memory and planning skills don't weaken.

One implication that was already earlier discussed is around the topic of privacy, if you are willing to share your values and even more, is your privacy protected well enough and how could we prevent the abuse of this personal information.

Social implications are a whole issue on their own: if LifeNavigator tells you when busses come and which place you would like when in a new city, how would it result in the city communication? Would no one be asking for help? Or would people maybe talk about the suggestions their settings have given to them and compare them with others? Also, would LifeNavigator make sticking to subcultures too easy? As a LifeNavigator user you could maybe even ignore the "wrong people" who are not like you. Like one workshop participant described the way they would use LifeNavigator: "*Informs me if somebody is looking for my*

company so I can avoid him/she." It could even result in completely new levels of bullying, youngsters could very effectively avoid someone who they don't like.

If LifeNavigator would go to completely commercial hands and be used as a marketing channel. It might work for some but many would feel cheated after sharing their inner values. There would probably be different kind of LifeNavigators, the commercial and non-profit. In any case it would add to the marginalization of different user groups, as people could have the freedom to personalize as they wish.

Lastly, one could think what is LifeNavigator concept itself implication of? It is definitely a symptom of its time: the time of efficiency, time of scattered values and moral as well as time of consumption. All issues that most of us think from time to time but never seem to find an absolute answer. LifeNavigator can certainly be seen as an implication of these dilemmas.

5 Conclusion

In the beginning of this research and design project I was set to look for a design solution that could help individuals to better fit their values and preferences into their everyday life. As a starting point I used the concept of LifeNavigator, a mobile application that would use combination of selected data to make context-aware suggestions. With human-centered approach of using probes, scenario based interviews and a workshop, I reflected on this concept and discovered a set of qualities that one needs to bare in mind when designing such a tool and what implications it might have on the existing practices of life management.

Through the insights perceived through the interviews and workshop and informed by the readings, the most important qualities I discovered were control, independency, richness of content and functions, trust, community, providing motivation, context-awareness and on-demand service. This list is not only uniquely related to LifeNavigator but also very relevant to any mobile application that deals with more "softer" and private issues. By looking at the other listings that I mentioned, the topics related to mobile services in general as well as the questions around values in consumption are very similar, mainly just phrased slightly differently. With the additional topics, community and motivation, that the workshop brought up the list I have gathered nevertheless covers a bit more than what similar list for a photo sharing application would. Yet it might be rather interesting to design an application for sharing photos that would implement these qualities.

The second issue that I was set to examine was the changes that the suggestions made by LifeNavigator would cause in the practice of making searches. Looking at research made around agents and query-free information retrieval as well as notions of commonsense and pliant computing I came to the conclusion that this effort to get rid of unnecessary searches is a topic that has raised interest since the early nineties and in the software world some solutions already exist. With the additional issues that mobile context brings to the topic, such as the need for an in-context help in a real world situation, the need for solutions on this field exists. Solutions are partly there, both in the practices people create (calling a friend to ask them to check things from the internet) and in the software side, as smart agents, so it would be interesting to continue further with this topic and see how revolutionary the effects of such an innovation would be in the everyday life of people. A lot more research and testing would be needed to reach some more concrete conclusions on this matter. Looking at the material gathered in this research, people would prefer asking for the suggestions. So, attention should be paid to implementing the suggestions on on-demand-basis.

From this process I got hands on experience on people-centered methods. If I would be using probes as a method for a similar purpose again, I would first make a pre-probe with one participant and then make it more focused based on what I learned from the test version. I would prefer working in a team of practitioners to provide different perspectives to the project and to keep up the momentum on the moments that an individual feels like giving up. I definitely got confidence on interviewing and felt that it is a natural way for me to discuss concepts in the future as well. The importance of the probes as a common ground between myself and the interviewees I cannot emphasize enough.

After thoroughly fleshing out the concept and looking at each dimension of it with the help of the kind people that took part in the human-centered approach I had in this research, one maybe cannot make a statement that such concept would be a great success. But what one can say is that the discussion it raised throughout the project has proven that the field that LifeNavigator would enter is very frail but also important to people. Most of the people that I talked to would be even willing to give such an application a shot, so the interest, if not the need, is there.

