Aalto University
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User-Centric New Service Development in Telecom Industry

Master's Thesis

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Aalto University School of Science Degree Programme in Computer Science and Engineering	ABSTRACT OF THE MASTER'S THESIS

In today's fierce competition companies are fighting against declining prices and profitability. Development of new products and services has become an important competitive factor to companies. However, products and services are getting more commoditized and do not necessarily provide enough differentiation. Hence, companies are now seeking to differentiate their offerings in new ways: products and services should deliver favorable experiences. In order to develop products and services so that they deliver favorable experiences, new methods are required in development. As a result several companies have started to develop products and services in a user-centered way by putting customers and users in the center of development.

The aim of this study was to give suggestions regarding the current TDC Product Development process. The starting point for improving the current Product Development process was TDC's vision to be the service leader in Business-to-Business telecom market. Based on TDC's vision the main objectives for this study were set: How the process can ensure the development of useful services and how the services are developed so that they provide favorable service experiences. To answer these questions a review of academic literature was made together with concrete experimentations in one product development project.

Based on the findings a new process model for TDC was developed. The main change was to move from product-centered thinking to service oriented thinking. Hence, to highlight service focus the name of the process model was changed to Service Development process. Other major changes to the process model were customer and user involvement right from the beginning of the process, applying new user-centered design methods to service development and taking advantage of iterative development. Additionally considering wider utilization of Service Design in service development was suggested. With the help of these changes the process model should be able to support TDC in achieving the vision to be the service leader. However, testing the process model in practice was left for further study. Therefore, the results of this study should be taken as indicative.

Keywords: New Service Development, Service Development Process, Service Design, User-centered design, ICT industry

Nykypäivän kovassa kilpailussa yritykset kamppailevat alenevia hintoja ja alenevaa kannattavuutta vastaan. Uusien tuotteiden ja palveluiden kehittämisestä on tullut yrityksille tärkeä kilpailutekijä. Tuotteet ja palvelut eivät kuitenkaan välttämättä tarjoa enää tarpeeksi erottautumista kilpailijoista. Tästä syystä yritykset ovat alkaneet etsiä uusia tapoja erottaa tarjoomaniaa kilpailijoista: tuotteiden ja palveluiden käyttökokemus tulee olla mieluisa. Jotta tuotteita ja palveluita voitaisiin kehittää siten, että ne loisivat mieluisia kokemuksia, tarvitaan uudenlaisia menetelmiä. Tämän seurauksena useat yritykset ovat alkaneet kehittää tuotteita ja palveluita käyttäjälähtöisesti, laittaen asiakkaat ja käyttäjät kehityksen keskiöön.

Tämän työn tarkoituksena oli antaa kehitysehdotuksia TDC:n tuotekehitysprosessiin. Lähtökohtana tuotekehitysprosessin kehittämiselle oli TDC:n visio palvelujohtajuudesta. Tämän vision pohjalta asetettiin työn keskeiset tavoitteet: kuinka hyödyllisten palveluiden kehitys voidaan varmistaa sekä kuinka palveluita tulisi kehittää, jotta ne tarjoaisivat käyttäjilleen mieluisia palvelukokemuksia. Kysymyksiin haettiin vastausta akateemisesta kirjallisuudesta sekä konkreettisista kokeiluista, jotka tehtiin osana TDC Boost -nimistä tuotekehitysprojektia.

Työn löydösten perusteella TDC:lle kehitettiin uusi prosessimalli. Keskeinen muutos prosessissa oli siirtyminen tuotekeskeisestä ajattelusta palvelukeskeiseen ajatteluun. Tämän seurauksena prosessin nimeksi ehdotettiin palvelukehitysprosessia. Muita keskeisiä muutoksia entiseen prosessiin oli asiakkaiden ja käyttäjien osallistaminen palvelukehitykseen jo prosessin alusta lähtien, uusien käyttäjäkeskeisten suunnittelumenetelmien hyödyntäminen sekä iteratiivisen kehityksen hyödyntäminen. Lisäksi palvelumuotoilun laajempaa käyttöä palvelukehityksessä ehdotettiin. Näiden keskeisten muutosten avulla prosessimallin pitäisi osaltaan pystyä tukemaan TDC:tä visiossaan saavuttaa palvelujohtajuus. Koska prosessimallin testaaminen jätettiin jatkotutkimukseksi, ei sen konkreettisista hyödyistä voida olla täysin varmoja ja tämän takia työn tuloksiin tulee suhtautua varauksella.

ACKNOWLEDGEMENTS

Finally after ten months this study is finished. I could not ever imagine in the beginning what kind of trip this study would be and how it would end. In the beginning all things were so fuzzy and it was very hard to get a grip of anything. Hence I felt that doing this study is not an easy task. And it wasn't. While doing the study I felt several times that this would never end and that making things clear is impossible. But all of a sudden things fell into place. I guess it is called learning. And as said, now it is finished and I can say that it was really rewarding.

As a result I learned a lot about service business, product and especially service development and service design. In particular, user-centered design and its methods started to fascinate me. Who knows what the future will bring.

I want to thank my instructor Samu Saastamoinen from TDC for this very interesting master's thesis topic. Especially I want to thank him for his passion towards the topic and all the support he gave me. Additionally I want to thank Petteri Nissinen for allowing me to do this master's thesis to TDC. I want to thank Jan Tamlander, my manager, giving me time to focus on this thesis. Also I want to thank Sami Akseli and people who participated in this study and any other who I forgot to mention for their efforts.

Special thanks I want to give to my wife and children who have patiently waited that I get my studies finished.

Espoo, October 5, 2012

Kimmo Kekkonen

LIST OF ACRONYMS

B2B	Business-to-Business
B2C	Business-to-Consumers
CSF	Critical Success Factor
NPD	New Product Development
NSD	New Service Development

CONTENTS

ACKNOWLEDGEMENTS

1   INTRODUCTION

In today's business, development of new products and services has become an important competitive factor to companies. Increasing competition and price declines poses challenges to companies in the name of profitability. Moreover, companies to be able to differentiate from other companies gets more and more challenging as the products and services get more commoditized. In order to stay ahead of competition companies must develop both successful and differentiated products and services to the markets – and above all, quickly.

It is not that easy, however, to develop successful products and services. Developing products and services that fulfill the fundamental requirements of customers and users is not enough. Products and services must also delight customers and users and provide favorable experiences. Moreover, to avoid development of useless products and services, companies should be able to ensure the usefulness of their products and services right in the beginning of the development. Additionally, in today's changing business environment, development of new products and service should be flexible so that the changing needs of the customers and users could be taken into account without wasting time.

Therefore, in order to satisfy customers and users accordingly and ensure the usefulness of the products and services it means that companies must develop their products and services in closer co-operation with customers and users. This means that customer and user point of view must be in the centre when the products and services are developed. However, user-centric development requires different methods and practices than traditional product or service development. Hence, in order companies to be user-centric, changes are required in the traditional methods how companies develop products and services. Especially this poses demands to companies that have standardized Product or Service Development processes to develop new products and services.

Against this background, TDC's business strategy was revised in the end of 2011. Great attention was given to communication services that was raised to be the company's vital foundation – the other being data services. Com-

munication services include services that are used by individuals to commu-
nicate with each other. Services like voice, chat and video conferencing ser-
vices belong to category of communication services. In turn, data services
comprise services like Internet connection, data communications between
customer offices and network security services. TDC had already noticed
that data services are used by the customers in a different way than com-
munication services. Data services are almost invisible to the users,
whereas communication services are personally used by the users. Hence,
development of the communication services requires different approach:
more user-centric approach than data services. Additionally, customers
themselves have increasingly required that the services must satisfy their
users. Concretively this has been discovered in customer's calls for tenders,
where customers demand user satisfaction as a metric to measure the ser-
vices provided by the service provider. To solve these new challenges it was
seen at TDC that they must pay more attention to users and their service
experiences already in the development phase of the communication ser-
vices. As a result, the author was requested to research the topic of user-
centric new service development.

1.1 Objectives and Scope

The objective of this study was to give suggestions regarding the current
TDC Product Development process. This study aims to offer suggestions
that would improve the current TDC's Product Development process to be
better in line with the company's current strategy that aims to service leader-
ship. The question presented by TDC was as follows:

> "How Product Development can support the organization to
> achieve the vision to be the service leader in the Business-to-
> Business telecom market?"

For TDC, being service leader means that they provide superior customer
and service experiences. TDC highlights their willingness to focus on service
and customer experience by stating as follows[1]:

> "TDC is a business operator to which the service is the top pri-
> ority. We focus on providing business customers the best cus-
> tomer experience on the market."

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[1] TDC Oy, cited September 19, 2012. Available at http://tdc.fi/tdcoy

This means that TDC aims to offer high quality products together with high quality services to their customers. From the Product Development perspective this means that TDC wants to develop products that are valued by the customers and that TDC's products provide favorable experiences to them. However, because the vision of TDC is to be the service leader it inevitably means that Product Development scope must be broadened to cover also the service aspect. Therefore, in this study the focus is on Service Development. Because TDC is operating only in B2B market – not in B2C market – the scope of this study is narrowed to B2B segment, although results may be exploitable also in consumer business. Additionally, because TDC is offering products and services to their customers' individual end-users, the scope of this study is also on user perspective. In this study, however, Customer Relations Management, Key Account Management and other functions that are related to relationship management are left out, although they affect the customer experience.

Based on the TDC's question, the following research questions were formulated to be answered in this study:

- RQ1: How can TDC Product Development function ensure that they develop right services to the customers and users?

- RQ2: How the right services can be developed so that they provide favorable service experiences?

To answer these questions the methodology presented in section 1.2 was used.

1.2 Methodology

In order to answer the proposed research questions, an extensive literature review was firstly carried out. Literature review covered central books, articles, journals and conference papers from the field of New Service and Product Development, Service Innovation, Service Marketing and Service Design. Suggestions from the literature that were possible to implement in practice were then experimented.

The experimental part was conducted after literature review. Suggestions from the literature – interviews, prototyping and Service Blueprinting – were

experimented to determine how feasible they would be in the context of TDC. Prototyping was carried out in real case study as part of Product Development project whereas interviews and Service Blueprinting were conducted as own entities. The reason for these arrangements was that Product Development project was progressed so far that it was not viable to conduct interviews and Service Blueprinting anymore. Interviews were held with customers' end-users ranging from directors to employees. Service Blueprinting was arranged within TDC as a half day workshop.

The following figure illustrates how literature review and experiments are related to final suggestions.
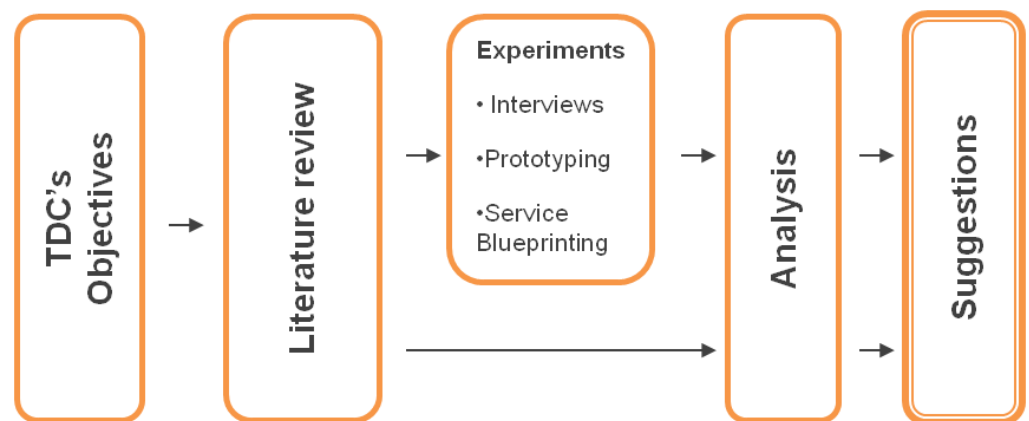
Figure 1: Research Methodology

Because it was not feasible to experiment all suggestions given by the literature – due to time limitations and lack of case projects – it was decided to focus on limited amount of inexpensive but widely suggested methods in the experiments. Hence, suggestions that require more resources and changes in the company's structure are analyzed mainly based on literature. Finally, based on the analysis suggestions for TDC are given.

1.3   Structure

This study is written in six sections. After the introduction, second section covers the topic of New Service Development. First service as a concept is described, which is followed by how services can be developed. Then how to successfully develop services is presented. This leads to study the topic of user understanding and user involvement. Section 3 covers the topic of Service Design. Service Design has many similarities with New Service De-

velopment and they can be seen as overlapping topics like presented in the figure 2.
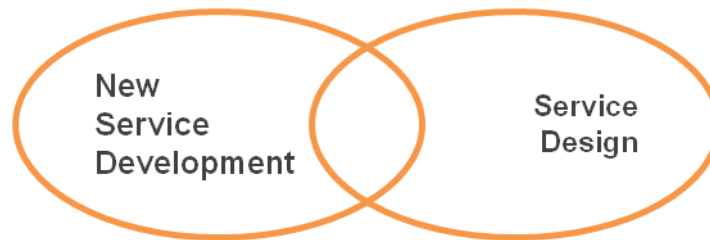
Figure 2: Relation between New Service Development and Service Design literatures

Whereas New Service Development aims to be more user-centric, Service Design has its roots in user-centered design methods. Against this background, the basic elements of Service Design are described. Then Service Design process is covered and finally the tools and methods to conduct Service Design in practice are presented.

Section 4 introduces the current Product Development at TDC and describes the experiments done as part of a product development project called TDC Boost. In section 5 the results from the experiments and literature are analyzed. Finally, in section 6 practical implications of this study are presented and further discussion is proposed.

2   NEW SERVICE DEVELOPMENT

This section begins the literature review part of the study. Theory of the ser-
vices, New Service Development and its process models, and customer and
user involvement will be covered. In the past New Service Development as a
topic has not gain much attention in the literature. Till mid eighties NSD was
hardly even mentioned in service research or in practice. Since nineties and
just recently in the 2000s the topic of NSD has gained rapidly more attention
(Bullinger et al., 2003).

One cause for this change is that nowadays especially in the advanced
economies services account for more of the total GDB than manufacturing of
goods account for. Therefore services are today one of the main bases for
profitable business (Edvardsson, 2006). The great importance of services to
world economies has inevitably affected the service research and there, es-
pecially New Service Development.

At first the theory of services is introduced. A definition to service is given
and the most important characteristics of services are described. Then NSD
as a process is covered: four different general process models of New Ser-
vice Development are described. After that critical success factors of New
Service Development are studied. Then the most important success factor,
user involvement, is studied deeper. Three different approaches to user-
driven service innovation are presented and options when to involve users in
the New Service Development process are described. Next four different
methods to involve users are covered: interview, ethnography, empathic de-
sign and participatory design. Then criteria for interacting with customers
and users are described. Problems that may occur and need to be taken into
account in user involvement are presented. Finally, the literature findings are
summarized.

2.1   Services

Services play an important part of our everyday lives. Services represent the
growing percentage of the GDP around the globe (Bitner et al., 2008, p. 66).
Especially in the advanced economies, services account for more of the total
GDB than manufacturing of goods account for. For example in Finland ser-

vices account for 68.6% of GDP whereas manufacturing account for 17.9%[2]. In 2001 numbers were 63.0 % for services and 25.2 for manufacturing. In other EU counties or US the difference is even greater.

