A Step Towards the Future of Wellbeing – Pharmacy Service Design Case

Iris Tomaszewski
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Media Lab Helsinki
Department of Media
Aalto University School of Art, Design and Architecture

Aalto University
School of Arts, Design
and Architecture

Aalto University, P.O. BOX 11000, 00076
AALTO
www.aalto.fi

Master of Arts thesis abstract

Author Iris Tomaszewski

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Abstract

This thesis is part of InPractice research project. It describes a user-centered design process, which aims to envision new service possibilities for pharmacies to encourage self-management of health and wellbeing. The thesis project was done by applying methods such as co-design workshop, storyboard and prototypes to design a concept with the pharmacy customers and employees.

The end result in the project is a prototype of a service called Vitamiini info. It is a touch screen application through which one can search and compare vitamin products in the pharmacy. The prototype was tested with four customers and two employees. The results suggest that this kind of service would encourage self-service and offer an alternative for those who would rather not ask for the help of the pharmacy staff.

By taking into account the current values in pharmacy services and the technological trends in healthcare and wellbeing this thesis suggests a service concept for a pharmacy that contributes to the gradual transformation in the field of wellbeing.

Vitamiini info url: http://198.38.92.172:8080/apteekki3/jsp/haku.jsp
Documentation of the project: http://www.iristomaszewski.com/thesis

Keywords service design, interaction design, prototyping, prototype, health, wellbeing

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Contents

1. Background

The population in Finland (and in the whole world) is growing older. Because of this and the increased standard of living also chronic diseases have increased. Everybody wants to live a long and healthy life. This puts pressure on the health care system. The growing trend is to frame health in terms of wellbeing and to support self-management as part of healthcare (Dubberly et al. 2010).

These kind of complex social issues like reframing wellbeing and healthcare have traditionally been tackled with scientific methods. Now also design methods are being used. This emerging field is called transformation design. It is a human-centered interdisciplinary process that aims to create changes in individuals, systems and organizations.[1] For me it has been a big question to think how I could best apply my design skills to create meaningful things and promote positive changes in society. I want to be a part of this scene where design is becoming a recognized means for helping solve complex problems.

At the same time new technologies emerge and offer new ways to take care of our wellbeing. A recent report on the possible future of health (PSFK, 2010) lists technological trends that will have an impact on the world. Monitoring and managing our health for example with the help of smart homes and mobile apps will become more common everyday. New technologies will enable more personalised care and treatment. Also the exponentially expanding computer power is replacing the old paradigm of a single chip inside a computer with a new paradigm where computing is ubiquitous. Chips are scattered everywhere around us: furniture, appliances and clothes, all connected to each other and to the Internet. (Kaku, 2011, p. 22-23.)

In this thesis I use user-centered design approach for prototyping solutions for service/product concepts. According to Cottam and Leadbeater (2004, p. 5) traditional services cannot adequately address many prominent issues including public health concerns such as smoking and obesity. New ap-

1 http://en.wikipedia.org/wiki/Transformation_design

proaches where those who use the services become involved in their design and delivery could encourage new norms of behavior. These new approaches mean social creativity, activating knowledge networks, resources and imagination across society (Cottam & Leadbeater, 2004, p 5). In this thesis, even though the case study is not in the public sector, I approach these health concerns from the same angle. I took a user-centered design approach to find new ways to address and transform current practices in health and wellbeing in the pharmacy context.

1.1 Pharmacies and wellbeing

This thesis project was done as part of a service design case study. The case study was done in a pharmacy context. In this chapter I will discuss the relationship of pharmacies with wellbeing and the changing landscape of healthcare services.

1.1.1 Pharmacies and wellbeing today

In recent years there has been a lot of discussion in the Finnish media about the role of pharmacies in the future[2]. Prescription drugs get cheaper but from the point of view of the pharmacies costs are still high in this expert field. Pharmacists are concerned how to come up with new means of income. We can see the fierce competition in the field in the vast ways it is manifesting: web stores, additional services such as unit dose drug distribution etc. Pharmacies are keen on coming up with new service innovations and concepts that would offer new value and give advantage compared to the competitors. However, finding new ways for pharmacies to earn money does not play an important role for me in this thesis; it is more interesting to think how to make pharmacies' role indispensable.

What value do pharmacy services produce for people's lives now? What about in the future? Pharmacy's services are not very involved in the daily lives of many. That's why they do not bring up strong emotions or create meaningful experiences (for example if compared to food consuming which is present in our every day lives and thus we attach emotions and experi-

2 E.g. http://www.hs.fi/paivanlehti/kotimaa/Kilpailuvirasto+haluaa+itsehoitolääkkeet+marketteihin/a1346120466324

ences to it). From the point of view of the customers the pharmacy services are just fine now. Studies on customer satisfaction from recent years show that customers are mostly very satisfied with the way pharmacies operate presently (Taloustutkimus Oy, 2011).

Using user-centered design approach in this thesis project is an interesting choice since the current pharmacy services are already considered good. Instead of improving an existing service I use the approach to ideate new solutions together with the customers and employees of the pharmacy.

1.1.2 Pharmacies and wellbeing tomorrow

In the future pharmacies could take a stronger part in services supporting wellbeing and self-management of customers. They could offer counseling, instruction and guidance in lifestyle issues (Tampuriini 10/2009). Pharmacies could help their customers achieve long-term health goals. There could also be variation between pharmacies – they could specialize with certain expertise or services (Tampuriini 10/2009).

In the field of pharmacy there is discussion of the future and how should the services evolve, e.g.:

"Pharmacists have been talking about moving from manual product handling into cognitive services for many years. We are going to see that happening in a significant way very soon," said Michael E. Coughlin, president and CEO of ScriptPro.[3]

"Pharmacies must transfer resources from behind-the-counter dispensing-focused activities and put their employees out in front." Kirsch said.[4]

1.1.3 Prevention of illnesses and self-management of health

One argument for developing new tools and services for self-management of health is that it would be much more productive to focus on the many

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3 http://drugtopics.modernmedicine.com/news/pharmacy-tomorrow?id=&sk=&date=&pageID=2

4 http://drugtopics.modernmedicine.com/news/pharmacy-tomorrow?id=&sk=&date=&pageID=3

hours that people spend in their lives managing different aspects of their health (i.e. living their lives) compared to the few moments spent at the doctor's office or at the pharmacy. Also, since the population is growing older, there is a growing demand for home-based solutions. With new technology we are moving in that direction. (Cottam & Leadbeater, 2004, p 10.)

Cottam and Leadbeater (2004, p 8) state:
"Chronic conditions, which are closely related to lifestyle need a wholly different approach–one which understands individual behaviors and motivations, involves community and, critically, can address the socio-economic divisions which continue to underpin and determine lifestyle choices."

Obviously prevention is not a new thing. There are plenty of examples such as preventing infections by washing hands or lowering cholesterol levels by reducing the intake of animal fat.

On the next page Table 1. shows how self-management is an aspect that should be added to the new healthcare frame (Dubberly et al. 2010).

1.2 Objectives

This thesis has two main objectives:

1. Envision new possibilities for pharmacies to take a role in this emerging self-management frame of health and wellbeing.
2. To design and test a concept to see the possibilities in practice.

The third objective in the project is to test the methods of user-centered design in the pharmacy environment. It seems that the need for change is more urgent from the pharmacies' side than from the customers' side. But if we consider the emerging reframing of health there are signs that imply a change in the pharmacy curtomers' needs too. Health foods, diet programs, fitness and exercise programs, DIY health movement like the Quantified Self group[5], are becoming more popular and point towards stronger self-management. Also the Internet and related technologies: e.g. social network applications, bio-medical sensors, and health-focused big data mining software, support this shift towards self-management. (Dubberly et al. 2010.)

5 http://www.quantifiedself.com/

Health-Frame Eras Summary

	Traditional Healthcare frame	**Emerging Self-management frame**
Scope	Relieve acute condition	Maintain well-being
	Now	Over a lifetime
Approach	Intervention; treatment	Prevention; healthy living
	Expert-directed	Self-managed
	Apply standards of care	Measure, assess, and adjust; iterate
	Lengthy regulatory pre-approval	Learn and adapt as you go
Subject	Symptoms and test results	Whole person, seen in context
Response	Prescribe medication	Improve behavior, environment
Relies on	Medical establishment	Individual, family, and friends
		Social networks, others like me
HCP as	Authority, expert	Coach, assistant
	Dispensing knowledge	Learning from patients
Patient as	Helpless, childlike	Responsible adult
	Taking orders	Setting goals; testing hunches
Relationship	Asymmetric, one-way	Symmetric, reciprocal
	Command and control	Discussion and collaboration
Records	HCP's notes of visit	Patient's notes, data from sensors
	Sporadic	Continuously collected
	Dispersed between offices	Connected; aggregated
	Managed by HCP	Controlled by patient

Table 1. Self-management does not replace healthcare; rather it acknowledges the limits of what healthcare can accomplish and seeks structures that go beyond those limits. (Adapted from Dubberly et al. 2010.)

From this point of view it is appropriate to apply user-centered design methods to identify and use the latent needs of pharmacy customers when it comes to pharmacy services.

On page 15 is a chart I have drawn to visualize how I see the pharmacies' situation in the field for helping and managing people's health and wellbeing now and where the possibilities for new kinds of products and services might lie.

1.3 Introducing the project and the case

This thesis was done as a part of InPractice research project where I worked as a research assistant (1.3.2012–30.4.2013). It is a cross-disciplinary project between research teams from Aalto University School of Arts, Design and Architecture (Living Places and Encore) and Helsinki Institute for Information Technology HIIT. The project was funded by the Finnish Funding Agency for Technology and Innovation and was part of their Serve program. There were also five companies taking part in the project, the case study of my thesis project was Järvenpää I Farma, a pharmacy in Järvenpää.

1.3.1 InPractice

InPractice is a research and development project that combines user-centered service design and practice based value creation theories. The idea is that developing services needs new perspectives. Value is created together with the people who use the services through their everyday practices. The aim of the research project is to create new approaches and guidelines for service design in different fields not only for the fields of the case studies.

The nature of the project is cross-disciplinary. The theoretical dialogue draws from value and practice theories, interaction design, user experience and design research. This theoretical knowledge base is put into practice in two case studies. The first case focused on a web-based local and organic food store, the second one on a pharmacy service. This thesis is done as part of the second case study. The aim of the pharmacy case study was to develop future service possibilities based on the understanding of the current practices.

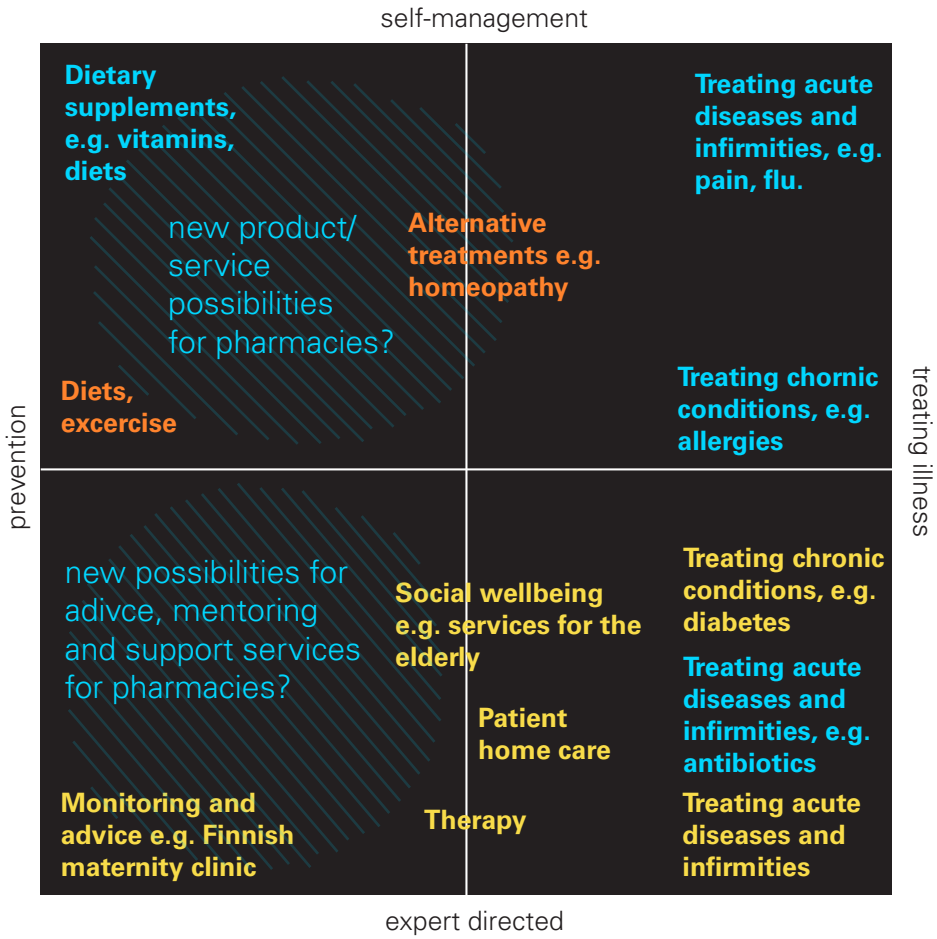

Figure 1.
The role of community pharmacy in Finnish healthcare, prevention and wellbeing services.

In the pharmacy case the research team consisted of seven members: me, Virpi Roto, Sampo Teräs, Jaana Hyvärinen, Juha-Pekka Karinki, Mari Mäkelä and Kreeta Haapamäki, each with their own interest and approach to the project. My focus in the project was to design and prototype a concept that could help transform the current practices in pharmacies into a direction that would give the customers more freedom and control over their own health.

1.3.2 Järvenpään I Farma pharmacy

The partner of this case study is a community pharmacy in Järvenpää. It is a pharmacy among the 30 biggest pharmacies in Finland, situated in the central area of Järvenpää. The pharmacy handles 150 000 prescriptions yearly, each customer averaging 1,4 prescriptions per visit. All in all there are about 100 000 client visits each year, 500-700 visits daily with approximately 300 purchasing prescription drugs. The margin revenue in the self-care products is 50 % whilst in prescription drugs it is 20–25 %. The pharmacy employs 10 people full time plus two that work on hourly basis. (Source: Interview with the pharmacist 9.2.2012)

Apart from delivering prescription drugs and self-care products I Farma gives advice on generic medication, drug-drug interaction and other information on the use, adverse effects and risks of drugs. The pharmacy also still produces some of the drugs sold and receives drugs for disposal. Other services of the pharmacy include unit dose drug distribution and handling e-prescriptions and phone prescriptions.