As a conclusion I want to encourage designers to look for solutions that would help people in their personal struggle to live according to their preferences and likes, but also emphasize that those who will enter this personal territory of people's lives should do it with great respect and mindfulness. Useful methods for approaching such tricky areas have been developed, for example probes. Also the implications LifeNavigator would result in have to be acknowledged and looked deeper into. Sometimes it can be difficult to fully understand whether the design

solution would actually be adding to the problems of today's society or provide people with a tool to work around them. To end with Thackara's words: "*Many of us want faster computers but we also want to live more balanced lives.*" Whether the LifeNavigator offers something for both of these wishes remains to be seen.

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7 Appendices

▼ Problem

- Checking timetable
- Where to send shift list
- Checking route for walk
- Checking route & time table for bus
- Looking up address
- Looking up address
- Making changes in work shifts
- Car broke down
- Could someone help me to get luggage to jns?
- Price for train
- Bus late
- Train delayed, no need to come yet to pick us up
- Train delayed, have to wait
- Drunken guy needs help
- Badly slept night
- Jogging not possible because of rain
- Need to buy winebottle.
- Change traintickets
- Moving about in strange city
- Looking for a bar to go to with a friend
- Organising a moving van
- Need to know smbds last name
- Cooking instructions
- Looking for a location
- Information about a course that taking part
- Friend late
- Need to order virkatodistus
- Which movies are running NOW
- Number of specific hairdresser
- Finding out how to get to jns.
- Checking out changes schedule of festival
- Looking for a supermarket while driving to jns
- Friend on the road looks for closest kotipizza
- Looking for scissor sharpeners
- Looking for flights
- Looking for accomodation
- Looking for fabric factories
- Phonenumbers
- Accomodation london
- Trouble with filling forms

Solution

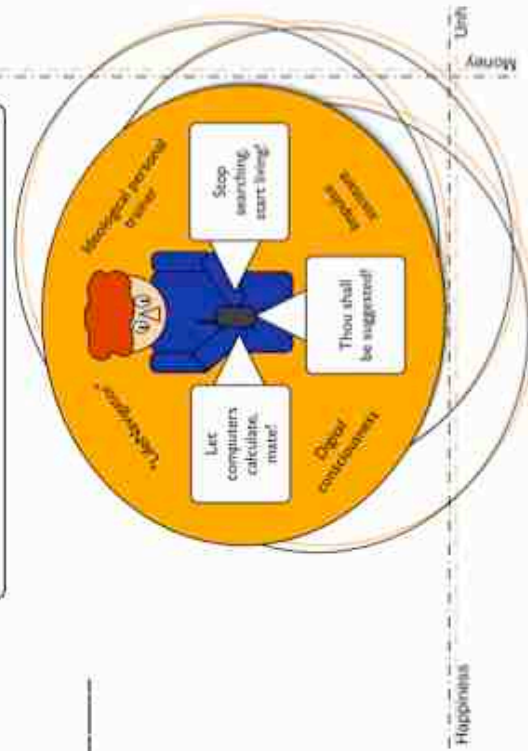
- Bus stop
- phone
- phone book
- Routeplanner
- website
- info board
- phone
- mobile phone
- mobile
- website
- phone
- phone
-
- helping him out
- taking a nap
- waiting, re-scheduling, running in the rain
- go to store
- go to railwaystation
- follow the leader
- walking around
- call around, get mother to help
- call a friend
- call mother
- phonebook
- website
- mobilephone
- website
- the cinema
- call mother-in-law
- websites, calling friends
- website
- call friend who lives there
- website, phone
- knowledge, phone
- website, calling a friend
- website, cousins via messenger
- websites, friends
- internet
- website that friend suggested
- called dad

Username: _____

Please select from the following list three most important qualities for you:

- environmentally friendly
- store size
- Finnish
- organic
- animal friendly
- vegan
- vegetarian
- other diet
- quality
- socially sustainable
- brand
- second hand
- certain subculture, which: _____
- local
- time saving
- cheap
- healthy
- _____
- _____
- _____
- _____
- _____
- _____

Comments, ideas, problems:



Haastattelut

1. Käydään läpi probesta pari tehtävää:

-Tässä tehtävässä käsiteltiin jo käytössä olevia elämänhallinnan järjestelmiä. Sinä olit vastannut tähän näin:

2. Onko yksi näistä ylitse muiden?
3. Onko mieleesi tullut jotain parannuksia näihin olemassa oleviin laitteisiin/välineisiin? Voisiko joku toimia paremmin yhteen tai tarvitsisitko jotain lisälaitteita? Tuotteita mistä haaveilet?
4. Mitä ajatuksia sinussa herättää käsite elämän hallinta?
5. Mitä ajatuksia sinussa herättää Life Navigator?