Next, a closer look to services in general is taken. The term "service" is defined and characteristics of services are introduced.

2.1.1 Definition

What is a service? There is no common generally accepted definition of a word "service". Since service has many meanings ranging from personal service to service as a product or an offering (Grönroos, 2007), lots of definitions have been proposed in the literature. For example Zeithaml et al. (2006, p. 4) define that "services are deeds, processes, and performances." Cooper & Edgett (1999, p. 18-20) define services more broadly based on their dominant nature: if offering is more intangible than tangible it is a service. In the opposite is product. This perspective is line with Kotler (2003), who distinguishes five types of products as follows:

1. Pure material products

2. Material products and accompanying services

3. Hybrids

4. Services and accompanying material products

5. Pure services

If point one is considered to be on left and point five on right, on the left there are the tangible dominant offerings and on the right intangible dominant offerings. In line with Kotler, Cooper (2011, p. 21) defines product as anything that company provides in an external marketplace for sale, use or consumption, including physical products, services or any combination of these. So, Kotler and Cooper do not distinguish services and products as their own entities but rather see services as one type of product – i.e. product can be a physical good or it can be a service.

The product oriented view on offerings is not adopted by all authors. Hence, the use of terms "product" and "service" is confusing in the literature. For ex-

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[2] Tilastokeskus, Kansantalous, cited June 6, 2012. Available at:
http://www.stat.fi/tup/suoluk/suoluk_kansantalous.html

ample Alam (2002) and Pine & Gilmore (1998) uses word product when they refer to a physical goods. On the contrary, service is a service. Yet another term found in the literature is the one of Bullinger et al. (2003). They use term "service product", to overcome the definition issue.

On the contrary to a product dominant view on offerings, there is also a service dominant view. Vargo and Lusch (2004) argue that products and physical goods are valued for the service they provide. So, the products and physical goods do not provide benefits as their own but rather they enable the use of a service, which brings benefits. Grönroos (2007, p. 52) provides a clear definition – which is also adopted in this study – for service that encapsulates the idea of service effectively as follows:

> "A service is a process consisting of a series of more or less intangible activities that normally, but not necessarily always, take place in interaction between the customer and service employees and/or physical resources or goods and/or systems of the service provider, which are provided as solutions to customer problems."

To put the service on a more practical context, Bitner et al. (2008, p. 68) describe the service as follows: "When we use the term 'service' or 'services,' we are referring to service offerings provided for and/or co-created with customers such as professional services, retail, financial, telecommunication, healthcare, and many others. We also include services that are offered in conjunction with goods such as training and network support services in a technology company and even service that is derived from a tangible product such as the service embedded within an onboard GPS system in a car." The key idea in their view is that all these services have interface with customer in common either through interpersonal interaction or technology.

So, there are two types of dominant persuasions on services and products. One sees product as an umbrella term to tangible goods and intangible services. The other, on the other hand, sees services as the general term, which can then include more or less intangible offerings provided to customers. In this study, the Service Dominant view, proposed by Vargo & Lusch and Grönroos is adopted. Next the characteristics of services are covered.

2.1.2 Characteristics

Since the beginning of service research in the 1970s, services have been distinguished from physical goods (Grönroos 2007). This distinction between services and physical goods has been classified in the literature (see for example Cooper & Edgett, 1999) using the following four generic characteristics of services: Intangibility, Heterogeneity, Inseparability and Perishability or shortly IHIP. First, intangibility means that services cannot be touch as such. They are not tangible like physical goods. Second, heterogeneity describes that service outcomes and processes are difficult to standardize and each user individually evaluates the delivery and outcomes of the service. Third, inseparability means that production, distribution and consumption of services occur simultaneously, i.e. they cannot be distinguished from each other like in the case of a physical good. Finally, perishability means that services cannot be kept in stock. Services cannot be produced beforehand and stored for later consumption that is the normal case when considering physical goods (Grönroos, 2007, p. 54-55).

So, traditionally services have been characterized in relation to goods. Today, however, this traditional classification of goods and services has become somewhat obsolete (Gummesson, 1995, 250-251). Additionally, this classification has gained criticism among researchers (see for example, Grönroos 2007, p. 67). Therefore, the traditional view is not the most fertile way to characterize services and hence services should be seen as their own matter (Grönroos, 2007, p. 53).

To give more up-to-date characteristics to services in general, Grönroos (2007, p. 53) proposes the following:

1. Services are processes consisting of activities or a series of activities.

2. Services are at least to some extent produced and consumed simultaneously

3. The customer participates as a co-producer in the service production process at least to some extent.

First, the most predominant characteristic of services is that they have a process nature (Bitner et al., 2008). Services are processes that consist of series of activities utilizing different resources, like people, goods, information, systems and infrastructure. The purpose of the service is then with

the help of resources to provide a solution to a customer's problem. Second, because service is not a thing but process, it means that service is produced and consumed simultaneously. This makes it hard to predefine the quality control because there is no preproduced quality to control. However, this varies depending on the service being considered. If service includes tangible aspects, like delivering goods, only part of the service process is visible and experienced, and therefore consumed simultaneously by the customer. The third characteristic emphasizes that customers are not only the receivers of the service but rather they are part of the production resource. Therefore customers are the co-creators and co-producers of the service (Grönroos, 2007, p. 54).

Services are now defined and characterized. Next, the way how services are developed will be covered.

2.2 NSD Process Models

Companies today experience high competition in the global and highly non-regulated markets (Cooper & Edgett, 1999, p. 1). High competition forces companies to all the time develop something new or at least copy the successful offerings of competitors. If the company does not invent anything but stays still and relies on its current offerings, the company will sooner or later be out of the competition. From the point of service companies, continuous innovation, i.e. development of new successful services requires systematic approach to New Service Development. This means that development of new services needs to be managed: there is a need for a New Service Development process (Cooper & Edgett, 1999, p. 28).

New Service Development – or shortly NSD – is the term used to describe the development of new services. Organizations that are successful in developing new services exploit a systematic (and nowadays often iterative) process instead of being ad hoc (Bitner et al., 2008). The process is often divided into two main parts: the so-called fuzzy front-end that stresses creative thinking and problem recognition and solving, and to more systematic development that emphasizes more rational activities (Koen et al., 2001). The systematic development can be further broken down into parts like service development, testing, service launch and post-launch review (Cooper, 2011).

Literature identifies several different models to develop services. These are Linear, Parallel, Spiral (or Agile) and Prototype models. These models can be further divided into two categories: waterfall models and iterative models (Bullinger et al., 2003, p. 280-281). Waterfall models represent models that progress linearly from one distinct phase to another like linear and parallel models. In contrast, spiral and prototype models are iterative models that repeat each phase several times throughout the process.

Next the models that have been described in the literature of New Service Development will be covered individually. Process models of Service Design are later described in section 3.4.

2.2.1 Linear

Linear or sequential models fall into category of waterfall models. Linear models progress from one distinct stage to another step by step. Each previous phase must be fully completed in order next stage to be started. That is, previous stage provides necessary information as output to next stage's input (Bullinger et al. 2003). An example of linear model is represented in the following figure.
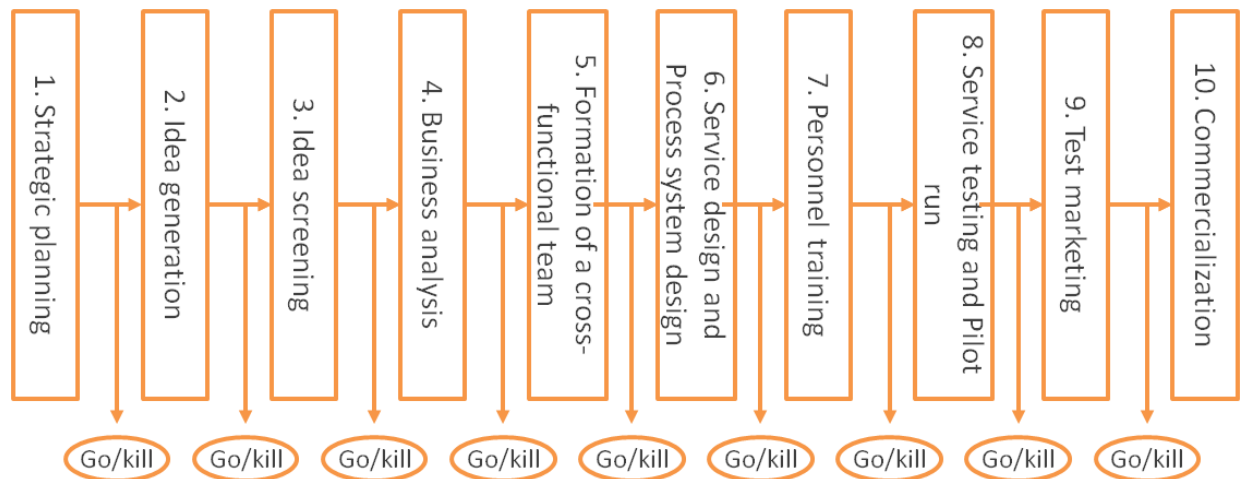
Figure 3: Linear model of new service development process (adapted from Alam and Perry, 2002, p. 525)

The ten-stage linear model was the result of empirical study conducted by Alam and Perry (2002) in the financial services industry. The process starts with idea generation – or seldom with strategic planning. Then the idea is screened and business analysis is made. This is followed by formation of the

cross-functional team to develop the service. When the team is formatted the actual development of the service and process systems starts. When the implementation is ready, the personnel are trained to deliver the service to customers and users. Then the service is tested and after adjustments the pilot run is made. This is then followed by test marketing and finally commercialization. After each stage, the continuation of the project is decided: whether to proceed or kill the project (Alam and Perry, 2002). This type of process is also known as Stage-Gate model, which is founded by Robert Cooper and is nowadays the trademark of Product Development Institute Inc (Cooper, 2011).

The linear process model has previously argued to be one of the success factors for new services (Alam & Perry, 2002).

2.2.2 Parallel

Parallel models also fall into category of waterfall models. The process is linear in nature although some of the stages occur in parallel. Parallel model of development process is illustrated in the following figure.
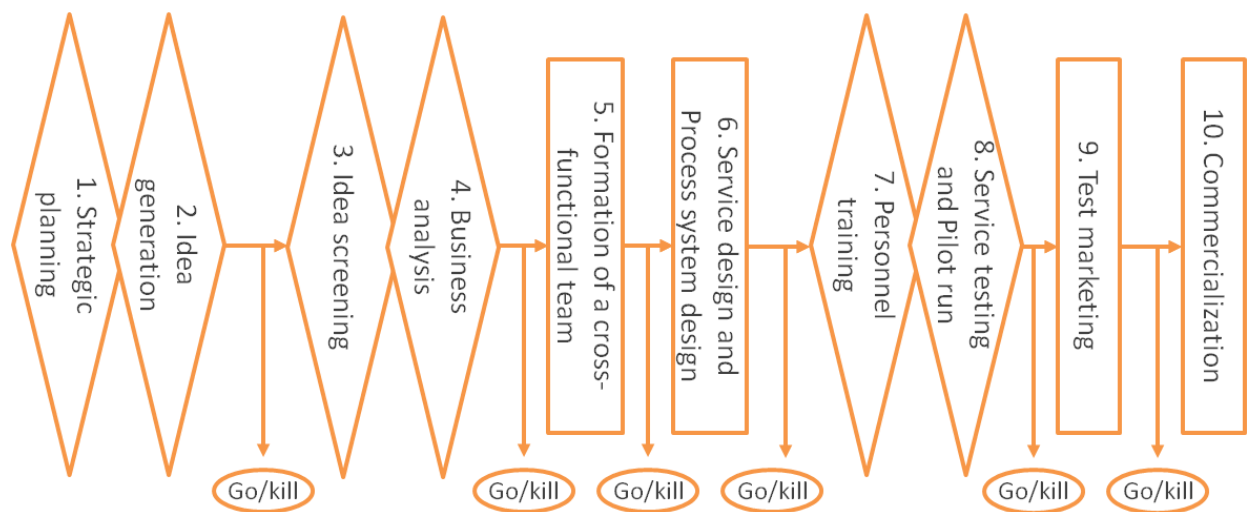
Figure 4: Parallel model of new service development process (adapted from Alam and Perry, 2002, p. 525)

The parallel process model is close to the linear process model. However, the difference is that some of the stages are conducted in parallel to fast track the service development. These three pairs of stages are 1) "strategic planning and idea generation", 2) "idea screening and business analysis"

and 3) "personnel training and service testing and pilot run" (Alam & Perry, 2002, p. 526).

2.2.3 Spiral

Third type of model that can be found in the literature is spiral (or agile) model. Spiral models fall into category of iterative models. Iterative development is about building something light, then testing it, getting feedback from it and finally revising it accordingly (Cooper, 2011, p. 49; Tuulaniemi, 2011, p. 112). Whereas parallel and especially sequential models represent traditional development models, spiral models can be considered as more modern models. Bullinger et al. (2003) stated that the spiral model of developing services is practically unknown. They found one exception that was Shostak and Kingman-Brundage's model from 1991. However, more recent literature identifies spiral models in the service context. Today especially Service Design literature recognizes the power of iterative development in the development of services. Service Design will be covered in section 3. Moreover, recent New Service Development literature also identifies spiral models. Cooper (2011) has developed an iterative version of his Stage-Gate model, which is illustrated in the next figure.
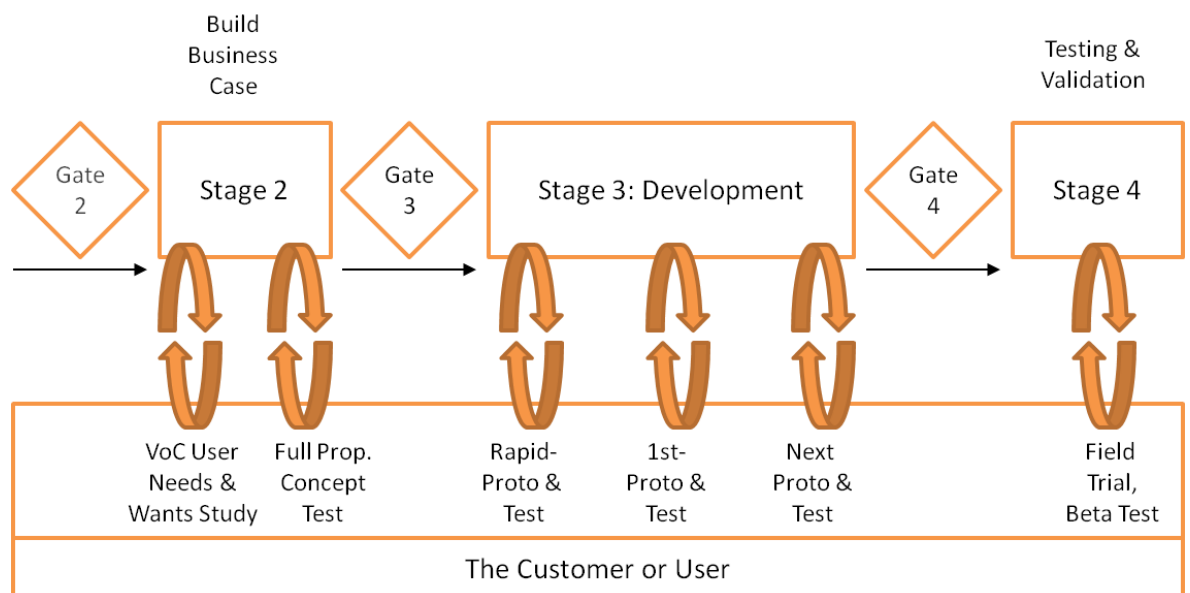
Figure 5: Spiral development model (adapted from Cooper, 2011, p. 48)

The key idea is that customer or user is part of the process from the beginning to the end (Cooper, 2011, p. 48). When the project enters the stage 2 of

the process, Voice of the Customer or User Needs & Wants study is done with customers or users. Additionally concept is tested with customer or user. Then if the stage 2 is approved, project moves forward to stage 3. In this phase rapid prototyping is executed. The service is then refined after several iterations until the service get its final shape. Finally project moves to stage 4 where testing and validation is done together with customer or user. After stage 4 project moves towards final launch and commercialization (Cooper, 2011, p. 205-228).

