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# Service design approach for improving the user experience and user centeredness in a medical clinic context

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**Service design approach for improving the user experience and user centeredness in a medical clinic context**

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The purpose of this thesis was to study how service design approach can be used in the context of clinic renovation and renewal, especially to improve the user experience and user centeredness. The main objectives were: first of all to analyze the user experience and user-friendliness of the clinic (both from the patient's and personnel's point of view), to identify challenge and opportunity areas, and to provide direction and suggestions for the development and re-design, and secondly to strengthen the user centeredness by enhancing the user involvement of both patients and personnel in the process and by supporting the user understanding and empathy.

The thesis was conducted in Cape Town, South Africa in 2013, as a part of a collaboration between the Lung Institute of the University of Cape Town managing the renovation process and the Cape Peninsula University of Technology.

From a theoretical perspective this thesis deals with discussion and concepts related to customer and user centered thinking and paradigm shift, user experience, service design and health care facility development. The thesis argues that service design can provide a practical and concrete framework for customer and user centered development in practice.

The thesis describes concretely how service design approach, methods and tools were used and adapted to meet the contextual, project specific conditions as well as provides an analysis of the process and methods based on the experiences gained.

Methodologically various design research and service design methods were utilized. Observation, contextual interviews and user workshop were the main methods for gathering information. The findings were then analyzed and turned into easy to grasp insight by utilizing especially personas, visual user journey descriptions, service blueprinting and user flow mapping.

As a result, the project delivered a list of identified re-design challenge, opportunity and focus areas with preliminary development suggestions and ideas, design drivers to guide the development and a design booklet to enhance user understanding and empathy. The selected re-design focus areas were taken forward by the industrial design students of the Cape Peninsula University of Technology. Additionally, various findings were included in the on-going renovations.

It can be concluded that service design approach, process model and methods provided a functional and applicable development framework also in the context of a clinic renewal.

Keywords: User experience, user centeredness, service design, design research, health care facility development

Terhi Pennanen

**Service design approach for improving the user experience and user centeredness in a medical clinic context**

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Lopputyön tavoitteena oli selvittää kuinka palvelumuotoilua voidaan hyödyntää terveydenhuollon klinikan peruskorjauksen ja uudistustyön yhteydessä, erityisesti käyttäjäkokemuksen ja käyttäjälähtöisyyden vahvistamiseksi. Toteutetun kehityshankkeen tavoitteena oli ensinnäkin analysoida klinikan tämän hetkistä käyttäjäkokemusta (sekä potilaiden että henkilökunnan näkökulmasta), identifioida kehityshaasteita ja mahdollisuuksia sekä tuottaa ehdotuksia ja suuntaviivoja kehitys- ja uudistustyölle. Toiseksi, tavoitteena oli vahvistaa uudistusprosessin käyttäjälähtöisyyttä, lisäämällä sekä potilaiden että henkilökunnan mukanaoloa että tukemalla remontin ja uudistusten toteuttajien käyttäjäymmärrystä ja empatian rakentumista.

Lopputyö toteutettiin Kapkaupungissa, Etelä-Afrikassa keväällä 2013, osana laajempaa yhteistyötä remonttia ja uudistustöitä koordinoineen Lung Instituutin (University of Cape Town) sekä Cape Peninsula University of Technologyn välillä.

Teoreettisesti lopputyö yhdistää keskusteluja ja konsepteja asiakas- ja käyttäjälähtöiseen ajatteluun ja paradigman muutokseen, käyttäjäkokemukseen, palvelumuotoiluun sekä terveydenhuollon tilasuunnitteluun liittyen. Lopputyössä argumentoidaan, että palvelumuotoilu voi tarjota konkreettisen viitekehyksen asiakas- ja käyttäjälähtöiselle kehitystyölle käytännössä.

Lopputyö kuvaa konkreettisesti kuinka palvelumuotoilun lähestymistapaa, menetelmiä ja työkaluja käytettiin ja muokattiin vastaamaan kyseessä olleen kontekstin ja projektin tarpeita, sekä tarjoaa analyysin prosessista ja käytetyistä menetelmistä kehityshankkeessa saatujen kokemusten perusteella.

Menetelmällisesti lopputyössä hyödynnettiin lukuisia palvelumuotoilun ja muotoilututkimuksen menetelmiä. Tiedon ja ymmärryksen keräämisessä keskeisiä menetelmiä olivat havainnointi, kontekstuaaliset haastattelut sekä käyttäjätyöpaja. Tulokset analysoitiin ja käännettiin havainnollisiksi tuotoksiksi hyödyntäen erityisesti persoonakuvauksia, visuaalisia palvelupolkukuvauksia sekä käyttäjien liikkumista ja prosesseja kuvaavia mallinnuksia.

Lopputyö tuotti listauksen identifioiduista keskeisistä haaste-, mahdollisuus- ja fokusalueista uudistustyölle, alustavia ehdotuksia ja ajatuksia näihin teemoihin liittyen, suunnitteluajureita kehitystyötä ohjaamaan sekä kirjallisen yhteenvedon keskeistä havainnoista ja kuvauksista, erityisesti käyttäjäymmärryksen ja empatian vahvistamiseksi. Tuotesuunnittelun opiskelijat Cape Peninsula University of Technology:stä lähtivät viemään valittuja fokusalueita eteenpäin. Lisäksi havainnot hyödynnettiin laajemmin käynnissä olleen remontoinnin yhteydessä.

Yhteenvedona voidaan todeta, että palvelumuotoilu tarjosi konkreettisen lähestymistavan, viitekehyksen, prosessimallin sekä menetelmiä klinikan uudistuksen kontekstissa hyödynnettäväksi.

Asiasanat: Käyttäjäkokemus, käyttäjäkeskeisyys, palvelumuotoilu, muotoilututkimus, terveydenhuollon tilojen kehitys

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## 1 Introduction

### 1.1 Background and motivations

During the last couple of decades there has been a large paradigm shift emphasizing the importance of customer and user centered thinking both in business and in design fields. It has been more and more highlighted that the key to success and real value creation is not so much dependant on organizations' resources and abilities to produce products and services, but more based on deep understanding on customer needs, challenges, goals, desires and experiences, and in the close collaboration between organizations and their customers (See e.g. Prahalad & Ramaswamy 2004; Bettencourt 2010; Fitzsimmons & Fitzsimmons 2000; Ojasalo & Ojasalo 2015; Koskinen et al. 2011.) Within this intersection of new ways of thinking about business and design, service design has emerged both as a field of research as well as a practical and holistic framework for service innovation and development in practise, emphasizing especially the importance of customer centeredness, insight and experience (Ojasalo & Ojasalo 2015; see also Mager 2009).

The benefits and possibilities of service design approach in re-thinking and developing services and process models has become more and more acknowledged also in the context of social and public services, including health care. It has been increasingly emphasized that developing health care services with both quality and efficiency in mind requires both new ways of approaching things as well as human centered focus: enhancing the understanding of patient needs and experiences as well as involvement of both patients and personnel in the development processes. (See e.g. Cottam & Leadbetter 2004; Jones 2013; Teso, G., Ceppi, G. Furlanetto, A., Cario, C. & Scannapieco, C. 2013; Tienhaara 2015.) In addition, more and more service designers have the aspiration to use their skills and knowledge for enhancing public good and to solve socially relevant challenges (see e.g. Thomas 2008; UK Design Council 2008; Ostrom et al. 2010). Combination of these trends has lead health care to become a very interesting as well as important domain for service designers and for utilization of service design approach and methods.

Several interesting research papers and case examples have been written to demonstrate the benefits and value of patient centered focus and service design approach in health care e.g. in clarifying, re-framing and prioritizing relevant challenges, design and development areas, in enhancing the empathy towards patients as well as in strengthening their role in the planning and development of service processes, practices and new user centric solutions. Some case studies have also been conducted in relation to the specific focus area of this thesis aka utilization of service design approach in the context of developing and re-designing health care and medical facilities, service environments that focus on supporting and evoking posi-

tive user experiences. (see e.g. Ido 2015d; Ido2015e, DesignIt 2015; LiveWork 2016; Stickdorn & Schneider 2011, 266-279.) Still, service design cannot yet be considered a standard approach when developing, re-designing and renovating health care facilities from a user centered perspective, especially in developing countries such as South Africa, where the development project of this thesis was conducted at. Thereby the goal of this thesis is to offer concrete examples of one practical project and thus hopefully increase the understanding of different possibilities.

From a personal perspective, the thesis project provided me a remarkable opportunity to broaden my experiences to new areas. The project was conducted while I was in exchange at the Cape Peninsula University of Technology (CPUT). The collaboration between Laurea University of Applied Sciences and CPUT offered me the possibility to conduct this project with a very inspiring case and to enhance my personal experiences and understanding about the possibilities, requirements and implications of utilizing service design approach in a context new to me, both geographically as well as thematically. I have been working in the areas of user research and user centered design, but mainly in the context to digital services. Thereby this terrain was totally new to me.

## 1.2 Main objectives and delimitations of the thesis

The thesis was conducted as a development project in Cape Town during spring 2013. It formed one part of a larger, multi stakeholder project where the aim was to renovate, renew and re-design a public, medical clinic located in a historical neighborhood.

The main objectives of the thesis project were:

- To analyze the user experience and user-friendliness of the clinic, both from the patient's and personnel's point of view, to identify challenges and opportunities, and to provide direction and suggestions for the actual development and re-design
- To strengthen the user centeredness of the renovation and renewal process:
  - By enhancing the user involvement of both patients and personnel in the process
  - And by supporting the renewal and the work of different main stakeholders involved, especially by enhancing the user understanding and empathy

Service design approach was used as a development framework to reach the objectives.

Due to practical, timeframe related issues the conducted project and this thesis focuses to the first: 'discover' and 'define' phases of the service design process: conducting research, gathering information, inspiration and ideas, and then analysing the findings and turning them into to easy to grasp, documented insight, design directions and suggestions to guide the de-

velopment. Thereby the main the research question this thesis aims to answer is: how can we analyze and improve the user experience and user centeredness of public medical clinic by using service design approach, and especially design research?

I did not take part in the actual concepting, validation, iteration or delivery of the re-design solutions, and thereby those later parts of service design process are out of the scope of this thesis. Similarly, as the service design project was conducted within the context of clinic renovation and re-design, focusing mainly on the issues connected to the physical environment and surroundings, many important elements connected to service experience (such as personal interactions or service practices) are thereby not included or in the focus of this thesis.

### 1.3 Structure of the thesis

This first chapter introduces the background, goals and focus of the thesis. The second chapter discusses the theoretical context and the main related concepts. The second chapter presents also case studies, previous research and example projects related to the theme, and highlights some identified key learnings and consideration points based on the review. The third chapter will focus on the actual development project, describing and discussing first the background and the service design process model utilized, and then the different phases of the actual thesis project and the methods used. The fourth chapter describes the results of the project. And the fifth and final chapter summarizes the whole thesis, discussing and reflecting the project and the lessons learned.

## 2 Key concepts and theoretical context

Just as service design is a an interdisciplinary approach combining different disciplines (Stickdorn & Schneider 2011, 29) also this thesis has an interdisciplinary approach, combining theoretical notions, concepts and discussion from both business and design fields.

First, concepts and theoretical backgrounds especially related to customer centered service development development, user centered design, service design and user experience will be introduced and discussed. Secondly this chapter will also introduce and discuss earlier research, case studies and examples related to service design in health care domain as well as especially the connection between user experience and service facility development in health care.



## 2.1 Customer and user centered paradigm shift

As mentioned in the introduction, last couple of decades have brought a significant paradigm change emphasizing the role of customers and users both in business and design domains, and in developing both goods, services as well as different service environments from a customer and user centered perspective (see Prahalad & Ramaswamy 2004; Bettencourt 2010; Fitzsimmons & Fitzsimmons 2000; Ojasalo & Ojasalo 2015; Koskinen et al. 2011).

Before going deeper into the paradigm turn, the relationship between the concepts of customer and user needs to be briefly discussed. The concepts of user and customer as well as human centered design or development have all been used to portray rather similar things, but in different contexts, mainly due to different backgrounds and traditions. The concept of customer centered development has mainly been used in business fields: in service science, business management and marketing (see e.g. Maglio, Kieliszewski & Spohrer 2010), where as user and human centered design has background in design, especially in product design as well as in information technology and software development (see e.g. Koskinen et.al 2011). Concept of human centered design is especially used in context of design thinking and when emphasizing the combination of design methods with human and social sciences e.g. in utilizing design approaches to address social challenges (see e.g. IDEO 2013; Brown & Wyatt 2010). In addition to different backgrounds and traditions there are also some real conceptual differences. The term customer is usually used when discussing the more comprehensive and longer-term relationship between a person and service provider, or when referring to a person who acquires or purchases the product or service and thereby is in a direct (and usually also in monetary) relationship with the service provider. Where as the term user commonly refers to the person who actually uses the product or service. In turn, human centered design can be seen as focusing on even more holistic view, emphasizing people as versatile human beings, not as subjects, consumers or users of certain products or services (IDEO, 2013; Brown & Wyatt, 2010). Even though it could be argued that any of these terms, as well as patient centeredness, would have a justified reason to be used in this thesis, I have used mainly the term user, especially when describing the actual development project. This mainly due to the fact that it can be used more naturally in the clinic context to include both the patients as well as the members of the staff, which both are the actual 'users' of the clinic. It can also be noted that the term customer has been somewhat challenging in the context of healthcare and especially public health care services (see e.g. Tienhaara 2015, 8). Thereby the term user is most commonly used in this thesis later on.

Customer understanding, experience and centeredness are all very popular concepts in today's business literature (see e.g. Manning & Bodine 2012). Customer centricity means placing the customers to the center of the development or innovation processes, focusing on under-

standing their needs, desires and motivations, and involving them in the actual development processes one way or the other (Bettencourt 2010). According to Prahalad & Ramaswamy (2004) the turn of the millennium marked also a turn to customer centeredness in business thinking. The paradigm shift had many influencing factors. In connection to technological and economic development concepts such as consumer power and consumer preferences became understood as more and more important (Koskinen et al. 2011, 18). The rise of theories related to experience economy (Pine & Gilmore 1999) and service dominant logic (Vargo & Lusch 2004; Lusch & Vargo 2006) were highly influential, emphasizing the customer centered viewpoint. The thinking shifted from the traditional organization and goods dominant logic to placing more focus and role on the customers. According to service dominant logic Vargo & Lusch (2006 and 2008) emphasized that the value is actually co-created when the service offering is consumed and experienced by the customer. As Ojasalo & Ojasalo (2015) have noted Grönroos (2006 and 2008) and Gummesson (2007 and 2008) went even further in their service logic thinking, arguing that it is actually the customers that determine, control and actualize the value, and that organizations are more enablers, resource creators and facilitators of value formation. And lately Heinonen et al. (2010) have used a concept of customer dominant logic which emphasizes even deeper understanding and focus on customers, their needs, everyday life and experiences and how value actually is formed or emerges in customer's own context. Heinonen et al. have underlined especially the importance of understanding customers' goals and motivations as well as mental and emotional experiences in the value formation processes. As Ojasalo and Ojasalo (2015) have pointed out, this viewpoint emphasizes the role of customer insight in building and developing services that support customers in their own, natural processes. What has been shared in all of these theorizations is the focus on customer centered thinking and the emphasis of customers' role in service development, based on these notions that value is strongly co-created and determined by the customer, and thereby the customers should be closely involved in the development of those services (see e.g. Prahalad & Ramaswamy 2004; Bettencourt 2010; Grönroos 2006; Grönroos 2008; Grönroos 2009; Gummesson 2007; Gummesson 2008; Edvardsson, Gustafsson, Kristensson & Witell 2010).

Customer centeredness has been seen important due to various reasons and expected practical benefits. It has been recognized that in today's economy people make their decisions largely based on their goals, perceptions and experiences. Customer centricity has been perceived as a way for e.g. raising awareness and the acceptance level of new services, improving satisfaction and strengthening the customer - service provider relationships, engagement and loyalty as well as for shortening the innovation and development process times. Based on perceived connections especially between customer centeredness, customer experience, perceptions of quality, satisfaction, value and loyalty, customer centered thinking has been seen as the core of element of success and competitiveness. (See e.g. Alam 2002; Bettencourt

2010, 25; Fitzsimmons & Fitzsimmons 2000; Matthing, Sandén & Edvardsson 2004; Manning & Bodide 2012.)