1.4 Framing the project

My own interests and background in interface and interaction design helped me to steer towards the chosen concept. Still, I was quite open to possibilities and wanted to do something that the stakeholders of the pharmacy would consider valuable. There are many interesting things happening in the field of pharmacy: automation, collaboration between organizations etc. In my thesis I will focus on the client services, those that are visible for the everyday pharmacy customer. "Behind the counter" there would be plenty of topics to tackle too but my own interest drove me to ponder the everyday practices of laypeople.

There is a strong influence of technology in the future trends for health and wellbeing services (PSFK, 2010). Not only do we see technology taking over in all fields and in our daily lives but there is also a strong belief that technology will change our practices and help solve many current world problems. Also the fact that this is a thesis for New Media studies I will focus my work to applying technological solutions for a service rather than for example designing service interactions between people.

Because of the time frame of the project (InPractice's pharmacy case was planned for 1.2. –31.12.2012) there were limitations to what kind of research we could do. For example it wasn't possible to make user tests over a month to test for a user experience over a longer period of time.

1.5 Structure Of The Work

The case project was an iterative process that consisted of background study, concept design, prototype development, and testing. My project case started in March 2012 and lasted until the end of December 2012 (see page 25 for visualization of the process).

In the next chapter I present the theoretical frame of the project and in chapter 3 I describe the practical process in detail. In the last two chapters I discuss the results and evaluate the success and meaning of the project.

2. Theoretical framework of the project

In this chapter I explain the theoretical background that I base my thesis project on. The project was done using methods of user-centered design to design for service with transformational goals. A significant part of the project was put in making different prototypes to communicate and develop the ideas I had.

2.1 User-centered design

User-centered design is an approach that initially has been used in systems design and interaction design. The users take part in every step of the process and they provide information and assess ideas (Säde, S. 2000, p. 19). Presently user-centered design approach is widely used in many areas of design such as industrial design and service design.

User-centered design applies various tools and methods such as interviews, observation, contextual inquiry, and probes to have a good understanding of the users. Essential about user-centered design is visualizing, modeling and prototyping ideas throughout the process so that the ideas can be discussed (Keinonen, T. 2000, p. 19).

The ISO 9241-210:2010(E) standard Human-centered design for interactive systems describes 6 key principles that a human-centered approach should follow:

1. The design is based upon an explicit understanding of users, tasks and environments.
2. Users are involved throughout design and development.
3. The design is driven and refined by user-centred evaluation.
4. The process is iterative.
5. The design addresses the whole user experience.
6. The design team includes multidisciplinary skills and perspectives.

ISO chooses to use the term "human-centered design" rather than user-centered design to emphasize that this part of the standard addresses a number of stakeholders, not just those who are considered as users. In practice, these terms are used synonymously. (ISO 9241-210:2010(E).) The design process of the thesis project followed the steps of a user-centered design process. Below is a figure that illustrates the iterative nature of a user-centered design process.

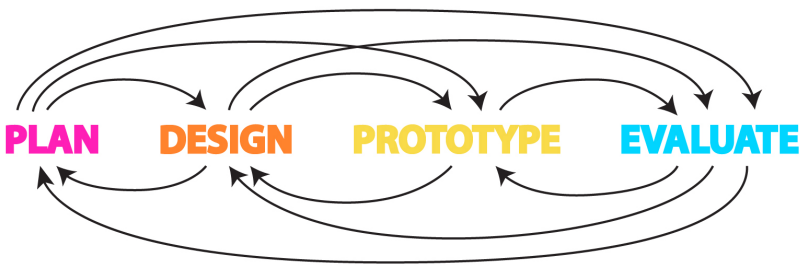

Figure 2. User-centered design cycle

2.1.1 Prototyping

"Prototyping is an activity with the purpose of creating a manifestation that, in its simplest form, filters the qualities in which designers are interested, without distorting the understanding of the whole" (Lim et al. 2008).

Prototypes can have different forms depending of the stage of the design process, the product or service that is being designed and resources. Low-fidelity (lo-fi) prototypes need very little resources and are quite unpolished. They are a "quick and dirty" way of testing a concept. Lo-fi prototypes are usually static and thus require someone (usually the designer) to make them look like functioning systems. Paper prototypes are a common example of lo-fi prototyping. (Saffer, 2010 p. 177,178.)

High-fidelity (hi-fi) prototypes require more investment in time and resources and usually follow lo-fi prototyping. The general concept and task flows are well tested when it is time to start making a hi-fi prototype. A hi-fi prototype mostly works as the "real thing" would. (Saffer, 2010 p. 179.)

Identifying types of prototypes according to their fidelity concentrates on their function for evaluation. Prototypes can also be seen from another perspective. Lim et al. suggest that prototypes are also support of design exploration. Designers use prototypes to organically and evolutionarily learn, discover, generate and refine designs. (Lim et al. 2008.) In my thesis project I used prototypes not only for evaluation purposes but also as a means of communication and exploration for design.

Lim et al. propose that prototypes have two key dimensions: prototypes as filters and prototypes as manifestations. Filtering dimensions are the selected aspects of a design idea that allow the designer focus on particular regions within the design space. The designer leaves out unnecessary aspects that the particular prototype does not need to explore. Considering the manifestation dimensions of prototype means considering the material, resolution and scope of a prototype. (Lim et al. 2008.)

Nielsen differentiates prototypes by dimensions too (See figure 3). Because the idea behind prototyping is also to save time and cost by testing with users in early stages, the prototype is somehow reduced compared to the full system. The prototype can either have fewer features than the full system or the level of functionality of the features can be reduced. A vertical prototype has only few features but their functionalities are fully working. This kind of prototype can be tested in realistic circumstances with real user tasks. (Nielsen, 1993 p. 94.)

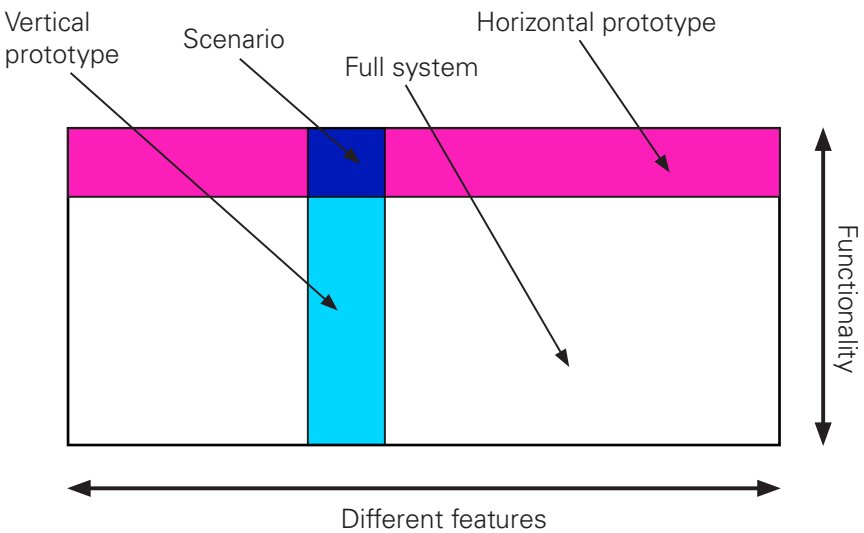

Figure 3.
Two dimensions of prototyping. (Nielsen, 1993)

Horizontal prototype has a reduced level of functionality. It looks like a full-featured system with the user interface but is without real functionality under the surface. Horizontal prototypes are good for testing the entire user interface and can be used to assess how the system feels as a whole. (Nielsen, 1993 p. 95.)

2.2 Service design

Service design is a vast and rich field. It is a fairly new field that has emerged from the change in economic basis in the developed countries. In the last four decades the industrial nations have changed from manufacturing towards providing services and information. (Mager, 2009, p. 29) This has had a significant effect on the field of design too. In addition to designing industrial artifacts designers have started to design intangible processes and experiences. In this chapter I shortly define the key characteristics of service design and situate it within this thesis project.

Service design is cross-disciplinary and holistic. It has a strong connection with traditions of product, interaction and experience design (Mager, 2009, p. 34). According to Mager service design aims to ensure that from the client's point of view service interfaces are useful, usable and desirable and from the supplier's point of view they would be effective, efficient and distinctive (Mager, 2009, p. 34). Service design looks at relationships and interactions (Mager, 2009, p. 37) and tries to provide understanding of value and the nature of relations between people and other people, between people and things, between people and organizations, and between organizations of different kinds (Kimbell 2010, p 51). Service design iteratively moves from designing intangible experiences to designing the tangible elements that make the desired experiences occur in a consistent way (Sangiorgi, 2009).

On a more practical level service design helps to innovate new services and improve existing services. The practice is anchored in human-centered design approach and often uses visual methods to communicate new ideas. Throughout all phases of the design process ideas are transformed into visible or tangible dimensions. There are various tools and methods for this such as customer journey maps, personas, prototypes, storyboards, and enactments just to mention a few. (Mager, 2009, p. 38.)

Another significant aspect to service design is co-creation. Co-creation is part of service design in two ways: because it integrates stakeholders in the design process and also because it is present in the service offering. The designers use the expertise and knowledge of the customer and client throughout the design process. Most services integrate the customers as active parts in the service delivery process making them co-creators of value. (Mager, 2009, p. 38.)

One big issue in the field of service design is how to define services. Zeithaml, Parasuraman and Berry describe services with four characteristics: they are intangible, heterogenic, inseparable and perishable (Zeithaml, Parasuraman, Berry, 1985). Another argument, based on Vargo and Lusch's (2004; 2008) articulation of a service-dominant logic, suggests that everything is service and that the conventional distinction between goods and services doesn't matter. In recent years there seems to be happening a shift even further: *"Services are no longer conceived of as an end in themselves, but are increasingly considered as an engine for wider societal transformations"* (Sangiorgi, 2011).

In this thesis I will not make a distinction between goods and services but consider everything as service. I also agree with the transformative nature of services and see this as an inspiration for this thesis.

2.3 Transformation design

There are signs of an evolution of service design becoming transformational. Services are discussed less as design objects and more as means for supporting the emergence of new kind of society and economy (Sangiorgi, 2011).

This emerging field has been defined as transformation design by Burns et al. (2006). They describe transformation design through six characteristics:

1. Defining and redefining the brief
2. Collaborating between disciplines
3. Employing participatory design techniques
4. Building capacity, not dependency
5. Designing beyond traditional solutions
6. Creating fundamental change

(Burns et al. 2006.)

I also find the description of transformation design in Wikipedia very good: *"In broad terms, transformation design is a human-centered, interdisciplinary process that seeks to create desirable and sustainable changes in behavior and form – of individuals, systems and organizations – often for socially progressive ends. It is a multi-stage, iterative process applied to big, complex issues – often, but not limited to, social issues."*[6]

Even though this thesis project is not exactly doing transformation design I find this thesis project transformational. The need for transformation comes from the organization's side and there are signs of transformation in society towards self-management of health, as I discuss in chapter 1.1. *"From a service design perspective, projects that improve service interactions and touchpoints (service interaction design) or that help redefining service values, norms or philosophy (service interventions), don't necessarily have a transformational impact"* (Sangiorgi, 2011) (see Figure below).

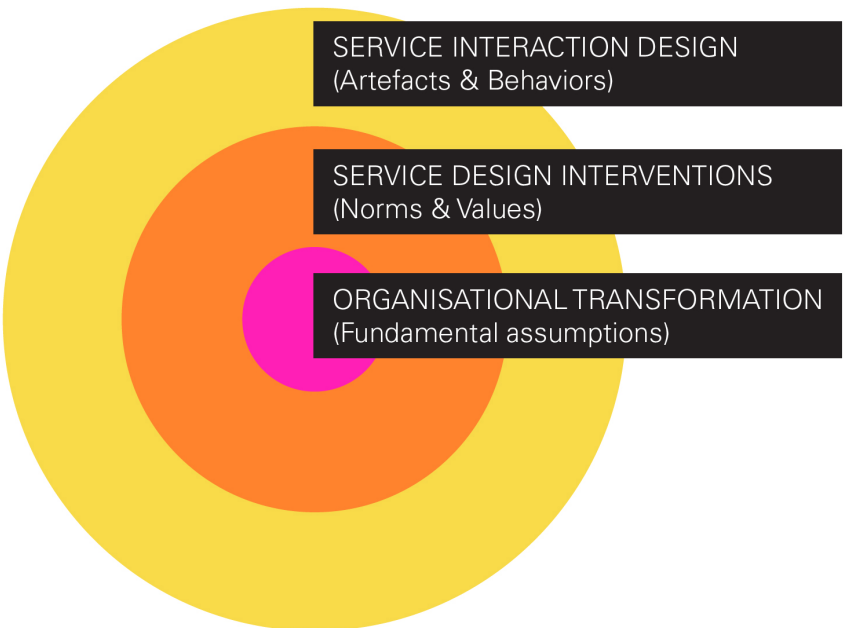

Figure 4.
Levels of potential impact of Service Design projects (adapted from Junginger & Sangiorgi, 2009).

6 http://en.wikipedia.org/wiki/Transformation_design

Within this project I do service interaction design and service design interventions. But as Sangiorgi points out: *"The quality and effectiveness of such interventions are hard to evaluate in the short term and within traditional design parameters"* (Sangiorgi, 2011). In this thesis I will not try to evaluate the possible transformation within the pharmacy context. I only state that the potential exists.

In transformation design, the solution to the problems (or the design challenges) comes from looking at the problems from the perspective of the people involved (in my case the pharmacy clients and employees) (Burns & al. 2006). The goal is a new kind of pharmacy service: one where clients and professionals collaborate to co-create new types of healthcare/wellbeing. The idea in transformation design is to bring about practical solutions to familiar and intractable social and economic problems (Burns & al. 2006). In my thesis project the aim was to design and prototype a new solution along these ideas and see if it could be the a step towards new pharmacy services.