Spiral (or agile) development has several benefits compared to traditional sequential process models. Due to the iterative nature of the process model, projects can grow and develop over time adapting customer evolving needs. Spiral development promotes strong co-operation between the service provider and its customers and users. Projects are adaptable, so they are quick in changing market circumstances (Stickdorn and Schneider, 2011, p. 196, Cooper, 2011, p. 47-49). On the other hand, spiral model has been criticized to increase the complexity of the process and demand for higher steering intensity (Bullinger et al., 2003, p. 7). However, more recent literature does not criticize or state challenges spiral development might pose to the companies applying it in practice.

2.2.4 Prototype

The last types of methods are prototype models that belong to iterative models category. The process of service development is conducted iteratively which starts by first making a test version – prototype – of the service. This prototype is then refined examining its key attributes and functionalities at early stage. Process steps are not discrete like in the case of linear process but can be overlapping (Bullinger 2003). The definition of prototype models is close – if not the same – as in spiral or agile development model.

According to Bullinger et al. (2003) there are no detailed studies that deal with prototype models and how they are used in practice in new service development. However, prototyping model can be found to be mentioned in Service Design literature as iterative model (Miettinen, 2011; Tuulaniemi 2011) and agile development model (Stickdorn & Schneider, 2011, p. 196). Development of services exploiting prototype model is one of the fundamentals of Service Design. Detailed process models of Service Design are covered later in section 3.4.

2.3   Critical Success Factors

Now that services and how the development of services can be managed are covered it is essential to study how to ensure success in New Service Development.

Literature talks about critical success factors. These are factors that service providers must pay attention to in order to be able to successfully develop new services. Posselt and Förstl (2011, p. 3) identified several critical success factors in the New Service Development and classified them into three categories: Antecedents, NSD Process Success Factors and Service Success Factors. Figure 6 gives an overview of these success factors and their position relatively to service development process.
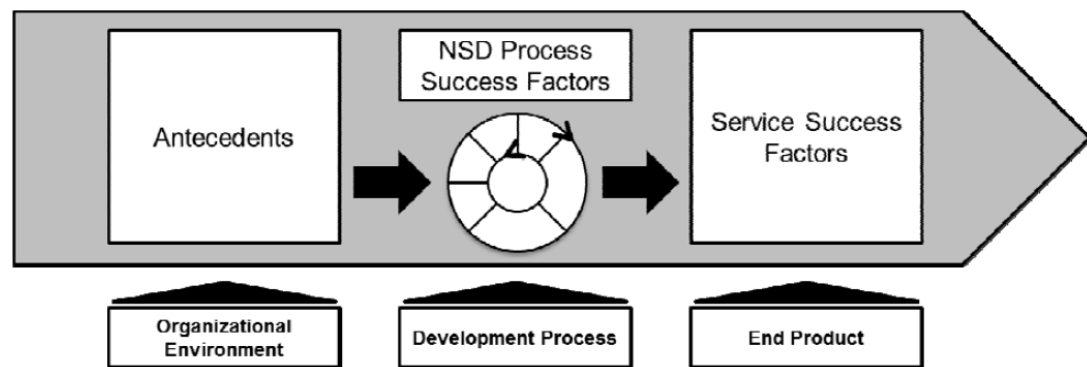
Figure 6: Categories of NSD success factors (Posselt and Förstl, 2011, p. 3)

First, antecedents are the factors that have an effect to NSD already before the actual NSD activity. These factors originate from the organizational environment, i.e. they are more general and organization-wide factors, like corporate culture, corporate structure and capabilities. Second, NSD Process Success Factors denote all the factors that relate to New Service Development process itself, including resources used and concrete actions taken during service development. Third, what distinguishes successful services from the unsuccessful ones are denoted as Service Success Factors. These success factors describe the factors that are essential for the individual service to be successful in the market (Posselt and Förstl, 2011).

As a result of their literature review, Posselt and Förstl (2011) observed that there were several critical success factors presented at each category. The findings are summarized in the following table.

Table 1: Summary of the critical success factors

	Most common CSF's	**Mentioned**
Antecedents	1. Market orientation	6
	2. technology	5
	3. knowledge management	5
	4. culture	5
NSD Process Success Factors	1. employee involvement	11
	2. appropriate formalization	11
	3. management measures	11
	4. customer involvement	9
	5. market orientation	9
Service Success Factors	1. Unique/superior service	8
	2. Product synergy	8

The four most frequently mentioned antecedents of NSD success were market orientation, technology, knowledge management and culture. Market orientation was the most predominant factor. Market orientation was considered as a company's capability to collect and distribute relevant market information and act according to it. Practical example is that company does market research, know the competitive market and respond to changing requirements of customers. Technology success factor was considered as the company's capability to utilize technology in service development and service delivery. For example with the help of market intelligence system, company is able to develop more ideas to explore market potential. Knowledge management as a success factor describes the company's ability to collect useful information within and outside of the company and finally make it available to the right people in the company (Posselt and Förstl, 2011, p. 12-13). Corporate culture is the atmosphere that is created by management and which signals company's values and attitudes about how the company operates. Corporate culture enables e.g. market orientation and customer

involvement (Posselt and Förstl, 2011). Studying these factors in more detail is out the scope of this study.

The three most commonly mentioned NSD Process Success Factors were employee involvement, appropriate formalization and management measures. Employee involvement refers to involving front-line employees in the service development. Appropriate formalization means that the development project should follow formal development process. It is not always good, however, to have too formal or rigid process. Having some level of non-formality and flexibility especially in more radical innovations and in turbulent environments has turned out to be advantageous. Management measures refer to things like strong support of innovation and innovation friendly attitude in the company (Posselt and Förstl, 2011, p. 10-11).

The fourth and fifth most commonly mentioned NSD Process Success Factors were customer involvement and market orientation. Customer involvement means that customers are involved in the service development process. This can occur once or several times during the process. Market orientation refers to customer understanding. How the customer requirements and desires are taken into account in the service development. Additionally, how attention is paid to competitors is included in the market orientation (Posselt and Förstl, 2011, p. 11).

The two most common Service Success Factors were unique/superior service and product synergy. Unique/superior services means that the service is better or distinctive than others (Cooper, 2011, p. 32). This can be achieved for example with superior quality or offering supporting services. Product synergy refers to aspects like fitting the service in its markets and customers and that the service is compatible with company's other services, resources and capabilities (Posselt and Förstl, 2011, p. 9).

Granting that Posselt and Förstl (2011) discovered several success factors that are essential for New Service Development, their study was lacking of information about how these factors are interrelated with each other - if they even are. Hence, there is a need to study the interdependence of these factors.

The purpose of new service development is to develop a service that is valued by customers and as a result of they are willing to pay for it. So, the

most important aspect of NSD is the outcome, i.e. the service that has been developed. In order the service to be valued by customers it must be unique and superior (Alam and Perry, 2002; Cooper, 2011). Cooper (2011) identified five ingredients that lead to unique and superior service, which separated best innovators from poor performers. They are as follows:

1. Service's main benefits are really important to the customer

2. Service provides new and unique benefits that are not available from others

3. Service deliver better value for money than those of competitors

4. Service is superior in terms of meeting customers' and users' needs

5. Launching better quality services - regardless of how customer or users measures quality

Next question is how the company can then satisfy these ingredients? Because the uniqueness and superiority are assessed by the customers, the answer is logical: in order to develop unique and superior service, service must be based on in-depth understanding of customer needs, wants and problems (Alam 2002; Sandström, 2008; Cooper, 2011), especially in the Business-To-Business context (Sandèn et al., 2006, p. 49).

To understand customer needs, wants and problems, they must be somehow collected. The solution is that customers must be part of the service development, i.e. customers must be involved in the new service development project (Alam 2002; Sandström, 2008). And to involve customers in the development project, the new service development process must be designed accordingly to support customer involvement. Having the process right is not self-evident. It requires suitable corporate culture and attitudes. Hence, the company's culture and market orientation are essential factors the company must commit to.

So, the conclusion is that the most commonly mentioned success factors discovered by Posselt and Förstl (2011) are not separate factors but they are highly interrelated. Having the service right is the ultimate goal. To develop unique and superior service that is valued by the customers requires understanding of customers, which is achieved by involving customers in NSD. This is the key to successful services (Alam 2002; Alam and Perry 2002; Sandèn et al, 2006; Sandström, 2008). And finally, to be able to in-

volve customers in NSD, corporate culture must support that kind of activity which reflects being market orientated. The key point here is that customers are in the central role in every category of success factors that Posselt and Förstl distinguished. So, customers and users cannot be neglected in service development. Therefore a closer look to how involve customers in new service development and how gain input of customers' needs is justified. In the next section, section 2.4, these topics will be covered more closely.

2.4   User Involvement

As was seen in previous section, literature suggests that user involvement is key to successful services (Alam 2002; Alam and Perry 2002; Sandèn et al, 2006; Sandström, 2008). User involvement can have many forms from one time involvement to full involvement. And because traditional market research only skims the surface there is a need to utilize other methods to understand customers and users (Sandström, 2008).

But first, there is a need to define terms "customer" and "user". Although authors use these terms usually interchangeably (e.g. Kuusisto and Kuusisto, 2010; Alam, 2002; Cooper, 2011) they tend to have different meaning. Cooper (2011) denotes that the terms customer and user mean different people within the organization. However, usually user is general term to describe "a person or an organization who or which actually or potentially benefits of a service via receiving it or via participating more or less actively in its production and development"[3]. Term customer, on the other hand, can be understood as the buyer of a service, who makes the purchasing decision and acts as the receiver, resource and co-producer of a service[4]. Even if exact definition of user is hard to find in literature, the main principle is that user is not related to purchasing decisions but to the person who uses the service and gets benefit from the service. Despite the differences, however, in this study these terms are mainly used synonymously.

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[3] Service Innovation and New Service Development course lecture slides: Drivers and sources of innovation in services, p. 10, Marja Toivonen, VTT, cited March 16, 2012. Available at: https://noppa.aalto.fi/noppa/kurssi/tu-22.1335/luennot/TU-22_1335_lecture_slide_5.pdf

[4] Service Innovation and New Service Development course lecture slides: Drivers and sources of innovation in services, p. 13, Marja Toivonen, VTT, cited March 16, 2012. Available at: https://noppa.aalto.fi/noppa/kurssi/tu-22.1335/luennot/TU-22_1335_lecture_slide_5.pdf

There are many ways to cooperate with customers and users. Kuusisto and Kuusisto (2010) present framework of three general approaches to involve customers and users in New Service Development: developing understanding on user needs, involving customers and users as participants in new service development and exploiting user-generated innovations. These three approaches are presented in the following figure.
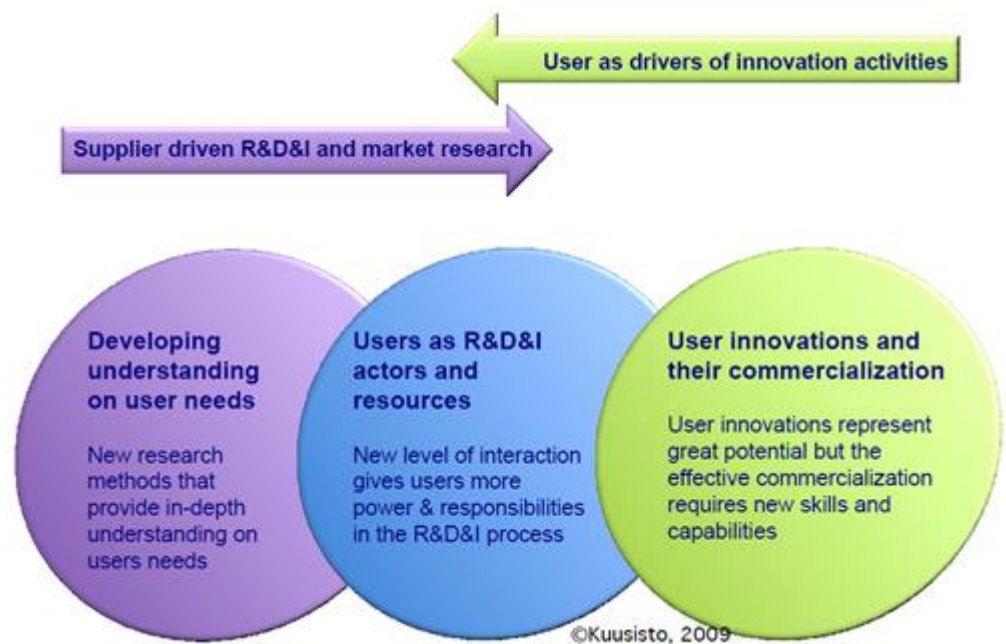
Figure 7: Three approaches to involve customer and users in NSD (Kuusisto and Kuusisto, 2010, p. 6)

The first circle, developing understanding on user needs, exploits the understanding of the users' needs and how they create value in their every-day activities. Methods of this category try to collect information from users and then to transfer them into the service provider's development process. In this approach users are seen as sources to service development and hence are considered as external resources. Essential in this category is that it is argued that traditional market research is not enough in user studies and therefore methods that take into account the users' natural environment are needed. The second circle, users as R&D&I actors and resources, exploits the working methods in which users themselves participate service development. This can occur in one or several stages of the process. Users' roles may vary a lot from active to less active roles. Main idea in this category is that by user engagement service provider can ensure that the service is rel-

evant and valued in the market. Third circle, user innovations and their commercialization, views users as innovators as their own. In this category focus is on what users are generating without interacting with the service provider. For example services like YouTube, Flickr, Wikipedia and applications in Mobile App Stores are regarded to belong to this category (Kuusisto and Kuusisto, 2010, p.6-8).

It is also essential to understand when users should be involved in the process. Average New Service Development project has approximately ten different stages. These stages were introduced in section 2.2. Customers and users can be involved in every of these stages (Alam, 2006) or just few of them (Alam and Perry, 2002). Customer and user involvement depends on the company's objectives and markets. For example a company making custom work may want to involve its customer and users in all stages whereas company developing a service for a target market, is likely to involve customer and users primarily in the idea generation stage, development and quality assurance (Melton, 2007).

How and when customers and users may be involved in service development depends on the service development stage. Alam (2006) suggests several activities that customers and users can perform at different stages of service development. These are summarized in the following table.