In practice customer centeredness has included variety of very different views of the customer role as well as different levels and intensity of customer involvement in the actual development processes. Customer role can also vary in relations to the phase of the involvement during development processes; whether customers are involved only in the beginning or only in the late steps (e.g. in validating or testing new service concepts rights before launch), or if customers are actually closely involved in various steps along the process. Based on a research review Edvarsson et al. (2010, 568-574) have listed a model where the customer role is seen either purely as a buyer, as a subject of interest, provider of information or as a co-developer or developer (these different perspectives are illustrated in the Figure 1). In the other end the customers may be seen as mere objects with little to contribute and on the other end they can be seen as vital resources possessing critically important knowledge and knowhow, forming an important part of the design or development process.

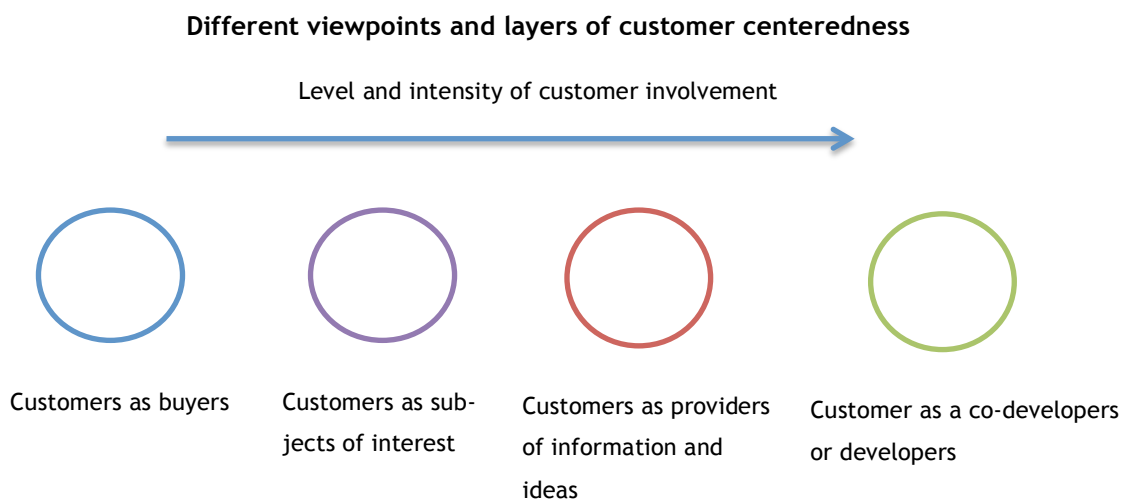


Figure 1: Different perspectives within customer centeredness (created based on Edvarsson et al. 2010)

At the same time as the customer centered paradigm was evolving in business science, user centered thinking and design gained popularity in design fields. Donald Norman (1998, 188) has described user centered design as a philosophy that is based on the needs and interest of the user, with an emphasis on making things usable and understandable as well as desirable for them. The rise of user centered thinking in design was connected to changes in thinking that emphasized user emotions, and placing more emphasis on concepts such as user experience, desirability and pleasure instead of pure functionality and usability (Jordan 2000). It

was noted that people are the best experts of their own experiences and lives, and "as everyone has experiences, they can thereby inspire design" (Koskinen et al. 2011, 18).

One of the concrete evidences of the popularity of the user centered thinking is the fact that it has been granted a standard of its own. ISO 13407:1999 (revised by ISO 9421-210) for Human centered design states that users should be positioned to the central of the design processes, as well as to be concretely involved during different stages of development. The standard emphasizes that design should first of all be based on understanding of the aimed users, their goals, tasks and context. Secondly the designs need to be developed iteratively with user participation and that the design solutions need to be evaluated by the users or based on user specific factors during the process. (Roto, Law, Vermeeren, Hoonhout 2011, 6-7.)

The evolvement of user centered thinking and design is also closely connected e.g. to development of participatory design and co-design movements. These approaches have their own historic and theoretic foundations, as well as practical emphasizes. Participatory and co-design approaches have been seen to emphasize even more profound collaboration with and involvement of users in the actual design and development processes than traditional user centered thinking (see Sanders & Stappers, 2008; Von Hippel 2005). However, the boundaries of the different concepts are flexible and overlapping, and user centeredness can be used as an umbrella term to include different perspectives and models. In practice user centeredness can vary from gathering insight and understanding about the users, their needs and desires, to gathering user's feedback during the development e.g. by testing and validating services or service concepts with them, to involving users as active partners in the actual ideation, design and development processes. (Hyysalo 2009; Keinonen 2010, Koskinen et al. 2011.) Thereby the different layers and perspectives of user centeredness are very much similar as the different perspectives of customer centeredness described in the Figure 1.

## 2.2 Service design approach as a concrete framework for customer and user centered development

*Service design is an interdisciplinary approach that combines different methods and tools from various disciplines to help to innovate new or to improve existing services to make them more useful, usable, desirable for users as well as efficient and effective for organizations. (Stickdorn & Schneider 2010, 29; Moritz 2005).*

Although customer role and customer centricity have largely been emphasized in service business science already for some time, Ojasalo & Ojasalo (2015) have noted that here has

been rather little models and actual tools for customer centered service development in practice, or the models have still been strongly service provider dominant. As Ojasalo & Ojasalo have argued, design thinking and especially service design approach has brought new, concrete means for implementing service and customer logic and customer centeredness in practice. Within the intersection of business and design, service design has emerged both as a field of research as well as a practical and holistic framework for service innovation and development (Ojasalo & Ojasalo 2015, see also Mager 2004).

Service design can be characterized as a systematic and holistic approach that aims to innovate and improve services, taking into account both the customer and service provider goals, and by utilizing several concrete methods originating from different fields. Service design can be described as an interdisciplinary approach with a set of key principles, as a process model and as a toolbox of different methods and techniques (Stickdorn & Schneider 2010). Service design aims to enhance the both the quality, value and experience related to the service as well as the efficiency and the effectiveness (Moritz 2005). Service design approach can focus on both tangible and intangible outcomes and service elements and it provides models and tools for recognizing, analyzing, planning and organizing the different components that constitute the service (Miettinen 2011).

One way of characterizing service design is describing it as a set of design principles. Stickdorn & Schneider (2010, 34-45) have underlined five core principles of service design: user centered, co-creative, sequencing, evidencing and holistic, from which the user centeredness and co-creation are perhaps the most prominent ones. According to Stickdorn & Schneider "knowledge and awareness of users' needs and wants and what is truly valuable for them is where service design thinking begins", meaning that the users' needs should to be put in the center of the design process. Also Moritz (2005, 43-37) has underlined user centeredness as a principle that makes service design unique, as "it truly represents users' perspective". Service design aims to understand users' needs, goals, motives, behavior, values, problems and challenges, experiences, wishes and behavior as a starting point for design and development (Heapy 2011). The principle of user centeredness emphasizes genuine understanding of users and different individual experiences, and that services should be designed through the users' eyes and by working together with them. Service design begins with an attempt to truly understand what users or customers really need and want and what is really important or valuable for them (see Miettinen 2011, 13, 27; Ideo 2011; Mager 2009; Saco and Goncalves 2008).

Service design is also inclusive by nature, emphasizing concepts of participation and co-creation. According to Miettinen (2011, 21-23 and 2009, 11) service design can mean even tighter co-operation with the users than traditional user centeredness. Service designers use methods to enable and engage the user and give them real power to influence the design.

Service designers role is thereby especially to be a facilitator in the development processes (Miettinen & Valtonen, 2012, 9; see also Mattelmäki & Vaajakallio 2011, 77-97).

In addition to set of principles, service design approach can introduce structured process models to service innovation and development, emphasizing user centeredness. Service design provides a systematic way to approach service development simultaneously in an analytical and intuitive way, meaning concrete activities of analyzing, planning and organizing the different elements that constitute the service as a whole. Service design processes have been modeled into various different alternatives by different researches and service design practitioners (see e.g. Stickdorn 2010; Mager 2009; Miettinen 2009; Miettinen 2011; Moritz 2005). These models have both differences as well as rather many similarities between them. As Stickdorn (2010, 126) points out there are various process models or frameworks that vary regarding the amount of steps and the concepts used, but pretty much share the same mindset. Common to all models is that they start with exploration and research aka insight gathering phase, based on which the process moves into ideation and prototyping of solutions, and then into testing, reflection, iteration. These interrelated steps lead to implementing the solutions into the actual context or markets. The models also emphasize that the implementation is not the end of the process, but should lead to constant iteration and further development.

Service design can also be characterized as a toolbox, a set of practical methods, tools and techniques than can be applied in variety of real life innovation and development processes (Stickdorn & Schneider 2010). Service design utilizes and combines methods and techniques from various fields, especially from the design tradition. Many of the core tools and methods of service design, both for gathering and building understanding about the users, context of use and user experiences as well as for ideating, co-designing and co-creating services together with users and other stakeholders have their origins in user centered design (Koskinen et al. 2011, 18-22; Miettinen 2011, 28; Raulo & Ruuska 2011, 13). On the other hand, service design provides an even more holistic and comprehensive, practical framework for user centered development in real life context than the traditional user centered design approach: meaning structured process models with a comprehensive set of methods, tools and techniques.

### 2.3 Design research in service design

As noted earlier design research forms an important part of service design approach. Service design processes are kicked off with a research, insight gathering or discovery phase, where the aim is to gather understanding about the topic, about different possibilities, opportuni-

ties, challenges and possible constraints, and based on that understanding to define the focus and direction for the later stages (Stickdorn & Schneider 2010, 128-129).

Design research can be used as a term to describe a myriad of research methods during service design processes to guide and support the design. First of all, as pointed earlier user understanding and deep customer insight gathering via different research methods is the key starting point of service design processes. Various data gathering, research and analysis methods originate from design discipline, as well as from social studies, marketing, anthropology and ethnography have been utilized and further modified with the aim to understand e.g. human behavior, needs, desires, motivations and experiences. (Koskinen et al. 2011; Miettinen 2009, Hämmäläinen, Vilkkka & Miettinen 2011, Stickdorn & Schneider 2010, 128-129.)

In addition to understanding users and their service experiences design research methods have been utilized in service design especially for understanding and analyzing service processes. Methods and tools stemming from the design field as well as e.g. from service engineering, such as service journeys, service blueprinting and scenarios are a vital part of describing, illustrating and modeling service processes. (Hämmäläinen, Vilkkka & Miettinen 2011, Stickdorn & Schneider 2010, 128-129.)

Design research methods and perspectives have been categorized in variety of ways. Hanington (2003) has suggested a categorization to 'traditional', 'adapted' and 'innovative' methods. To him 'traditional' methods include e.g. surveys, questionnaires and interviews, 'adapted' methods contain e.g. observations and ethnographic methods, and 'innovative' methods focus on creative, visual and participatory methods, such as workshops, collages, diary studies etc. Fulton Suri (2008) on the other hand has divided design research into three main perspectives: 'generative', 'evaluative or formative' and 'predictable' design research, especially in context of innovation processes. According to her, 'generative' research provides especially understanding and inspiration; it can be used to gain insight and ideas. It involves activities of describing, explaining and framing. It looks at patterns, challenges and opportunities as well as for gathering deep understanding of people's behavior, aspirations, emotions, perceptions and motivations in different contexts. 'Formative' or 'evaluative' design research focuses on learning and refining throughout the design process, e.g. via prototypes and their evaluations. According to Fulton Suri such research can also include close collaboration with the users along the process e.g. via co-design sessions. 'Predictive' design research aims to estimate potential of future opportunities and ideas especially via scenario work. Fulton Suri has emphasized that in addition to understanding what currently is, design research is concerned with future oriented questions such as what should or could be, and methods which blend design and research closer together have been seen especially needed for examining, experimenting and exploring new type of research questions (Fulton Suri 2008;

See also Koskinen et. al. 2011; Sleeswijk Visser 2009).

Design research includes closely the concept of empathy building, the ability to see things from the user's perspective or to step into user's shoes. As noted earlier empathy is one of the core elements of service design (Miettinen 2011; Miettinen 2009). Fulton Suri (2003, 55 and 2008) has emphasized how design research informs intuition and how it is easier to get excited about design once we know the people we are designing for, as well as their situation and context. Fulton Suri has highlighted how it is possible to learn about what other people think and feel through design research and emphatic interpretation of what they say and do. In building empathy Koskinen & Battarbee (2003, 47-50) have emphasized especially the role of immersion and research that allows designers an access on how users experience things around them, strengthening the ability to see things from users' point of view. According to them such research not only inspires, but also creates an emphatic understanding. Combinations of various design research methods can be used to both learn about people's experiences as well as to strengthen the emphatic understanding to inform and inspire design.

Sanders & Dandavate (1999) have highlighted how variety of design research methods can be used to access different levels of information about peoples' experiences: for listening to what people say, interpreting what people express, to watch what people do, to observe what people use, to uncover what people know, and to reach towards an understanding of what people feel and to appreciate what people dream.

Sleeswijk Visser (2009, 16) has emphasized how different research approaches provide information of different levels and how different methods are many times needed in order to gain deep understanding (see Figure 2). She has highlighted how talking with and interviewing people, provides information about what people can say, which is mainly explicit knowledge about what they think. Observation studies give insight into the physical context of people, and how people do things. Sanders and Dandavate (1999) Koskinen et al (2011) and Sleeswijk Visser (2009, 16) have all emphasized how especially design inspired 'constructive' or 'generative' design research methods are important in trying to understand complex and latent issues such as experiences, feelings and dreams and how those methods (e.g. creative tools, such as context mapping, moodboards, storyboards, or self documentation techniques and probes) can use the creativity of people to become aware and express their own experiences in a deeper level.



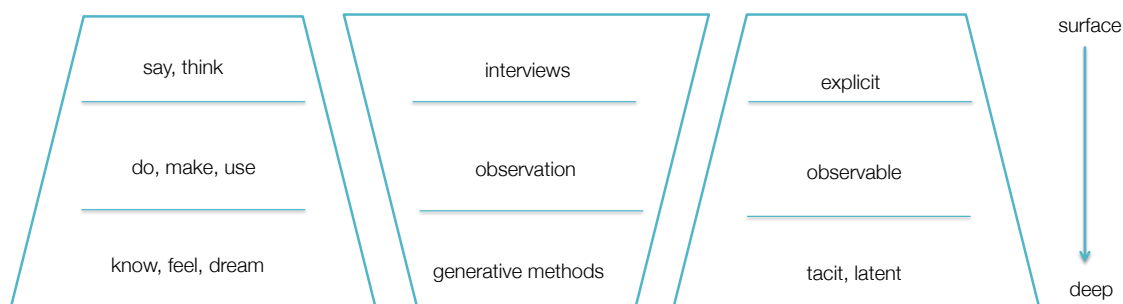


Figure 2: Illustration on how different levels of knowledge that be accessed by different design research methods (Sleeswijk Wisser 2009, 17 based on Sanders & Dandavate 1999 and Sanders 2001).

Service design approach has adopted and further modified variety of the above discussed ‘traditional’, ‘adapted’ and ‘evaluative’, as well as ‘innovative’, ‘generative or constructive’ (e.g. personas, scenarios, context maps, probes, moodboards) design research methods, tools and techniques both to gain deep understanding about users and their experiences, to build empathy and to envision, ideate and develop future services together with the users (Miettinen & Koivisto 2009; Stickdorn & Schneider 2010).

## 2.4 User experience

One core concepts in both customer/user centered service development and in service design is experience. As noted earlier, creation of positive, memorable or superior experiences has been seen as one of the main goals in variety of sectors, shifting the focus from production of outcomes to how the outcomes are experienced and interpreted by the individuals (Jaakkola et al 2015; Helkula & Aarikka-Stenroos 2015, 183; Fitzsimmons & Fitzsimmons 2000; Grönroos 2001; Ojasalo & Ojasalo 2015). User experience is one of the key concepts also in service design approach. As Saco and Goncalves (2008) have put it, service design can be described as a “human centered approach that focuses on user experience as the key value for success”. Or as Miettinen (2011, 30) has stated “in the context of service experience development service designers focus on how users experience the services offered by different organizations, and how those services can be re-designed and improved together with the users”.

However, even though customer and user experience have been widely used and referred concepts in various contexts, they still lacks a jointly agreed, clear definitions (see e.g. All About UX 2016 for about 30 different definitions for user experience) and have been ap-

proached from variety of different directions.

As such, experience can be approached first of all as a psychological phenomenon (see Roto, Law, Vermeeren, Hoonhout 2011; Helkula 2011). According to Roto et al. (2011, 6-7) “experience is inherent to our existence as people, and to our individual perceptions of good and bad. Experience in general covers everything personally encountered, undergone, or lived through”. According to them user experience differs from experiences in a more general sense, in that it explicitly refers to the experience(s) derived from encountering systems (or services). Sleeswijk Visser (2009, 15-16) has noted that what has been agreed on is that experiences are individual and unique, holistic, situation dependent and subjectively constructed. She has highlighted that experiences are influenced and defined by variety of elements and aspects related to the context and situation, as well as by the user’s state of mind. Thereby experiences are created and affected by the expectations, goals, motives, background, values and knowhow of the user and the situational service components such as interactions, artifacts and the environment that the user senses. These elements all influence how the user feels in the situation and then perceives it.