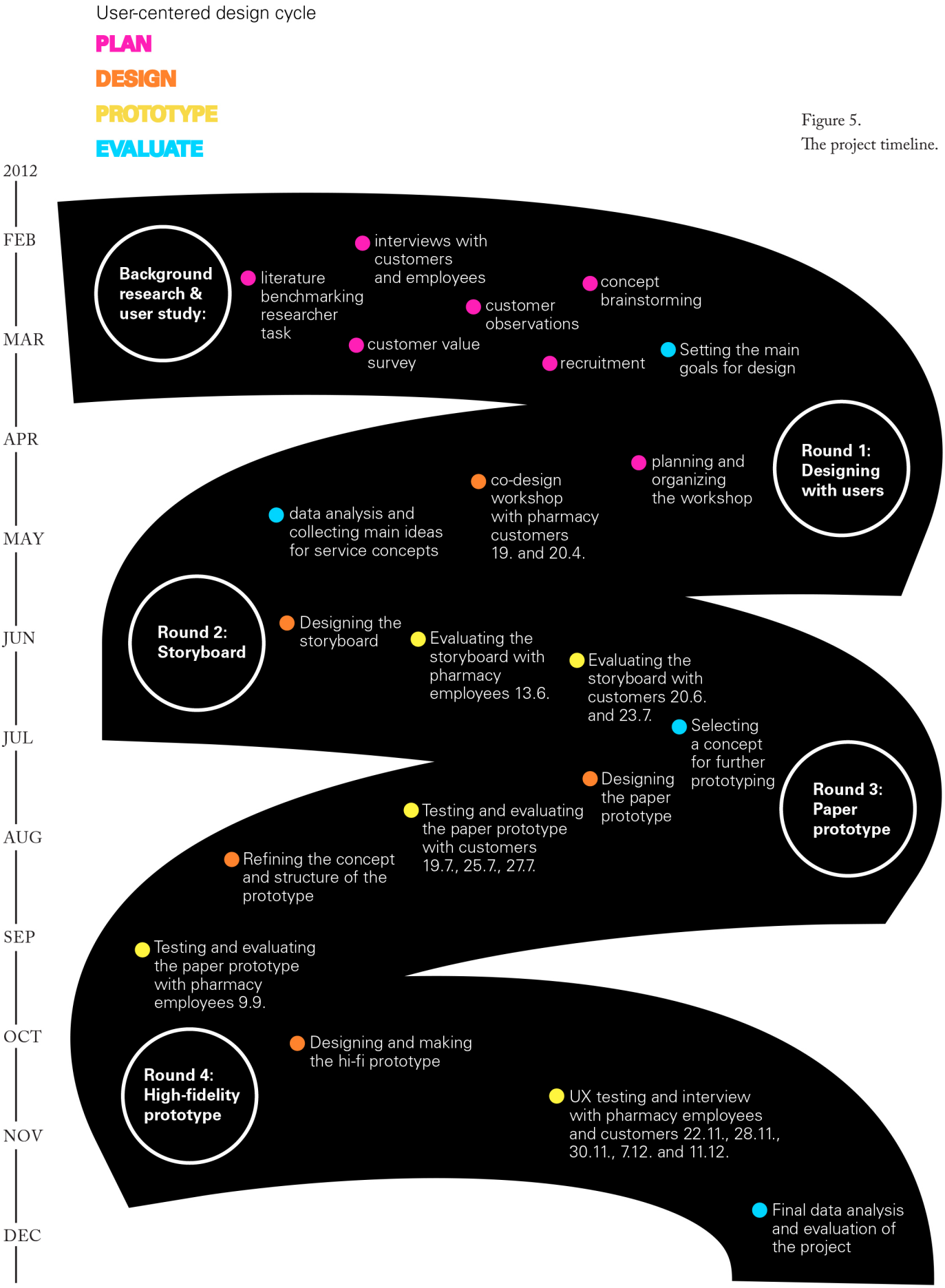

Figure 5.
The project timeline.

3. The design process

In this chapter I describe the practical part of my thesis. I also describe and justify the methods used in the different phases of the process here. In this way, keeping together 'what' was done with the 'how' it was done, I think I can emphasize the process and keep the whole "story" clearer. The methods used in the process follow the principles of user-centered design. On page 25 Figure 5 shows the whole design process on a timeline.

The background research was done using the following methods: observation, survey, interview, benchmarking and gathering knowledge from other existing sources. Methods used during the rest of the design process were: co-design workshop, storyboard, paper prototype and hi-fi prototype. For gathering feedback in each phase I did semi-structured or open interviews and in the final evaluation I also used a user experience evaluation tool called Anticipated eXperience Evaluation (AXE).

In this project my goal was to do emerging service concept design. Product concept design can be divided into four categories: visioning, emerging, defining and solving concept design (Kokkonen et. al, 2005 p. 17). I do not see concept design for emerging services as a radically different practice from product design so I apply these terms and practices in my thesis.

Emerging concept design researches applications for promising technologies, new potential markets and opportunities that arise from new user requirements. The outcomes of the research are then communicated through visualizing the concepts. Time frame for emerging product concepts is normally 5–10 years. The technologies in these concepts might be radically different from the ones used today or they can be in use already. There might be other reasons for the concept not being realized just yet. These reasons can be for example legal or patent issues or the market or users are not ready to adopt the product yet. The target of the concept design can vary from the development of specific product features to developing whole new product or service concepts. (Kokkonen et. al, 2005 p. 17-18.)

Normally projects for emerging concept design last a long time, even years (Kokkonen et. al, 2005 p. 18). In the scope of InPractice project I didn't have

so much time so I will evaluate my work from the perspective that it has been an exercise of emerging concept design for pharmacy services.

3.1 Background research & user study

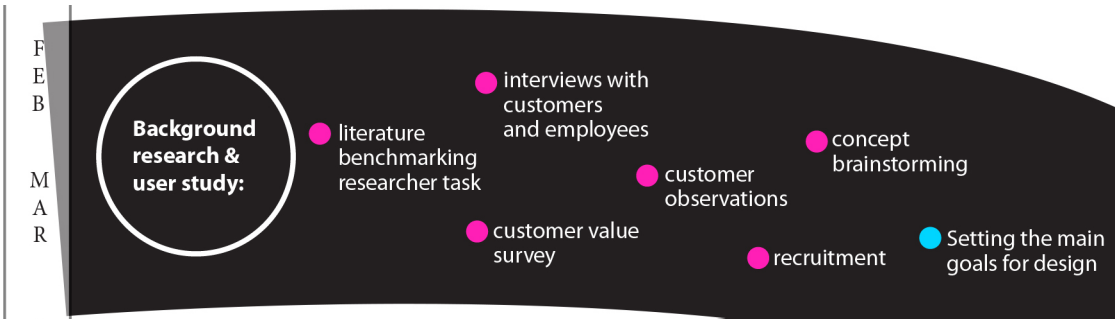

Figure 6. Project timeline – background research and user study.

Different activities for gathering background knowledge of pharmacies and understanding the users (the customers of pharmacy) were planned by one or few researchers respectively and carried out together with the whole team. I didn't participate in designing the user study activities because my work in the project started a little bit later so these activities had already been planned. This is why I will not explain or justify those methods more specifically. I did participate in conducting these activities though. Also I used the knowledge gathered from the activities in the design process after that. In this chapter when I write "we" it refers to the research team without specifying more clearly the individuals (more about the research team in chapter 1.4.1). Many activities were conducted and/or discussed together resulting in mutual understanding. Still I will, of course, credit those researchers who designed the activities.

3.1.1 Understanding the context

Background information and literature about the future trends in the field of pharmacy were gathered. We also benchmarked national and international companies. We found different concepts for the pharmacy space as well as technological innovations to automate services.

Benchmarking other pharmacies and service solutions

Below are some examples of services and innovations that I found inspiring for this project.

Stores

Seitsemän veljeksen pharmacy in Nurmijärvi is the first one in Finland to have in-store terminals to be used by the customers and staff for getting product information and other drug related information. The system contains information of products in the pharmacy's stock. The staff can also access more specialized information with the system without the necessity to leave the customer service area.[7]

Web stores

Many pharmacies have already expanded their services to the Internet. Internetapteekki.fi[8] is one example of a web pharmacy. They offer a wide range of self-care products with home delivery or delivery to a nearby grocery store. They deliver anywhere to Finland and the delivery time is usually two to four days.

In addition to shopping this web pharmacy offers comprehensive selections of functionalities: comparing products, health related articles, faceted search, wish list, and newsletter. They also offer a possibility to communicate with the pharmacist online. In addition the pharmacy offers a mobile application with which the pharmacist can see into the customer's shopping cart online and give targeted advice.[9]

Figure 7. Above. Seitsemän veljeksen pharmacy in Nurmijärvi.

Figure 8. Below. Internetapteekki.fi web store screen shot.

7 http://www.proversa.fi/Suomeksi/press/pressrelease0609.htm

8 https://www.internetapteekki.fi/

9 http://www.internetapteekki.fi/blog/lehdistotiedote_04082011

Another web pharmacy example is Apteekkituotteet.fi[10]. The physical store is located in Eura, Finland. This web pharmacy claims to be the biggest web pharmacy store in Finland and the first one to sell prescription drugs over the Internet. It provides also customer reviews and comments on products.

Non-pharmacy related web solutions

There are many interesting solutions for healthcare online. One of them is for example Hellohealth.com[11]. It is a platform provided by Myca Health, a New York based company. It offers healthcare professionals a new means of revenue for their business. With monthly subscription patients are allowed access to the platform with which they can utilize a set of tools that include for example online scheduling and a personal health record. The service allows patients to communicate and schedule appointments with a doctor online through mobile, email and video. I think Hellohealth is a good example of new business models utilizing the opportunities of Internet and mobile technologies.

3.1.2 Understanding the users

We applied both objective and subjective methods to understand the stakeholders. We started by doing a researcher task. Mari Mäkelä, one of the researchers in the InPractice project, designed the task. All seven members of the team and one researcher from another group visited a pharmacy and purchased something. During the visit or right after it we filled a questionnaire evaluating our experience and describing the service journey. The purpose of this task was mainly to get our minds working around the pharmacy context.

Then we did observations and interviews in the pharmacy (both constructed and organized by Mari Mäkelä). 17 customers and 5 employees and the head pharmacist were interviewed. We also spent two days in the pharmacy observing the customers. The observations were done shadowing individual customers while they were doing their business in the pharmacy to see where they move and how they behave. We also took notes about whether they came alone or with someone, what they were carrying and the mode of payment. All in all we did 28 client observations.

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10 http://www.apteekkituotteet.fi/#&panel1-1

11 http://www.hellohealth.com/

A survey (created by Virpi Roto) about customer values was conducted. It was a sentence completion questionnaire and was left for the customers in three pharmacies: Farma and Jamppa in Järvenpää and a pharmacy in Oulunkylä. All in all we got 50 answers. A very thorough analysis was done and key customer values were sifted out.

3.1.2 Conclusion of the background research and main themes for design

Notable things that were gathered from the first researcher exercise were (taken from a report by Mari Mäkelä):

- Many of us usually visit pharmacy when running other errands such as grocery shopping
- The service experience depends on many things: the amount of queuing, is it a routine visit or not, are we buying a familiar product or not, are we visiting the usual pharmacy or a new one etc.
- Some want to explore the products on their own while others ask for expert advice immediately
- The mood is negative or neutral when visiting the pharmacy, usually because we are sick or because we feel that the visit is a necessity and after the visit or taking the medicine the mood is more positive.
- The purchasing decision was mainly made by price, previous experience and the packaging size. Other affecting things were doctor's orders, the form of the substance, the active substance of the product, and the familiarity of the name or the package
- In general the visit to pharmacy is a very quick one.

The survey showed that the most important values in a pharmacy service were expertise, speed of service, respecting one's privacy, availability, fluency and good and kind service.

Based on the knowledge from user studies customer personas that represent the most important customer types were created. There were four of them: The busy worker who does not want help from the pharmacist; Mother of small children; The busy worker who wants to be helped; and The one who is very concerned about his/her own health. Also each persona was defined with its own unique customer journey and service experience during a visit to a pharmacy.

Based on all the user studies described above we identified the core values of the service that could need attending: personnel's expertise, individual service, discretion/privacy, knowledge acquisition and fluency (anticipation). These I chose as my design challenges that were to be developed further into concepts with the customers and employees of the pharmacy.

3.1.3 Producing ideas with the research team

With the research team we produced the amount of 61 different concepts around the pharmacy context. The ideas varied in breadth and detail. The idea was to brainstorm as many ideas as possible without being too critical towards them yet. The ideas arose from the background research, from previous experiences and projects and also intuitively. Some of the concepts were overlapping; some were wilder and some not very novel. Anyway, the purpose was to get as much ground material for new service ideas as possible.

After the brainstorming we categorized all the ideas under following categories: reminding, delivery, remote tracking, preordering, automates, personalization, knowledge, products, background processes, space, self service, privacy and paying.

These concept ideas came to be good material for the coming co-design workshop.

3.2 Round 1: Designing with people for ideation

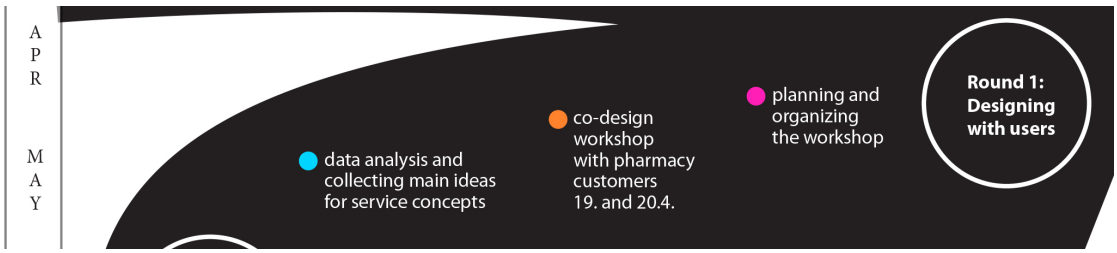


Figure 9.
Project timeline – Round 1: Designing with users.