Table 2: Customer activities at different stages of service development (Alam, 2006, p. 27)

Development stage	Activities performed by the customers
Idea generation	Describe needs, problems, and possible solutions; suggest desired features, benefits, and preference in a new service via brainstorming or focus group sessions; identify problems not solved by the existing services; evaluate existing services by suggesting likes and dislikes; identify gaps in the market; provide a new service wish list.
Idea screening	Suggest rough sales guide and market size of various new service ideas; rate the liking, preference, and purchase intents of all the new service concepts; critically react to the concepts by analyzing how they would meet customers' needs; compare the concepts with competitor's offerings; examine

Development stage	Activities performed by the customers
	the overall salability of a new service
Business analysis	Limited feedback on financial data, including profitability of the concepts, competitors' data
Formation of cross functional team	Join top management in selecting team members
Service design and process / system design	Jointly develop initial service blueprints; review and evaluate the initial service blueprints to crystallize the concepts; suggest improvements by identifying fail points in service delivery; observe the service delivery trial by the front-line service personnel. Compare their wish list with the proposed blueprints of the service
Personnel training	Observe and participate in mock service delivery process by the key contact employees; suggest improvements
Service testing and pilot run	Participate in a simulated service delivery process as a customer; compare their wish list with the proposed initial service blueprints
Test marketing	Provide feedback on various aspects of the marketing strategies and suggest desired improvements; give input to sharpen sales arguments and advertising themes; examine the overall salability of the new service
Commercialization	Adopt the services as a trial; provide feedback about overall performance of the service along with desired improvements, if any; offer word of mouth communications to other potential users

If the company is developing the service for target market, i.e. not a custom work, what are the right stages for customer and user involvement? Edvardsson and Olsson (1996) suggests from quality perspective that customers and users should be involved when formulating and testing the service concept and when developing service processes. Formulating and testing the service concept refers to describing customer and user needs and how they are to be satisfied. Developing service processes relates to activities that must occur in order the service to work correctly. So, their recommendation is to involve customers and users in the beginning (idea genera-

tion, idea screening stages) and in the middle (developing the service). However, this is just their recommendation and lacks of empirical data. On a contrary, Alam and Perry (2002) conducted a study in which they investigated how companies involve customers and users in their service development in the financial services industry. They found that customer involvement was most frequently mentioned at three stages: idea generation, service/process system design, and service testing and pilot run. One of managers that Alam (2002, p. 255) interviewed commented as follows:

> "At the idea generation stage we investigate the customers in great depth in order to gain a better understanding of the market mechanics and then convert the service ideas into their first crude shape. This shape becomes more accurate and concrete at the service design stage when we consider customers' wish list in detail. Final modifications are made at the service testing/pilot run stage of an innovation when we watch customers' actual interaction with the new service. Therefore, user input into these three stages of the development process is more important and critical."

So, in addition to idea generation and service development as suggested by Edvardsson and Olsson, companies seem to involve customers and users in service testing and pilot run stages. This is in line e.g. with Cooper (2011, p 48), who recommends involving users along the process, especially in the business case phase – when user studies are to be done – in development phase and in testing phase. Cooper justifies this with argument that users do not know what they want until they see or experience the service, which is why user involvement must be continuous.

2.5   Methods to Understand Users

New Service Development literature identifies several methods to involve users in the New Service Development process. Sandèn et al. (2006) conducted an empirical investigation covering 366 organizations in Sweden both Business-to-Consumer and Business-to-Business to discover how they involve users in their development processes. As a result they found out that five methods – internally collected information and knowledge about customers, surveys, customer interviews, observations, and the lead user method – were used by companies. The methods were equally common among B2B organizations having usage rate of 50-70 %, excluding survey method which had a usage rate lower than 30 %. Kuusisto & Kuusisto (2010) identified the following methods to be used in NSD: Interview, Eth-

nography, Empathic design, Participatory design, Contextual inquiry and Contextual interviewing. All these methods have a lot of similarities and hence only the first four ones discovered by Kuusisto & Kuusisto are introduced.

2.5.1 Interview

Interviews and focus groups are well known methods to involve users in New Service Development. Alam (2002, p. 256) describes interview as a method to "gather user input on various aspects of the new services to be developed: users' needs, wants, preferences, likes and dislikes, gaps in the market, competitors' offerings, desired improvement in the service delivery process, timeliness of the service delivery, comments on the marketing mixes, and service acceptance criteria." Griffin and Hauser (1993) see the interview as method to gain deep understanding of general and more detailed needs of the user. Focus groups are another type of interviews. Focus groups involve a set of users that have been invited to a group discussion where issues related to different development activities are handled.

Interviews and focus groups – that are categorized to a traditional market research – are argued to be unreliable. It is argued that users do not express truthfully their opinions but rather might less reliably suggest their future needs (Alam, 2006, p. 20). Additionally, because these methods directly ask people to express their opinions and ideas they force people to talk about things that they are already familiar with and hence they are considered as bad sources for innovation (Kuusisto and Kuusisto, 2010, p. 6). Therefore, many authors (e.g. Alam and Perry, 2002; Kuusisto and Kuusisto, 2010) suggest additional methods to understand deeper users and their latent needs.

2.5.2 Ethnography

Ethnography is increasingly used by service providers to gain a deep understanding of users. It has uses in developing new service ideas and concepts. Kuusisto and Kuusisto (2010, p. 7) describe that "Ethnography has its roots in anthropology and it is best seen as an approach combining different research methods to understand people's actions, practices, experiences, and the social meanings attached to these, in people's own, natural setting." In line with this, Hämäläinen et al. (2011, p. 71) further describes that "Design-

er itself takes the role of end-user or ends up being end-user in interaction with other user or users in order to obtain user information about the product, item or service." Hence, the most typical forms of ethnography are participatory observations and interviews. Therefore, authors sometimes use observation as a synonym to ethnography.

The purpose of ethnography is to extend the understanding why users act as they do and discover how their acts relate and give purpose to items, products and services. Because use of services occurs as part of everyday life and ethnography is design to take the natural environment also into account, it makes ethnography feasible to be a part of service development process. This has been realized for example by IBM, IDEO and Apple (Hämäläinen et al., p. 71).

2.5.3 Empathic design

The purpose of empathic design is to reveal the latent needs of customers. Empathic design provides the means to extend thinking outside existing products and services. Methods of empathic design are user observation, settling into user's position with the help of empathic tools like blurring the sense of sight, collecting users' stories and different kinds of ethnographic methods (Miettinen, 2011, p. 32-33). Empathic design emphasizes empathy towards user needs.

In the process of empathic design, researchers observe users in their normal home and work environments, so that correct information regarding how the products and services are used can be received. The process tries to generate information regarding the questions like "'What circumstances prompt people to use the product or service?' 'How does the product or service fit into users' own systems?'" (Kuusisto & Kuusisto, 2010, p, 7). Leonard & Rayport (1997) defines five step process of empathic design as follows:

1. Observation

2. Capturing data

3. Reflection and analysis

4. Brainstorming for solutions

5. Developing prototypes of possible solutions

This process of empathic design is very similar to the iterative process used in Service Design (Miettinen, 2011, p. 33). Service design will be introduced later in the section 3. The key idea of the process is to combine insights gained in the observation of the use of the service with company's internal knowledge and capabilities (Kuusisto & Kuusisto, 2010, p. 7).

However, empathic design alone is not sufficient and it cannot replace market research. Leonard and Rayport suggest that empathic design techniques contribute to the traditional market research by providing vital insights regarding the products and services. Then after empathic design assessment, company is wiser about if it is feasible to commit itself to a development project at all (Leonard & Rayport, 1997).

2.5.4 Participatory Design

Participatory design emphasizes the importance of the user participation throughout the development process. Participatory design methods have their roots in systems design. Kuusisto & Kuusisto (2010, p. 9) describes the key idea of participatory design as follows, "The key idea is to engage users as stakeholders in development projects: active collaboration between designers of new technology and its users should help ensure that innovations will be meaningful to their users."

The process of participatory design emphasizes active collaboration with users. The process on a general level consists of the following steps (Kuusisto & Kuusisto, 2010, p. 9):

1. Ethnographic field study
2. Sense making of the results
3. Co-ideation
4. Establishment of new concepts
5. Development

Participatory design method has been developed as a combination of participatory design practices, design anthropology, and the lead-user approach (Kuusisto & Kuusisto, 2010, p. 9).

2.6 Criteria for Interaction

Although many authors suggest that involving customers and users will produce superior services and increase they success, attention should be paid to what kind of customers and users should be involved. Alam (2006) suggests three criteria that should be considered when selecting customers and users for interaction: close relationship with customer, customer itself is able to trigger innovation and customer represents lead user group. First, a close relationship with customers is seen vital because of confidentiality issues. Company developing a service may hold lots of sensitive information which cannot be shared with just anyone. Additionally he proposes that customer with close relationship is willing to commit to NSD project deeper than customer not having that close relationship. Second, interacting with customer who is able to initiate innovation in liaison with the company by formally or informally discussing ideas with managers and sales staff, complain existing services and state other desired suggestions is stated to be an important criterion. Third, interacting with customer representing lead user group increases the opportunity of service being innovative and profitable. Lead user concept was first introduced by von Hippel (1986). He defines lead users of a service as those showing the following characteristics:

- "Lead users face needs that will be general in a marketplace—but face them months or years before the bulk of that marketplace encounters them, and

- Lead users are positioned to benefit significantly by obtaining a solution to those needs."

But interacting with lead users may pose few concerns. First, true lead users are rare (von Hippel et al., 1999). Second, lead users may not represent the average and general user in a marketplace but rather smaller group of having some specialized needs for the service (Alam, 2006). However, to overcome this latter issue, von Hippel et al. (1999) suggest having lead user process which first identifies trends and lead users and finally determines whether these ideas fit to target market users' needs. To find out are the ideas worth of developing, several other customers should be discussed with, as one manager (Alam, 2006, p. 28) pointed out:

"When we decided to search and involved leading edge customers, we were fully aware of the many challenges and risk involved. For example, we first took note of input from the leading edge customers and later discussed that input with a number of other customers. When those customers showed some interest only then did we decide to move ahead with the service concept."

Customer interaction might pose some additional problems. Even though many authors suggest that involving customers and users will produce superior services and increase they success, it is not self-evident. Alam (2006) identifies four issues relating to customer interaction: over-customization of a new service, confidentiality, finding right customers and lack of customer co-operation and motivation. First, by over-customization it is meant that listening to customers too closely service provider might customize the service too much. When customizing the service to suit one customer's demands the service might not satisfy other customers' needs anymore. Hence, it is suggested to conduct markets studies to see the reactions more widely. Second, confidentiality might pose problems since customers might have access to confidential information. Customers can then reveal the information intentionally or unintentionally. Therefore, to avoid information leaks, customers with close relationship might be considered. Third, finding right customers for interaction can be tricky. To be able to choose right customers, deep knowledge of the market and customer contacts is vital. Additionally, customer might need to interact with customers' customer. Finally, lack of customer cooperation and motivation can be a major issue. Customers may have conflicting interests with service provider. Additionally many service providers ask why the customer would agree to give their input to the project while having busy with their own schedules. This issue could be solved by making the customer to feel that they are part of the development team (Alam, 2006, p. 29-30).

Previous problems are issues that are seldom discussed in the literature. Although there are some concerns, there is always a solution. So, in order to make co-operation work with customers and users, the process should be designed appropriately in order to avoid problems.

2.7   Summary

In this section services were defined and characterized. The conclusions was that services and goods cannot be treated as their own entities, but ra-

ther see service as the umbrella for the offering, which then includes goods, personnel and traditional service elements. Additionally services can be seen treated as products but products should not be confused with physical goods. Product can mean service or physical good or something in between whereas service means offerings that have process nature and which can have tangible characteristics as well.

Additionally we took a look to development of new services. We covered different process models that can be used to develop and manage new service development: linear, parallel, spiral (or agile) and prototype. It was found out that especially today literature suggest using iterative process model (spiral, agile or prototype) in New Service Development. Moreover, iterative models provided more flexibility and ability to involve users in the service development. Also the previous separation of spiral and prototype models turned out to be unnecessary from the service development point of view.

Next, how to ensure successful service development was covered. Literature suggested several success factors that may be taken into account. The most commonly mentioned CSF between the three categories of CSF seemed to have logical interdependence. All of them more or less indicated the importance of users in the service development.

After it was found out that involving users in New Service Dvelopment is important, the topic of user involvement was studied in more detail. It was found out that there are three different approaches to develop service together with users: 1) developing understanding on user needs, 2) users as R&D&I actors and resources and 3) user innovations and their commercialization. Additionally it was found out that users may contribute to service development in many ways. However, organizations promoting user involvement must choose what they want users to perform, because involving them at every stage is not sufficient.

Then introduction to methods to understand users was provided. Because traditional market studies only skim the surface and provide indicative results, more deeper understanding of user needs is required. For this purpose four different methods to involve users were covered: interview, ethnography, empathic design and participatory design.

Finally, the criteria for interaction with customers and users were presented. It was found out that even though user involvement is suggested in the literature it might pose some challenges to the organization. Three issues were introduced: close relationship with customer, customer itself is able to trigger innovation and customer represents lead user group.

This was the first section of literature review. The next section will cover the topic of Service Design.

3 SERVICE DESIGN

In this second section of literature review, the theory of Service Design is introduced. In recent years Service Design has gained ground from traditional service development. The advantage of Service Design stems from the way how services are developed: customers and users are active participants of the service development and thus customers' and users' needs, requirements and experiences play major role in service development. Hence, it is said that Service Design is about co-design, empathy and participation (Miettinen, 2011, p. 21). Service Design is not contrary to New Service Development but rather it complements the New Service Development (Holmlid & Evenson, 2008, p. 342). For example, it takes into account customers and users and their needs (Miettinen, 2011; Tuulaniemi, 2011) like NSD but additionally Service Design extends this to a new level: it provides methods and means to take into account the customer and user service experience (Moritz, 2005; Patrício, 2011).

At first, introduction to what is Service Design is provided. The purpose is to build a common understanding of the topic and describe what the Service Design is about. Second, basic elements of Service Design are described. The emphasis is on how Service Design takes into account the nature of services. Third, the concept of service experience is covered. What is the role of experience in today's business and how the service experience can be understood are explained. Fourth, the process model of Service Design is illustrated. Again there are several different models but this time all of them share the same principles. Fifth, an introduction to Service Design tools and methods is presented and in more detail the methods of Service Blueprinting and prototyping are covered. Finally, the literature findings are summarized.

3.1   Introduction

Service Design is emerging approach to develop services. Service Design can be used to improve – re-design – existing services or develop – innovate – totally new services (Moritz, 2005). Service Design was practically unknown until the early 1990s when the first education degrees of service design were founded (Mager, 2008). Service design takes a holistic view to develop service systems (Patrício, 2011) and brings customers' and users' perspective at the center of service development (Miettinen, 2011). Hence it is often described as an outside-in perspective on service development (Holmlid & Evenson, 2008). Mager and Sung (2011) define service design as follows:

> "Service design aims at designing services that are useful, usable and desirable from the user perspective, and efficient, effective and different from the provider perspective. It is strategic approach that helps providers to develop clear strategic positioning for their service offerings. Services are systems that involve many different influential factors, so service design takes holistic approach in order to get an understanding of the system and the different actors within the system."