6. Skenaario I

Maija leaves her workplace in Kallio and hops on her bicycle to head home. Sun is shining and she feels happy for all the work she got done today. She puts on headphone set, leaving her other ear free to hear the sounds of traffic. Bicycling in Helsinki requires full attention. She turns to right and follows the bigger road. Her mind wanders to what she should do tonight, until a voice says: "Shopping list reminds you to pick up two packages of cat food, orange juice, bread and beer. Alepa is on your right in twenty meters." Aha, Pekka (her boyfriend) has added beer on our shared shopping list, there must be some sports on tv tonight, Maija thinks and parks her bike in front of the store. She does her shopping and while she is packing her groceries, she decides that she wants to have a glass of wine before delivering the beer load to Pekka. She tells that to her LifeNavigator and gets back on her bicycle. After a crossroad LN suggests to her a wine bar on the parallel street. She thinks she knows the place in question and that her friend described it pricy and cold atmosphere. She follows the instructions only to discover it indeed was the same place. So she keeps bicycling further. Soon she hears new suggestion of a beerhouse with a terrace two blocks further. She follows the instructions and after turning around the corner she already can see a cozy looking terrace. She parks her bicycle and sits down. While looking at people strolling in the street on a warm summer day, she feels happy for her new discovery and the joy of a glass of good red wine. Before leaving she leaves her comment about the place, giving it four stars out of five and adding it to her favorite places.

Mitä ajatuksia tämä herättää? Miten tämä liittyy mielestäsi omaan elämääsi? Entä tuttujesi elämään? Mikä tässä pelottaa? Mitä tämä mielestäsi tarkoittaisi käytännössä? Miten jaettu

ostoslista mahtuisi sinun elämäsi? Kenen kanssa jakaisit?
Millä ehdoilla? Kiinnostaisiko paikkojen ”arvostelu” sinua? Millä ehdoilla?

7. Skenaario II

Helps you to find what you want

Teemu is walking in Esplanadi to go to a meeting in Eira. He moved to Helsinki two years ago from Turku and he’s still finding the city a flux. He misses the feeling of knowing your kind of places and being able to walk from one place to another. In Helsinki there’s just so many things happening and interesting places to see that he didn’t used to know where to begin. He’s looking at the massive old trees in the park and realizes that he still has some time to fill before the meeting. Coffee would be nice, he thinks to himself and looks into LifeNavigator for suggestions. Sure he has seen many coffee places next to Esplanadi, but he prefers living in a more ethical way. So LN, knowing this, suggests him a nearby coffeeplace that serves organic fairtrade coffee, and is conveniently on his route to his meeting. Half an hour later he enters the meeting feeling good for being able to stick to his taste and principles, but also energetic after having a nice cup of fresh coffee without a worry how to find his way to the meeting and being late.

Mitä ajatuksia tämä herättää? Miten tämä liittyy mielestäsi omaan elämäsi? Entä tuttujesi elämään? Mikä tässä pelottaa? Mitä tämä mielestäsi tarkoittaisi käytännössä? Onko sinulla vastaavia must-have tuotteita? Miten tällä hetkellä löydät ne? Mihin tahoon luottaisit tarjoamaan sinulle tietoa näistä tuotteista?

8. Skenaario III

Lets you live your life and be spontaneous

Kirsi is wrapping up her work at the office and tells LifeNavigator she’s heading home. Navigator advises her to get going in five minutes and she does so. Just before turning to the road that leads to the bus stop she hears a familiar voice calling: “Kirsi, is it really you?” She turns to look who can it be and is delighted to see her high-school friend Tiina. She tells LifeNavigator she’s busy and engages herself fully in catching up with her old friend. After standing outside in the cold for five minutes, they decide to go somewhere for a cup of tea.