To gain a more holistic view of the experiences and needs of users, in this case the pharmacy customers, a co-design approach was appropriate. We had produced plenty of concept ideas inside the research team. For the second part of ideation I chose some promising ideas and brought them to the pharmacy customers and asked them to participate in discussion and ideation. The ideas presented to the customers were supposed to work as provocation for discussion and food for thought.

To understand user's experience empathic design methods are applied. Often these empathic methods require considerable effort to analyze the results, thus designers usually work with a small number of cases. (Koskinen, 2003, p. 59-61) I planned and conducted a co-design workshop for the customers of the pharmacy. The purpose of the workshop was also to search for new ideas, validate the ideas created by the research team, and in a more general sense to envision future possibilities. Binder says co-design sessions in the format of workshops provide a way for sketching and trying out possibilities (Binder, 2010, p. 18). Also co-design can be seen as a *"set of creative techniques whose aim is to inspire the design process"* (Rizzo, 2010).

The participants were recruited through the survey questionnaire (three participants) and in the pharmacy (four participants). Additionally three more participants came through a person who had answered the questionnaire.

The workshop was organized twice: on 19.4.2012 and 20.4.2012 in a meeting space rented from a hotel in Järvenpää. Both workshops had the same content. In the first one there were six participants (four women and two men) and in the second one four participated (one man and three women).

3.2.1 Tools used in the workshop: Scenarios and inspiration cards

For the co-design workshop I planned two activities. The first task was intended to be a warm-up task and the second one a more elaborate task to find new ideas or solutions to our design challenges. I acted as a facilitator in the workshop and another member of the research team took notes and photos during the session.

The first task included a sheet of paper, post-it notes, pens and inspiration cards. *"Inspiration cards can successfully frame and guide workshops with disparate participants and bring various sources of inspiration into the design process."* (Halskov& Dalsgård, 2006) The inspiration cards that I had prepared contained images of pharmacy service touchpoints (such as a queue, a package of painkillers and a pharmacist), media and technology related images (e.g. a smart phone, a news paper and a vending machine) and other images that could be associated with health, wellbeing and people (e.g. fruits, sports and family). The cards also had some white space in the bottom where a description could be written.

Figure 10.
Inspration cards.

First I read the participants a story of my own visit to a pharmacy. Then I showed them how I had illustrated that story using the inspiration cards. Then each participant was asked to remember their last visit (or a visit they could remember) to a pharmacy and to describe it using the inspiration cards. Writing on the cards or on the sheet of paper was also encouraged. When everyone was ready we went through each one's story one by one. The outcomes were interesting and sparked lots of conversation.

In the second task I introduced the group with a scenario. Scenarios are consistent, believable and logical scripts of a possible future (Kokkonen et. al, 2005 p. 36). This one was a story of a customer journey in a pharmacy in the year 2020. In this story I had included many of the ideas we had come

Figure 11.
The workshop participants doing the first task, a story of a visit to the pharmacy.

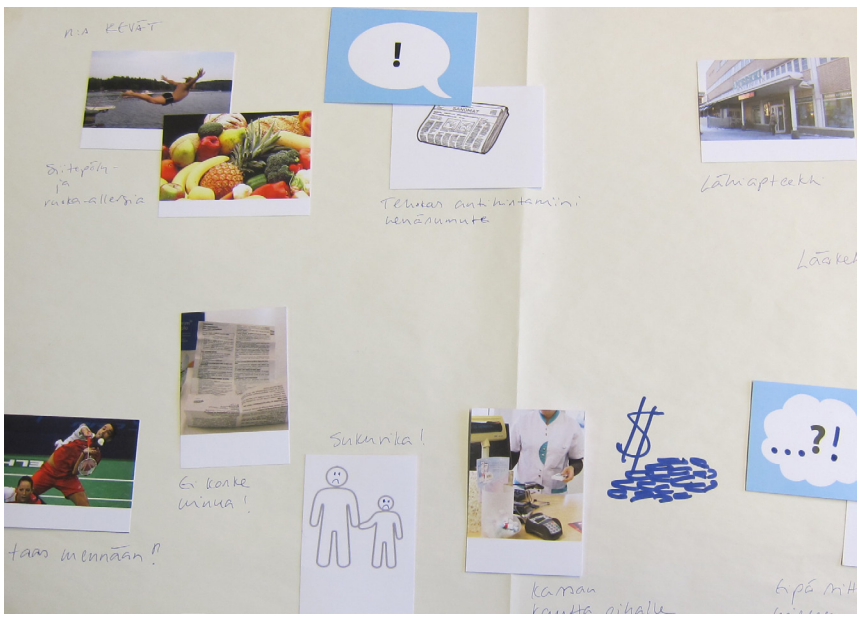


Figure 12.
A participant's story of a visit to pharmacy.

up with the research team. In this phase of concept ideation the suggested ideas can still be quite wild and futuristic to encourage liveliness and versatility (Kokkonen et. al, 2005 p. 36). This story was illustrated on a big sheet of paper with the same inspiration cards that were used in the first exercise.

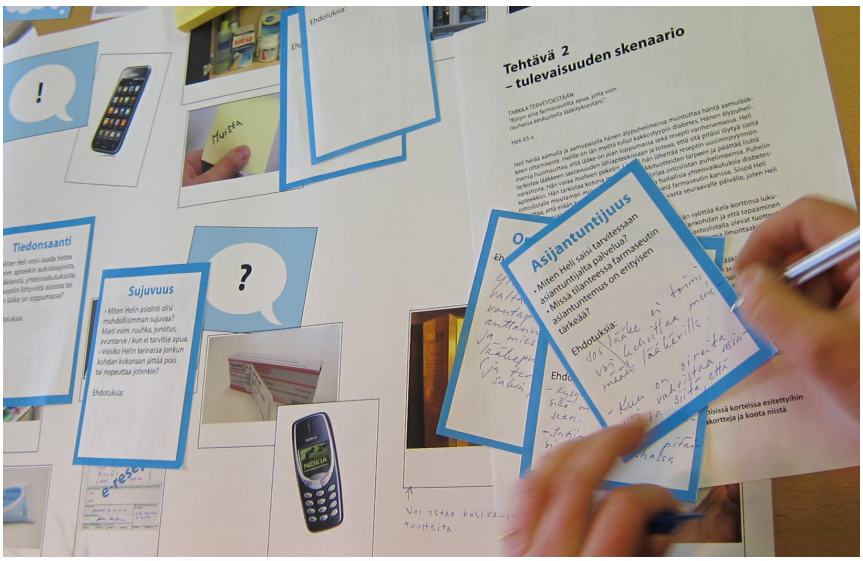


Figure 13. Answering questions in the second task.

After reading the scenario I asked for first impressions and reactions of the story. These comments I wrote on the story sheet together with stickers to indicate positive comments (green stickers) and negative comments (red stickers) stickers. We also discussed about the story and the possible future it offered.

After that, I asked the participants divide into pairs. Each pair got a copy of the same illustrated story on a big paper sheet. I then introduced the main design challenges to the group. These were cards with questions about the story concerning the four topics: expertise, knowledge acquisition, service and fluency. The participants were asked to come up with new solutions/ alternatives to the story. The questions were for example: How could Heli (the character of the story) get information about the opening hours, drugs, drug-drug interaction, prescription related issues or when she's running out of medicine (knowledge acquisition)? The participants were asked to write their suggestions on the cards and they could also write on the sheet of paper with the illustrated story. They were encouraged to change the story using the inspiration cards.

In the end we went through each pair's solutions and suggestions and discussed them. After the second task I also asked if anybody would be interested in participating in the following phases of the project. Three of the workshop participants agreed to be involved.

3.2.2 Findings from the co-design workshop

I grouped the design challenges that I had earlier defined (as listed in chapter 3.1.2) into two larger entities: personnel's expertise & knowledge acquisition and fluency & individual service. This I did because it seemed that expertise and knowledge are closely related topics as well as fluency and service. This decision was purely based on my intuition and was meant to ease the grouping of results.

Issues that arose from the first task were following:

Expertise & knowledge

- drug-drug interactions (effects medication can have when used at the same time with another drug)
- Decision making (right information, asking for help, choosing a product)
- Where can one get reliable information?
- The right diagnosis

Fluency & service

- Finding the product
- Comparing products
- What was the product advertised on TV?
- How to remember to use the product/take the medication?
- How to remember to renew the prescription?

The second exercise seemed not to be clear or easy enough for the participants. They struggled to come up with original ideas but instead the ideas were quite ordinary and safe. It seemed a difficult task for the participants to try to envision something in a more distant future. Instead the ideas were very much tied into current practices. Maybe a good idea would have been to have a member of the research team participating in the task as a "catalyst" for ideating.

However, findings from the second task confirmed our personas: The busy worker who doesn't want help from the pharmacist was more interested in services outside the physical pharmacy. The one who is very concerned about his/her own health appreciated more old-fashioned face-to-face service in the pharmacy.

Many of the suggestions that came from the second task were about the pharmacist's work – their way of serving the customers and their expertise. Surprisingly, plenty of ideas that had been discussed with the research team also came up in the workshop. Those were for example a confession booth for intimate issues, a separate room for a private meeting with a pharmacist and a drug vending machine. In this sense the exercise validated some of our ideas.

The first task, which was meant to serve as a warm-up exercise, proved to be more fruitful than the second, "the main", exercise. In the first task the participants got to tell experiences from their own lives. That was a great source for finding various needs for improvement in the pharmacy services. As Mattelimäki and Visser say, *"The co-design activities typically aim at searching new potential directions and producing design ideas and solutions. However, they can also be about making sense of the topic or expressing experiences collaboratively "* (Mattelmäki & Visser, 2011).

One of the most important things when discussing the future pharmacy services was the voluntary nature of the services and offering alternatives. Many of the discussed ideas got positive feedback as long as they remained voluntary. For example the e-prescription was thought to be a good idea by some participants but some wanted still to opt for the paper version.

3.3 Round 2: Storyboard

Figure 14.
Project timeline – round 2: storyboard.

The workshops gave me plenty of ideas and insights to continue. The next step was to take direction and start envisioning and designing a concept. Since the beginning the aim was to develop a service concept in to a high fidelity prototype. In this thesis project I'm moving between the intangible and tangible. My starting point is in thinking that pleasurable experiences help us change or create new practices. Prototyping a tangible element of a concept I try to enable these experiences and see whether they could make a difference.

In user experience studies for example software or applications are thought to be intangible but in the context of service design I consider them as the tangible touch points of a service. The intangible service experience happens through interactions with these tangible elements, such as an application.

3.3.1 Recruiting customers to participate in the process

I started this prototyping phase by recruiting four pharmacy customers to be involved in the rest of the process with me. The idea was to gain insights and feedback from them as we went along and developed the prototype further. Three of the recruited customers had participated in the ideation workshop and one more came along through my own network (she was a friend of a friend). Two participants were young, 19 year olds and two were mothers of 1-year old babies. This led me to consider the target group of the possible prototype.

I decided that I would design for these two groups: Parents of young children and young people around twenty years old, especially the ones who would rather not ask for the help of the pharmacist. This decision suited very well, not only because the recruited customers fit the target group but also because these two groups, out of the pharmacy customers, are probably the most familiar with current technologies and also the most keen on learning new ones.

As one of my approaches in this project is to consider new technologies in developing future pharmacy services I think it is most fruitful to prototype and test with people who at this moment have the most positive attitude towards technological innovations. In the storyboard I focus on describing services that are multichannel and focused on improving fluency, acquiring and sharing information and supporting self-management. The storyboard tells a scenario designed for the target groups.

Also two to four employees of the pharmacy were involved in the process from this point on. It was quite difficult to arrange meetings with the employees because during their working hours they are very busy and it is hard for them to leave their post. Some meetings I arranged during their lunch hours and they ended up being quite informal sessions. Some meetings were arranged before or after their shift.

In the service concept that I created I combined the ideas and knowledge gathered so far: I used the scenario from the workshop's second task as a base, the users' wants and needs that arose from the workshop's first task and the ideas and suggestions from the workshop's second task. This concept I visualized in a form of a storyboard.

3.3.1 Method

The storyboard is a visual representation of a scenario. It helps illustrate the product or service in use. With a storyboard the designer can present a concept idea with its' key moments. (Saffer, 2010 p. 146-147.) The storyboard I created is a four page long story with four characters (see Appendix A). The level of detail is adequate for describing the most relevant parts of the concept. We can think of the storyboard as a horizontal prototype (see chapter 2.1.1). It presents the spectrum of service moments without going into too much detail. As Cooper states, effective scenarios should be

rather broad than deep. This means that it is more important to describe the scenario form beginning to end than that it tells all steps in detail. (Cooper, 2004 p. 180.)

My storyboard describes a vision for managing healthcare and wellbeing in the near future through a story with four characters: Elina, Urho, Sanna and Henkka. In this story physicians' and pharmacies' services are integrated in one portal that also includes the self-managerial side of wellbeing such as diet and sport. I named this service TERHI - it is a sort of acronym that stands for TERveys (health), Hyvinvointi (wellbeing) and apteekkI (pharmacY). In this vision pharmacies have become more seamlessly a part of healthcare as well as become a supporting actor in self-managerial services for various wellbeing related end-user services. The technological ecosystem in the storyboard is more or less at the same stage where it is now. All the technologies for the services envisioned already exist. Instead, I imagine that some changes in the legislation have happened. For example ordering prescription drugs online for chronic conditions or continuous treatment is possible.

I presented the storyboard both to the four recruited pharmacy customers and to four pharmacy employees. I met with the mothers individually and the youngsters came to discuss the storyboard together. The employees I met in a group session during their lunch hour. With all we discussed the service concept in general and then they evaluated individual parts of the story. This way I could find which ideas they found most interesting or valuable. In the following chapter I summarize the findings from the storyboard sessions.

3.3.2 Findings

On the following three pages there is the feedback from the storyboard sessions. I have divided the feedback into three sections according to the three parts in the storyboard. The first part told the story of Elina and her son Urho, the next part was about Sanna and the last one about Henkka.