Also Mäkelä and Fulton Suri (2001) have emphasized the multiple factors related to formation of user experience. Based on their definition user experience is “a result of motivated action in a certain context”. They have highlighted that the experience is formed and interpreted in the interaction of users’ prior experiences and expectations, motivations, actions and context and that each of these components can be further divided into smaller elements. Roto et al. (2011, 6-7) have also emphasized user experience as unique to an individual and influenced by prior experiences and expectations as well as rooted in social and cultural context where it happens. They have divided the main factors influencing the user experience into three main categories: the context, the users’ state (e.g. motivations, mood, current mental and physical resources and expectations) and the encountered system (e.g. functionality, aesthetics, interactions, brand). Roto et al. have emphasized that although user experience cannot be described solely by these factors, they can help to identify the reasons behind the experience (Roto et al 2011, 10). The various elements and phases of experience formation emphasized in all these theorizations are illustrated in the figure below (Figure 3).

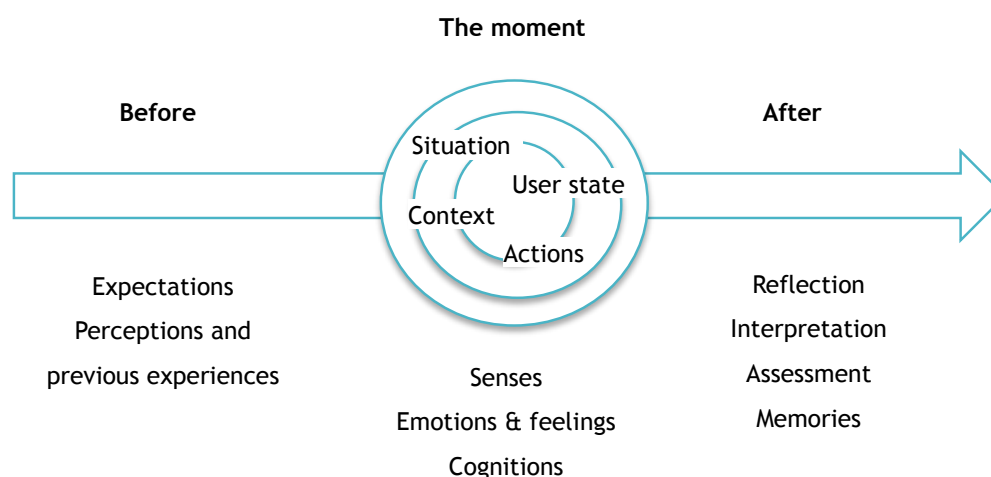


Figure 3: Illustration of user experience formation (created as a modification from Sleeswijk Visser 2009, 15-16; Roto et al. 2010; Kankainen & Fulton Suri 2001).

In addition to subjective elements, all of these theorizations of experience emphasize that the context where the experience happens and is perceived or experienced plays an important role. The context can include the physical location and the sensory experiences related to it (e.g. the visual surroundings, objects, temperature, light, noise), social factors (who is around and who is not), cultural factors (e.g. values, background) and time (Sleeswijk Visser 2009, 14-15).

In addition to experiences being a complex constructions affected by multiple both subjective and contextual elements, they have also been emphasized as being time related, sequencing and interpretative. Berry, Carbone and Haeckel (2002, 18) have defined experience as the "sum of feelings customers take away from their interaction with a firm's goods, services, and 'atmospheric' stimuli". Jaakkola et al. (2015, 183) have concluded that majority of recent definitions commonly consider experience as an "individual and subjective response to or interpretation of any direct or indirect contact with the elements of the service". This viewpoint emphasizes both the interactive nature of experience as a co-created phenomena as well as the role of interpretation in experiences. Roto et al. (2011) have also emphasized that the user experience can be approached as an interpretation or perception created based on the various different encounters and resulting emotions. They have divided user experience into four different types based on the lifespan: to the anticipated user experience that happens actually before the usage, the momentary user experience that is the actual experiencing during the use, the episodic user experience which focuses on reflecting the experience and different episodes during it and to the cumulative user experience which consists on the views as whole afterward. One of the early founders of user centered design Donald Norman (2004, 63-68) has also emphasized the different phases of experiences and divided expe-

periences into three levels: visceral, behavioral and reflective. According to him visceral experience refers to the first feelings evoked, the immediate sensory reactions, the behavioral experience to the actual experience during use and the reflective experience to the more cognitive rationalizations and longer lasting perceptions of the experience.

The notions related to the reflective and interpretive nature of user experience are both interesting and challenging in relation to goals of understanding, analyzing and evaluating users experiences. As Roto, Law, Vermeeren, Hoonhout (2011, 9) have noted focusing e.g. on the moment can give information on a user's emotional responses to specific elements and details of the product or service, where as focusing on longer periods may reveal the cumulative user experience, the reflection of the total of the momentary experiences. However, as Roto et al. have noted a positive outcome, final momentary example may e.g. diminish the importance of prior negative momentary experiences, or the memory of them. Many times experiences contain also many intangible factors of which the user may even be aware of. Also Sleeswijk Visser (2009, 12-16) has highlighted that it is important to note that reflection or awareness of a past experience involves interpretation of the actual experience and these interpretations may change over time. She has also noted that from the factors that determine the experience some are more explicit or at the surface than other, and both awareness and reflections are necessities in order for the user be able to articulate and express experiences verbally to others.

Due to the complex nature of experience, it has been noted as a rather challenging topic to analyze or evaluate. As user experiences are subjective, situational, contextual and interpretive it is impossible to define an exact list or hierarchy of attributes that affect them. Even though there are design principles and heuristics created to various design fields as well as scientific understanding on basic, general human values and behavior (Kaasinen et al. 2015), true understanding, analysis and evaluation of user experience requires understanding particular users in particular context. User experience analysis involves both the user cognitions and emotions and the various elements affecting those. In a broad sense user experience analysis should take into account various behavioral, social, sensory, emotional, cognitive, situational and contextual aspects as well as various time related phases: the expectations, the actual momentary experiences as well as the interpretations and assessment e.g. on value and quality, as well as the reasoning of those assessments (Sleeswijk Visser 2009).

Service design has aimed to provide one concrete framework to support the understanding and analysis of service experiences. What is characteristics to service design is that it emphasizes the formation of experience especially from the process perspective, as a sum of the different service moments and touchpoints along the service journey. In service design experiences are approached and analyzed from a viewpoint of customer journeys, which consti-

tute of various interrelated service moments and touchpoints or contacts points as described in Figure 4. According to service design approach services are seen, sensed and experienced through these different touchpoint, and the total service experience is formed as a sum of these encounters and the resulting cognitive assessment, which is influenced e.g. by expectations, personal preferences, motives and values. (Kimbell 2009; Koivisto 2011, 49-53; Jaakkola et al. 2015; Mager 2009.)

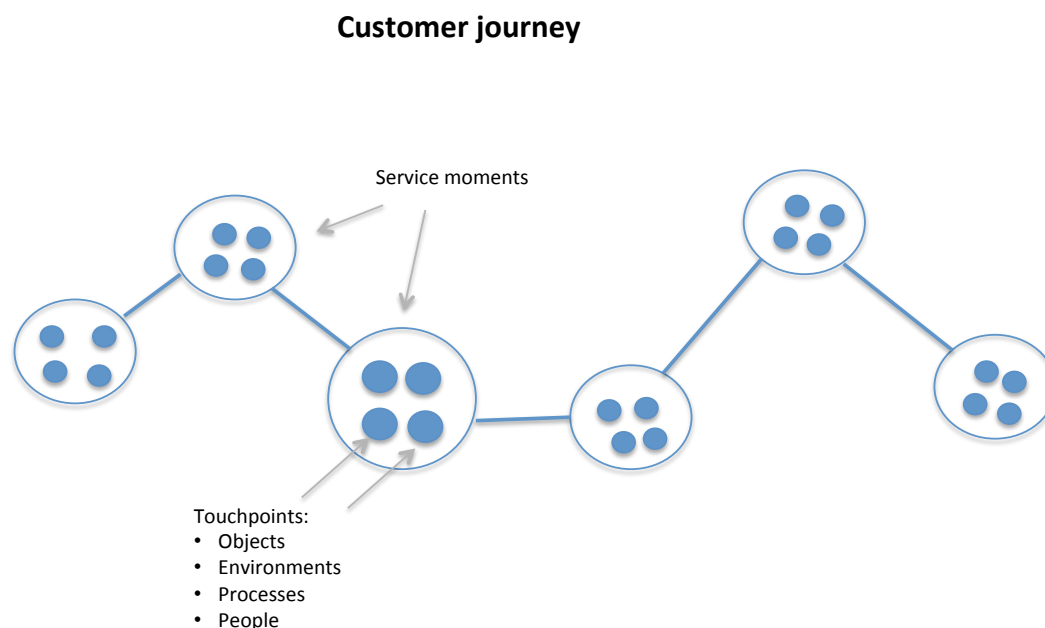


Figure 4: Illustration of the key components of experience formation according to service design approach (based on Tuulaniemi 2011, 80 and Koivisto 2011, 49-53)

Service touchpoints form the building blocks of service experience formation. They have mainly been divided into four different key elements or components: 1. Facilities, environments or channels, 2. objects, artifacts and products, 3. processes, procedures and operations and 4. People and their behavior (Ramaswamy 1996; Saffer 2007, 176). The goal of service design is both to understand the role and importance of the different touchpoints, the service elements and components in question, and then to plan, design and organize them in such way that they create value and positive experiences to the user. (Tuulaniemi 2011, 80; Stickdorn & Schneider 2010, 158; Koivisto 2011, 49-53). In relation to the focus of this thesis, it is important to note especially that is given to the role of service context and environment as a crucial element in experience formation. Saffer (2007) has emphasized that service facilities and environments both send cues to the user and well as influence user behavior. He has emphasized that it is important to pay close attention e.g. to issues important to human sensing, such as interior decoration, lighting, sounds and smells, which have an important role in

how people experience the service moments. Ramaswamy (1996) has highlighted both the role of service facility design referring to the design and organization of the physical space, including e.g. the layout, lighting, guidance and tidiness, and service product design including the artifacts and objects in the space such as the seating and storage solutions. User experience analysis should thereby focus also on understanding and identifying the major, crucial issues related to the construction of experience in the particular physical space and environment as well as the main context related issues affecting the experience, either positively or negatively.

In addition to understanding, analyzing and evaluating user experience the other important and much discussed topic has been how to design or create those positive, affective and memorable experiences. Due to the complex nature of experience, there has been a lot of debate if and how much experiences can actually be deliberately and systematically planned, designed, managed or developed (see Jaakkola et al. 2015, Helkula 2011 and Roto et al. 2011). It is clear that design has its limitations. Due to the special nature of services and the subjective nature of service experiences services always include a level of unpredictability. Many theorists have emphasized the co-creative nature of experience formation and the limitations related to designing or controlling experiences as such (Sleeswijk Visser 2009, 13; Jaakkola et al. 2015). What has been more emphasized also in service design approach is not designing experiences per se, but identifying, understanding, designing and developing those elements and components that crucially influence the experience and can be designed and modified by deliberate actions. In practice this mean especially focusing on the previously listed touchpoint components: the processes and practices, the objects related to the service processes and encounters, service environments and physical surrounding, and the behavior of the people involved in the actual service situations. Thereby it can be concluded that service design approach aims to plan and create service encounters and different touchpoints that support the creation of positive service experiences and to eliminate the sources for negative experiences. This means focusing on understanding and limiting the elements that prompt or provoke negative feelings and enhancing the elements that evoke, support or enable positive ones. From this perspective different service touchpoints and elements can be analyzed, designed and orchestrated, but the actual experience is still formed as and based on the user's respond to those elements (Jaakkola et al. 2015, 190).

## 2.5 User experience and service design in developing health care services and facilities

Health care sector has become a very interesting domain in service design and health care organizations as well as public health care development initiatives have been widely interested in utilization of service design and design thinking. Eemphasis on enhanced user cen-

teredness and role of user experience has also been widely recognized in many countries. (See e.g. Cottam & Leadbetter 2004; Freige & Sangiori 2010; Jones 2013; Teso et al. 2013.) When thinking about the future of health care Bader (2015) has emphasized especially the “experience factors” e.g. the development of customer convenience, clarity and transparency, waiting times as well as building empathy and even customer happiness as important goals. Design units from different universities as well as well known design studios such as IDEO, LiveWork and DesignIt have conducted variety of interesting collaboration projects with health care service providers. These projects have dealt e.g. with refining the patient experience in hospital context, creating a patient-centric experience for children’s hospitals, improving the patient - care practitioner interaction or the knowledge exchange between nurses for improved patient care, shortening waiting times and placing more emphasis on patient emotions in service development (Ideo 2016; Ideo 2015a; Ideo 2015b; Ideo 2015c; Ideo 2015d; Ideo 2015e; DesignIt, 2015; LiveWork 2016; Stickdorn & Schneider 2011, 266-279). The digitalization of health care sector would provide a mass of interesting additional case studies, however, due to the scope of this thesis the cases focused on digital service design are left out.

Some of the same core elements and focus areas have been common to many of the design projects and case studies. Good experiences have been gained especially from building empathy, gaining deeper understanding about emotions and their role in health care and from giving the voice to patients and different stakeholders, including the staff members and involving them directly in the design processes (see e.g. Stickdorn & Schneider 2011, 266-279; Sangiori et al. 2011; Livework 2016). In addition to building understanding about the patients, their needs and emotions, and strengthening empathy, service design has been successfully used for understanding and scoping the challenges faced by health care providers. Based on the experiences from a very interesting case study (Stickdorn & Schneider 2011, 266-279) where Carnegie Mellon University School of Design partnered with University of Pittsburg Medical Center (UPMC) with the goal of improving waiting times, workflow and way finding, it was noted that that even though organizations commonly recognize that they have problems with their services, the problems can may many times be rather fussy or assumed. The role of service design can thereby be to introduce tools and methods to clarify or re-frame the problems, define them more clearly, prioritize them and then to build creative solution ideas to address the identified issues. What was also learned from this particular case study, was the importance of recognizing the design constrains and different priorities along the development processes in the health care sector.

Based on the review of different case studies and research reports it can be noted that there are some specific characteristics as well as consideration points related utilization of service design in health care sector. These include e.g. the highly contextual and procedural nature

of health care services as well as specific emotional aspect related to experiences in health care domain. All of these offer some interesting focus points as well as possibilities for service design projects.

First of all health care services commonly include rather specified processes and steps. Service design can e.g. have a crucial role in identifying the different steps and their role in the service flow and then in organizing the different touchpoints in way that enables the user to reach her goals as effortlessly and pleasantly as possible, as well as to guide the user through the process in a clear, smooth and pleasant way without unnecessary problems.

Secondly, even though health care sector is currently very much in the middle of digitalization process, health care services are still very much contextual, where the context, the physical space and surroundings is very much part of the service experience: either evoking, strengthening or soothing the feelings and emotions connected to different health related situation and service moments (see e.g. Ideo 2015d, Ideo 2016; Ulrich 1992, Ulrich 2008). As noted earlier, service facilities and physical contexts are an important element in both service experience formation and in service design as they form the environment where the experience happens (Ramaswamy 1996; Saffer 2007).

There is an interesting body of research that has been conducted especially on healthcare facilities and environments and their role for not only for patient experiences, but also for wellbeing and even health care outcomes. Based on their project experiences LiveWork design studio has also noticed that the service experience and how the patients rate the service quality seems to have has a clear correlations on how they trust the actual treatment. They have also noted that issues such as cleanliness, well managed reception areas and information materials have even disproportionally big influence on patient experiences (LiveWork 2016).