Both take out their mobile phones and look what LN suggests. Kirsi's navigator's suggestion sounds better to both of them, so they let her LN guide them to this place. Two hours later they realize it's time to head home. Kirsi tells LN again that her direction is home and she gets instructions for the connections to go home. She finds out they can still have ten minutes for saying good-bye. Kirsi heads to the bus stop and soon sees the bus coming. She's happy that this cold winter day had such a nice ending and inspired by seeing an old friend, adds to her to-do list organizing a party for her high-school friends.

Mitä ajatuksia tämä herättää? Miten tämä liittyy mielestäsi omaan elämääsi? Entä tuttujesi elämään? Mikä tässä pelottaa? Mitä tämä mielestäsi tarkoittaisi käytännössä? Käytätkö aikataulujen katsomiseen jotain teknologiaa vai riittääkö sinulle bussipysäkin tarjoama tieto?

9. Skenaario IV

Lets you focus on your surroundings, not in the snake-game

Heikki is 29-year-old literature student who lives in Oulunkylä. He has a girlfriend, who studies in Joensuu.

On Sunday evening Heikki waves goodbye to his girlfriend, who is boarding the train to Joensuu. He walks in his longing thoughts to his regular bus stop and only then remembers to tell the navigator he's heading home. Next bus is only in twenty minutes, so LN suggests to him he would go look at the free exhibition at the railway station. Sounds interesting he thinks and follows the instructions there. It turns out to be photographs of skateboarders and there are even a few really good shots. When it's time to walk back to the stop, the navigator tells him to get going. On the bus his mind wanders back to his girlfriend and he decides to call her and tell her about one of the pictures that reminded him how he tried to teach her to skateboard.

Mitä ajatuksia tämä herättää? Miten tämä liittyy mielestäsi omaan elämääsi? Entä tuttujesi elämään? Mikä tässä pelottaa? Mitä tämä mielestäsi tarkoittaisi käytännössä? Olisitko valmis ottamaan vastaan tällaisia ehdotuksia ohjelmalta? Millaisia ehdotuksia? Minkä tahon tarjoamana?

10. Skenaario V

Gives you the route information that fits to your needs

Taneli has lived all his life in Helsinki, but he got into motorcycling accident last summer and has been in a wheel chair ever since.

Taneli is just returning from his wheel chair salsa practice and tells his LN he's heading home.

Following the instructions, he is guided to an accessible route to his bus stop. When almost passing Sokos, LN reminds him that he has on his to-do list watching Brokeback Mountain.

He's instructed to nearest movie rental that is accessible and he has a membership for.

Luckily one is almost next to his bus stop. He picks up the movie and gets on the bus that is a low one. He thinks to himself how he would've managed with his new situation without the LN.

A city so familiar to him was now full of surprises and obstacles, but with LN and accessibility listings he was able to avoid most of the problematic situations.

Mitä ajatuksia tämä herättää? Miten tämä liittyy mielestäsi omaan elämääsi? Entä tuttujesi elämään? Mikä tässä pelottaa? Mitä tämä mielestäsi tarkoittaisi käytännössä?

11. Skenaario VI

Frees you from worry and hurry

Matti and Tiina are on their way to a soccer game. They like taking walks, so since they had time they chose to walk the six kilometers distance to the soccer field. They had been at the field once, but then they were coming from a different direction and with a bus. So they use the LN, which knows that they are going to the game, since they had written it in their shared calendar. They enjoy the landscape and look at interesting buildings. Matti, whose LN they are using, likes to know more about old buildings. So while they pass interesting houses, they hear some short descriptions about them. At a park they sit down for a while, to talk a bit about their plans for the summer. Time goes by and the LN alerts them that they have to get going in order to make it with slow pace that Matti has as set as a preference earlier. Matti replies that they will walk the rest a bit faster in order to have some more time to sit peacefully with each other. They talk about how nice it is to be able to relax even when going to a place where they never walked to before. No hurry or worry. A bit later LN tells the lovebirds to get going and they walk with fast pace to the field and are just in time to buy the tickets, sit down and enjoy the match.