All customers found electronic prescription very useful (this service is currently being implemented in the Finnish health care system). Home delivery got much interest form the parents of small children but the young people didn't see it valuable for themselves. All found the possibility to find high quality information on products and comparing them interesting and

Presented concepts:

Elina and Urho's story

Audio instructions

Feedback from customers:

- Weird, pointless
- The instructions are in the package anyway
- Would it really bring more value
- Hands stay free but instructions might be faster to get in text form
- If instrucions are on paper they might get lost but what if they would be also availabe online
+ Interesting idea
– Would it be useful enough?
+ Might be reassuring to hear the doctor's voice
+ Fun
+ The visit to the doctor will become more peronal when the doctor's voice follows you home

Feedback from employees:

- Does this mean the pharmacist would not give instructions any more?

Touch screen application for searching and comparing products in store

Feedback from customers:

+ It's a good idea
- On the other hand you can also ask the pharmacist
+ It's good for comparing when there are so many alternatives or the customer is embarrased to ask the pharmacist
- It wouldn't have to be on every shelf but more like an ATM
+ The pharmacist doesn't always take a stand so with this service you might get more confirming information that would help to make a decision.
- If you're out with strollers they might block the way. Also the child might reach the shelf and make a mess while the parent is viewing the screen.
- It's ok if you have time. Using this from home would be better. I could check what I have bought or find a suitable product before I go to the pharmacy.
- Would the user comments be useful?
- If the comments come from various forums the user should have skill to filter the information.
- Would the pharmacy want critical comments of their products in the system?
- It should filter out irrelevant content (about the user comments)
+ User comments about the self care products interest me, eg. if you have long lasting problems such as constipation or muscle pain.
- It might not be any faster than if I would ask help from the pharmacist
- Can I do something else other than compare products? Maybe something entertaining?

Feedback from employees:

+ Could be very useful in our work for finding information and also counseling older customers.
+ Young people would use the system by themselves.
- Who updates all the information? The prices and products change very often

Electronic shopping list

Feedback from customers:

- \- Sounds weird
- \+ Ok, if it's intelligent enough. I have everything on the same list groceries etc. It should only remind me of pharmacy products when I'm in the pharmacy

Feedback from employees:

- \+ Good idea, if you write your shopping list on paper you might forget it home

Queuing time online

Feedback from customers:

- \+ Helps foresee when to visit the pharmacy
- \- Static information based on statistics could be ok too
- • Avoiding rush would really affect my life
- \- Would this information really help the situation or pose false expectations?

Feedback from employees:

- \- Real time information is not good because rush situations change so fast
- \+ A more general presentation of the busiest hours and days could be better

Sanna's story

Electronic prescription and reminder

Feedback from customers:

- \+ Renewing a prescription online would be very useful
- \+ Renewing a prescription online would be good when it's more just a formality
- \+ Electronic prescription by mobile phone. If it would be possible to control the frequency of reminders this would be absolutely good idea.
- \+ The reminder could be nice eg. for elderly
- \- It's really up to you that you remember to take your medication

Feedback from employees:

- \+ Reminding when a prescription is about to expire or when you are running out of medication could be useful.

Product information and comparison

Feedback from customers:

- \+ If it's a product that interests me
- • If I can be sure that it's not a virus
- \+ Comparing products that are for my child would be interesting. Not interested on special offers, competitions would be more interesting.

Home delivery

Feedback from customers:

- \- I'd rather check the queuing situation than pay extra for home delivery
- \- It's not so important for young people
- \- Useless
- \+ Would make life easier for many people
- \+ Would replace the rush notification
- \+ Could be refundable by KELA
- • Medication could be posted home. Continuous medication by mail similarly like contact lenses.
- • Should be provided by courier not a pharmacist
- \+ People with no car or with problems moving or parents of small children would benefit
- • The service could be free or cheaper for those who really need it

Feedback from employees:

- • Who delivers, when and how to make sure that the right person is receiving the product?
- • Would the pharmacy have recources for this?

Purchasing and paying online

Feedback from customers:

- \+ Nice
- \- Would this service cost extra?

Henkka's story

Storing and following data about yourself

Feedback from customers:

- Creating your own profile is an extra feature for those who are interested in following these kind of things
- You could see when was the last time you eg. visited a doctor (dentist, gynecologist etc.)

Drug-drug interactions

Feedback from customers:

+ Would be nice to see drug-drug interactions from this system
+ Could be used as one source of information

Feedback from employees:

+ Would be a handy service for pharmacists
- Can these be told safely to people online without the pharmacist?
- With natural heath products it's not known what the product contains
- Would good if the service would be so intelligent that it would know a person's own medication and would be able to warn about interactions

Social networks and (peer) support

Feedback from customers:

- Would people really go there?
- Nowadays it takes about an hour when you google eg. symptoms
- Would be nice to keep track of my trainings but do I have the energy to put in the information?
- An online pharmacist might make the environment more factual, less random forum/chat-like action.

+ It could offer information about drugs in popular way (less medical jargon)

- Possibility to filter professional articles
- The forum should be moderated

Feedback from employees:

- Counseling online might be more relevant for HCP

valuable. The parents of small children preferred to access this information from home and the youngsters found it useful to have in the pharmacy.

A touch screen service for searching and comparing products in the pharmacy got lot of positive feedback from the employees of the pharmacy. They saw it could be very useful in their own work for finding information and also counseling older customers. They thought young people would use the system by themselves. They were concerned about who would update the information in the system, since the prices and selection change very often.

Finally, I decided to continue to develop the touch screen idea into a working prototype. Apart from the feedback from the storyboard sessions there were also practical reasons that supported the decision: the budget and time limitations of the project. Also personally, it was an interesting opportunity to get to create something in the physical pharmacy store. This kind of application on a screen in the store also combined the important aspects that we wanted to address: offering knowledge, expertise (as an alternative to or used together with the pharmacist) and offering alternatives to make the service experience more fluent.

3.4 Round 3: Paper prototype

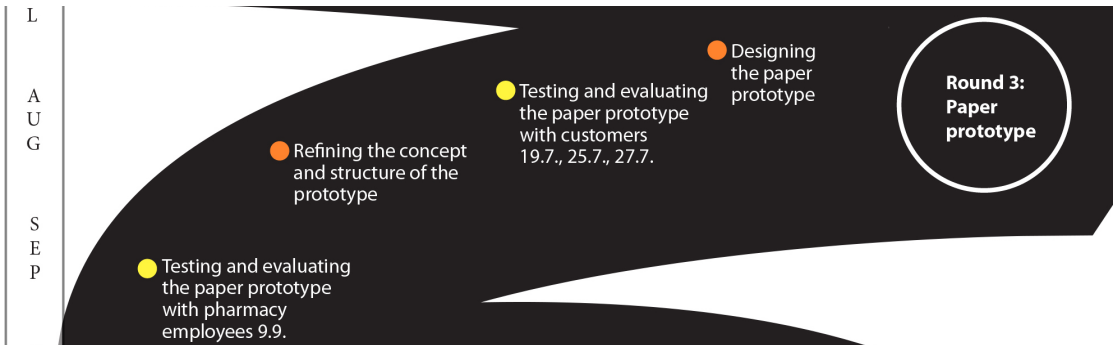


Figure 15. Project timeline – round 3: paper prototype.

After the storyboard sessions I focused on prototyping one specific part of the storyboard. This part can be seen as a vertical prototype (see chapter 2.1.1): I chose one element from the whole concept and started to develop that part in more detail. At this point I also decided that I would include only the vitamin products from self-care selection of the pharmacy in the prototype. This would limit the amount of content to reasonable proportions and allow focusing on producing more exact functionality. Vitamins were also a safe category to test this concept since any errors in the system or content would not lead to serious consequences. Also vitamins are a common product category that many people are familiar with and possibly one means for self-management of health. Incidentally, there was an active debate on vitamin D in the media at the time when this project was ongoing so this made the selected product category even more topical.

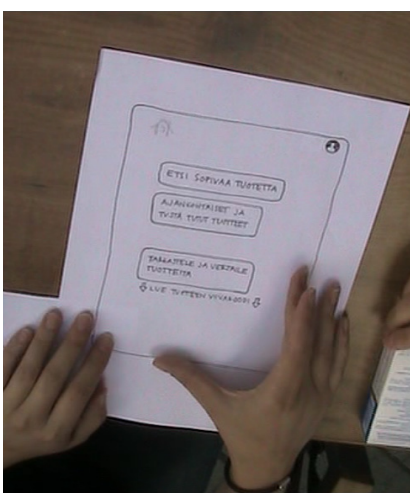
3.4.1 Method

Paper prototypes are a simple and fast way of testing the product's overall concept and flow. Because they are not digital the users do not have expectations that they are seeing the finished product and thus they freely comment on them critically. Creating a walkthrough of the product or system on a paper prototype is a fast way to demonstrate a working product. (Saffer, 2010 p.177.)

The paper prototype that I made can also be seen as a horizontal prototype of a concept that we had chosen to develop further. Simply put, it was a prototype of an interface through which the user can search for vitamin products that suit her best. Of course in the background I kept in mind the design drivers: acquiring and sharing knowledge and fluency of service.

The idea of the concept was very simple. Below I describe the features the paper prototype contained:

1. Searching for a product by a faceted search:
First the user selects the product category. She can then narrow down the results by marking out products that are not suitable for her by choosing her age and other factors such as allergies or pregnancy. The search results can then be sorted by price, popularity etc.



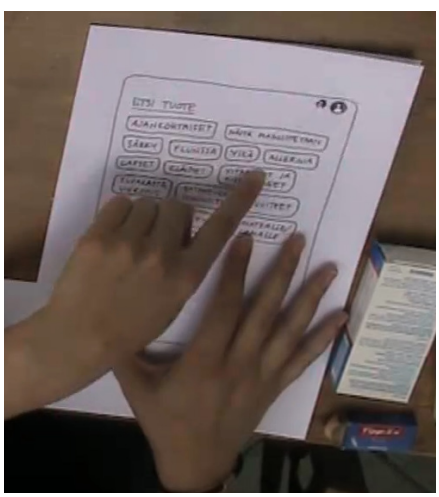


Figure 16. Left. The start view.
Figure 17. Right. Select product category view.

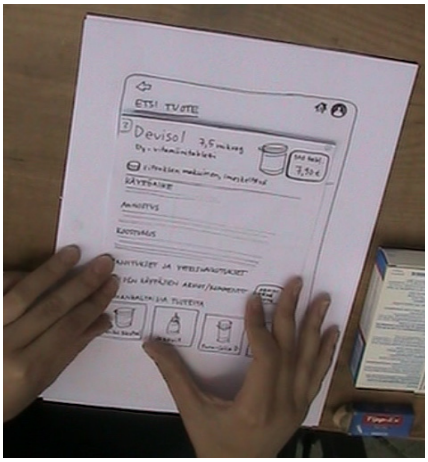
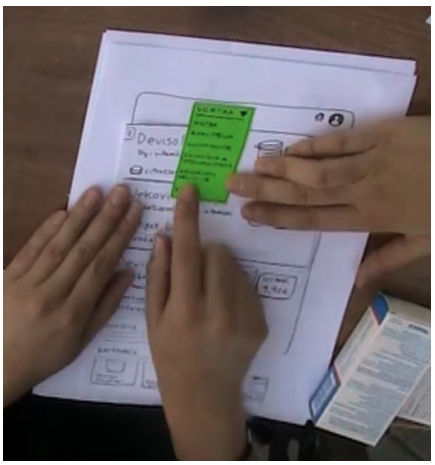


Figure 18.
Product details view.

2. Viewing product details:
Each search result (vitamin product) can be viewed in detail. The detailed product view shows the price and all the information that can be found in the product's packaging. The user can also read comments and recommendations about the product left by other customers. The customers can also rate products by giving them stars.

3. Comparing products:
The user can choose to compare products. She will see the chosen products listed in a table and can compare different information such as price, composition, use restrictions and drug-drug-interactions, dosing and user comments.



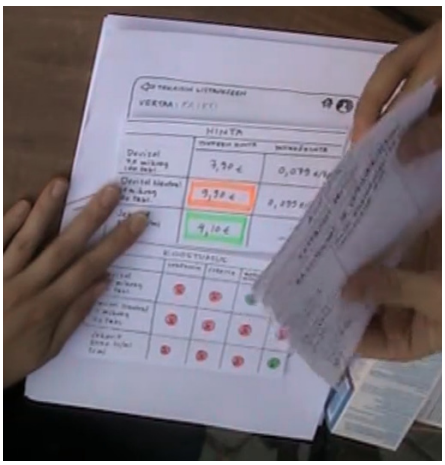


Figure 19. Left.
Selecting
a product for
comparison.
Figure 20. Right.
Comparing products
view.

There was also a possibility to scan a product with a bar code reader to access that product's details straight away. For the paper prototyping sessions I had a rubber eraser as a placeholder for the barcode reader because we didn't yet have the real barcode scanner. I had also brought a few empty packages of some pharmacy products to represent vitamin products in the session.

I had drawn the "screen" to have the size of an iPad. This was because we had discussed with the research team about the possible hardware options and an iPad seemed to be a potential selection. Each piece of paper contained one moment of the design: the start page, the detailed search and the results and the comparing page. Other moments of the design, such as

product details, dropdown menus and comparison tables were on smaller pieces of paper. I had prepared three products with complete product information for the test sessions.

I met with the four recruited customers during July and with the employees in September to test the paper prototype. I met two of the customers (the mothers) individually and two (the young customers) came to the session together. With the employees I met one individually and two at the same time. In all sessions the participants were given a similar task: to search for vitamin D. The parents of small children were asked to search for vitamin D for themselves and their child. The employees were asked to help the customer (me playing the role of the customer in the task) find vitamin D for herself and her one-year-old baby. The young customers were asked to find vitamin D just for themselves. In the sessions I acted as a facilitator of the session and also as the system reacting to every action the user took. The sessions were recorded on video for later analysis.

3.4.2 Findings

From the paper prototype sessions I got feedback on the features, functionalities, interface and the content. After each session I modified the prototype according to the feedback I had received so that in the next session the prototype was already a bit different.