Mager and Sung definition has three points. First, it takes into account customer and user perspective and second service provider perspective. Third, it identifies the holistic approach to service development due to the complex nature of service systems. Another definition of Service Design is provided by the Copenhagen Institute of Design (Stickdorn & Schneider, 2011, p. 30) as follows:

> "Service Design is an emerging field focused on the creation of well thought through experiences using a combination of intangible and tangible mediums. It provides numerous benefits to the end user experience when applied to sectors such as retail, banking, transportation, & healthcare.
>
> Service design as a practice generally results in the design of systems and processes aimed at providing a holistic service to the user.
>
> This cross-disciplinary practice combines numerous skills in design, management and process engineering. Services have existed and have been organised in various forms since time immemorial. However, consciously designed services that incorporate new business models are empathetic to user needs and attempt to create new socio-economic value in society. Service design is essential in a knowledge driven economy."

Although this definition by Copenhagen Institute of Design contains almost the same subject matters than Mager and Sung definition, it adds one significant point to the definition. It points out that services are empathetic to user needs. This point is also emphasized by Miettinen (2011). So, whereas traditional service development exploits market research and customer feedback, Service Design go deeper taking into account customer understanding, users and user data by stepping into shoes of the users (Miettinen 2011). Even though there are few definitions provided for Service Design there is no a common one (Stickdorn & Schneider, 2011, p. 34). This, however, can be considered as the strength of Service Design, because it is not restricted knowledge base but rather a more common thinking, process and toolbox (Tuulaniemi, 2011, p. 60).

Service Design roots are argued to be in several fields. Tuulaniemi (2011) and Moritz (2005) claim that Service Design roots are in the field of design. Both authors have background in the product design, which may be the reason for their view. However, Mager (2008) and Stickdorn & Schneider (2011) see Service Design as a sum of more fields. In addition to the field of design, Service Design is claimed to have roots in the fields of engineering, management and social sciences. As a result of its roots, Service Design has adapted user-centric view to its core of operation.

Methods of Service Design are borrowed from related fields. Some of the Service Design methods are used in product design but service design exploits these methods in a new way (Tuulaniemi, 2011). Although the roots of service design methods are usually not in design, they are referred, for the sake of clarity, as Service Design methods. More about Service Design methods will be covered in section 3.5.

Service Design is a process - it is not a project (Moritz, 2005). Even though Service Design provides comprehensive set of design tools and methods, it is not limited to that. Service Design can be seen as a more holistic mode of operation. Service Design helps to discover new service opportunities, produce ideas, solve problems and create solutions that can be implemented effectively. Service Design combines the wishes of the customer with the wishes of the company. It is also about planning and shaping useful, usable, desirable, effective and efficient service experiences (Moritz, 2005, p. 40-41).

Service Design utilizes iterative process model. This means that design, development and prototyping are repeated several times until the desired output is achieved (Miettinen, 2011). Additionally service design makes use of incremental development methodology, which means that entirety is split into smaller development challenges (Tuulaniemi, 2011). These smaller parts are then combined to one entirety. A closer look to Service Design process is taken in section 3.4.

To summarize the introduction of Service Design the following overview model can be used (see figure 8). Moritz (2005, p. 150) developed an overview model of Service Design based on his research.
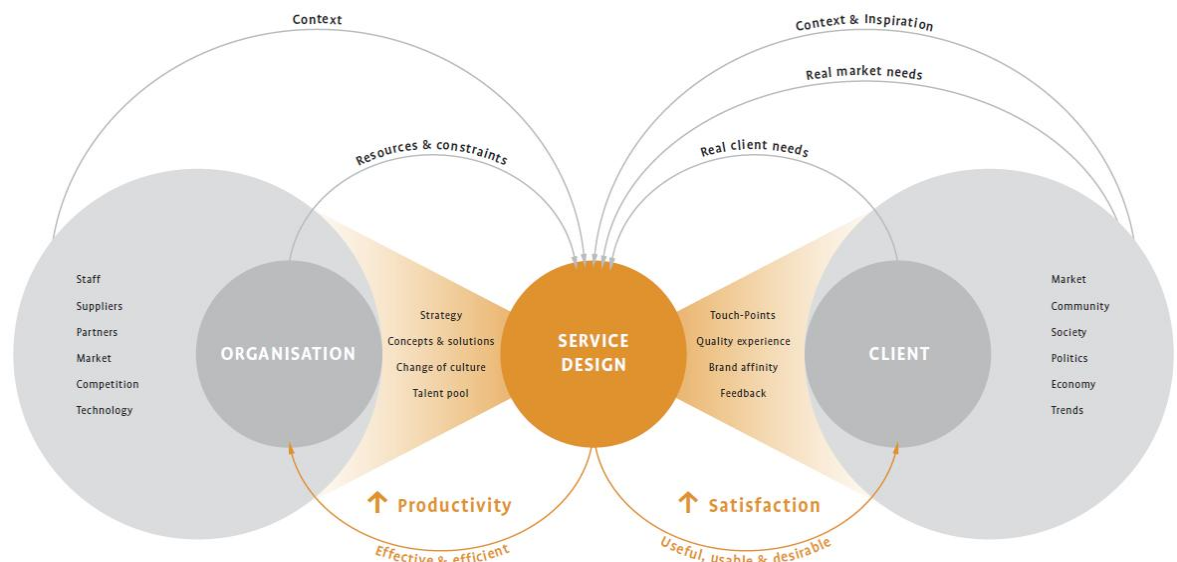
Figure 8: Service design overview model (Moritz, 2005, p. 152)

The model illustrates how Service Design acts as a mediator between the service provider (organization) and customer (client). Orange arrows illustrate how Service Design provides win-win situation to both parties. Service providers receive higher productivity due to more effective and efficient services and at the same time customer satisfaction arises because services are more useful, usable and desirable. The gray arrows in the top left illustrate how Service Design takes into account service providers' resources, constraints and the environment, i.e. context they operate in. Gray circle on the very left expands the context of the service provider, which, as Moritz (2005, p. 150) put it: "consists for example of staff working for the organization, suppliers that are or could be used, partners that are available, the

market the organization operates in, the competition and relevant technologies." In turn, the gray arrows on the right side illustrate how Service Design develops insights into real customer and market needs, and takes into account the customer context: Market, community, society, politics, economy and trends. Inside the organization, service design supports strategy work, develop service concepts, solutions, and design internal processes. It helps to change the mindset towards service oriented, customer focused and innovative one. Additionally, the ongoing service improvement is guaranteed through talent pool of people. On the customer side, Service Design helps to design all the touchpoints that customers encounter in service delivery, resulting in better experiences with a service provided. Moreover, brand affinity is increased through deeper relationship between the service provider and customer. Also as part of the relationship, Service Design manages the feedback and integrates service provider staff with the customer in the design process. Finally, Service Design circle in the middle illustrates how it designs the interface between service provider and customer: operating as an interface itself (Moritz, 2005, p. 150).

3.2 Service Design Elements

Service design utilizes several basic elements that are essential in order to understand Service Design. These are service packet, service system (or process), service journey and tangibility of the service (Koivisto, 2011; Tuulaniemi, 2011). In addition to these elements, customer and service experience also belong to basic building blocks of Service Design. However, because service experience is broader concept than the other elements, service experience is covered separately in section 3.3.

3.2.1 Service Packet

Service packet describes the end-result of the service (Koivisto, 2011, p. 43), i.e. what the customers receive (Grönroos, 2007, p. 186). Service packet defines all the service elements that are needed in order to satisfy customers' requirements. Service packet can be divided in to two separate services: core service and ancillary services (Koivisto, 2011, p. 44). The following figure illustrates the service packet.

Figure 9: Service packet (Koivisto, 2011, p. 44)

Core service defines central requirements of the service in order customer or user to achieve his or her aim. For example, making a phone call is core service. This service answers to the customer's central need. However, core services are usually the same among service providers – making a phone call does not differ between telecom operators - and therefore there is a need for ancillary services. Ancillary services are then built around the core service. Ancillary services can be further divided into two different services: enabling services and supporting – or enhancing – services. Enabling services define the elements that are mandatory to successfully use the core service (Koivisto, p. 44). For example, in order to make a phone call, phone must first include a SIM card. This SIM card can be delivered to customer for example by using a delivery service. Supporting services, on the other hand, make it more appealing to use the service, increase the value of the service, and differentiate the service from those of competitors. Supporting services are not mandatory to use core service because they fulfill the secondary needs of the customers and users (Koivisto, p. 44). To give an example, if the caller could see the status of the callee, caller would know whether to call this person or not. This kind of service is no required to make a call but definitely would make it more appealing to use the service.

3.2.2   Service System

Service system (Koivisto, 2011, p. 47) or service process (Tuulaniemi, 2011, p. 76) defines resources and functions that are needed to deliver the service. Service system consists of front stage, service interface and back stage (see figure 10). It is not unusual that service system is also referred to as theater (Tuulaniemi, 2011, p. 76; Moritz, 2005, p. 41).
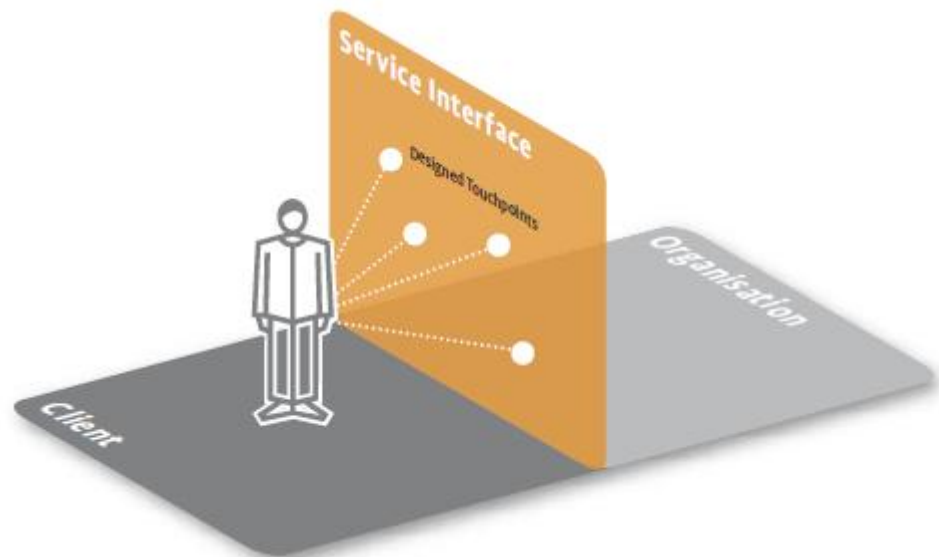
Figure 10: Service touchpoints (Moritz, 2005, p. 41)

First, front stage is the part of the service that is visible to customer, the place where customer or user acts. Second, service interface defines the contact points – also referred to as touchpoints – that customer or user has with the service provider and its brands. Front stage and service interface together define how the customer or user experiences the service (Miettinen, 2011, p. 46; Moritz, 2005, p. 41). Finally, back stage, i.e. service provider side of the service, is the place where service delivery occurs. These are not visible to customer but most of the work takes place in the back stage. Back stage functions support the visible part of the service and therefore are integral part of the service system (Miettinen, 2011, p. 48).

3.2.3   Service Journey

Services are processes and they take over time. Service journey – or customer journey - describes how the customer navigates through the process over time and how he or she experiences it. In Service Design the service

journey experience by the customer is illustrated step by step in order to be able to analyze it and develop it by the means of design methods. Service journey may be divided into smaller pieces to help the design work but it needs to be comprehensive enough so that the service covers appropriate parts of the services journey (Tuulaniemi, 2011, p. 78). Service journey is not always the same to all customers. Service provider may provide different options to its customers and customers then form the individual service path by their own. Service Design tries to discover the key behaviors and needs that affect to service consumption, in order to design the customers' service experience to fit into different customer profiles. Additionally, one service provider is not usually capable of providing all the elements that are required by the customer in the service. Hence, services that are essential and provided by other service providers may also be included in the service journey. Service journey as method can be used to develop both transactional services – i.e. they are consumed only single time – or even holistic customer relations (Koivisto, 2011, p. 50-51).

Service journey is divided into two underlying components: service moments and service touchpoints. Hence, service journey is a sum of various service moments. Each service moment comprises of several service touchpoints, through which customers are in contact with the service (Tuulaniemi, 2011, p. 79). Contact with the service occurs as a sum of several senses – i.e. hearing, smell, taste, appearance and touch (Miettinen, 2011, p. 51). Service touchpoints can be divided into four groups: people, environments, items and standard of activity. These form the opportunities and challenges of the services. Service provider may try to affect its customers through several senses at different stages of the service. However, it is important to design the service touchpoints so that it does not confuse or expel the customer.

First, people as a touchpoint means those people who deliver (i.e. customer service personnel) and, on the other hand, those who consume the service (customers that create value for themselves). Second, services take place in the most diverse environments. Environments include both the physical spaces and virtual environments. Environments have a major impact on service success (Tuulaniemi, 2011, p. 81) because they are at the front stage where the visible part of the service delivery takes place (Miettinen, 2011, p. 51). Third, items mean the physical objects that are needed in the service

delivery (Tuulaniemi, 2011, p. 82). They include goods and devices that cus-
tomers or users themselves use as part of the service delivery and goods
and devices that are used by the personnel (Miettinen, 2011, p. 52). Items
can also act as a proof of access to service; take for example bank card or
electronic keys. Finally, standard of activity mean the agreed behavior and
manners of service personnel during service moments. Service provider may
want to standardize some of the activities in order to make service experi-
ence more standardized (Tuulaniemi, 2011, p. 80-82).

3.2.4   Tangibility of the Service

Services need to be somehow tangible. Because services are abstract and
intangible in their core nature, service providers should turn invisible service
claims to visible and desirable offerings (Grönroos, 2007, p. 54-55). The
benefit of making service tangible is that customers then feel that they get
more value for money. This is why for example computer software is put into
heavy and plausible packets. Hence, intangible services need to have tangi-
ble aspect and this is one of the main objectives of Service Design
(Miettinen, 2011, 92-94).

Making invisible service claim visible and desirable offerings can be
achieved using service evidences. On a rough level, service evidences can
be divided into two groups: Service landscape and goods. Tuulaniemi (2011,
p. 92) describes them as follows:

- Service landscape: "Service landscapes are all those environments,
  in which service is offered and in which person and service provider
  encounter. Service landscapes can be for example parking lots,
  signs, environments and buildings. It includes even the smells and
  temperatures of the facilities."

- Goods: "Service evidences are also all those goods that eases and
  enables the service implementation or communication, for example
  bank cards, tickets, program booklets, invoices, reports, seminar
  folders, clothing and uniforms, brochure and websites."

Building service evidences, i.e. making services tangible, can be also con-
sidered as wrapping services into a products, commercialization or
productization.

3.3 Service Experience

The fourth basic element of Service Design is service experience. The focus of business economy started from agriculture, and then moved to manufactured goods and finally services. Now that services are increasingly commoditized, companies are looking for new value opportunities and ways to distinguish their services from those of competitors. This new era is about experiences (Pine and Gilmore, 1998).