Mitä ajatuksia tämä herättää? Miten tämä liittyy mielestäsi omaan elämääsi? Entä tuttujesi elämään? Mikä tässä pelottaa? Mitä tämä mielestäsi tarkoittaisi käytännössä?

12. Skenaario VII

Makes the connection to your social network as strong as you want it to be

Kiia is a teenager who loves anime and manga. With her friends she forms an active community around the topic in Helsinki.

It's Thursday afternoon and she's getting off the school. She immediately checks her LN where to head so that she can be with her community members. It's a warm autumn day and she gets instructions to go to the nearby park. Five minutes later she's with her friends and talking about the newest film that is opening on Friday. She almost had forgotten to buy the tickets. But luckily LN reminded her about it yesterday evening when she was in the center visiting her grandmother who lives nearby Tennispalatsi. Otherwise she would've been too late, as her friend Taija, since the movie is sold out. Maybe next time I add the tickets reminder to a shared list, since Taija always forgets these things. LN reminds Kiia that she has to get going to back home, since her mother is taking her shopping in Itäkeskus. It was written to their family calendar and Kiia had marked to it that she will join.

An hour later they arrive at Itäkeskus. Kiia is very precise about where she wants to shop. On her shopping list are lots of things for school: clothes, shoes, backpack. They start walking in Itäkeskus, passing by stores. Kiia has told to her LN that she wants to follow her community's taste in things, so when a store that has something from her list is marked by her community members as a favorite, LN tells that to her and she can go look if she finds what she likes. After an hour of shopping, hunger strikes and they start looking for a place to eat. LN helps them to find each other quickly and then they look what is suggested. Mother's LN suggests some nice pasta place, but Kiia doesn't approve since her community does not recommend it. Her LN suggests first sushi place, but mother doesn't want to eat that, it's too strange sounding to her. Second suggestion from Kiia's LN is a sandwich bar, mother agrees with it and soon they sit comfortably in the restaurant with big plates of food in front of them. While waiting for the bill, Kiia's navigator tells her that one of her friends is approaching the restaurant. Just some seconds later, she sees one of the newer community members entering. Kiia waves at her and as they leave with her mother, Kiia tells the girl that mozzarella sandwich is very tasty here. Her mother says that she's done with her shopping, but after checking her shopping list Kiia notices that she still has not found shoes. Navigator suggests to her to check tomorrow from the community's favorite shoe store that is in the center. She decides to do that, so they are ready head back home.

Mitä ajatuksia tämä herättää? Miten tämä liittyy mielestäsi omaan elämääsi? Entä tuttujesi elämään? Mikä tässä pelottaa? Mitä tämä mielestäsi tarkoittaisi käytännössä? Kenen kanssa haluaisit jakaa tietoa sijainnistasi? Millä ehdoilla? Onko sinulla yhteisöä tms, jonka suosituksia mielelläsi kuulisit? Millaisissa tilanteissa?

13. Skenaario VIII

Finds the time for the things you find important

Juhani can be shortly described as the sports guy. He wants to get as much exercises as possible. On Wednesday morning Juhani wakes up and notices it's only six in the morning. He checks his navigator that suggests to him that he goes to the nearby gym for a spinning class. Great start for a morning! After his class he has to head to work, and as he has written to his calendar that he has a meeting at clients office, the LN instructs him to take his bicycle instead of walking. Otherwise he couldn't make it in time. Ever since the LN Juhani has almost stopped using public transport, because he can always either walk, run or bicycle everywhere. After his meeting he has a lunch break and LN guides him to a nearby restaurant that serves Atkins diet food. Two years ago Juhani started following this diet, but only now with LN he can also stick to the diet during his work days. He eats peacefully and has enough time to digest the food before hopping on his bicycle. On the way to the office he doesn't need the LN, and LN knows it so it doesn't give any instructions, except when he's passing a sports store. Shopping list reminds you to by a pump for the bicycle. "how can I keep forgetting" Juhani thinks and quickly takes care of that. He arrives at the office on time and feels alert after his exercise.