Ulrich has noted that health care facilities have traditionally focused on functional efficiency or risk reduction of disease exposure, and thereby they have been perceived as institutional, “hard” and “cold”. However, a clear correlation between health care environments and positive patient outcomes has been identified, and according to Ulrich, together with a wider emphasis on experiences and processes that promote wellbeing instead of purely curing health problems, these findings have lead to new perspective that focuses more on the psychological and sociological needs of patients. (Ulrich 1991; Ulrich1992; Ulrich 2000)

In his research Ulrich has very much emphasized the role of patient needs in designing health care facilities and solutions, and paying attention to how health facility design can be psychologically supportive and how design choices can either foster or hinder wellbeing. Several contextual or environmental factors have been noted to have a significant influence on pa-



tients' wellbeing e.g. social support, light and use of colors, access to food and nature e.g. flowers, sky, natural light. On the other poor design and factors such as lack of privacy and noise level have been noted to have the opposite effect, resulting e.g. higher anxiety, stress, even delirium and higher blood pressures (Ulrich 1991; Ulrich;1992; see also Shumaker & Pequegnat 1989). Some of the main environmental elements having influence on patients experiences and health outcomes have been noted to include especially noise, windows versus no windows, natural light and sun shine, occupancy of rooms, flooring materials, furniture arrangements and other environmental factors such as ventilation, use of music and art (Ulrich 2000).

Ulrich has underlined especially the role of stress in health care experiences and how health care facility design should focus especially on relieving stress. He has noted that in many health care situations there are actually two sources of stress: the stress related to patient's medical condition and to the uncertainty associated with it, and secondly stress related to physical and social context that can be e.g. noisy, invade privacy and lack social support (Ulrich 1991, see also Shumaker & Pequegnat 1989). Health care environments should not themselves contain elements that add stress factors, but to facilitate access to features that reduce feelings of stress. Ulrich has highlighted especially three core principles to guide the supportive health care facility development: fostering user control (including privacy), promoting social support and providing access to positive distractions such as nature. Health care facilities commonly include variety of factors that reduce the feeling of control. There are commonly challenges related to e.g. way finding, feeling of privacy, and personal control over e.g. noise, lightning an temperature. Using the viewpoint of supportive design these issues should be tackled and eliminated. On the other hand the characteristics and opportunities in the environment that calm patients, reduce stress, and strengthen coping resources and healthful processes should be strengthened. Based on findings from environmental psychology Ulrich has also suggested that wellbeing can be enhanced by moderate degree of positive stimulation e.g. related to lighting, sounds and colors. Especially natural elements such as plants of water have been found to have a profound effect on people's stress level and sense of wellbeing. (Ulrich 1991; Ulrich 1992; Ulrich 2000b.)

In addition to patient experience and wellbeing supportive design emphasizes the role of facility design on staff experience. It has been noted that health care facilities have been traditionally included poor design solutions also from the personnel point of views, e.g. poorly designed work stations or lack of adequate areas for free time. It has also been highlighted how stress experienced by patients and enforced by poor design influences also the staff members. (Ulrich 1991, see also Shumaker & Pequegnat 1989.)

Based on the review, it can also be noted that there are still some specific challenges related

to utilization of user centered approach and service design in the public health care sector. Even though user centeredness and service design have become very popular concepts in variety of strategy and development documents, it has been noted that the level of user centeredness in actual service development and familiarity with e.g. tools and methods service design can offer still vary greatly. For example, based on experiences from Finnish health care sector both Tiehaara (2015) and Virtanen et al. all (2011) have noted that even though the need and value of user centered approach has been emphasized in the strategic level already for years, there are wide differences in perceptions as well as especially in concrete activities. There are variety of influencing factors, such as economic pressures as well as the traditional perceptions related to provision of public health care services that have been seen as hinderers of the development and activities in a concrete level. Especially the economic pressures are many times seen as emphasizing more effectiveness than the user experience in public health care (see also Sangiori et al. 2011). Secondly, public health care has not traditionally been one of the sectors where the decision power of the customer (patient) has been the strongest (Tiehaara, 2015). However, this has been changing dramatically related to e.g. privatization of health care services and it seems evident that there is a wide interest for turning also the public health care sector to be even more patient centered than it has been. It has been noted that both decision makers and professionals in the health care sector could benefit from having more practical tools and experiences related to user centered service development and service design for executing this turn concretely (see e.g. Jones, 2013).

### 3 Development project: Service design approach for clinic renewal

#### 3.1 Background, context and case organizations

The thesis project was conducted spring 2013, in the context of a larger collaboration between University of Cape Town (UCT) Lung Institute<sup>1</sup> running the clinic renovation and the Design Department and the Cape Peninsula University of Technology (CPUT) where I was as an exchange student during that time.

The case clinic is the oldest medical clinic in Cape Town, administered by the City of Cape Town and located in culturally historical neighbourhood that is under socio-economic change. Special emphasis in the clinic operations is placed on pediatrics, with an extensive program

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<sup>1</sup> The UCT Lung institute is a registered company owned by the University of Cape Town. It's mission is to address priority health issues in Southern Africa through education, research and service. The institute serves public by educational and health promotional activities, and by providing several unique clinical and community services. The UCT Lung institute is involved with various social outreach and community-centric development initiatives (The University of Cape Town Lung Institute 2013).

for infants and children. Another priority area is the implementation of the National Tuberculosis Program where patients are both screened and treated for TB. A lot of effort has also been put to build a program for antenatal care and providing exemplary maternal healthcare in the future. There have also been plans that in the future part of the clinic would serve as a special ARV clinic for HIV positive patients (UCT Lung Institute4Community 2013). The goal of providing excellent service to these very different customer groups and the need to understand and take into consideration their different requirements had implications both on the clinic development process as well as to this thesis project.

The city of Cape Town had for several years been collaborating with UCT Lung Institute with the goal of renovating the clinic. Lung Institute had already run and administrated a renovation project focused on a small part of the clinic in 2010. This part of the clinic is separated from the rest of the clinic and focuses on the Employee Wellness Programme for City of Cape Town employees. Following the 2010 renovation a decision was taken to extend the renovation to involve the entire clinic. UCT Lung institute saw the project as a pilot initiative through which they hope to forge a new kind of, sustainable collaboration models with local businesses in renovating numerous clinics throughout the city. Through the pilot, UCT Lung institute hoped to identify how the nature of collaboration between different stakeholders, especially companies and public sector organizations, could be changed or developed for the future. (Whale, interview 10.5.2013)

The opportunity for the thesis project was raised when the project manager of the clinic renovations contacted the CPUT Industrial Design department to discuss possible collaboration concerning the renovation and re-design of the clinic. It was perceived that the collaboration would fit well in the context of CPUT activities, focusing on design for social innovation (CPUT DESIS Lab 2014) and providing the industrial design students interesting project opportunities. During the initial collaboration discussions it was perceived that it would be good to start with a broader, service design approach to enhance a holistic and user centered view in the renovation and renewal, and to gather further understanding about the needs, experiences and desires of the users of the clinic (both patients' and staff members') before jumping into concrete industrial design solutions. During the discussions the planning of the clinic renovations were already in a rather advanced stage and moving on quickly. The goal was that the service design project could feed information and insight both to the already planned renovations as well as for the potential further design activities that would be carried on by the CPUT industrial design students.

It was also identified that the collaboration could function as a pilot, from which the findings and lessons could be used in other contexts as well, and that the larger collaboration connected to utilizing design in renovating and developing clinics around Cape Town could well

fit into the Cape Town World Design Capital 2014 programme (Futerman & Whale, discussion 30.4.2013). The idea was that UCT Lung Institute and CPUT (as well as other stakeholders) could in this way gain experiences as well as practical framework (process model, tools and methods) that could be utilized also in other, similar development projects with other clinics around Cape Town.

### 3.2 The double diamond model for a service design process

I decided to use the Double Diamond model by UK Design Council as the process model for the service design project. The double diamond model was chosen because it offers a simple, but goal-oriented and adaptive model that can be used as framework and reference point in concrete service design projects. The strength of the double diamond model is also the emphasis on the convergent, divergent and iterative nature of design processes.

The double diamond model was created by the UK Design Council in 2005 as a simple, visual description of the commonalities in design process that includes both divergent and convergent phases (see Figure 5). The double diamond consists of four phases that follow each other and are named 'Discover', 'Define', 'Develop' and 'Deliver'. To put it shortly, the main goal of the 'Discover' and 'Define' phases is to understand and define the actual, right challenges to be solved and the main goal of the 'Develop' and 'Deliver' phases is to find the right solutions to those identified challenges and then to implement the design solutions. (UK Design Council 2015.)

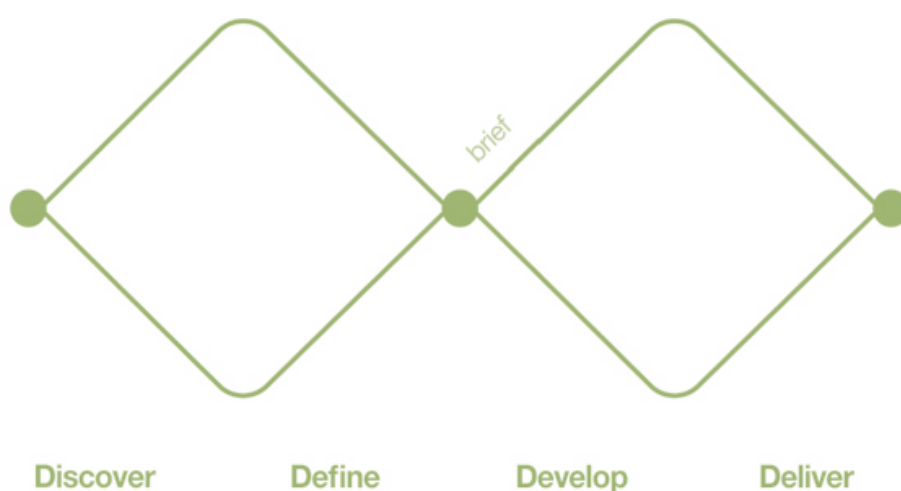


Figure 5: The Double Diamond model for service design processes (by Design Council 2015)

The 'Discover' phase is focused on framing the context and scope of the design project and on identifying and understanding the various possibilities and factors influencing the identi-

fied challenge area. The activities in this phase focus on conducting research and gathering insights to understand the current state, challenges and opportunities, as well as the needs, requirements and desires of the current or potential users. (UK Design Council 2015)

The goal of the 'Define' phase is to analyse, interpret, review and narrow down the findings and make sense of the identified issues, in such ways that a clear design brief can be created to frame the design challenge to focus on and to take further to the 'Develop' phase. Questions such as what are the things, challenges or opportunities that matter the most, what to focus on, as well as what is perhaps feasible to be tackled are dealt in the 'Define' phase. (UK Design Council 2015.)

The 'Develop' phase is focused on exploring, creating, sketching, validating, testing and iterating different concept and solution ideas. And then, during the final 'Deliver' phase the results of the project (e.g. new products, services, service systems or environments) are finalized, produced and launched. (UK Design Council 2015.)

This thesis project can be described with the adapted double diamond visualization in figure 6. Due to practical reasons and changes related especially to timetables this thesis project ended up focusing on only the 'Discover' and 'Define' phases, touching only briefly the preliminary ideation of the 'Develop' phase. The chosen re-design focus areas and development ideas were taken forward to the 'Develop' and 'Deliver' phases by the CPUT design department and students, as well as additionally by the clinic project manager as a part of the ongoing renovations.

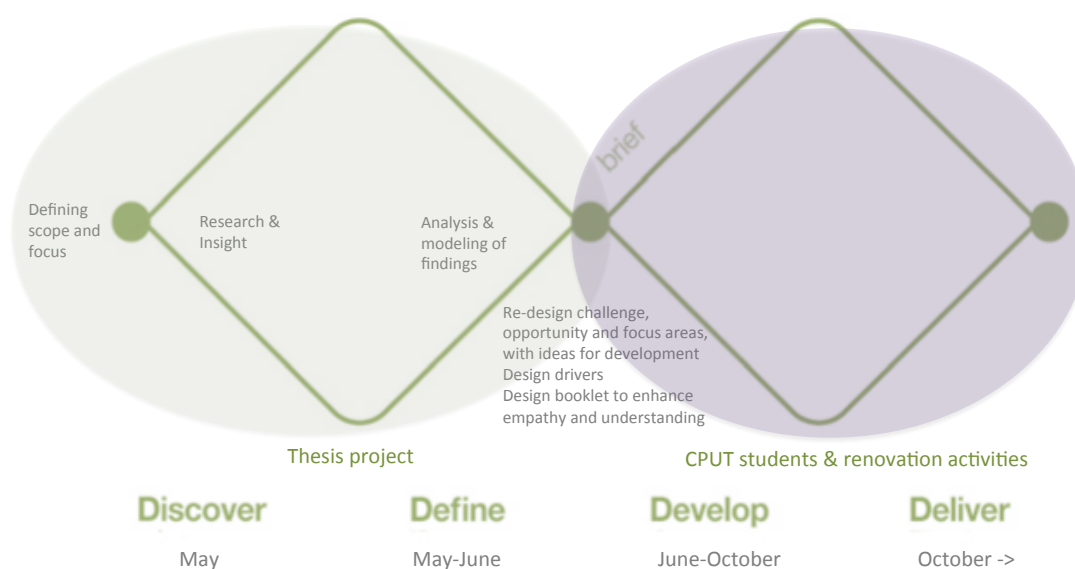


Figure 6: Adapted Double Diamond model describing the thesis project and the larger clinic renewal and re-design process.

In this case the main goal of the 'Discover' phase was to understand the context of development and the experiences, needs, desires and requirements of the different patient and personnel groups, as well as to involve the users in the ideation of the renovation and re-design solutions. The main objective of the 'Define' phase was to analyze and report the findings from the 'Discovery' phase in an easy to grasp and clearly communicated format, to provide understanding and to build empathy, to support the decision making concerning the main challenge and opportunity areas, and to provide concrete directions and support for further development. Various methods were utilized both to gather data and to form insight, to involve the users in the process and as well as to analyze and model the findings. The used methods, the gained insight and results and how the project proceeded are described next.

### 3.3 Discover phase: conducting research and gathering insight

#### 3.3.1 Kick-off workshop: setting the goals and scope for the project

In the first phase (after the initial discussion) I met with the Project Manager of the renovations in a mini-workshop to discuss in more detail about the goals and practicalities of the thesis project, as well as the vision, larger goals and current status of the renovations. The main focus of the workshop was on scoping the vision and goals of the service design project, discussing the focus and possible limitations, the role of different partners as well as agreeing overall on the project practicalities. The research and insight gathering was also started in the workshop, by forming a basic understanding of the clinic context, operations and situation.

I drafted some templates to guide the discussion (see examples in Figure 7). These included a sentence completion template for a vision statement of the renovation and re-design, a template to define the scope and goals aka the current perception of the re-design challenge areas in few points, a template to list the potential special consideration points and limitations and a template for listing preliminary drivers for re-design. I also created an illustrated floor map of the clinic for describing the current plans and ideas. The idea was that the floor map was to be updated as the renovation plans proceeded.

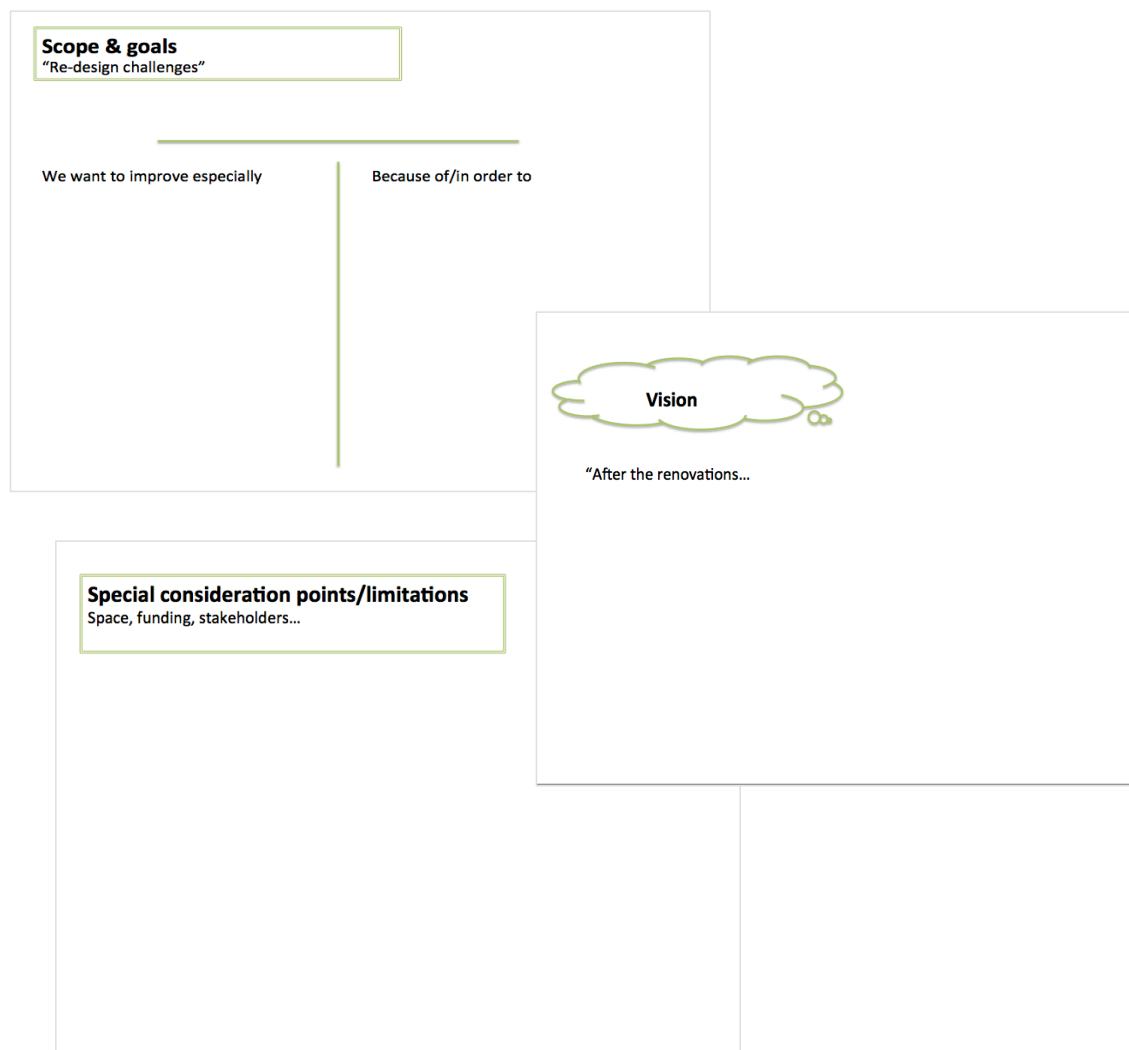


Figure 7: Templates used in the kick-off workshop.