Findings and suggestions for the features, functionalities and interface were:

- The search screen should be the starting screen
- Possibility to organize the search results by most viewed products
- Possibility to search for products that are not on the shelf (from Internet)
- If searching product with text input it would be useful to have predictive text input because it might be hard to remember product names

The most important findings concerning the content of the service were:

- The price of the product should be always visible in the comparison table
- Adding the pharmaceutical form (tablets, capsules, liquid etc.) to the comparison table
- Dosing information should be consistent (different products use different units)

- Dosing information and recommended daily intake should be together

I got especially valuable feedback on the content from the employee sessions. We discussed thoroughly about specifying the right constraints for the faceted search: what are the relevant age groups, and which other criteria should be added in or removed from the search constraints. For example there should be separate age categories for 0–2 year olds and for 2–4 year olds since their need for vitamins (and other products too) are different. We also discussed for example should artificial sweeteners be added as one category for "drilling down" products from the search results. In the employee sessions it also became clear that we can leave the pet animal category out since those products are so rarely searched and also because there really are no vitamins for pets. Also the employees thought that one parameter for the search should be the pharmaceutical form (liquid, tablet etc.). Other suggestions from employees included showing the price of a product by daily dose and not by unit. We also discussed the different options for placement of the touch screen in the store and the potential users of this service.

The barcode reader didn't get much attention in any of the paper prototype test sessions. At this point I didn't have the real barcode reader yet. Instead I used a rubber eraser as a placeholder for the reader. The users didn't use it to get product information on the screen. I think this was due to the fact that we were not in the real context with the abundance of products so it was hard for them to imagine the usefulness of it.

3.5 Round 4: Hi-fi prototype

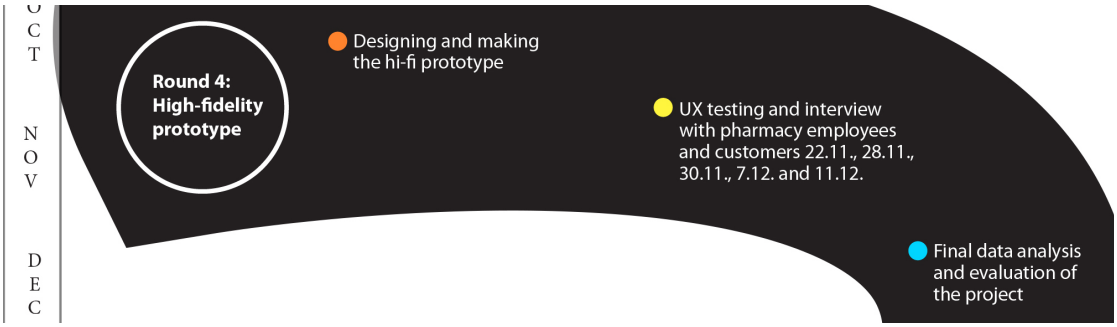


Figure 21. Project timeline – round 4: high-fidelity prototype.

After the test sessions with the paper prototype and gathering and analyzing the feedback from them we started to develop the service further. The idea was to produce a high-fidelity prototype that could be tested with pharmacy customers in the real context. This way we could better test the user experience of the service. We gave the concept a working title: Vitamiini info.

I developed the high-fidelity prototype together with Sampo Teräs, another researcher in the InPractice project. He was also planning to test the final prototype by recruiting 40 people to use it in the pharmacy.

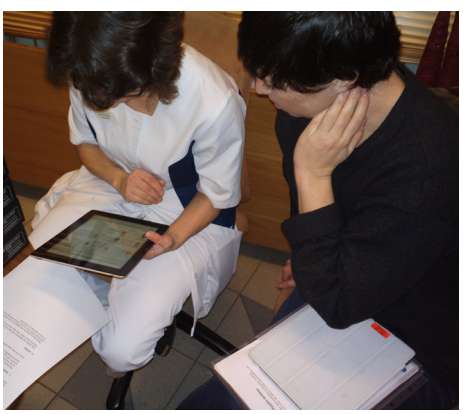


Figure 22. An employee of Oulunkylä pharmacy is familiarizing with the product before the test session.

We decided to continue to develop the system on an iPad. We discussed other options too, such as larger touch screens. Large touch screens are quite expensive though and for this scale case study prototype it would have been a big investment. We already had access to several iPads so that we could develop the system in parallel.

Making the hi-fi prototype took a long time. We started the development in August and finally it was ready to be tested in the end of November. There were also some unpredictable things that slowed down the project. We had ordered a stand for the iPad from an online store. After a long wait we found out that they had run out of that specific stand and that the model wasn't in production anymore. So we had to place a new order for another stand. It took another three weeks for the stand to arrive.

When the prototype was ready it was pilot tested with a member of the research team (on 21.11.2012) and then again with one of the recruited customers in a pharmacy in Oulunkylä (on 22.11.2012). The actual user tests were conducted with the remaining three recruited customers and two employees in the pharmacy in Järvenpää (on 28.11, 30.11. and 7.12.).

3.5.1 Methods

High-fidelity prototypes are like their name implies prototypes that are developed to represent the final product or service as closely as possible. They require more investment in time and other resources to create. They mostly work as they should and do not require any Wizard of Oz trickery. (Saffer, 2010 p.179.)

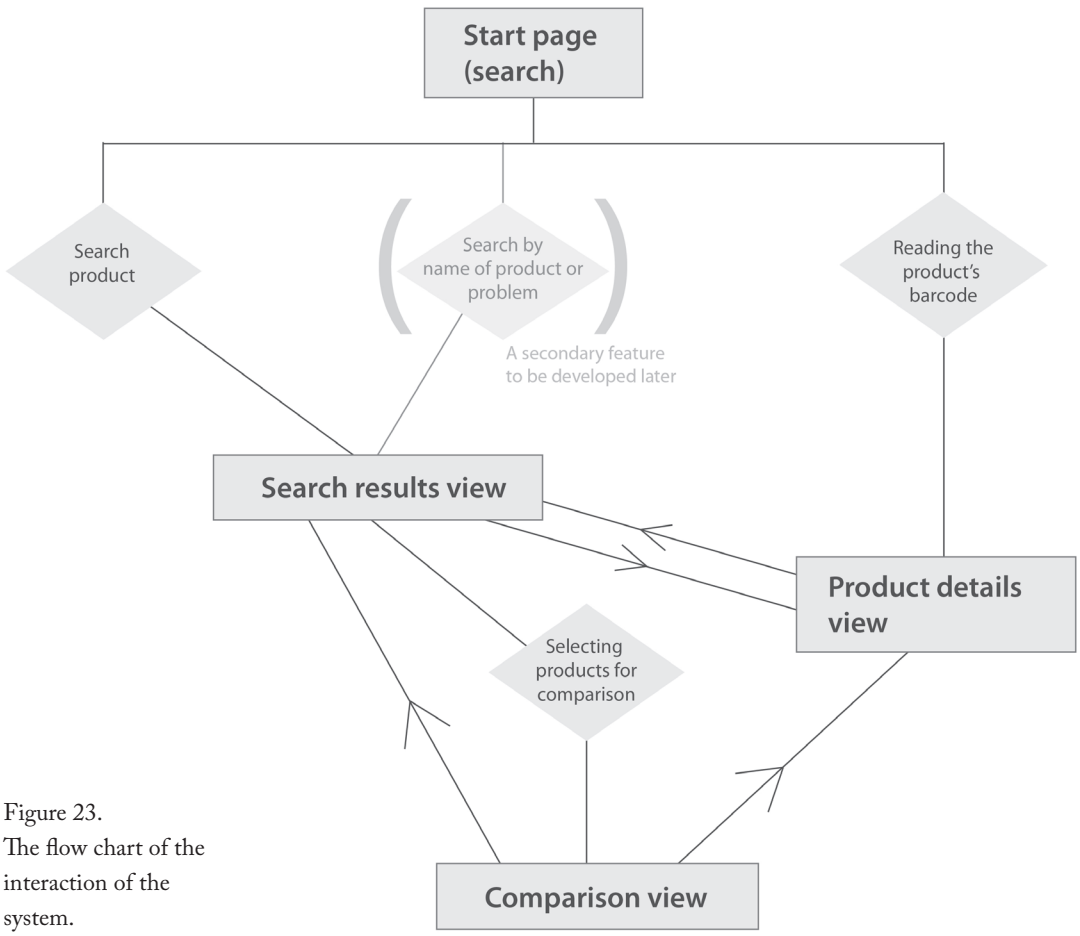
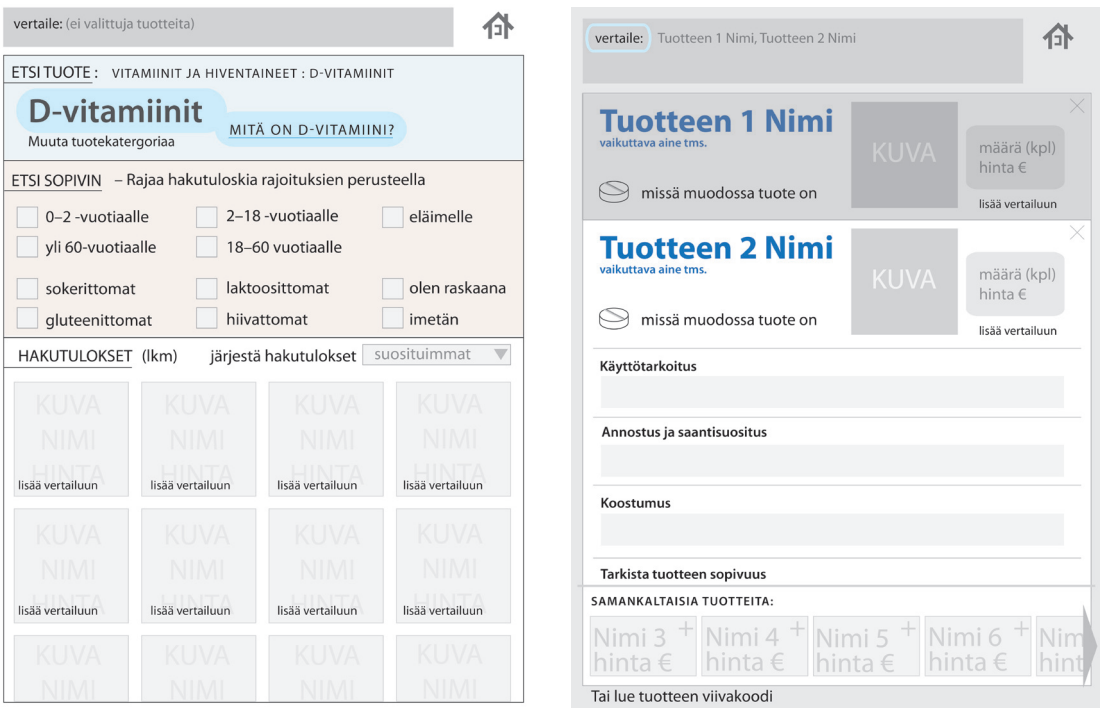


Figure 23.
The flow chart of the interaction of the system.

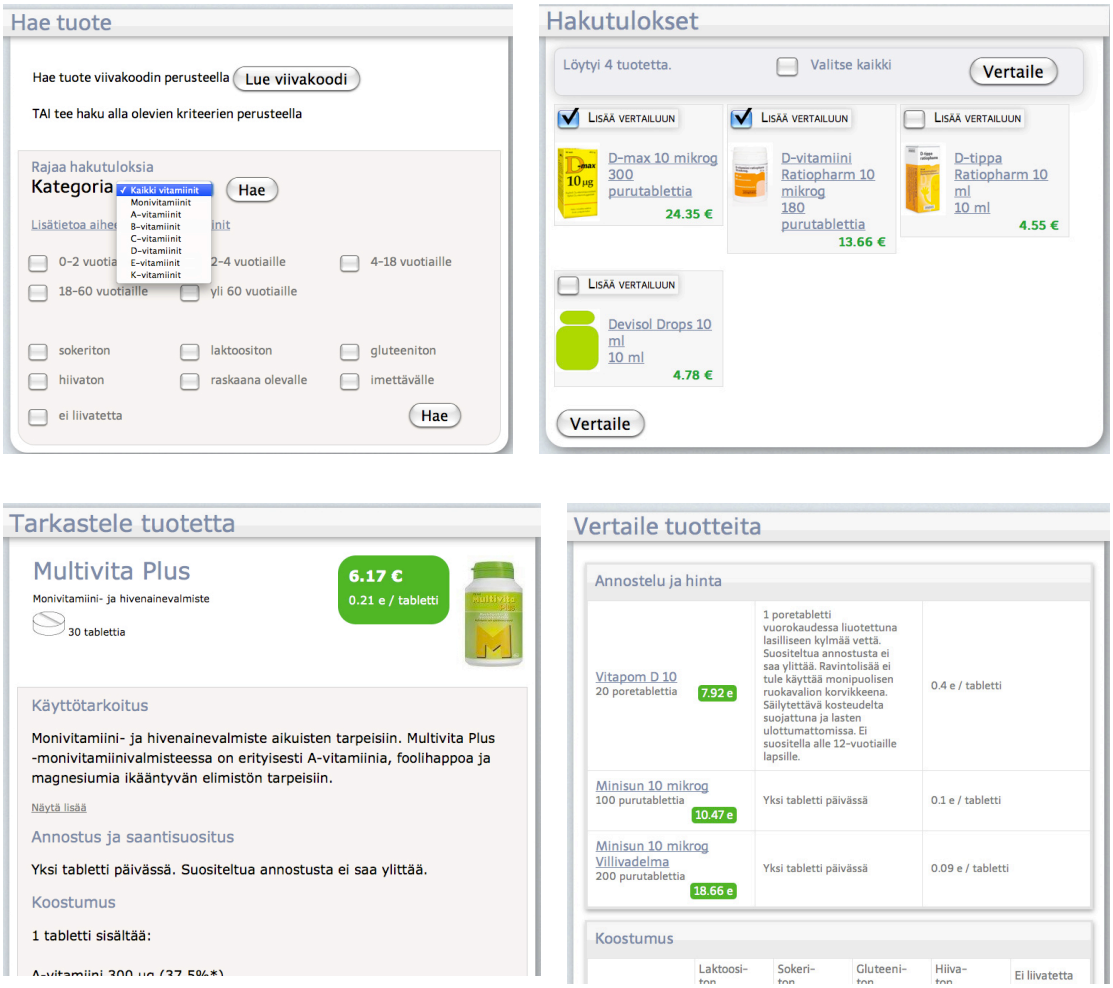
For this last round of prototyping I simplified the interface and interaction design a lot, removing some less important features, for example the search by text input. I left out the start page with the selection of product category. Instead the starting page would be the detailed search with the results listed under. Comparing products would only be available from the search result list not from product detail page. I also decided to give up the similar products listing feature. Figure 23. shows the interaction structure of the system.