Mitä ajatuksia tämä herättää? Miten tämä liittyy mielestäsi omaan elämääsi? Entä tuttujesi elämään? Mikä tässä pelottaa? Mitä tämä mielestäsi tarkoittaisi käytännössä? Onko sinulla vastaavaa liikunta tai muuta harrastusta tai asiaa, jolle haluat tehdä enemmän aikaa? Uskotko teknologian voivan auttaa sinua siinä?

14. Skenaario IX

Makes adjusting to new environments easy but still exciting

Leila is arriving to Helsinki with train to visit her daughter Johanna and grandchildren. Her train is a bit late and her LN is showing her events that she might like that are taking place in Helsinki. Johanna had seen from her LN that the train is delayed, so she is using this time to pick up some flowers, as reminded by the LN. When it's time to get back to meet her mother, LN tells her that. Soon warm reunion takes place and they head home to see the children. Next morning Leila is babysitting for the children. Since her daughter just moved to a new area in Helsinki, Leila is not very familiar where the closest park is. She tells the navigator she's heading to the park. The LN can see from her location that she's at her daughter's place and therefore she will be moving around with a pram. Normally LN would look for parks that are popular amongst elderly people and where you can play petanque, but now it will look for the parks that the family normally uses and guides her through routes that are accessible with a pram. After a whole hassle with dressing the one and three year old children, they can follow the instructions of the navigator to the park. Smaller baby falls a sleep and three year old Leena starts immediately playing with other children. Other parents start talking to Leila, since they recognize the children. Leila thinks to herself how surprisingly cozy life can be in such a big city.

After a while they start heading home. Leena says she really needs to go to the toilet. Leila knows that it's still quite a distance before they are at home, so she asks the LN for advice for closest public toilet. She feels relieved when they make it in time. Finally they can head home, Leila thinks to herself, but then she hears her navigator reminding her that she's soon passing a store and on the shopping list there are margarine, yoghurt and apples. She smiles: that was pretty smart from Johanna to add me to their shared shopping list members. Have to play that trick when I'm getting older and they visit me.

Mitä ajatuksia tämä herättää? Miten tämä liittyy mielestäsi omaan elämääsi? Entä tuttujesi elämään? Mikä tässä pelottaa? Mitä tämä mielestäsi tarkoittaisi käytännössä?

15. Skenaario X

Lets you personalize it to your needs, all the way.

Marjatta is looking for a new mobile phone. She has decided that she wants one that has LifeNavigator in it. After comparing the prices she chooses the one that has a bit bigger buttons.

At home she changes the sim-card and turns on the phone. Address book was already copied by the store, but now she has to set up the LifeNavigator. She heard from her friend that it takes almost half an hour, but it's supposed to be worth it. Marjatta is not very familiar with technical things, so she's a bit worried how this will go. She opens the application and it starts guiding her through the process. First she selects three most important things to her: family, being in the nature and Finnish products. That was easy, she thought. Then she has to put them into an order. First it seems difficult to compare these things, but after a bit of thinking, she keeps them in the order she selected them. I can always change them if this doesn't work out, she thinks. Then she has to set up her calendar. LN offers the synchronizing option, but Marjatta has never used a digital calendar, so there's nothing to synchronize. But then she remembers that her Työväenopisto courses had codes that let her join the shared calendar and have the calendar automatically updated to her phone. She looks that up and sees the data coming to her LN. She also notices that her family members birthdays are already in the calendar, retrieved from the phonebook. Then LN asks whether she wants to use the navigating guide while moving around. She chooses not when in 5 km radius from home, since she knows her neighborhood well enough. The reminders for shopping list and to-do list she wants, because she likes to get things done when she's around the stores. Then she can choose the trustees; people, communities or other sources (magazines, organizations) that she trusts for providing her with data for the suggestions that LN gives her. She chooses her family and relatives, but also Suomen Latu and Kodin Kuvalehti. This will be interesting she thinks, feeling still safe since it all seems to be under her control. As the last step, she can share her calendar and shopping lists. She selects to share parts of her calendar with her old friend Pirjo and also her closest family. Shopping list she keeps still private, but keeps the option to share some things from it with her daughter who lives in Tallinn, and can maybe find those things for her cheaper from there.