It was identified that the space is not as user-friendly and appealing as it could be, the goal was to move from institutional to warmer feeling. The goal was also to serve the different user groups in a sensitive way, considering their special needs, and to facilitate the daily work of the personnel and to provide also them user-friendly environment. It was also identified that the building needs maintenance before it gets too difficult. The project manager envisioned that: *"after the renovations, we hope that the clinic will be a space all stakeholders will be proud of. That it will fulfill its community needs in a sensitive and thoughtful way. Plus that it will showcase the vibrant culture of the area in which it is situated."*

Together with the project manager of the renovations we also did a stakeholder mapping exercise to identify the different actors in the project and their planned role. Stakeholder and context maps are a great tool to use when starting service design process. Stakeholder maps can be used especially to build understanding about different actors, their connections, roles

and interactions. Stakeholder or context map is a visual or physical representation of various groups connected to the service or design challenge in question. Stakeholder groups can be categorized or combined based on different attributes, roles and motivations. Maps can have various different formats, but they should identify the stakeholders, their importance and role and relationships with each other. Maps can also include the interests and motivations of different stakeholders and to portray how they are connected and how they interact with each other's. Different visualizations can help the mapping and gathering information that is not easy to verbalize. Also different artifacts, tools and technologies can be included in the map. Stakeholder maps can be adopted and modified based on the project in question. In some cases the whole surrounding service ecosystem can model and visualized to e.g. to identify the missing elements, problems and opportunity areas. (Koivisto 2011, 55; Stickdorn & Schneider 2010, 150-153; Miettinen 2009; 15-18; Moritz 2005, 187-189.) In this case the exercise helped especially to quickly form a picture of the various stakeholder involved.

The filled templates were placed on a wall of the project room inside the clinic (see Figure 8) also for the personnel and other stakeholders to see, to enhance the transparency of the project and to communicate the goal of involving the staff members closely to the process.



Figure 8: Picture of the filled templates that were placed visible for the staff members and other stakeholders to see at the clinic.



The workshop helped build a shared understanding of the goals and context as well as of the current state and plans related to the larger renovation process. The scope and goals of the renovation and re-design were listed to include especially the improvement of the user friendliness of the clinic, with a special focus on the patient flow and on the other hand the staff working experience and conditions. The identified preliminary drivers for the development were user friendliness, safety, dignity for all and enhancement of positive experiences. The identified vision, goals and drivers (See Figure 9) for the overall renovation and re-design process were used to direct the focus of the service design project and the research phase that was to be started immediately. We agreed that the research phase would focus on analyzing the current user experience of the clinic, both from the patients' and from the personnel's point of view and identifying needs, opportunities, focus areas and ideas for development. It was also agreed that the goal is to involve the patients and the personnel more closely to the renovation and re-design process. Additionally the goal was also to support the work of the different stakeholders involved in the renovation and re-design, especially by providing insight and understanding about the users, their needs and desires. The illustration below (Figure 9.) visualizes the process of how the service design project goals and focus areas were defined based on the workshop.

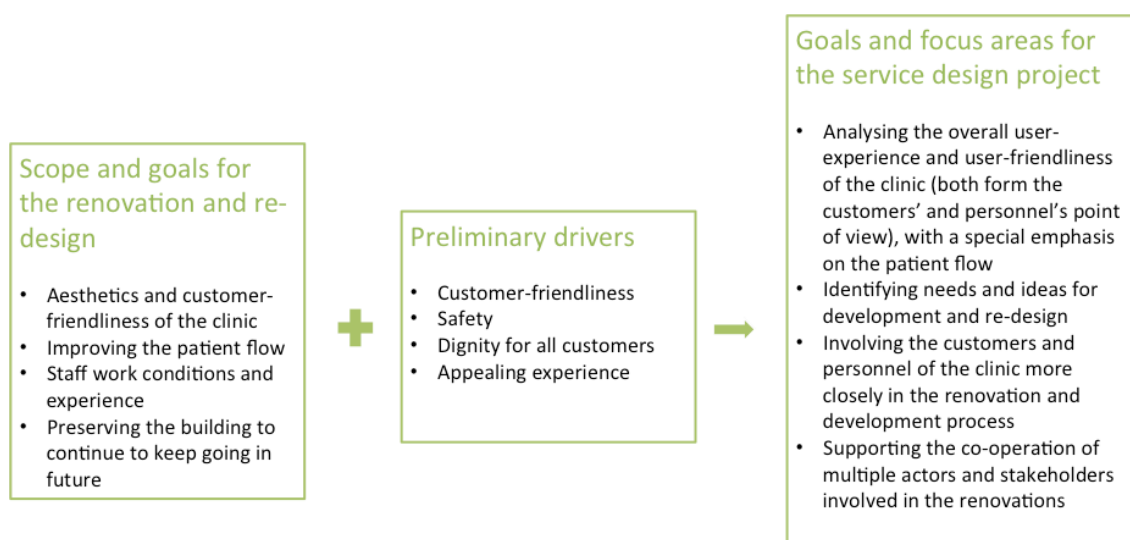


Figure 9: Visualization of the project goal and focus area definition based on the workshop.

The kick-off workshop helped also to identify and understand the limitation and constraints for the renovations and re-design. These included e.g. the finite amount of funding and the fact that the clinic needs to remain operational through the process. Given these, some potential re-shuffle of spaces was not easily executed. It was also emphasized that the security issues need to be considered in any possible idea for renewal.

### 3.3.2 Conducting observations

I decided to start the research phase by using observation as a method for gathering both initial understanding as well as for identifying issues affecting the user experience, by looking at the clinic with the eye's of a user.

Observation is an ethnographical method that happens usually in the real environment of the user. The goal is to get close to the user's world and to be able to see her natural behavior and practices in real life surroundings. Through observation the researcher can identify both strengths and challenges in the current services as well as to gather understanding about the factors and elements related to those challenges. As a method observation is both descriptive and interpretative. Observation helps the researcher to immerse herself to the context and situations where the services are experienced. Spending time in the service context may help the researcher also to spot issues that the users may not be able to recognize by themselves. (Hämäläinen, Vilkkä & Miettinen 2011, 64, 73; Stickdorn & Schneider 2010, 156-157)

Observation was conducted in a period of two weeks, in the general areas of the clinic as well as in the staff areas (except private patient consultations). Specific observation themes were listed to guide the focus. These included:

- Processes and way finding, patient flow and moving around in the clinic
- Interactions: between patients and staff, with other patients, surrounding, and the information provided
- General surroundings, the space, environment and artifacts related elements affecting user experience
- General observations on staff and patient actions, their activities and expressions etc.

Variety of issues affecting both the user experience as well the patient flow were identified during the observation. The findings related to the user experience were especially connected to direct sensory experiences (such as the temperature and noise level of the clinic), to way finding and the guidance available and to the organization of the physical space and the furniture. It became quickly evident the challenges related to way finding and guidance and on how the furniture and the very limited spaces were organized were also clearly influential regarding the patient flow and how people moved around and behaved at the clinic.



Figure 10: Pictures from the observation phase and observation notes.

### 3.3.3 Contextual interviews with the patients and staff members

The second main method that was used was contextual interviews. Along observation, contextual interviews are one of the key ethnographical research methods used in service design. Contextual interviews are very effective and flexible method to gather understanding about people's behavior, opinions, thoughts and perceptions. Contextual interviews are conducted in the actual environments where the service happens and many times while the interviewees perform the actual tasks. Contextual interviewing combines both observation, interviews and probing. Contextual interviews can be conducted with different stakeholders, and it's a great method to gain versatile understanding, combining what people say and do. The actual environment prompts the discussions and data gathering. It is easier for people to remember and discuss issues in the natural environment. For the researcher it is very beneficial to gain more holistic understanding by seeing and understanding the physical and social environment and real practices. In contextual interviews it is crucial to create a trusting and comfortable feeling for people to share their life and experiences, as well as naturally to document both the interview and environments. (Stickdorn & Schneider 2010, 162-165; Moritz 2005, 187)

In this case 10 staff members and 13 patients were interviewed in the clinic context. In addition, more, shorter and more informal discussions were had with both patients and staff members on special themes. The interviews and discussions were conducted using contextual interview approach, where both patients and staff were interviewed in spaces where they could also show the things and areas they were talking about. I used semi-structured interview templates that were modified to the different interviewee groups. The question themes were selected based on the project goals and focus areas.

Main questions for the patients focused on gathering understanding on the following themes:

- What made them come to the clinic in first time, did they have some expectations before visiting and did they find the clinic easily
- When arriving to the clinic, was it easy/clear to know where to go and what to do
- How did they find clinic and visiting there. What are the best/good things in the clinic
- How about what would need to be improved or changed
- How they find the clinic building and the space. How does it feel to be in the clinic
- How would they describe the clinic to a friend
- What would they like to renovate, why and how
- How would they like the clinic to be or look after the renovations
- At the end of the discussion the patients were given an opportunity to express freely any thoughts, ideas or suggestions related to the renovations they may have

The interviews with the staff members included some of the same questions, especially regarding their thoughts and feelings related to the space and their needs and wishes for the renovation and changes. The interview included also more specific questions regarding their the potential challenge areas that affect their work or the patient flow. In addition, the interview included discussions of their personal work content and processes and how the clinic facilities support their work. The staff members were also asked about potential feedback the patients have provided to them earlier regarding their experiences and the potential development areas. Interviews with the personnel and especially with the clinicmanager were also crucial for forming an understanding about the different patient types that visit the clinic.

The interviews provided a mass of concrete insight about the thoughts, experiences, needs and wishes of both the patient's and the staff members. Comment's from the users included e.g. the following:

*“This is a good place to come, nice, except the baby area. It is too open and cold.”* (Female patient, family planning, 30 years old)

*“The personnel are very helpful, but first time that I came here I was a bit skeptical because there are tubi patients too. Maybe there could be one area*

*for babies and one for others. There should also be more space for families for waiting.” (Female, mother of three small children, 40 years old)*

*“The place could use a uplift. There could be a fence to protect the place. And a phonebooth. They could improve the privacy, now there is no privacy here.” (Male, TB clinic, 50 years old)*

The interviews provided understanding about the different user types and their specific needs and focus areas. Some of the issues that were highlighted in the interviews were more connected to personal and emotion focused aspects, compared to the findings of the observations. The interviewees emphasized e.g. the privacy challenges related to the current use of space, especially in the waiting areas. The interviews enforced the understanding that clinic visits and health care related service experiences are very personal and associated with various challenging feelings and emotions, such as fear, stress, vulnerability, insecurity, even shame. Those feelings and emotions can either be enforced or relieved both by human interaction as well as by physical surroundings. Foremost they are an important to take into consideration.

The interviews made it also possible to deepen and confirm some the findings from the observations. One of the main findings was related to understanding the differences in the planned processes related to guidance and communication and the actual behavior of many of the patients, and the affect these differences had to the patient flow and especially to the preparation/triage area.

#### 3.3.4 Questionnaires and other written feedback options

In order to provide the users also alternative or additional means for providing feedback, as well as for gathering more data also during the times I did not have the possibility to personally be at the clinic I decided to use also questionnaire based data gathering methods. Questionnaire is a common research method, which relies on data gathering in written format. Questionnaires are many times used when delicate issues are being researched. The idea is that the respondent can both read the questions and write their answers by themselves and that the answers remain anonymous to support the feeling of privacy (Vilkka 2015, 94).

In this case both staff members and patients were provided an opportunity to give feedback and suggestions anonymously in written format through a very openly structured questionnaires that could be returned to the feedback boxes placed to the waiting hall and to staff recreational room. The questionnaire included only four very informal questions to make giving feedback as easy and informal as possible. The questions were:

- How could the clinic be made even better? What should be improved changed or renovated?
- Do you have any concrete suggestions for the renovations?
- What is important to remember or think about during the renovations?
- Any other thoughts or ideas?

In addition to the short questionnaires, both the staff members and the patients had an opportunity to provide feedback and ideas by writing their thoughts to post-its and placing them to a floor map of the clinic. These floor maps were placed next to the feedback boxes (see Figure 11). The idea was that post-it could be used to connect the feedback to the actual physical location that it is related to. The goal was that the floormap and comments written by other could prompt both the patients and the personnel members to communicate their thoughts and ideas.

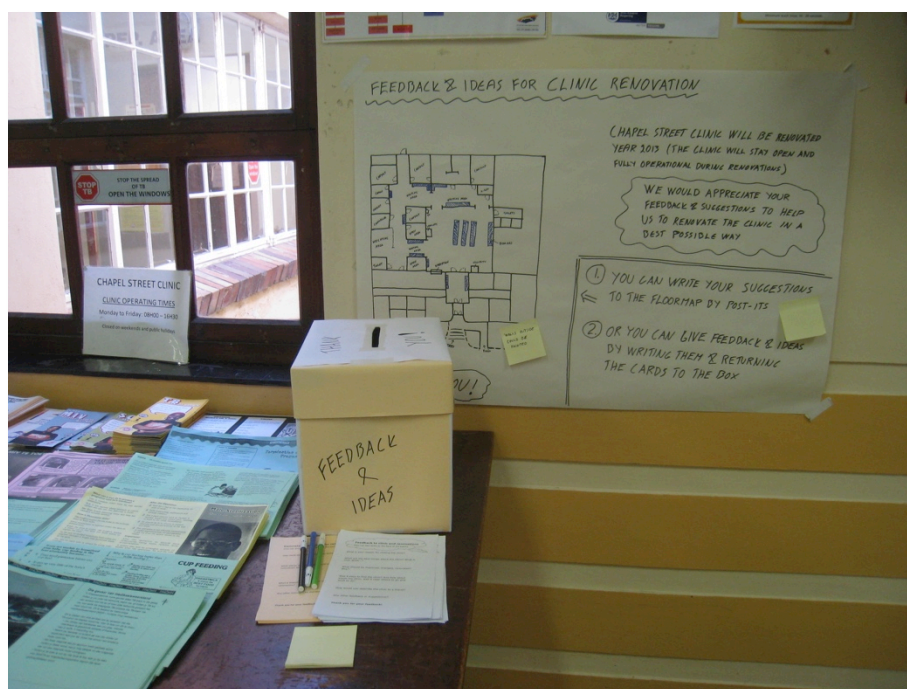


Figure 11: Picture of the used questionnaires, feedback and idea box and floor map.

The written methods did not prove to be very efficient way in this case to gather feedback neither from the patients nor from the staff members. Only few responses were gained and none of them actually written to the questionnaire. The feedback that was received was written to plain papers, wishing or suggesting very practical things such as soap to the toilet, more nurses for the preparation/weighting area, toys and park for the children or a small tuck shop to the clinic.

### 3.3.5 Staff workshop

I also organized and held a workshop with the staff members to gain more in-depth insight concerning their needs and desires for improvement and re-design, as well as to very concretely involve them in the ideation of the renovations.