I designed the graphic user interface with the intention for it to be very simple and clear. The aim was to guide the user to search for a product that fits her needs specifically. After designing the layout of the GUI I transformed them into html pages and css style sheets. These I gave to Sampo Teräs who then was responsible of the technical implementation of the designs. Images 24.–28. show examples of the layout designs.



Figures 24. and 25. Early versions of the user interface.

The service was developed to be a web site that was used through the iPad. The system administrator from Medialab Pekka Salonen helped us tremendously by coding a small piece of software for us. It was a tiny web browser -like application on the iPad that opened our website on the iPad screen.



Figures 25. –28. Screen shots of the final version of the GUI (screen shots are taken from a computer browser. The GUI looks a bit different on an iPad.)

The idea was that within the app there were no controls so that the user would not be able to surf out of the service. We ended up in this solution because Sampo was much more familiar with developing for web environment rather than a whole iPad app. Also we thought that eventually the service could also be available for online use and thus it was logical to already make it there.

We got the data for the content from the pharmacy product register. Since we didn't have any ready means for putting the data in our application we needed to input the data by hand. This was a slow and tedious process with many errors along the way. In addition to the product data from the pharmacy we also used information taken from different Internet sites. For example to

have some customer reviews on products ready in the system I copied them from different websites. This way the data was real but really not from our service. Still it was good enough for us to test if they would be a meaningful part in the service experience. All in all we provided information on 41 products.

In the final prototype some of the functionalities did not quite work as planned due to problems in the coding. For example some cookie functions did not work correctly. Still, these were minor problems and did not seriously affect the usability of the system.

The user test included two tasks. In the first task the customer was asked to find a vitamin product of their choice for themselves or their child. They were also told to ask for the help of a pharmacy employee. They would then together with the employee use the service and find the right product. In the second task the customer was asked to find a multivitamin product for themselves or their child. This time they should use the service on their own but think aloud through every step.

Figure 29.
User testing the service in Järvenpää I Farma pharmacy.

For evaluating the test session I prepared interview questions and a small survey with 11 questions to be answered on a Likert scale. I also decided to use Anticipated eXperience Evaluation (AXE) approach to get a deeper understanding of the user experience of the prototyped service. It is a fairly new approach to evaluate early product concepts with users. The approach uses opposed images to stimulate conversation in the interview. It is a qualitative method and its purpose is to offer insights for the development team on how future users might experience and value a product or service concept. AXE can also work for getting new suggestions and inspiration for refining the concepts. (Gegner L. & Runonen M., 2012.)

The analytical framework of AXE approach bases on Hassenzahl's UX model (Hassenzahl, M., 2003 p. 32). It uses the same categories for analyzing data. The key elements of user experience are divided into perceived

product features (general, content, functionality, interaction and presentation), associated attributes (pragmatic and hedonic) and anticipated consequences (attractiveness and behavioral change). Additionally there is a fourth category that carries information for potential improvements (suggestions, unwanted and meta). (Gegner L. & Runonen M., 2012.)

3.5.2 Findings

The results from the AXE interview and other parts of the user test sessions were surprisingly uniform (see figure 20). The unfinished quality of the prototype affected the user experience negatively but all users saw potential in the service. In this chapter I evaluate the user experiences of each group respectively: the young customers, the parents of small children, and the employees of the pharmacy. I also discuss the difference in the customers' user experience when using the Vitamiini info with and without the staff of the pharmacy.

3.5.2.1 User experience of the young pharmacy customers

The young customers found the touch screen application appealing and easy to use. They thought that it must be easy also for middle-aged people even though some people might be scared because of the novelty.

They found the interface to be clear and simple but the amount of search results was confusing. One user found the device was human-centric because it helps you. She also found it a good thing that she doesn't have to ask for help from the staff if she doesn't want to. The other participant chose a product in the second task by reading the user comments in the system. He found the comments very helpful in making the right decision.

Both had suggestions for improving the system, some even quite imaginative. One suggestion was that you could take a photo of yourself with the iPad's camera and attach it to your comments. That way people could see what kind of a person has commented on a product.

Neither one of the young testers was very interested in following their own health or wellbeing related information on a daily basis. This is probably because they are so young and do not have any health problems yet. Otherwise I could see that this age group could have interest in following ones own

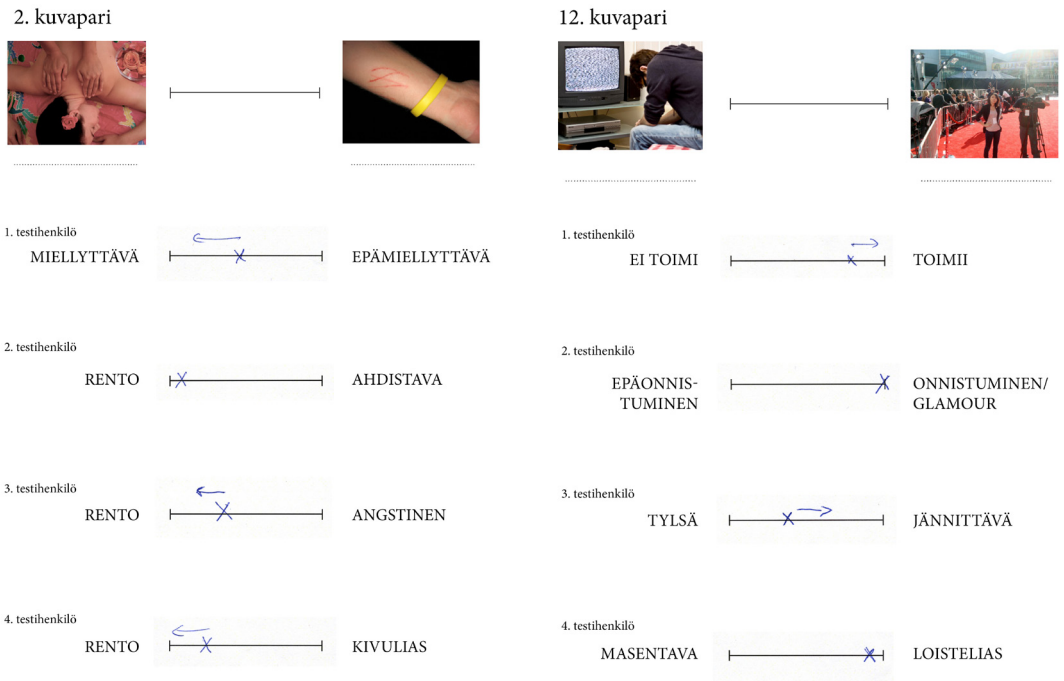


Figure 30. Compiled responses of two image pairs from the AXE interviews with the four customers.

data if they have some specific need, for example a chronic disease, special diets or sport activities with marked goals.

The young customers thought that if this kind of service would be available online they would visit the pharmacy less. Both youngsters found that they got information easier now than before.

All in all their evaluation of the concept was positive:

"The best experience I've had in a pharmacy." (User No. 4)
"Cool, It's something new." (User No. 4)
"A good product and what it tries to achieve, that people would get what's good for them." (User No. 2)

3.5.2.2 User experience of the parents of small children

One of the recruits of this target group thought that the interface is calm, clear and pleasant. Still she found that the Vitamiini info did not help her

in finding the suitable product. She found the long list of search results exhausting. She thought the discussion she had with the pharmacist after the task was more valuable. The other parent found the interface a bit boring. Also she found the list of search results too long and reading the comparison table confusing. Still, she thought that all in all the system was easy to use and it helped her to make a choice.

Both of them clearly appreciated staff's service more than the young customers. One also enjoyed using the Vitamiini info together with the staff and could imagine using it like that while the other one thought it was funny that both stare at the screen together. The first mentioned customer also thought that she would have gotten the information as fast straight from the staff but that there was more info available in the system.

Both thought that this service would be valuable for them if they would have access to purchase history online but neither one was interested in having more health related activities online. One said that she would prefer to use the system in the pharmacy rather than somewhere outside (from home for example). One suggestion that also came up was adding a category in the search for products that are suitable "for the whole family".

3.5.2.3 User experience of the employees of the pharmacy

Both employees that participated in this last test session found that the device could be very useful once complete with all products and information in it. They also thought it was very easy to use and that especially young people would probably use it. They felt that the Vitamiini info would help them in their work at least in two ways: giving fast and easy access to information and offering an alternative to serving customers on busy hours. On the other hand they felt that they wanted to be at hand and use the device together with customers.

When we discussed with the employees about the appearance of the prototype they didn't comment much on the interface but one found the mounting stand of the screen ugly and that it stood out. During the time the prototype was installed in the pharmacy for testing they also collected some feedback from customers. One suggestion from a customer was to include the pharmaceutical form of the product in the search criteria. Another suggestion was to make the comparison of the composition of multivitamins easier.

3.5.2.4 Customer's experience with and without the employee

Three out of four customers preferred to use the Vitamiini info without the help of the staff. One very interesting thing came out: one customer felt silly in the first task when they look at the screen together with the staff. She would have preferred that the staff member uses the device alone and she could observe next to her. I think this is a valuable point that when the pharmacy staff would use the device together with customers they should be the ones actually interacting with the device. Trivial it may seem but I think this could reinforce the notion of expertise of the pharmacy staff.

The customer who preferred to use the Vitamiini info with the staff was surprised about it herself. She thought it was nice that the staff was there to help because the device was new and she didn't know how it works. She also thought that she could use it together with the staff again.

I think we should have given the employees in the Järvenpää pharmacy more time to learn to use the device before the test sessions. They got a quick introduction to the system right before the test sessions thus their behavior with the system wasn't very confident. This of course affected the testing situation since they perhaps didn't use the system as effectively as possible.

3.5.2.5 Summary of the findings

In the following I list the most relevant observations and outcomes of the evaluation:

The most common positive remarks were:

- Comparison, especially of prices, was good.
- It helped finding the right product and making a decision.
- Fast and easy to use.
- The novelty of the technology can be appealing.
- (lot of content still missing but) When complete the service will be very useful.

The most common negative points were:

- Too many search results.
- The novelty of the technology can be intimidating.

- It could be more exciting.
- Reading the comparison table was difficult to read.
- Visual style was clear and pleasant but could be more attractive and entertaining.

Many suggestions also came up:

- Comparing the contents should be easier. For example comparing two multivitamin products to see which one has more of some substance in it.
- One should be able to search for products by their pharmaceutical form, e.g. liquid, tablet etc.
- It should be aesthetically more attractive.
- Using the service should be more exciting and entertaining.

Most of the feedback, positive and negative, was about the pragmatic attributes of the device:

"I think anyone who has used a computer even a little can use it." (User No. 5)
"It retrieves information quickly." (User No. 6)
"The only complicated thing was reading the comparison table." (User No. 3)
"The texts were simple." (User No. 2)
"It's still so rudimentary but when it develops it can be a useful tool." (User No. 5)
"The interface was pleasant." (User No. 1)

Of the hedonic attributes stimulation was most present. The users found that many people might find this kind of touch screen application interesting in the pharmacy. Also the novelty of the technology was appealing to some. On the other hand most found that the product wasn't quite there yet. The product should be more exciting and visually appealing:

"At first using it is probably interesting." (User No. 5)
"I could use it again." (User No. 3)
"It should be as exciting as possible." (User No. 4)
"It could be visually more appealing." (User No. 3)
"It (the device and the stand) should be disguised to be prettier." (User No. 5)
"Some entertainment would be desirable." (User No. 3)

Nearly all agreed that the service helped them to find the right product and especially made comparing prices easier.

4. Discussion

In this chapter I evaluate and discuss the results of the final user tests. I also evaluate the success of the whole process and suggest next steps for the project.

4.1 Evaluation of the results

Both the customers and the employees of the pharmacy found the prototyped service interesting and saw the potential usefulness of it. The pragmatic attributes (usability and utility) of the service were seen more positively than the hedonic (stimulation, identification and evocation) attributes. I think this was partly because of the pragmatic nature of the concept, which was to provide useful information and make the visit to the pharmacy fluent. Partly, I think this was also due to the roughness of the aesthetics of the prototype. As Saffer points out: *"Aesthetics matter when crafting high-fidelity prototypes. The prototype should be nearly indistinguishable from the product a user would buy or encounter. The less the high-fidelity prototype seems like a prototype, the more accurate the feedback will be"* (Saffer, 2010 p.180).

Pharmacy customers who were involved in this project did not seem very interested in following their health with the help of new technologies. It is hard to say, based on the reasearch I did in this project, whether the kind of service that we prototyped would have transformational effect and make customers more self-managerial in respect to their health and wellbeing. Sangiorgi states about transformational projects that *"The quality and effectiveness of such interventions are hard to evaluate in the short term and within traditional design parameters"* (Sangiorgi, 2011). Testing the user experience only once does not tell how the service would be perceived in longer-term use. This one-off user testing was a good way to get an idea of the first impression of the service and feedback for further development. Testing the user experience in long-term use would be an interesting subject for further research.

On the other hand, from the pharmacy's point of view, this design intervention in the pharmacy could be a new type of service that encourages

self-service in the store. Especially the young customers found it pleasing to have an alternative to asking help from the staff. Yet, the customers did not feel the device would replace the pharmacist and the results imply that some customers might enjoy using the service together with the staff.

4.2 Evaluation of the process

Considering that it was the first time for me that I was a part of relatively big design and development project I consider the project went well. I found that choosing or designing the tools and methods for each stage and activity is a demanding task. Also conducting the co-design and user test sessions successfully requires some experience. Still, with these sessions and activities with the stakeholders one can gain rich information and valuable insights for the design.

Some points learned during the process were that one should schedule enough time for the development of the hi-fi proto. I guess it is a trade-off with the time and the level of completeness of the prototype. Before starting the development one should also choose the appropriate tools for developing the prototype. It is not the best time to learn new coding skills for example.