After finishing the set-up she feels good for being able to complete that on her own. She is still a bit skeptical about this whole thing. At least she won't be like those teenagers who use LN to keep themselves busy and social every minute. She made the settings so that she gets suggestions only when she asks for them. And she will be able to turn it all off when she wants.. "Anyway, now it's time to get out there and test this thing" with her other hand already in the sleeve of her jacket.

Mitä ajatuksia tämä herättää? Miten tämä liittyy mielestäsi omaan elämääsi? Entä tuttujesi elämään? Mikä tässä pelottaa?

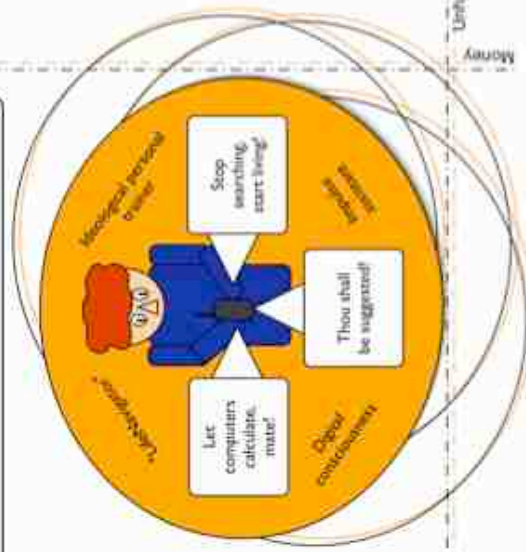
Mitä tämä mielestäsi tarkoittaisi käytännössä? Olisiko näiden asetusten määrittäminen sinulle helppoa? Mitä muuta haluaisit määrittää? Miten haluaisit ehdotuksia: jatkuvasti, pyydettäessä? Saisitko ne kuulokkeisiin aktiivisesti vai näytölle passiivisempina? Mitä ideoita sinulle herää edeltäneistä skenaarioista?

Username: _____

Please select from the following list three most important qualities for you:

- environmentally friendly
- store size
- Finnish
- organic
- animal friendly
- vegan
- vegetarian
- other diet
- quality
- socially sustainable
- brand
- second hand
- certain subculture, which: _____
- local
- time saving
- cheap
- healthy
- _____
- _____
- _____
- _____
- _____
- _____

Comments, ideas, problems:



Happiness

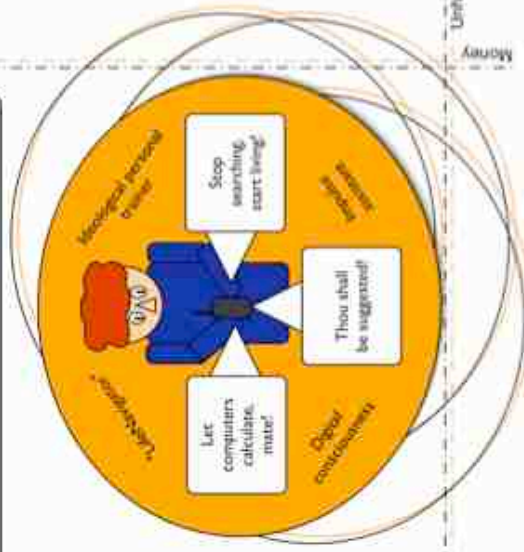
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- _____

Comments, ideas, problems:

Time



Happiness

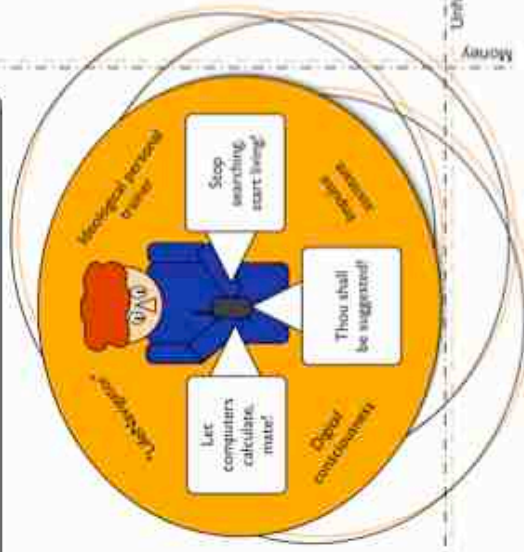
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Comments, ideas, problems:

Time



Happiness