Literature identifies at least three terms to describe experience of service. These are service experience (Berry et al., 2006; Sandström et al., 2008), customer experience (Johnston and Kong, 2011) and customer service experience (Olsson et al., 2012). The lack of exact definition and term can be detected for example in Olsson et al. (2012) study when they use all three terms interchangeably. In this study term "service experience" is used, like Olsson et al. (2012) define it: "as the cognitive and affective response to any direct or indirect contact with the company or its resources". That is, whenever a customer uses company's services (in person, through Internet or through other means), customer will have service experience (Berry et al., 2006), which is a combination of rational and emotional responses towards the service and the company itself.

Service experience is argued to have major impact in the success of company's offering (Gentile et al., 2007). Additionally, Berry et al. (2006) even argue that the experience is actually the service. However, the importance of service experience is not only limited to customers. Johnston and Kong (2011, p. 18) found out that company's staffs better understanding of customer service experience generated higher commitment to their work, pride in it and higher work satisfaction.

Next the structure of service experience is illustrated in the form of service experience framework. Then the elements of service experience dimensions are described.

3.3.1 Frameworks

Even though the importance of service experience has been raised in several studies, literature is lacking of mutual understanding about the service experience elements. Studies about service experience mainly focus on defin-

ing service experience and hence little empirical evidence about its elements exists (Xie et al., 2011, p. 2234).

Few studies about the service experience structure exist but they are not complete ones and they differ from each other. Klaus and Maklan (2012) have developed a service experience framework called service experience scale (EXQ) in the context of mortgages. This framework divides service experience into four dimensions: 1) Product experience, 2) outcome focus, 3) moments-of-truth and 4) peace-of-mind. Product experience represents experiences that are related to features and range of products offered. Outcome focus is associated with reducing the customer's willingness to seek out and choose another provider. Moments-of-truth are about how the service is recovered if problems occur and how flexibly service provider deals with the customer. Peace-of-mind is associated with the emotional aspects of the service.

In turn, Grace and O'Cass (2004) developed a service experience framework in the context of bank consumers. In this framework they propose three elements that affect service experience: core service, employee service and servicescape. Core service is associated with process by which the service is delivered by the service provider. Employee service refers to how employees behave and perform during the service delivery. Servicescape include the physical signs, symbols, products and the infrastructure that is required to provide the service.

Third service experience framework, by Sandström et al. (2008), argues that service experience is the sum of functional and emotional outcome dimensions. Their service experience framework is a result of literature review covering several studies in the area. Sandström et al. (2008) have developed the service experience framework in the context of technology based services. Their framework takes into account the unique nature of technology base services: in general these services lack of personal interaction, like for example in medical services and instead interaction occurs through for example video conferencing, phone or web-interface. The service experience framework proposed by Sandström et al. (2008) relies on the value creation theory. But what is value?

Value is gain. When a user uses a product or a service to achieve his or her own desires or is able to solve the problem, it is said that user feels that they gain value (Tuulaniemi, 2011). In the B2B context user desires and problems are set by the company. Company's mission and strategy controls what the company is trying to achieve and this further determines what each person in the company is doing. How value is defined is not self-evident. For example Tuulaniemi (2011) defines value as a ratio between price and benefit. In this context price does not always mean monetary value but can also be sacrifices that the customer does in order to achieve its targets. Additionally, value is relative to user's expectations and previous experiences. So there is value only if the user feels that it is valuable to him or her. Hence, value is always relative - there is no absolute value. The following figure illustrates how the value is perceived.
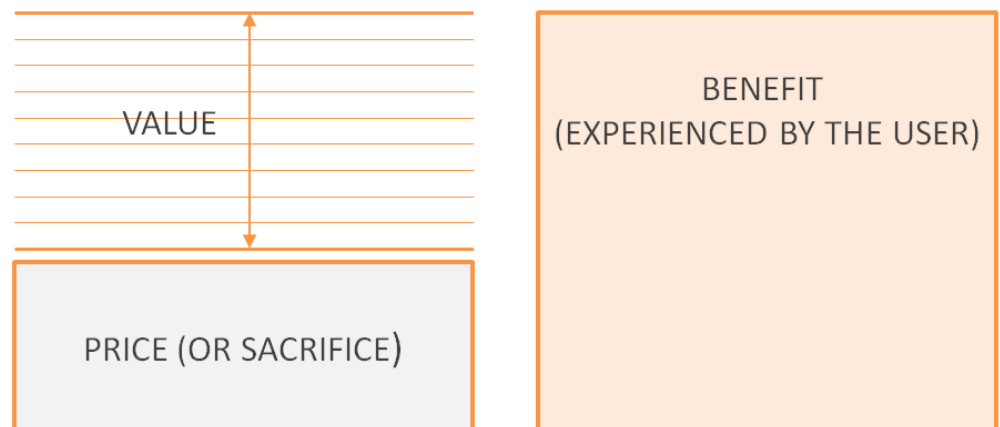
Figure 11: The formation of value (adapted from Tuulaniemi, 2011, p. 31)

This kind of view of value is beneficial when value is created into a good which is then again exchanged with a customer (Sandström et al., 2008), i.e. especially in the world of products. However, this view has been called into question by a new perspective by Vargo and Lusch (2004). In this new perspective value is realized when a service is used by the customer or user, which means that customers and users are co-producers of the value and hence value is co-produced or co-created. This means that a service cannot bring any value until it is used by a customer or user and further, customer and users define what the value is when they use a product or a service. Hence, service providers can only provide value propositions to their customers and users, and the value is created during the service consumption process (Sandström et al., 2008).

The service experience framework of Sandström et al. consists of four components: 1) value proposition: physical/technical enablers and functional and emotional value proposition, 2) individual and situational filter, 3) service experience, and 4) value in use. The framework is illustrated in the following figure.
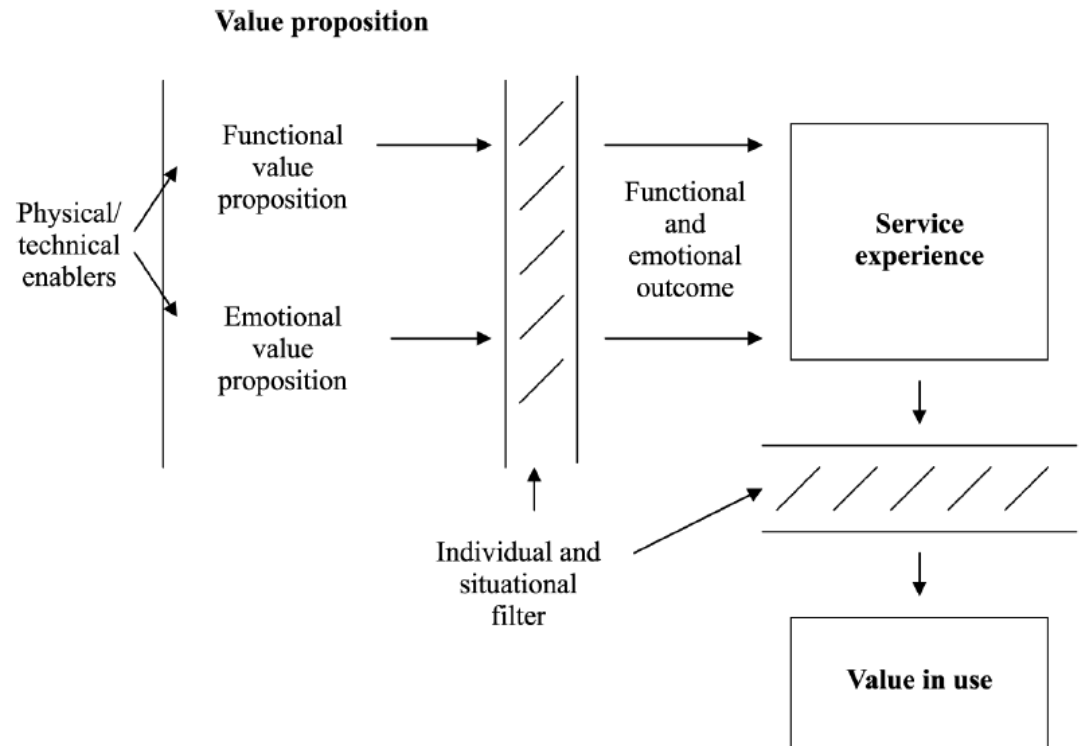
Figure 12: Value in use through service experience (Sandström et al., 2008, 121)

First, physical/technical enablers (or servicescapes) are referred to as physical and technical tangibles that are needed to provide value proposition. These enablers are, as Sandström et al. (2008) put it: "physical signs, symbols, products, and the infrastructure necessary to create the various attributes that impact upon the service experience. These enablers can often be related to the multisensorial, e.g. visual images, tactile impressions and sounds, the generating of individual experiences, imagination, and the emotive aspects of the service usage experience…" In technology context these are the e.g. underlying systems that are needed to enable value proposition. For example in the case of mobile services, user needs a mobile phone and mobile network infrastructure in order to use the services. The actual value proposition is then provided by the physical and technical enablers and con-

sists of both functional and emotional value propositions. Functional value propositions are referred to as functions made available to customer or user. For example, user can make a phone call or browse the web. Hence it is referred to as what can be done with the physical and technical enablers. In turn, emotional value propositions are referred to as intangibles, i.e. mental images, e.g. a logo in the mobile phone provides mental images to the user about what to expect from the service offering. Hence it is considered non-physical features of the service (Sandström et al., 2008).

Second, individual and situational filter refers to the individualistic nature of the service between the service provider and the customer. Every customer or user has their own individual experience of the service. This means that functional and emotional value propositions are personal to every individual customer. The individual and situational filter includes demographic dimensions, competence and skills of the user, surroundings, previous experiences etc. The amount of items is uncountable. Hence, although service provider would provide the same physical and technical enablers to its users, different users will experience these differently (Sandström et al., 2008).

Third, service experience comprises of functional and emotional outcome dimensions. Functional and emotional outcome dimensions are the individual location dependent functional and emotional value propositions that are enabled by the physical and technical enablers. Hence, as Sandström et al. (2008, p. 118) put it: "The service experience is always individual and unique to every single customer and every single occasion of consumption, and it assumes that the customer is an active co-creating part of the service consumption process".

Finally, the service experience is linked to the value in use. Sandström et al. (2008, p. 120) suggest that value in use is the evaluation of the service experience. Hence they define the value in use as follows:

> "Value in use is the evaluation of the service experience, i.e. the individual judgment of the sum total of all the functional and emotional experience outcomes. Value cannot be predefined by the service provider, but is defined by the user of a service during the user consumption. "

However, their study does not provide insights to what are the items and relation of functional and emotional outcomes. Because value is linked to ser-

vice experience, we discover the service experience items from the value theory. This is the topic of section 3.3.2.

To study the relation between the functional and emotional outcome dimensions in service experience and their elements, there is a need to deepen the understanding how value is formed. Tuulaniemi (2011, 75) presents a value creation pyramid proposed by Palmu inc. consultation company (see figure 13). Value pyramid reveals that functional dimension is only on a hygiene level, whereas emotions are on an upper level of the value pyramid.
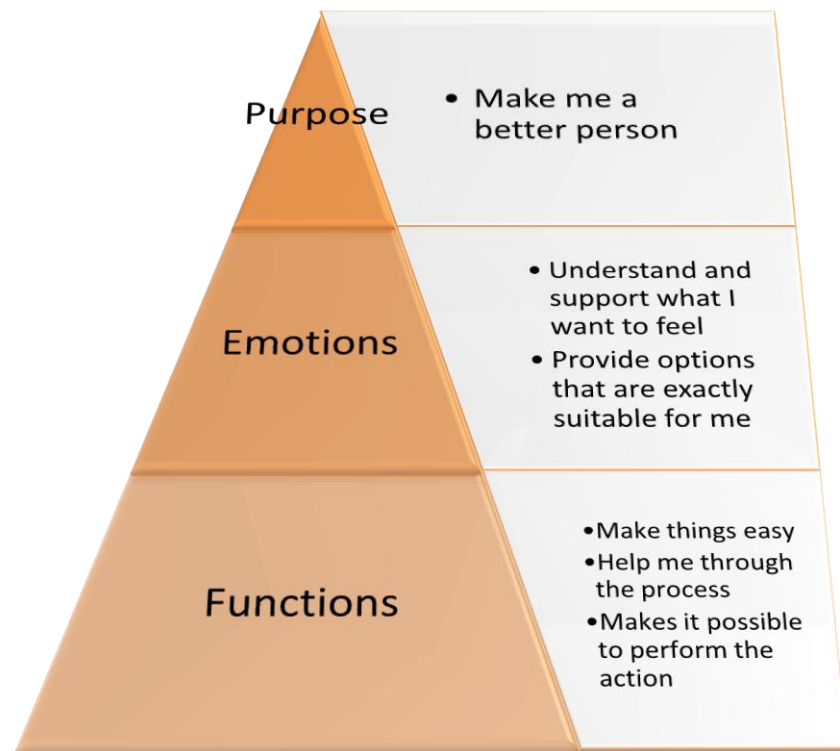

Figure 13: Value pyramid by Palmu Inc. (Tuulaniemi, 2011, p. 75)

Value pyramid divides service experience into three levels: functions, emotions and purpose. First, functions define how easily and smoothly the service satisfies the customer's or user's need. Functions level means the ability of the service to satisfy the customers or users functional need, how well

the process is working, how the customer or user perceives the service, how it is attained, its usability, efficiency and versatility. Functions can be considered as the hygiene level elements which mean that they illustrate the necessities of the service which are required in order the service to exist in the market place (Tuulaniemi, 2011, 74). This observation is in line with Sandström et al. (2008) who suggest that functional dimension is not enough but organizations must also pay attention to emotional dimension in order to provide better services, i.e. which bring more value to its customers or users. Second, emotions illustrate how the service fits to images and feelings that the customer or user wants to experience. Emotions level includes instant feelings and personal experiences that are formed to customer or user when using the service. According to Tuulaniemi these are "instant feelings and personal experiences, pleasantness of the experience, easiness, attractiveness, enthusiasm, atmosphere, style, and ability to touch senses." Finally, the highest level of the service experience is called the purpose level. Purpose level illustrates how the service contributes to customer or users willingness to learn, realize and achieve different things. Purpose level means aspects like, as Tuulaniemi puts it, "the dimensions of image and purpose that are related to experience, cultural codes, dreams, stories, promises, personal aspect of the experience, relation to customer or users style of life and identity." (Tuulaniemi, 2011, p. 74). In this study, however, the purpose level is not considered that important. This is due to the fact that the adopted service experience framework of Sandström et al. (2008) does not distinguish purpose level, only functional and emotional levels.

It seems that there are not universally correct elements for service experience. Even though the elements presented in the previous paragraph captures wide range of points on a general level, they may vary depending on the service and the service provider. Johnston and Kong (2011) find out in their study that companies carried out a phase called "Define the experience" to improve the service experience. As a conclusion they suggest a framework or road-map for improving service experience and propose that service providers themselves define what the experience should be from the customer or user point of view. Tuulaniemi (2011, p. 74) suggests that customer or user forms the experience as sum of all the offerings the service provider is providing: touchpoints before the service like advertising, the quality of the customer service, ease of use and reliability. Hence, service

providers must adapt a holistic approach to improve service experience. In this matter, methods of Service Design can be a great help (Johnston & Kong, 2011, p. 14)

3.4 Service Design Process

Service Design process is iterative in nature, not linear (Moritz, 2005). There is no single answer what a Service Design process should look like because service development is creative work and hence each project is unique (Tuulaniemi, 2011). Additionally, services are very different among themselves, imaging for example medical services and telecom services. So, what Service Design process looks like depends on the context. Hence companies developing services must apply generic models to fit their own needs (Tuulaniemi, 2011).