The Anticipated eXperience Evaluation approach proved to be quite a demanding and difficult tool in this context. In the evaluation the users are asked to name opposing image pairs with adjectives and then evaluate the concept indicating on a line between the images, which of the pictures better represents the concept. Based on the experiences of this case, using the AXE approach seems to require good verbal and visual skills from the participants. This method might be effective when used among people who are used to reading and interpreting images. The AXE approach has been tested only among people with higher education. I found that especially the employees of the pharmacy found the AXE approach difficult and even distressing. Still, as I stated before, the results from the final user tests were surprisingly similar.

When having as few users involved in the design process as I had, each one's personality has a big effect in the results. This is why the results are not valid for stating something about certain user groups but instead they are a valu-

able source of feedback and suggestions for improvements. For example the two pharmacy employees that participated in the project are very different personalities. One has a positive attitude towards new situations while the other one reacts rather pessimistically. Every time their views of a subject in question were very different. This only proves that an individual's attitude has a huge impact on her judgment of a situation, and it makes interpreting the situation the for the designer hard.

I present a more detailed description of the results of each phase of the process in their respective chapters.

4.3 Suggestions for further iterations

Here is a list of suggestions for future development and further iterations of the prototype. The following suggestions are practical notes for improvement based on the user test feedback:

- Including all products of the self-care selection in the system
- Improving the search by making the results list shorter and more relevant for the user by adding more categories and filters in the search. For example filtering the results by pharmaceutical form or package size.
- Refining the appearance of the device and making the GUI visually more interesting and appealing.

Some ideas for further development of the service itself:

- Expanding the service for online use and a mobile application, with personal accounts for storing personal data e.g. purchase history.
- Integrating the service with other healthcare organizations' information technology systems to create a more holistic service for wellbeing.

5. Conclusions

In this thesis I designed and tested a concept for a pharmacy with the aim of finding new directions for pharmacies to take in the emerging self-management frame for health and wellbeing. In the thesis project I used user-centered design methods such as co-design workshop, storyboard and prototypes to iteratively design and evaluate a service that would be considered valuable by both the pharmacy customers and the employees.

I found the user-centered design approach fruitful in a context where the need for improved or new services comes strongly from the organization's side and where the customer's needs for change are only emerging or latent. Involving the clients throughout the design process resulted in a concept that resonated with the pharmacy customers' needs. Involving the employees of the pharmacy in the process was more difficult due to their tight work schedules. Also, we should have kept the staff better informed about the project and we should have planned their involvement better beforehand with their manager. I feel that the employees showed genuine interest in participation but did not really have enough time to be involved.

The end result in this thesis project was a prototype of a service called Vitamiini info. It was a touch screen application in the pharmacy through which one could search and compare vitamin products. The aim was to provide an alternative source of information and increase fluency by offering a new way of comparing products and for finding the most suitable one. In addition the system provided comments and ratings of products from other customers. The pharmacists are not considered as the only source of reliable information anymore; people also count on social networks for getting trustworthy knowledge. This added another layer of sometimes contradicting information on the products.

The final user test results showed that with the high-fidelity prototype we managed to touch on some of the core values we had identified in the user studies. Those values that could be considered from the customers' point of view were personnel's expertise, knowledge acquisition, fluency, and individual service. The customers found that the information they got through the Vitamiini info was reliable and that it helped them to make a purchase de-

cision. The users perceived the pragmatic attributes of the service positively. User tests show the system was mostly easy to learn and use and it helped in finding the right product. It also aided in comparing product prices. The hedonic attributes though, stimulation, identification and evocation, were less apparent. In retrospect I think the biggest problem was that the prototype should have had a more finished look to it. I had not paid much attention to the aesthetic look of the prototype, mistakenly thinking that it doesn't need to look like a ready product.

The final result wasn't perhaps the most innovative or futuristic service. Still I claim that this service would be something novel for the pharmacy and would offer new value for both customers and employees. It would encourage a more independent way of visiting the pharmacy. In that sense I see this service would promote a more self-managerial way to wellbeing. At the same time this service would allow the staff more time to attend to those customers who need personal service. The service would probably be most appealing to young pharmacy customers who are open to new technological solutions and who might be reluctant to ask for the help of the staff.

Another novel thing about the service we prototyped was offering other client's comments on products. This could be helpful for the customers for example in situations where the pharmacist can't make a recommendation according to the latest trends but are restricted to older standardized recommendations.

On a broader scope I see this thesis as a contribution to the field of service design for wellbeing. Due to the short duration of the case study it is hard to draw conclusions of what could be the longer-term effects of this service. This would definitely be an interesting topic to research further. *"Pilot projects can have a fundamental role to open the way to transformative changes as they help designers to make tangible the intangible, such as behavioural patterns, values and norms that shape organisations and their products"* (Junginger & Sangiorgi, 2009). Further research could include a mobile version of the service and involving people with special interest in monitoring their own wellbeing in the design process.

I think that the service that was prototyped takes part in the slow transformation that is now happening in the field of healthcare. Knowledge based services and personalized information will be more and more ubiquitous

and reliable. In the pharmacy context this means that the pharmacist's role might change from being an expert to being also a counselor or a caregiver, tutor, motivator etc. Also, less time will be spent on routine tasks and questions and service can become more personalized.

It seems that what we value about pharmacy services changes very slowly. The service experience in pharmacy should be fast and fluent and the pharmacist's expertise is highly appreciated. Taking into account these current values and the future trends in the field of healthcare and wellbeing this thesis suggests a service concept for a pharmacy. This concept contributes to the gradual transformation of pharmacies to keep up with the changing landscape of wellbeing.

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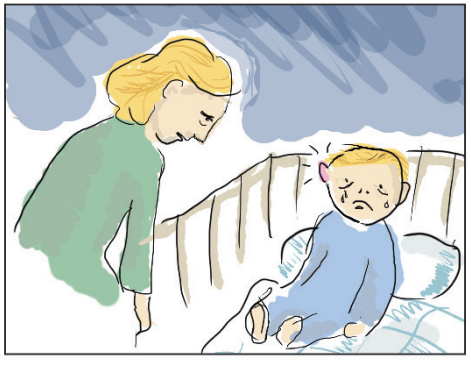
TERHI =

TERveys, Hyvinvointi ja apteekkI

Henkilöt:
Elina 29 v. äiti ja Urho 1 v., Elinan lapsi
Sanna 21 v., Elinan sisko
Henkka 21 v.,Sannan poikaystävä

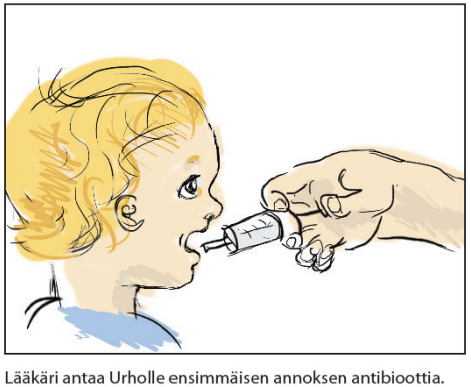


Urholle tuli taas kerran korvatulehdus – ja vielä keskellä yötä. Ei kun päivystykseen!

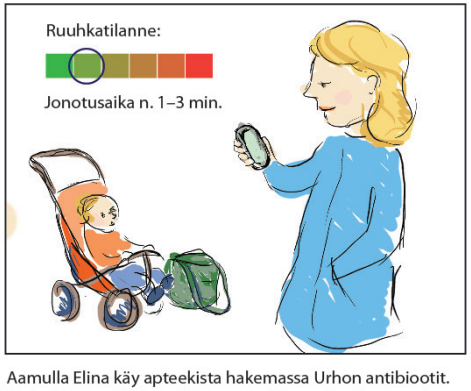
Vastaanotolla lääkäri avaa koneelleen näkymän Elinan TERHI-palvelusta , josta lukee Urhon tiedot.

Elina on niin väsynyt että tuskin ymmärtää mitään mitä lääkäri puhuu.

Lääkäri selostaa lääkkeen annostelun ja käyttöohjeet.



Lääkäri antaa Urholle ensimmäisen annoksen antibioottia. Loput Elinan on haettava seuraavana aamuna apteekista.

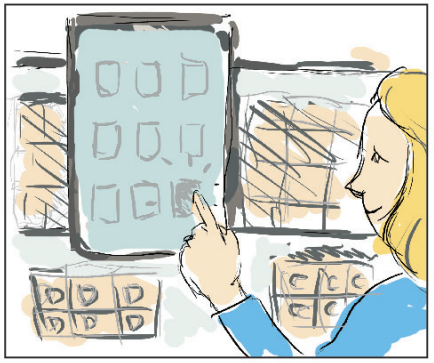


Aamulla Elina käy apteekista hakemassa Urhon antibiootit. Kotoa lähtiessä hän tarkistaa apteekin ruuhkatilanteen ja huomaa, että jonotusaika-arvio on inhimillinen. Sinne siis suoraan ja sitten vasta ruokaostoksille.

Kertaluontoista reseptikuuria ei voi vielä lainsäädännöstä johtuen tilata suoraan kotiin.

Apteekkiin sisään tullessaan kännykän terveysohjelma TERHI käynnistyy ja muistuttaa Elinaa ostoslistalla olevasta d-vitamiinista.

Elina suuntaa vitamiinihyllylle.

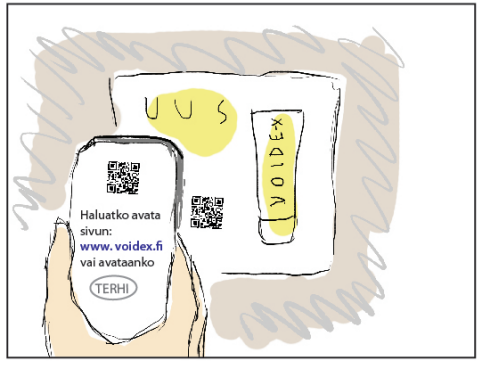


Elina huomaa hyllyn reunassa näytön. Sen avulla hän pystyy kätevästi vertaamaan eri tuotemerkkien pitoisuuksia, hintoja, sekä lukemaan muiden asiakkaiden kommentteja eri tuotteista.

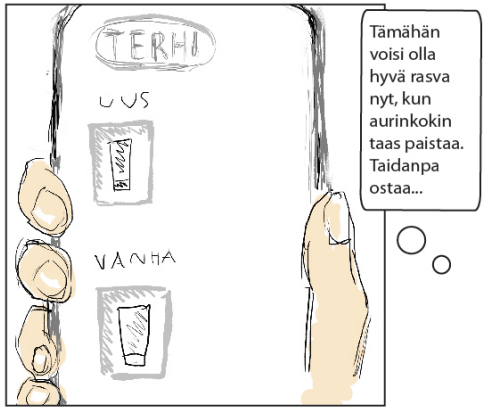
Kotona Elina hakee TERHIstä lääkärin tallentaman äänitteen lääkeohjeista ja kuuntelee sen kännykästään.

PARI PÄIVÄÄ MYÖHEMMIN

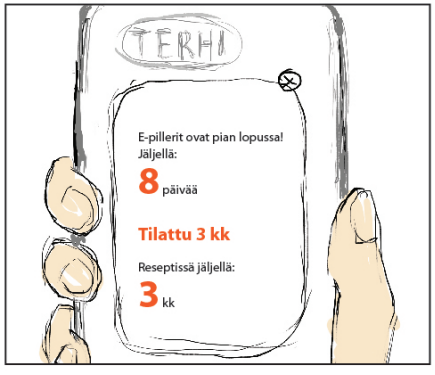
Sanna istuu bussissa matkalla siskonsa Elinan luokse. Hän on lupautunut lapsenvahdiksi Urholle.



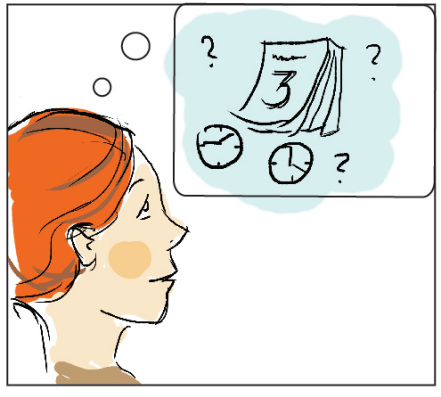
Sanna valitsee TERHIn.



Sanna vertaa tuotetta voiteeseen, jota normaalisti käyttää ja huomaa, että uutuustuote on hieman kalliimpi mutta sisältää enemmän hoitavia ainesosia. Tuote on niin uusi, ettei se ole vielä saanut käyttäjäarvioita.



Tämän jälkeen TERHI muistuttaa Sannaa, että hänen e-pillerinsä ovat pian loppumassa ja kysyy haluaako Sanna tilata niitä lisää. Sanna lisää pillereitä kolmen kuukauden satsin ostoskoriin. Ohjelma näyttää, että reseptiin jäi pillereitä vielä kolmelle kuukaudelle.



Sanna tilaa tuotteet kotiinkuljetuksena ja maksaa ostokset. Jatkuvan lääkityksen reseptilääkkeitä saa jo tilata kotiinkuljetuksena, kunhan ensimmäisellä kerralla noutaa lääkkeet farmaseutilta. Hän valitsee itselleen sopivan ajankohdan kotiinkuljetuksen vastaanottamiselle.

PERILLÄ ELINAN LUONA

Urholla oli korvatulehdus ja antibioottikuuri on vielä kesken, joten sinun on annettava vielä annos illalla ennen nukkumaanmenoa. Laitoin ohjeen sulle TERHIin. Lääkepullo on keittiönpöydällä. Nyt mun täytyy mennä. Oon takaisin puolenyön maissa. Moikka!

MYÖHEMMIN ILLALLA

Henkka kertoo edistymisestään maraton-juoksuun valmentautumisessa.

Kysyin TERHIn keskustelufoorumissa, pitäisikö mun mennä lääkärille. Siellä tuli aika hyviä hoitovinkkejä muilta juoksijoilta ja myös se meidän farmaseutti vastas siellä, että miten niitä kipeitä penikoita voi hoitaa. Sain myös paljon myötätuntoa ja tsemppausta muilta maratoonareilta.

Huomasin kanssa, että jos otan tulehduskipulääkekuurin näihin kipeisiin sääriin niin mun on parempi lopettaa siksi aikaa se neidonhiuspuu-uutteen käyttö. Niillä kun on molemmilla vertaohentava vaikutus.