User workshops can be described as creative sessions, which combine group discussion with various projective tools and techniques to support users to express themselves and to provoke latent and tacit knowledge, opinions and experiences. Such tools and techniques can include e.g. list making, sentence completion, drawing, building collages such as moodboards or different kind of exercises for mapping, scoring and imagining (Mariampolski 2001, 50-51).

The two-hour workshop in this case included the following themes and exercises:

- Discussion on the current renovation plans
- Mapping the thoughts, needs, ideas, hopes and consideration points regarding renovation and re-design needs on both personal working spaces as well as in general areas (by using pictures of the clinic)
- Ideating the personality of the clinic, children play area, development of general, waiting areas and utilization of open spaces (by using moodboards)
- Discussion on preparations for the renovation period

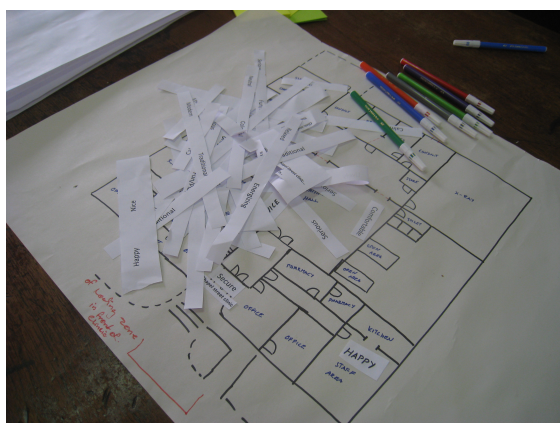


Figure 12: Pictures from the workshop organized with the clinic personnel.

One method that was adapted especially to fit this case and context, and proved to work very well was a kind of environment mapping exercise created based on photos from different common areas and rooms in the clinic (see Figure 13). The participants were provided printed pictures from the different areas of the clinic, and they could freely choose pictures of the areas they felt that need improvement and changes. Different color post-its were used to communicate different kind of feedback and ideas, to mark the good things/areas that should be preserved, the areas that especially need to be changed or renovated and the concrete ideas and suggestions for change.

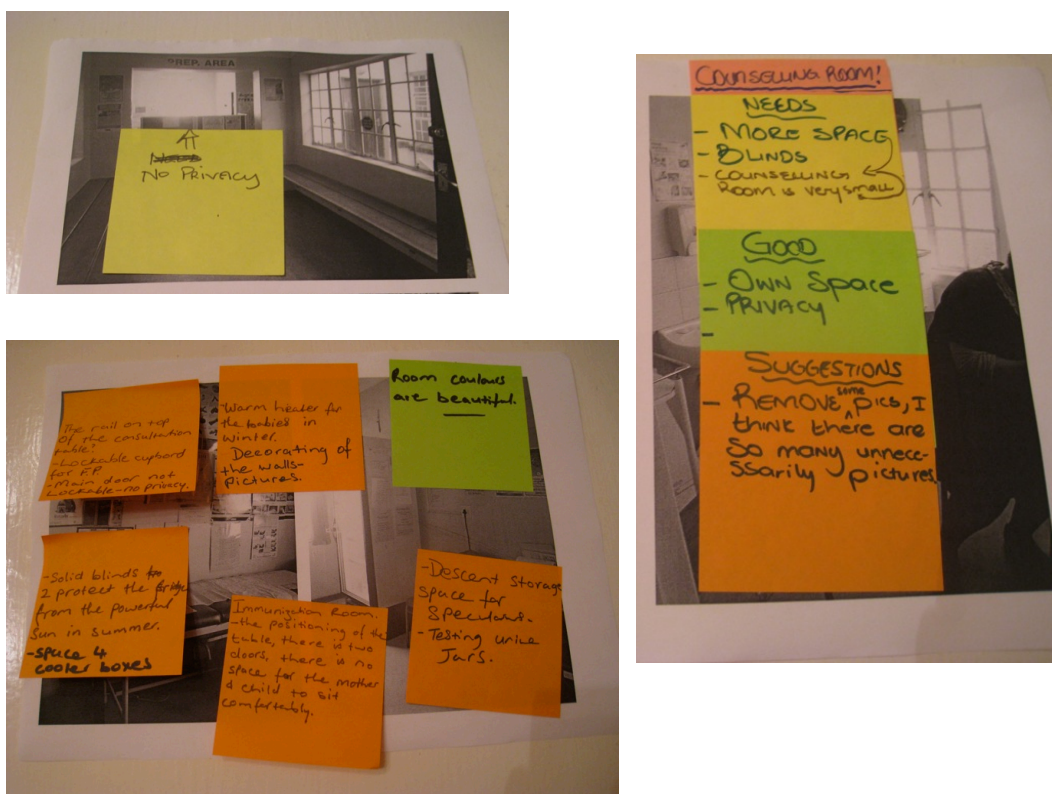


Figure 13: Clinic pictures were used to mapping the needs and ideas for development.

The feedback and ideas gathered with the help of the pictures helped to confirm some of the previously identified challenges related to both the user experience as well as the patient flow, especially in connection to the current layout and organization of the clinic, the waiting areas and the preparation/triage area. What was especially useful with the pictures was they way they helped the staff members to identify and locate very concrete development areas especially in their own work spaces that were not so easily observable as the actual patient care situations could not be included in the observations. The staff emphasized issues such as challenges with storage solutions, problems with toilets and specimen sample processes.



We used also moodboards at the end of the workshop to envision and ideate the personality of the clinic (see Figure 14). Moodboards are a great method to visually communicate different ideas that may verbally be difficult to explain. Moodboards are user created collages of pictures that visualize their thoughts, hopes, dreams and feelings. Moodboards are especially good at communication atmospheres and feelings (Sleeswijk Visser 2009, 34).



Figure 14: Moodboards created by the personnel members.

Participants were provided different magazines to take visual images from as well as pre-written adjectives that could be used for inspiration. The participants were also encouraged to draw and write freely to papers to describe their thoughts and ideas about their vision of the clinic in the future. With the moodboards the participants wanted to focus especially on ideating how to improve the children clinic look and feel of the clinic. It became evident that many of the participants envisioned the clinic to be both more colorful and to evoke warm feelings in the future. The adjectives the staff members attached to their moodboards were commonly: colorful, bright, relaxed, nice, happy, fun, playful, comfortable, as well as secure and educational.

Together we formulated the following vision of the personality of the clinic: *“Clinic is both welcoming and secure at the same time. The clinic provides patients a comfortable, nice, relaxing, bright and modern surroundings. The clinic has a lot of children patients, to whom the clinic provides safe, non-intimidating visit with educational and colorful space. The staff have functional and comfortable working spaces as well as a shared staff area that supports happiness, where they can relax and take their minds off from their daily work and share their experiences.”*

### 3.4 Define phase: Analysis and modeling of findings

As described earlier, the project had two main goal areas: one focused on identifying challenges, needs and opportunities related to user experience and the second one to strengthening user centeredness, both by enhancing the direct involvement of different user groups in the process and by enhancing the user understanding and empathy. Different data analysis and modeling methods were used to reach these different goals.

First, the collected data was divided into different themes, and the most common and emphasized findings were grouped together to see what kind of themes and patterns emerge, especially concerning the challenge and opportunity areas. Secondly specific service design methods were used both to analyze and model the findings. These methods are described in the following.

#### 3.4.1 Creating patient personas and staff member profiles

Based on the conducted research, I created personas and user profiles especially with the goal of enhancing the understanding of and empathy towards different patient and staff member groups, and their special needs and focus areas.

Personas are fictional descriptions of the different users types (archetypes) that are created based on gathered research data. Personas are usually created based on the shared motivations, needs or goals of a specific user type. Personas describe the behavior, goals and focus areas of the user type in question. Personas usually include also personalized characteristics that make the persona “come to alive” to guide the design work, instead of impersonalized target group data. They describe a “character” which stakeholders and designers can relate to. Creating personas in a group can also facilitate understanding and discussion on customer segments. Personas are created by identifying patterns, grouping research data (both qualitative and quantitative) and then developing a character around it. Also assumption personas can be created in the early phases of design process and then to be iterated as the knowledge

of the actual users increases. (Stickdorn & Schneider 2010, 178-179; Moritz 2005, 220; Koivisto 2011, 59)

First of all the different patient types (see Figure 15) visiting the clinic were identified mainly based on interviews with the clinic manager and personnel. The different patient types included:

- Children, from infants to 13 year olds that come to clinic for immunization or due to illness
- Parents bringing their children to the clinic
- Teenage or adult females, visiting for family planning /contraception
- Males and female patients visiting for testing or treatment related to HIV, STI's or tuberculosis

It was also noted that future plans of new service areas for the clinic will have implications also for both of the patient groups, resulting with user types. One of the main challenges of the clinic is that it serves very diverse patient groups, which have rather different needs.

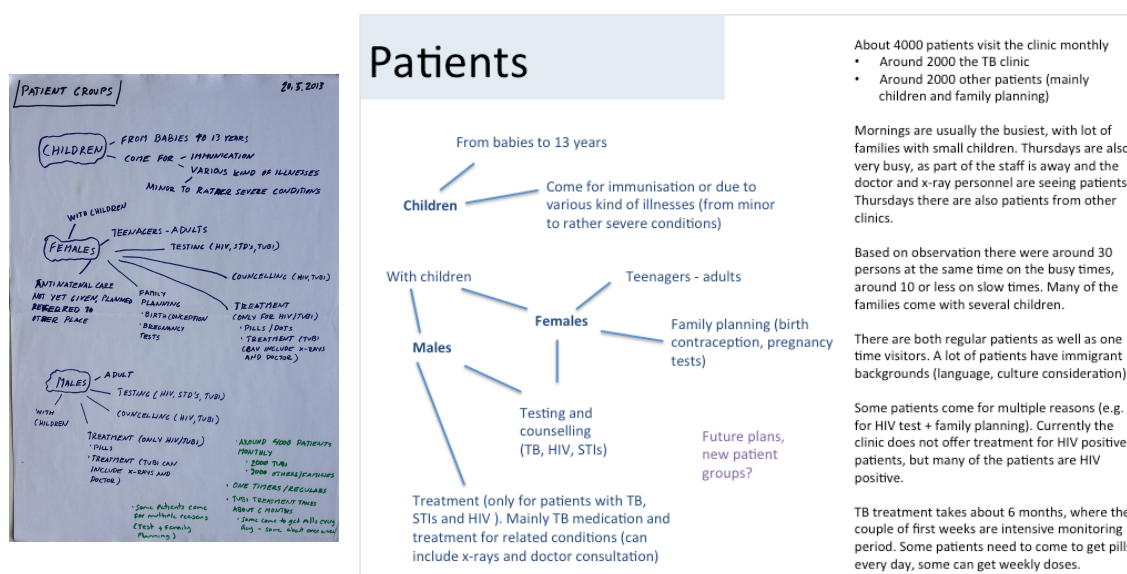


Figure 15: Illustration on how different patient types were first identified for the basis of persona creation.

Based on this preliminary categorizations and the conducted patient interviews it was possible to identify different patient profiles that have different, specific needs, experiences and focus areas related to the clinic. All together six main patient profiles were identified and described as personas: a small children patient, her mother who has also other small children,

a teenager coming for contraception, a HIV positive mother, a male patient with tuberculosis and a female patient suspecting that she may have caught tuberculosis.

The created persona descriptions (see example in Figure 16) included a description of the patient profile and her or his background, reason and goals relates to visiting the clinic, previous habits related to the clinic visits, main thoughts and experiences with the clinic and a description of the issues that the persona finds especially important regarding the clinic.

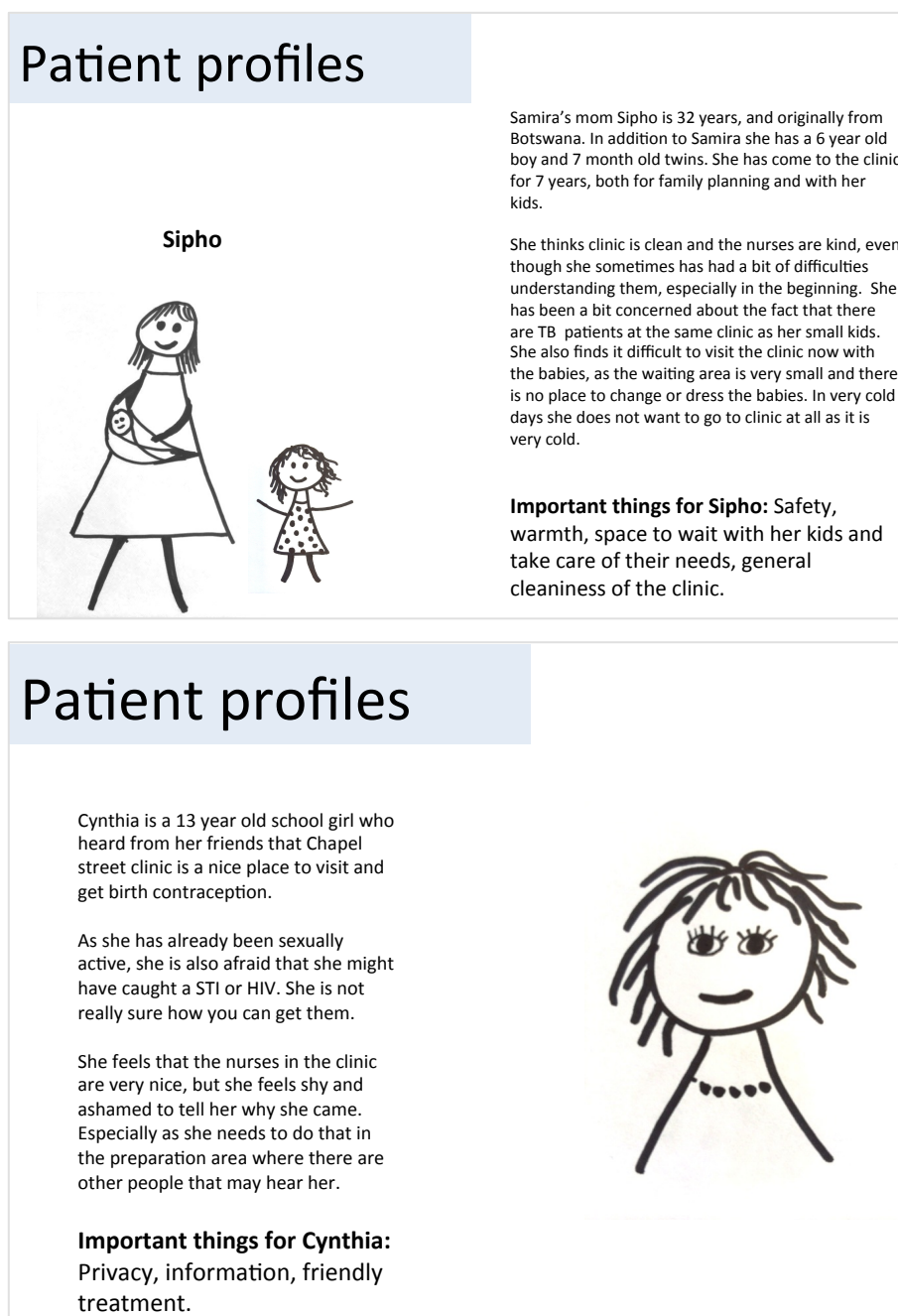


Figure 16: Examples of a patient persona descriptions.

In this case the users of the clinic consist of both patients and staff members. Staff members have dual role as both service providers as well as users of the clinic and beneficiaries of the re-design and renovation process. The clinic staff members were profiled based on their job descriptions and main tasks (see examples of a personnel profiles in Figure 17).

## Personnel profiles

### Assistant nurse

Works mainly in the preparation/baby weighting/triage area, no personal room. Works also a lot at the reception office.

Has very important role in the patient flow and interaction. She collects the patient folders from reception, assesses and prepares patients (by asking about their reason for visiting, weighting, potentially measuring temperature etc.) and after assessment and preparation instructs them forward and delivers the filled folder to sisters' baskets. She also files the information on computer afterwards. She sees various type of patients, but her work does not entail actual testing or treatment.



## Personnel profiles



### Counsellor

She is employed by a NGO. Works in a personal counselling room which is very small. Her work entails mainly testing (also pregnancy tests) and counselling (no treatment). She sees various type of patients (with STIs, HIV, TB)



Figure 17: Examples of a created personnel profile.

All together 11 different personnel profiles were identified and described (in addition two visiting staff profiles). The goal with the personnel profiles was to support the understanding of the different roels and main activities the different staff members have in the clinic. The profiles of different members were also connected to different physical areas of the clinic the as well as to their role in the patient flow.