The Service Design process proposed by Moritz (2005) consists of six steps: 1) understanding, 2) thinking, 3) generating, 4) filtering, 5) explaining and 6) realizing. The overall process is illustrated in the following figure.
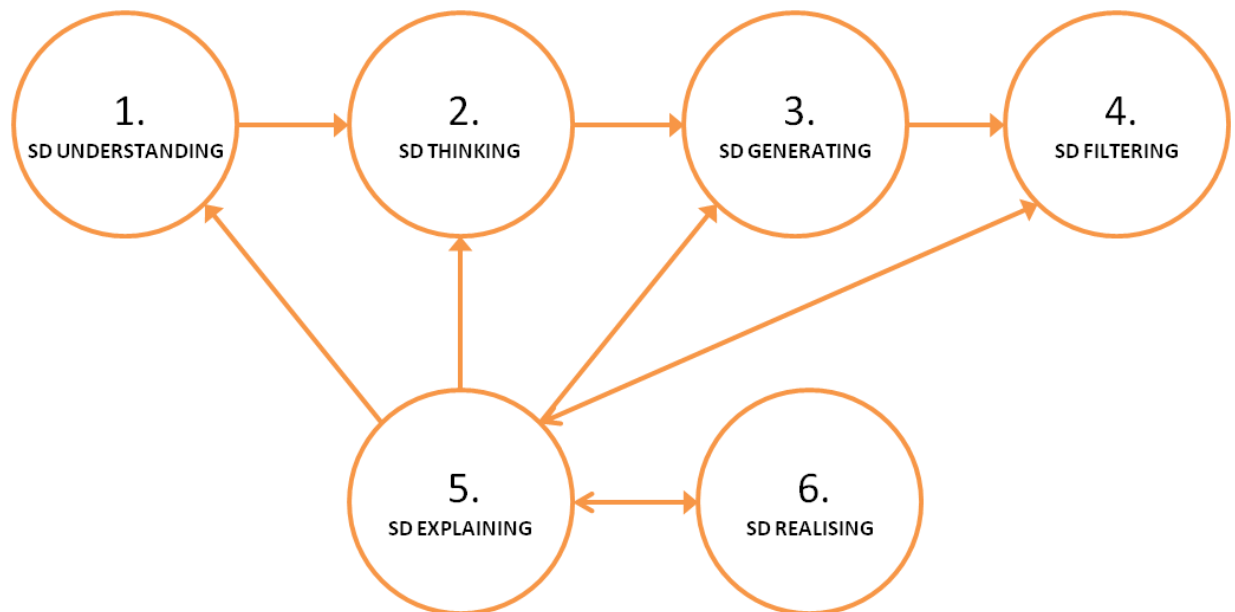

Figure 14: Service Design process (adapted from Moritz, 2005, p. 158)

At first, process starts from the need like market changes, service differentiation, increasing efficiency or providing more value to customers. This fundamental need then drives the project in the process towards the first phase: understanding. Understanding phase identifies what the company should go

for. It is about researching the customer and user latent and conscious needs, finding constraints and resources in business, technology and domain areas, and exploring opportunities. This is followed by the second phase: thinking. Thinking phase gives direction and guidelines to the project and includes all the strategic considerations. At this phase, project is aligned with company's strategy, its scope is set and how the project will be executed will be decided. Then comes the third phase: generating. Generating is about developing concepts. In this phase service ideas and solutions are developed. Additionally, service experience is designed in detail and all the service system surroundings, including objects and spaces are developed. This phase is followed by filtering. Filtering is about selecting the best ideas and solutions. Each concept is tested against specific criteria to assess the performance and viability of the service. When the decision of the right concept is made, project moves to explaining phase. Explaining is about enabling understanding. At this phase understanding about the service is shared among people with different backgrounds and the service experience is tested. At this point, service can be illustrated using mock-ups or real prototypes. Finally comes the realizing phase, which is about making it all happen. At this phase service is taken into market. It provides all the means that are required to launch the service, including final checks, training of personnel, blueprints, etc (Moritz, 2005).

The service design process proposed by Tuulaniemi (2011) covers five steps: 1) initiation and pilot study, 2) customer understanding and strategic planning, 3) brainstorming and conceptualization, 4) piloting and launch, and 5) continuous development.

In the beginning of the process project is initialized. At this point company defines its needs and objectives for the development project. Then project moves to pilot study phase, in which the current state of service provider is studied along with analysis about the operating environment. Second step first covers customer understanding. It examines the users' needs, requirements, expectations and desires, both inside the company and among customers. Then strategic planning phase focuses the objective of the company from the strategic point of view. At this point for example differentiators and brand positioning are defined. Third step starts with brainstorming and conceptualization. The purpose at this phase is to develop alternative concepts

according to company's objectives and customer requirements. First pilots are tested at an early stage. Third step ends in prototyping. Prototyping is about testing ideas and concepts of the developed service together with target groups. At this point prototyping may happen in real-life scenarios. Fourth step starts with piloting. Now service is in Beta-phase, service concepts are pushed to the market to be judged by the customers. Service concepts are refined according to the received customer feedback. Fourth step ends in launch, when the service is implemented and launched to the market. At this point training and advertising is carried out. Also the final service description with documents, company's staff roles and Blueprints are finalized. Finally, the process reaches its tail and the continuous development of the service begins. Now the service will be standardized to service delivery state and it will be developed continuously (Tuulaniemi, 2011, p. 130-131).

Miettinen (2011), on the other hand, proposes a four phased Service Design process: 1) customer understanding, 2) service conceptualization, 3) prototyping, and 4) launch and maintenance. The overall process is illustrated in the following figure.
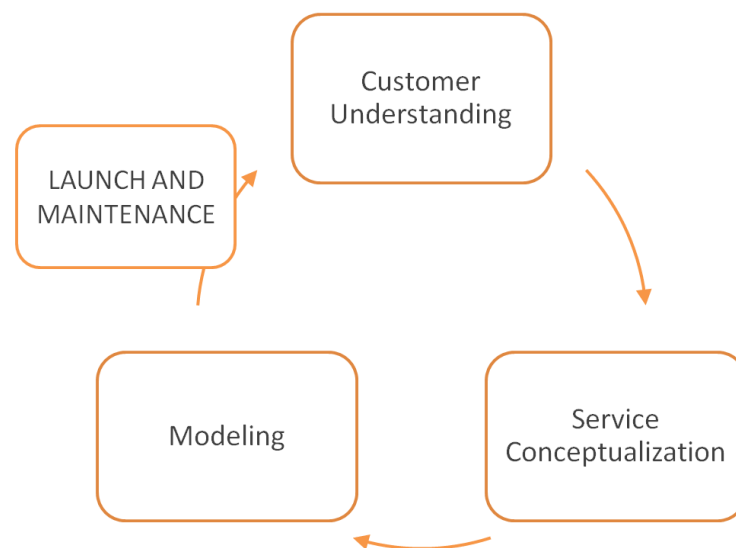
Figure 15: Service Design process (adapted from Miettinen, 2011, p. 37)

The process starts from the comprehensive understanding of human activity, needs, emotions and motives. At this point understanding of customers is build and service development ideas are raised. This means that service providers must understand the reality in which their customers use the ser-

vices. This initial step is then followed by service conceptualization in which ideas are visually presented and described. Then ideas are modeled and prototyped to further develop the service. In this manner, service can be shaped to better meet the customer requirements. This cycle occurs iteratively especially in the beginning of the process, which means that the development cycle is repeated as many times as needed. When the service approaches its final form, iterations are not any more needed. Finally, process ends with launch and maintenance. At this point the service is launched to market and the company continues to maintenance it (Miettinen, 2011).

Although these service design processes have different detailed structures, they have much common on a general level. First, each of the three processes discovers the customer or user needs in the beginning. This stage is then followed by the so called define phase, where the findings are analyzed and turned into feasible ideas. Then these ideas, or service concepts, are developed into service prototypes. Finally, when the service is ready it will be finalized and launched, i.e. service moves to deliver phase. All these four phases (Discover, Define, Develop and Deliver) are found in the previous process models (Stickdorn & Schneider, 2011, p. 126). These four D's are the building blocks of general design process, called "Double Diamond", which is illustrated in the figure 16.
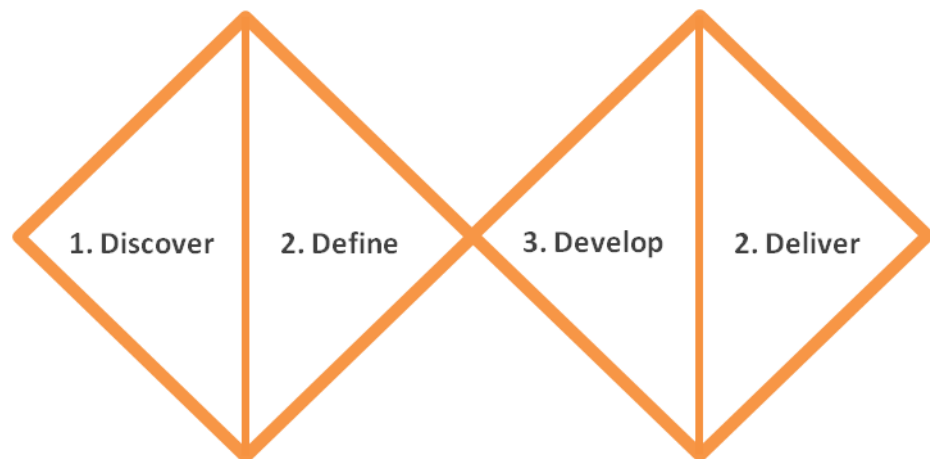
Figure 16: Double Diamond by Design Council (adapted from Stickdorn & Schneider, 2011, p. 126)

The Double Diamond model was developed by the Design Council to illustrate the general activities that are common to all design processes. Shapes of the diamonds represent the scope of possibilities. For example, when dis-

covering user needs thinking and possibilities get broadened and when it comes to define phase, the gathered information is narrowed and focused. Further, at the development stage different alternatives are developed so the diamond broadens again and finally, when choosing what kind of service to deliver these ideas are narrowed and focused accordingly.

So, now a general model of Service Design process is in place. Next step is to utilize this model to illustrate what kind of Service Design tools and methods are commonly used at each stage of the Service Design process. This is the topic section 3.5.

3.5   Service Design Tools and Methods

Methods of Service Design are continuously developed and they are borrowed from related areas (Patrício, 2011). Service Design has its roots in industrial product design and in interface design, which enable exploitation of creative design methods into the domain of service development. Especially interaction and experience design principles of interface design have affected Service Design (Mager, 2008). With the help of creative design methods ideas are illustrated visually for example by using blueprints, videos or drawings. Additionally service ideas can be tested by playing service situations or by giving users an opportunity to test service prototypes. This way service idea can be further enhanced and service developers can ensure that service meet customer and user needs and requirements. Thus service developers can better understand what the service is about (Miettinen, 2011). These types of methods are useful especially in service context. Due to the time and space dependent nature of services, the surrounding environment has instant impact on service experience. Miettinen (2011) put it as follows: "People use products in environments, where processes occur and thus they must be understood and modified. Processes form service system… it (Service Design) helps to analyze and understand the service". This means that when stepping into the shoes of the user, service provider is able to observe the service down to the smallest detail that affect the service.

Small things, i.e. details, may have a major impact to service experience. For example Berry et al. (2006) have recognized that it is small things that count in service provisioning, as he put it: "In the provision of services it truly is the 'little things' that count. While many managers focus on achieving fun-

damental goals in the delivery of services, it may be that greater attention to the details would result in greater customer satisfaction... However, small clues can signal the service is exceptional and have a disproportionately larger effect on how a customer assesses their entire service experience— and, therefore, which services they choose to utilize again." This challenge is recognized in Service Design. To overcome this issue, Service Design applies methods that make it possible to see the service from the user point of view.

The list of all Service Design tools and methods would be endless (Moritz, 2005) and which of them should be used depends on the service provider and its operating environment. For example Service Design consultation company Engine[5] lists 21 methods that they use doing their work. Hence just few of them will be reviewed in this study. The following table summarizes the Service Design methods introduced by Miettinen (2011), Tuulaniemi (2011) and Design Council[6] at different stages of Service Design process.

Table 3: Service Design methods at different stages of Service Design process

Stage	Methods
Discover	Interviews, Observation, Ethnography, Design Games, User Shadowing, Design Probes
	Customer Profiles, User Personas, Design Drivers, Affinity Diagrams, Business Model Canvas
Define	Brainstorming, User Personas, Design Brief, Service Blueprinting
Develop	Scenarios, Storytelling, Conjoint Analysis, Service Blueprinting, Experience Prototyping, Business Model Canvas
Deliver	Scenarios, Net Promoter Score (NPS)

Service Design methods are categorized according to four phases of the general service design model presented in the section 3.4. The purpose of

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[5] Methods, Engine, cited July 5, 2012. Available at http://www.enginegroup.co.uk/service_design/methods
[6] Design methods for developing services. Technology Strategy Board & Design Council, cited July 5, 2012. Available at: http://www.innovateuk.org/_assets/pdf/design_methods_services.pdf

this study is not to describe all the Service Design tools and methods but rather show that there are plenty of them available. For comprehensive overview and introduction of Service Design tools and methods, see for example Moritz (2005). Next two methods are introduced: Service Blueprinting, which is commonly used at Define and Develop phases and prototyping that is common way to develop services in Service Design.

3.5.1   Service Blueprinting

Service Blueprinting is a customer-focused approach for service innovation and service improvement (Bitner et al. 2008). It was first introduced by Shostack (1982, 1984) two decades ago. The initial purpose of the blueprinting was to provide a tool for to systematically illustrate the service system. After its introduction it has been developed towards customer-centric method of service innovations and is nowadays commonly used method in Service Design. Today blueprinting has evolved significantly into a practical method to take into account the challenges faced in service innovation and development, and it is particularly suitable for service experience design (Bitner et al, 2008).

Layout of a Service Blueprint is two-dimensional (See figure 17). The horizontal axis illustrates the chronology of actions performed by the service provider and the customer to be served. In turn, the vertical axis separates the different areas of actions from each other (Fließ and Kleinaltenkamp, 2004), which can be regarded as blueprint's components.

<table>
<tr><td>Physical
Evidence</td><td></td></tr>
<tr><td>Customer
Actions</td><td></td></tr>
<tr><td colspan="2">Line of Interaction</td></tr>
<tr><td>Onstage/
Visible
Contact
Employee
Actions</td><td></td></tr>
<tr><td colspan="2">Line of Visibility</td></tr>
<tr><td>Backstage/
Invisible
Contact
Employee
Actions</td><td></td></tr>
<tr><td colspan="2">Line of Internal Interaction</td></tr>
<tr><td>Support
Processes</td><td></td></tr>
</table>

Figure 17: Service Blueprint components (Bitner et al, 2008, p. 73)

In a typical Service Blueprint there are five components which are as follows (Zeithaml et al, 2006; Bitner et al, 2008):

- customer actions,
- onstage/visible contact employee actions,
- backstage/invisible contact employee actions,
- support processes, and
- physical evidence.