### 3.4.2 Visualizing user journeys

The research phase re-enforced the understanding that the user experience of the clinic is created and affected by variety of different touchpoints and factors along the service journey, from arriving to the clinic throughout the moment and process of leaving (see Figure 18). The patients are in contact not only with the personnels, but also closely with the space and building, with different physical objects and with different processes and practices.

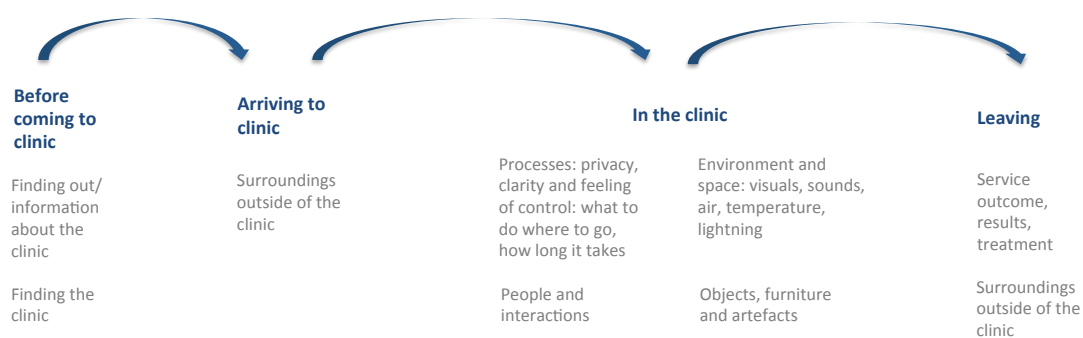


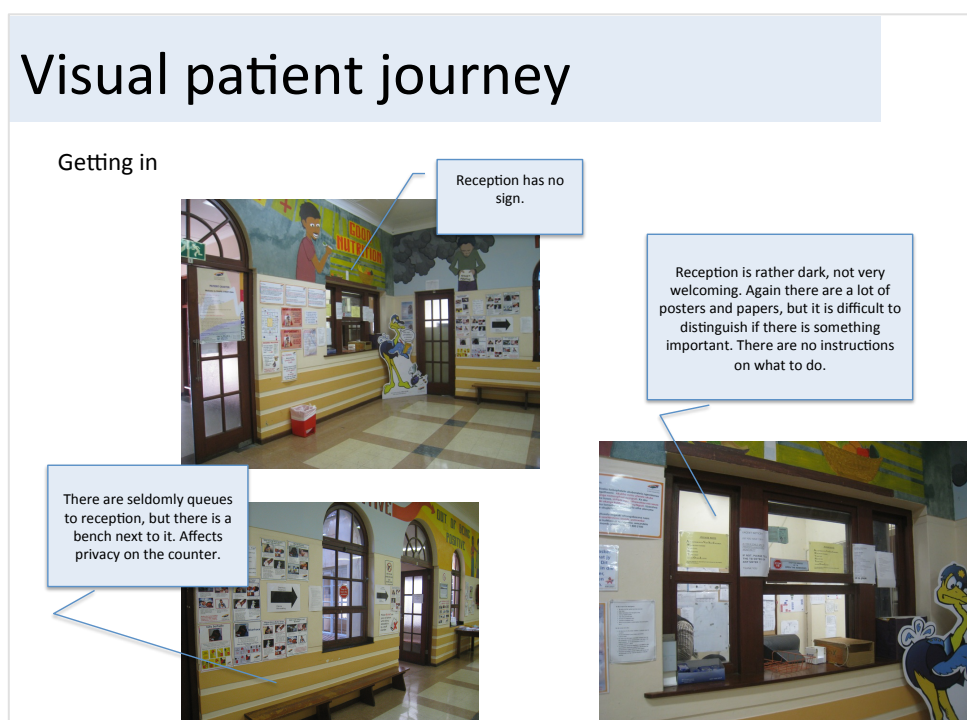
Figure 18: Summary of various phases, service moments and touchpoints affecting the user experience before, during and after clinic visit.

I used a visual user journey mapping to analyze and describe how the customers experience the different steps along the journey of visiting the clinic. Journey maps (or sometimes referred as experience maps) aim to provide vivid representations or visualizations, engaging stories of the users experience, by describing the service contact points, interactions and emotions. The basic idea behind journey mapping is that service experiences consists of various service moments, periods and touchpoints that follow each other. Together these formulate customer journeys, a "whole service entity" providing or offering value to the customers. Customer journey describes what the users sees and experiences in different phases of the process, including the interactions before and after the actual service encounter. Customer journeys, different elements and touchpoint can help both understanding, analysis and development of the service process, to identify problems and opportunities, as well as critical

development areas. Customer journeys can be created to both describe existing and as well as for concepting new services. (Koivisto 2011, 49-50, 55; Miettinen 2009, 15; Mager 2009)

Building a customer journey map starts with identifying touchpoints in different service phases. Insights about touchpoints can be gained directly from the user or e.g. based on interviews. The entire experience should then be visualized by connecting the touchpoints. Journeys can also be constructed based on a persona to make it more lively or personalized e.g. with photos. The idea of user journeys is to provide a structured visualization or engaging story of user's experience (Stickdorn & Schneider 2010, 158-161). Customer journeys involve also "moments of truth", especially important touch points. Visual user journey map can be highly valuable tool for the identification the crucial elements affecting the user experience (Koivisto 2011, 49-56).

In this case the user journeys and experiences were described visually with a help of photos from the different areas of the clinic (see Figure 19). The visual journey was created so that the reader can step into the patient's or visitor's shoes and visually to see what the patient or staff member is seeing from entering the building, going through the typical flow and all the way until leaving. The visual journey was also used to communicate the identified challenge areas related to user experience and user-friendliness of the clinic, in a vivid and highly visual way. The visual journey description was especially useful for concretely describing the challenges related to issues such as guidance and way finding, lack of privacy and waiting areas.



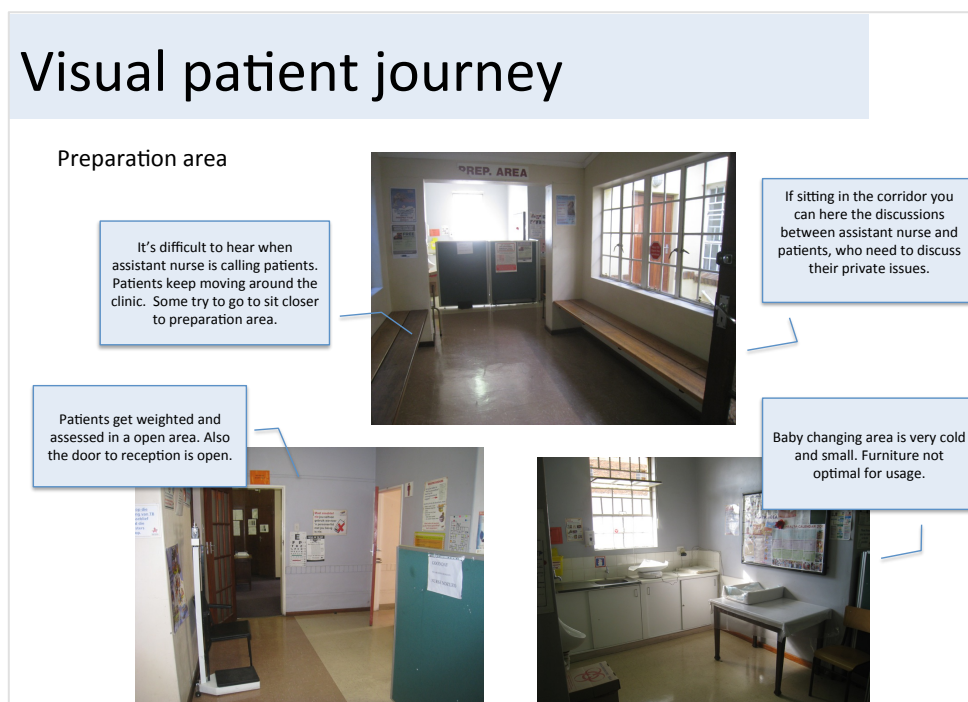


Figure 19: Examples of the created visual user journey descriptions.

### 3.4.3 Service blueprinting and mapping current patient flows

In order to understand and analyze the patient flow, to identify potential bottlenecks and challenges, user experience issues and development areas two supplementing methods were used to analyze the findings from interviews and observations: service blueprinting and patient flow mapping.

Service blueprinting is a process analysis method for visually describing service systems, originally developed by Shostack (1984). It is a method of describing and analyzing each step and element of a service experience and its production. Blueprints are usually visual portrayals of involving the perspectives of the user, service provider and other relevant actors. They describe both the user actions, contact points as well as the behind the scenes activities. A service blueprint is essentially a flow chart that depicts every activity and step in the service-delivery process. Service blueprinting is a especially helpful method for simplifying and specifying the service processes and interactions between people and other service elements in different touchpoints and service phases, as well as for identifying moments of truth, critical incidents, bottlenecks and pain points that are critical for the user experience. Service blueprint document involves usually four or five "stacks". Physical evidences, user actions, front stage and back stage activities. Blueprint also includes lines of interaction and visibility. Service blueprint helps to identify both crucial and overlapping areas along the service journeys.



It also helps to co-ordinate different service productions elements. Blueprints are also a great tool to communicate service processes and the various interrelated aspects to different stakeholders. (Stickdorn & Schneider 2010, 204-207; Miettinen 2009, 17; Bitner, Ostrom, & Morgan, 2008.)

In this case the blueprinting supported especially the patient flow understanding and analysis by offering a tool for combining the patient and personnel activities as well as the physical spaces in different steps related to the visit (see Figure 20). As a visual analysis tool, blueprinting made the different steps, space and their relations visible and easier to grasp.

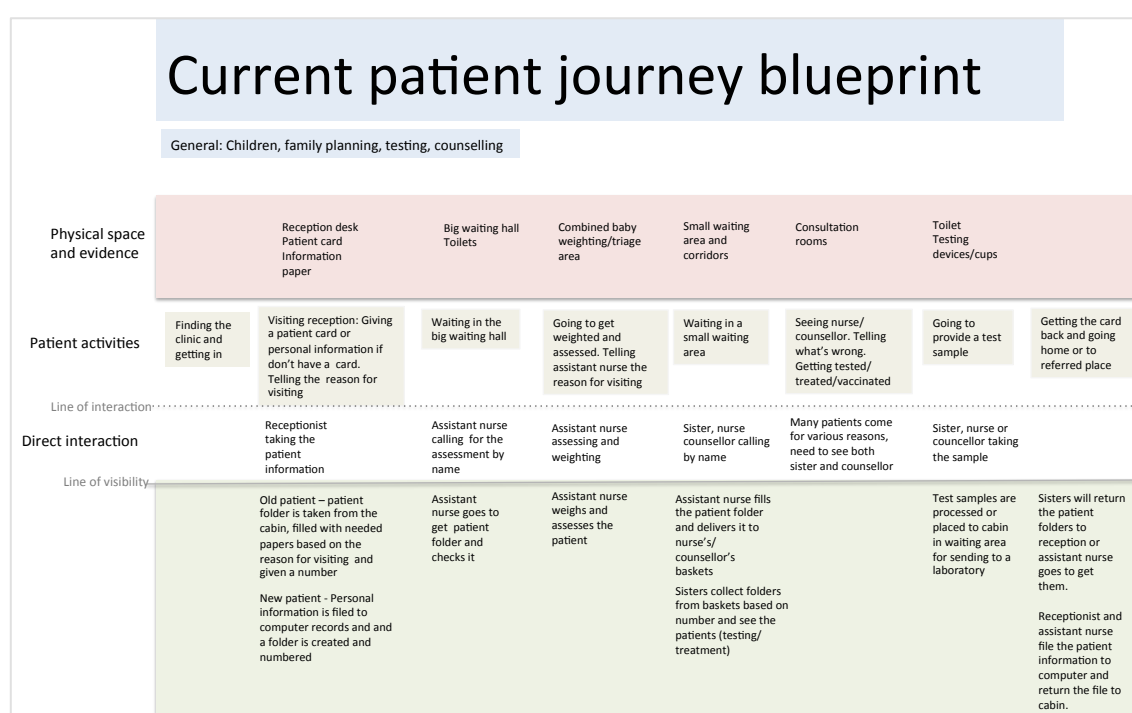


Figure 20: Picture of a created service blueprint.

Secondly, the identified patient flows were modeled and visualized on top of the floor map of the clinic describing how the patients commonly move around the clinic and to mark the main challenge and bottleneck areas (See Figure 21). Based on the information gathered the tuberculosis patients' journey differed from the journeys of the other patients groups substantially, and thereby those two flows were described and analyzed separately.

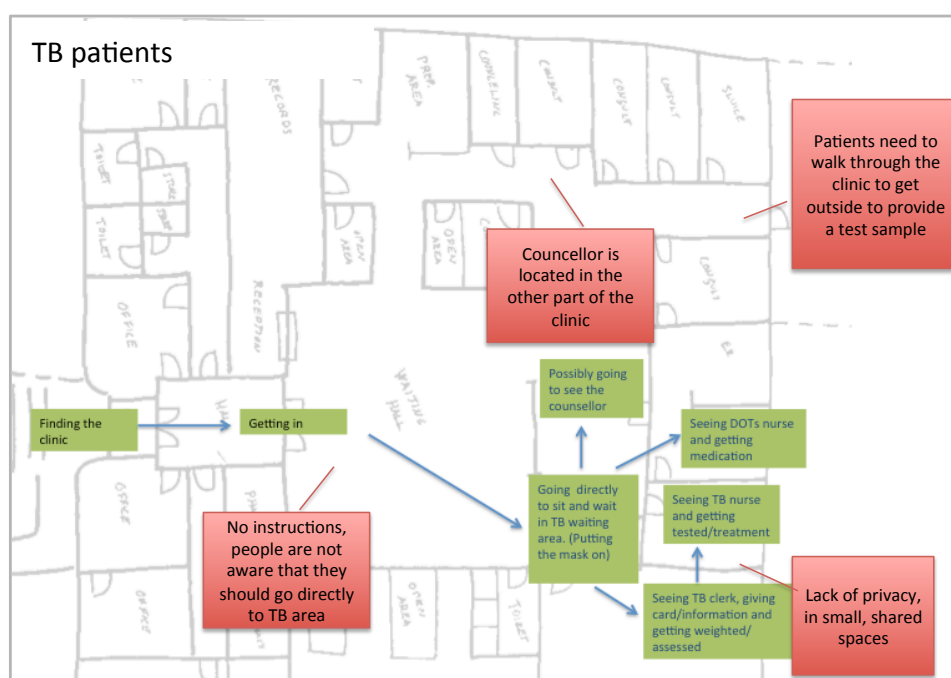
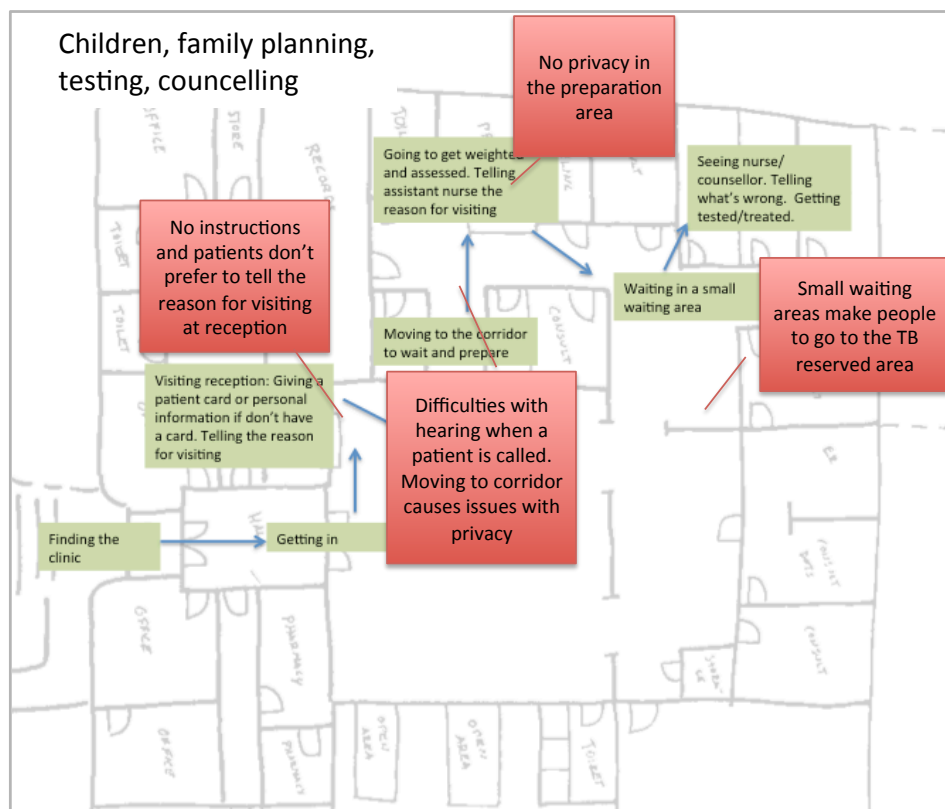


Figure 21: Pictures of the patient flow visualizations with identified main challenge areas.

Various challenge areas related to patient flow and experience were identified and made visible with the help of flow analysis and blueprinting. Challenges were especially related to privacy issues, lack of instructions and guidance and to the fact that the rather limited, open

space is shared between very different patient groups. In the clinic TB patients and other patients share same spaces, also with small children. All the patients need to share the same toilets too. This resulted both to real concerns related to possible contamination, as well as more psychological issues related to both fears and stigmatizing. The sharing of space has also implications on practical sensory experiences such as coldness, as all windows were kept open.

#### 4 Results

The thesis project had two main goals (see Figure 22). The first goal was to identify the challenge and opportunity areas that were important related to the development of the user experience. And the second main goal of was to strengthen the user centeredness of the renovations and renewal of the clinic. Several previously described methods were used both to reach these goals as well as to communicate the results to the main stakeholders involved in the process. The results of the thesis project are summarized in the next chapters.

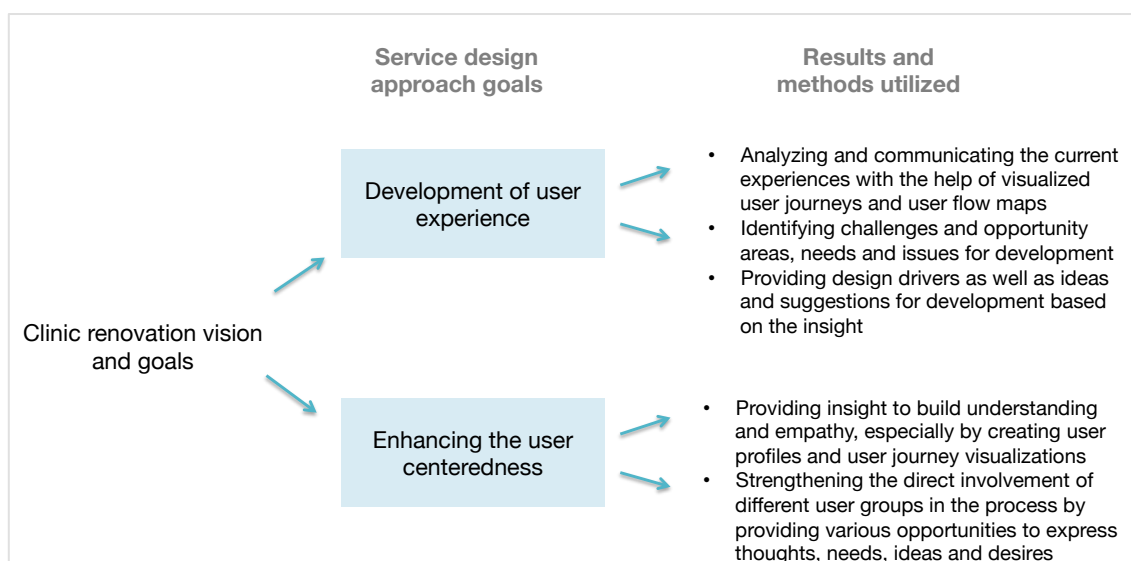


Figure 22: Summary of the project goals and results.

##### 4.1 Identified challenge, opportunity and focus areas

The core goal of the project was to identify the main challenges, needs, opportunities and focus areas related to the development of user experience of the clinic. During the research it was identified and strongly emphasized that the clinic has also various strengths which makes the user experience generally very good compared to other similar public clinics. The-

se included issues such as the location and history of the clinic as well as the personnel and culture of the clinic. It was also noted that some of the strengths could be further enforced to improve the user experience even further.

On the other hand, there were also clearly identified challenges that affected negatively to the user experience. Based on the analysis the identified main challenges and improvement areas were grouped thematically to the following areas:

- **User experience and user-friendliness from the patient perspective:** sensory elements related to coldness and noise level, problems with toilets, small waiting areas and sitting places and lack of children clinic elements.
- **Experience issues related especially to the patient flow:** lack of guidance and clarity related to the process and way finding, which affects also the effectiveness of the flow, privacy issues, size and location of the waiting areas and specific challenges related to preparation/triage area and the TB treatment area.
- **Staffs work conditions and facilities:** Heating and lack of warm water, storage solutions, staff room, and several concrete challenges related to workspaces, e.g. the furniture and the way they are placed.
- Additional special challenges were identified in relation to **TB patients and children sharing the same space, especially the waiting areas**, as well as related to the planned new service areas with new patient groups.

The analyzed strengths and challenge areas were then turned into list of more focused re-design opportunity areas, in which the core challenges were described more closely and taken a one step further (see Figure 23), including suggestive "how could we..." questions and some preliminary ideas based on the gathered user insight. The goal was to turn the identified issues into concrete re-design opportunity areas that could be selected to be taken forward by the CPUT students or to be considered in the ongoing renovations. The questions related to these identified areas included e.g. the following: "How could the clarity of processes and way finding be enhanced with re-design and renovation solutions? How could especially the privacy be improved? Could the situation be improved by changing practices?" or "How could the big waiting area be utilized in more effective, better way? Could the open spaces be taken into use, turned into waiting areas/kids areas/baby changing areas?"

## Re-design opportunity area: Storage solutions



Record shelves in the reception office are already being renewed.



But the reception area storage solutions would need more comprehensive re-design.

## Re-design opportunity area: Storage solutions



If the white cabin in waiting area is removed, there needs to be a new place for folders and linen. Folder system can also be re-designed, executed differently. There is no need for own boxes for all sisters. Also the placement could be re-considered



Storage solutions in consult rooms need development: Shelves, cabins, bigger information boards

Figure 23: Example of a closer description of the challenges related to the storage solution re-designing opportunity area.

The listed re-design opportunity areas were:

- “TB clinic” area re-design
- Preparation/triage area re-design
- Small waiting areas and lack of sitting places
- Privacy challenges in the patient flow
- Guidance, way finding and information provided

- Improving the children clinic look and experience
- Improving the storage solutions, including specimen equipment
- Improving the staff working areas
- Improving sensory user-experience elements (coldness, noise level, natural lightning)
- Reflecting the history and great spirit of the clinic more evidently

From the identified re-design opportunity areas the following challenges were chosen as the focus areas to be taken further by the CPUT design students:

- Storage solutions
- Preparation/triage area
- Testing, specimen processes and equipment
- Guidance, way finding and information display solutions

The selection of the re-design focus areas was heavily influenced both the personal interest of the students as well as the focus and expertise of the design department. Also the potential for utilizing the solutions in other clinics was taken into consideration.

During the project the gained insights were also constantly communicated and discussed with the project manager of the renovations in informal meetings and phone discussions. Thereby in addition to the selected re-design focus areas many of the challenge and opportunity areas were taken into consideration already within the ongoing renovations during the research phase as described in the illustration below (Figure 24).

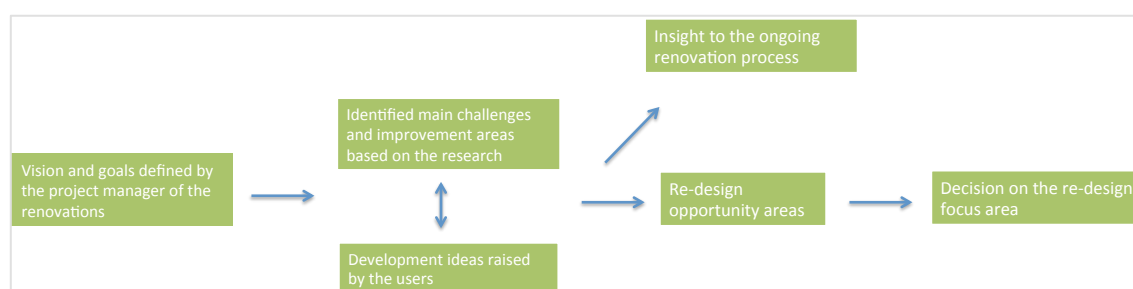


Figure 24: Illustration on the process of identifying the needs and ideas for development and how they were taken forward.

During the renovations the clinic space was e.g. divided more clearly into sections for children and families and for the TB clinic by adding new walls. These renovations and restructuring of the space had impact also e.g. to the noise and acoustics as well as for the temperature of the clinic. The children clinic look and feel was enhanced e.g. by new colorful murals. And the history of the clinic was brought more visible by creating a small photo exhi-

bition to the hall of the clinic. The improvement of the staff working areas was also one of the focus areas of the actual renovations.

#### 4.2 Design drivers to give direction to renovation and re-design work

In addition to identifying the core areas for development and re-design the other way of providing concrete direction for the further work were the created design drivers. Design drivers can be described as the main principles that guide the design process, formulated especially based on customer insight and other research findings. Through design drivers the needs, goals and opportunities identified by insight gathering methods are formulated into concrete goals and priorities and brought into the center of design. Well-chosen and evaluated design drivers can help designers to build strong concepts that include and answer directly the main user needs and goals. Design drivers should be defined in short, descriptive way in couple of words (e.g. "the service should be highly accessible and inclusive"). Design drivers are especially good tool to communicate research finding to designers and developers in a short but guiding manner. (Mattelmäki & Vaajakallio 2011, 97; Tuulaniemi 2011, 156)

In this project the following design drivers were defined, based on the kick-off workshop organized in the beginning and on the conducted research.

1. **Dignity for all.** The re-design solutions need to be non-discriminating and respect the needs of different patient groups.
2. **User-friendliness.** The re-design solutions should take into consideration the emotional experiences, improve the logical patient flow and to be optimal for staff treatment processes.
3. **Appeal.** The re-design solutions should be visually appealing, evoking especially warm feelings.
4. **Safety.** The re-design solutions need to support the safety of the clinic, both inside and outside.
5. **Privacy.** The re-design solutions should improve the privacy of the clinic customers.
6. **Clarity.** The re-design solutions should enhance the clarity of processes especially by improving the guidance and feeling of user control.
7. **Sustainability/maintenance.** The re-design solutions should take into consideration the need for maintenance and support sustainability.

#### 4.3 Providing a design booklet to build understanding and empathy

The second main goal of the thesis project was to improve the user centeredness of the renovations both by involving the users (both patients and the personnel) in the actual process and renewal, and by enhancing the user understanding and empathy. Some of the activities described earlier that focused on involving the users in the process and providing them different opportunities to participate and to express their thoughts and feelings can be considered as part of the results as such.

The other part of enhancing the user centeredness was focused on building understanding and empathy. This was done mainly by collecting the gained insight into a design booklet that was provided to the Project Manager from the UCT Lung Institute, to the CPUT Design Department contact person and to the industrial design students that were to take the re-design work further. Especially the persona descriptions and personnel profiles, as well as the visual user journeys were aimed to support the building of understanding and empathy. The design booklet included also an introductory chapter to describe the background and the context of the renovations, the vision and goals for the renovation and re-design that were identified in the beginning, results from the staff workshop, the description of the identified main challenges and re-design opportunity areas, design drivers as well as some preliminary suggestions and ideas for further work. Also the process and research methods used were summarized in the appendix, with links to further reading and case examples for inspiration.

The design booklet formed a basis, a brief, for the re-design projects to be carried out by the CPUT industrial design students. The content of the booklet were shared with the industrial design students also in a face to face meeting to ensure that the information and insights gathered so far were distributed forward. The students also visited the clinic before the knowledge sharing to gain a personal touch to the context.

## 5 Conclusions

Overall it can be said that the objectives set for design research and service design project were reached. Issues regarding the user experience and user friendliness of the clinic were analyzed, both from the patient's and personnel's point of view. Challenge and opportunity areas were identified, together with ideas for improvement. Special bottlenecks and problem areas from the point of view of the patient flow were also identified. User centeredness was enhanced both by improving the user understanding and by providing tools to build empathy as well as by involving both the patients and clinic staff members more closely in the renovation and re-design process, and by providing them different channels to express their thoughts,



needs and ideas. Including the service design approach enhanced also the general communication concerning the renovations, making both the patients and the staff members more aware of the plans.

In addition, based on the project, UCT Lung Institute and CPUT Design department made a joint proposal for the clinic re-design collaboration to be included in the Cape Town World Design Capital 2014 programme, and it was accepted as one of the officially recognized projects (World Design Capital Cape Town Projects 2014).

During the project variety of different service design methods and tools were used both to strengthen the user centeredness and to identify the issues related to the user experience, to gather insight and ideas as well to analyse and communicate the findings. Some of the methods and tools worked very well in this case, where as some did not prove to be so useful or feasible in this context. From the insight gathering methods the observation and contextual interviews both had their benefits and when combined, they provided both a versatile set of findings as well as deep insight, also regarding the different feelings and emotions related to clinic experiences.

Also the staff workshop proved to be very functional method for both gathering feedback and further understanding about the different thoughts, needs and feelings related to the renovations as well as especially for generating new ideas. The strength of the workshop method is the power of collaboration. Discussion and hearing thoughts from others, feeds more thoughts and ideas. The workshopping method proved to be also a very good method for enhancing the involvement of the personnel in the process.

On the other hand, as it was anticipated already in the beginning, the questionnaires and other written feedback options did not prove to be very feasible in this context. It was pointed out already in the beginning that the level of English language use as well as the level of literacy varies greatly among the patients. It became evident that face to face discussion is the preferred way of communicating.

From the methods used for analysis, modelling and communicating the insights, persona descriptions and the visual user journeys were perhaps as most fruitful in this context, as they offered a very concrete, yet easy to grasp way to communicate the various user types and the issues important to them, as well as a visual methods to describe the different steps of the experience of being at the clinic. User journey visualization together with the patient flow analysis on top of the clinic map seemed also as feasible methods for locating and communicating concretely the pain points and main challenge areas related to the actual physical areas they were connected to. In this case blueprinting was useful for me personally to form a

picture about the main activities and processes and how they affect e.g. the patient flow and the organization and use of space. However, as a tool for communicating the experiences and challenge areas the visual journey descriptions and the clinic maps seemed more tangible.

Based on the conducted study, it can be concluded that service design can offer a valuable, concrete framework for user centered development also in the context of renovating and re-designing health care facilities. Design research methods and service design approach can help to identify the variety of elements and factors relevant to the clinic experience and their connections with each other. Strengths of the service design approach include both the emphasis on a holistic viewpoint as well as offering practical tools and methods for gathering understanding and for involving the users in ideating and developing places and spaces that fit their needs, goals and desires. Service design approach and methods provide also tools for building empathy towards the users among different stakeholders included in renovations. Especially the service design methods such as persona creation and customer journey visualizations that make the users and their experiences visible and tangible, can substantially build understanding and empathy, by helping the designers and other stakeholders to see the issues from the user's point of view.

From more personal and service design process related perspective there were some practical, time schedule limitations that affected the thesis project. At the beginning it was planned the thesis project would include also at least some activities of the 'Develop' and 'Deliver' phases. However, the project timetables and practicalities especially concerning my personal return to Finland and the negotiations with different stakeholders and organizations did not allow us to follow the initial plan. The fuller process would have allowed me to participate in the actual ideation and concepting of the solutions to address the main development areas as well as in prototyping, testing, feedback gathering and iteration of the solutions. Thereby I would have been able to gain experience on the entire service design process in this context, where as now I was only able to briefly touch the area of conceptual re-design by identifying core development areas, design drivers and ideas to direct the further steps.

In some extent such challenges and changes with timetables, limited and uncertain resources and uncertainty in general, concerning the actual development steps, progress and implementation of identified development areas is something a service designer can come across quite often in projects. In many cases companies and organizations can hire a service designer or design researcher to conduct a research to identify challenges and development needs or to provide insight to problems they have encountered (e.g. with declining customer satisfaction), without an actual plan or commitment for the concrete development or de-design. Thereby service designer has to be prepared to accept that it may take time before things move to the actually development or delivery phase or that things are not taken forward at

all. The double diamond model as such actually identifies and highlights such realities with briefing and review stages. Those are important stages in service design projects in which the stakeholders analyze the current situation, knowledge and results gained together with the goals set and the resources available, and as a summary decide whether to proceed and how or whether to reconsider, hold or stop the project.

As a personal reflection it can be concluded that this thesis study provided a very interesting learning experience, with many practical lessons both regards on possibilities and benefits of service design approach in such context as well a on different challenges that can be encountered during such processes.

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