First, "customer actions" are regarded as all the steps that customer takes as a part of a service delivery process. These actions are chronologically described in the top of the blueprint. Bitner et al. emphasize customer actions as the key differentiator from other flowcharting approaches since the actions of the customer are central to the formulation of a blueprint and therefore they are generally prescribed in the beginning so that all the other activities during the service process are supporting the value proposition offered to or co-created with the customer. Second, "onstage/visible contact employee actions" are illustrated in the blueprint under the customer actions.

These two actions are separated from each other using a line of an interaction in between. All the front-line contact employee actions that are part of a face-to-face rendezvous are described as onstage contact employee actions. Moment of truth occurs every time when the customer crosses the line of interaction, i.e. a link from customer to contact employee of the service provider is formed. However, in the case of technological service there is rarely human contact person on the service provider side but rather there is e.g. a self-service system, a device or another kind of technology interface which is used by the customer to use the service. Hence, the onstage contact employee action row can be replaced for example with an "onstage technology" row, as suggested by Bitner et al.. Third, "backstage/invisible contact employee actions" component is laid out under the onstage actions. These two components are distinguished from each other by the line of visibility. The line of visibility shows that everything that is illustrated above the line is seen by the customer, while everything below the line is invisible to the customer. Below the line of visibility, all the backstage contact employee actions are described. These are the actions which the customer has no visual contact, including non-visual interaction with customer, other actions that contact employee need to do to successfully serve the customer or that are part of their role responsibilities. Fourth, "support processes" include all the activities that are needed to successfully deliver the service. These activities are carried out by individuals or by units within the company who are not contact employees. Support processes are separated from the backstage actions by a line of internal contact. Finally, the "physical evidence" of the service encounter is laid out at the very top of the blueprint. These are – as Bitner et al. put it – "all the tangibles that customers are exposed to that can influence their quality perceptions" (Bitner et al., 2008, p. 72-73).

To make clear what a complete blueprint should look like, Zeithaml et al. (2006) and Bitner et al. (2008) have used a blueprint of a one-night hotel stay service, see the following figure.

Physical Evidence	Ad/Website	Hotel exterior Parking	Cart for bags Employee dress	Desk Paperwork Lobby Key	Elevators Hallways Room	Cart for bags Employee dress	Menu	Delivery tray Food appearance	Food	Room Amenities Bathroom	Bill Lobby Hotel exterior Parking
Customer Actions	Make reservation	Arrive at hotel	Give bags to bellperson	Check in	Go to room	Receive bags	Call room service	Receive food Sign/tip	Eat	Sleep/ shower	Check out and leave
Line of Interaction											
Onstage/ Visible Contact Employee Actions			Greet and take bags	Process registration		Deliver bags		Deliver food			Process checkout
Line of Visibility											
Backstage / Invisible Contact Employee Actions	Make reservation for guest				Take bags to room		Take food order				
Line of Internal Interaction											
Support Processes	Reservation system			Registration system			Prepare food				Registration system

Figure 18 Blueprint for Overnight Hotel Stay Service (Bitner et al, 2008, p. 76-77)

The example of a one-night hotel stay service is a concept blueprint. This means that only the high level steps in the process are described. It starts from the customer actions: customer wants to make a reservation to a hotel. What he or she first saws is ad or website. Then the reservation is registered in the hotels own systems. The process continues then by describing the most common actions customers take when they stay for a night. All physical evidences that customer experiences in the service journey are described in the top of the blueprint. Then below customer actions the actions and process of the hotel to support customer in the process are described (Bitner et al., 2008).

What makes Service Blueprints unique is that the service journey is described from the customer or user point of view. Moreover, Service Blueprints enables also service providers to find out the critical factors of the service that can be then used in the quality control systems (Tuulaniemi, 2011,

p. 210-215) and to improve service experience. As a result Service Blue-printing can be used to develop new services or to improve existing ones.

Next we take a look to second method to develop services, prototyping.

3.5.2 Prototyping

Before services are piloted with real customers, they should be first proto-typed. This is due to the fact that piloting is expensive (Vaahtojärvi, 2011. p. 131), whereas prototyping is not (Tuulaniemi, 2011, p. 194). Prototyping provides the means to exclude bad service concepts and ideas from the ser-vice and to focus on the most promising ones. Additionally, it is one way to minimize risks in the development of new services (Tuulaniemi, 2011, p. 194). When the most feasible service concepts are found they can be further developed and finally, before market launch, piloted with real customers.

So, prototyping is about testing. The fundamental idea behind prototyping is making ideas visible and concrete (Vaahtojärvi, 2011, p. 131). Prototypes are not fully functional pilots but rather they bring out the fundamental idea of the developed object. In Service Design prototyping means building quick models of the service in support of design and development. Hence, proto-typing is integral part of Service Design and it occurs in every stage of ser-vice development. These models can be developed for example using yel-low stickers, carbon, pens, boxes etc. Service encounter can be modeled by acting or using figures. For example Lego's have found their way in Service Design prototyping (Tuulaniemi, 2011, p. 194-196).

There are several things that can be tested with the help of prototyping. Tuulaniemi (2011, p. 195) provides a list, which describes what kind of things can be tested using prototyping:

- "does the service work

- is the service interesting and desirable from the customer's perspec-tive

- is the service easy to use

- does the service strategically serve a purpose for the service provider

- is the service economically and logistically viable from the service provider's perspective."

How prototyping can be done? Vaahtojärvi (2011) suggests storytelling methods such as experience prototyping, stories, scenarios, storyboards and blueprints to conduct prototyping. On the other hand Tuulaniemi (2011) argues that additionally, Service Assessment Matrix, Conjoint analysis and Customer Journeys are feasible methods to prototype the service. As a result of her analysis – which was based on literature review and expert interviews – Vaahtojärvi (p. 139-141) suggests five cornerstones to be kept in mind when prototyping:

1. There is no single method to do prototyping

2. No structured assessment – intuition and discussion are in

3. Stakeholders make ideas feasible

4. Prototype right from the start for the project

5. Prototyping does not end in service launch

First, Vaahtojärvi discovered that because services differ so much from each other there is no one single optimal method that can be used to do prototyping. The method of prototyping service rather depends on the context. Hence, prototyping digital service requires different methods than prototyping service where human interaction has a big role, for example health care services. Second, Vaahtojärvi suggests that intuition should be considered more, because it is possible to assess how things can work in practice based on our previous experiences. Third, development team must come out of the chamber. Different stakeholders must be participated to service development right from the beginning. Without appropriate stakeholders, ideas may remain in a non-feasible state because developers rarely have all the necessary information about the service. This is done to ensure that services will be feasible when they are launched. Fourth, based on her study, Vaahtojärvi also discovered that prototyping should be started right from the beginning. Prototypes can be cheap and light to just visualize and concretize the ideas. This then helps the other stakeholders to better understand the concepts and assess them. Prototyping should not be too finalized: first they are rough models, like mockups and then when the development process continues, prototypes evolve into more finished ones. Finally, Vaahtojärvi emphasize that prototyping should not end when service is launched. She (p. 141) summarizes it as follows: "Prototyping could be, however, involved

in after launch world because through that way users and customers can be participated more closely in the service development. This way, more comments and views about the service could be gained if compared to, for example, that what can be achieved with the help of inquiries."

In the end, the purpose of prototyping is to provide information to be used in design and decision making (Vaahtojärvi, 2011. p. 134). This means that results of prototyping are used in the process of evaluation. Vaahtojärvi (2011, p. 135) suggests several methods – presented by Ramaswamy (1996), Keinonen and Jääskö (2004), Goel et al. (2005), Fitzsimmons & Fitzsimmons (2004), Nielsen (1997) and Fulton Suri (2008) – that can be used to put ideas and service concepts in order. These evaluation methods are, however, out of the scope of this study and therefore they are not introduced.

3.6   Summary

In this final section of literature review the topic of Service Design was covered. First, the explanation to question "What is service design?" was given. As a result it was found out that there was no exact single answer what Service Design is. The most important point was that Service Design is a user-centered design approach for service development. Additionally, the Service Design overview model was presented to give the overall picture of Service Design as part of company operations.

Second, the central elements of Service Design were described. Service packet described how the service provider can packet the service. Different layers of service illustrated how the service comprises of mandatory and value added layers. In turn, service system illustrated how the user experiences the service process. Service system divided the encounter into visible part, which was the service interface including the touchpoints and invisible back stage part where service delivery occurred. Then, the concept of service journey was covered. Service journey captured the whole process experienced by the user. Service journey consisted of service moments and service touchpoints that described how the user is in contact with the service and service provider. Finally, the tangibility aspect of the service was covered. It was found out that because services are abstract and intangible in

their core nature, they should be turned into visible and desirable offering by using service evidences.

Third, the concept of service experience was studied. Based on the findings in the literature, service experience seems to form from functional and emotional dimensions. Findings also revealed that functional dimension (e.g. the ability of the service to satisfy the customers or users functional need) is on a hygiene level of the value pyramid. This means, that functional dimension defines the must have features of the service. They are needed in order the service to exist in the market place but alone they do not provide a good enough service experience. The better service experience is achieved by adding emotional dimensions (e.g. easiness, attractiveness, enthusiasm, atmosphere, style, and ability to touch senses) to the service. On a value pyramid, this means elements on a higher level. The height of the pyramid defines the value customer or user can gain from using the service. When service has emotional elements, service experience is higher and the service produces more value to the customer or user.

Fourth, the process how Service Design should be applied in service development was studied. It was found out that there are several suggestions how the process should look like. The structure of the process model depended on the service in question and organizations capabilities. What was common to all process models was that they all were iterative in nature. Additionally all process models included four key stages: Discover, Define, Develop and Deliver. This four D-model was called "Double Diamond" model. With the help of this model it was then possible to identify what Service Design Methods was used at which stage of the Service Design process.

Finally, an overview to Service Design tools and methods was provided. It was discovered that Service Design methods are commonly borrowed from related fields. All the methods used in Service Design stress the user point of view: they provide the means to step in to the shoes of the user. Then it was described what methods can be used at which stage of the process. Finally, common design techniques – Service Blueprinting and prototyping – were covered in more detail.

This section concluded the literature review part of this study. Next, the experiments conducted as part of the product development project will be introduced.

4 PRODUCT DEVELOPMENT AT TDC

The purpose of this section is to describe how methods discussed in the literature were applied in TDC's Product Development. Three methods in total were applied: interview, prototyping and Service Blueprinting. Although the methods were not integral part of the project, it was managed to experiment them on the side of the project.

First, background information for the experiments is given. TDC as a company is briefly described and their strategic focus is recalled. Then the Product Development model and example project, which utilized the process model, are described. Then the actual experiments are presented and finally the results are described. The results are later analyzed in section 5 Analysis and final recommendations discussed in section 6 Discussion and Conclusions.

4.1 Background

TDC is a leading Danish provider of communications solutions with market leadership across all segments in the domestic market. In the other Nordic countries, TDC is the main challenger in the Business market. TDC has main focus in the operation of telephony, Internet, TV, data communications, integration and hosting solutions, as well as related content and services[7].

TDC's target in Finland is to be the service leader. TDC highlights their willingness to focus on service and customer experience by stating as follows[8]:

> "TDC is a business operator to which the service is the top priority. We focus on providing business customers the best customer experience on the market."

In order to achieve the service leadership status it requires service-oriented attitude across the organization. One of the issues was how Product Development process can be developed to support TDC to achieve their vision.

TDC applies structured approach to Product Development. TDC has described their Product Development process that is to be followed when products are developed. The process model is illustrated in the following figure.

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[7] TDC Company Profile, cited September 19, 2012. Available at www.tdc.com/profile
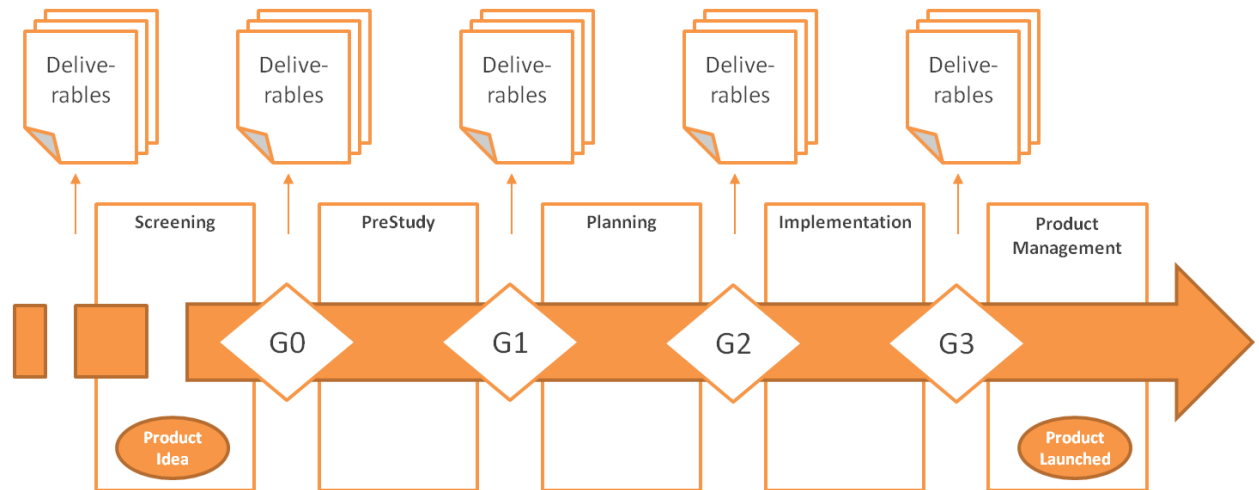[8] TDC Oy, cited September 19, 2012. Available at http://tdc.fi/tdcoy

Figure 19: TDC Product Development process model[9]

The process model adapts the Stage-Gate approach that was described in section 2.2. This means that after each stage (Screening, PreStudy, etc.) there is a gate in which it is decided whether the project is allowed to move forward to next stage or not. Additionally, after each stage required documents must be produced and delivered. The process starts from an idea. If the idea is in line with TDC's objectives and strategy, process continues. Then in PreStudy phase market analysis and business case are done and project plan is outlined. When the project moves to planning stage, several sub-projects are started in parallel. Next at implementation stage, implementation, testing and piloting are done. Finally in the end, the product is launched and marketing initiatives are started.

The process model is linear in nature, although within the stages some activities occur in parallel. So, to some extent the process is a combination of linear and parallel model (described in section 2.2). This means that although some activities might be performed simultaneously, process as a whole does not support turning back. This is not even described in the process model. Hence, process progresses one stage at a time.

Moreover, the process model does not describe the role of the customer or user. Since customers or users are not mentioned in the process, it points to the fact that they are not involved in the process. Finally, the name of the process model is Product Development model. This might indicate that the

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[9] TDC Oy product development model with toll-gates. Internal documentation, not publicly available, cited September 19, 2012.

focus in the Product Development is more in the products than in services. Although TDC states that service is top priority to them, this is not shown in the development process yet.

In 2009 a product development project called TDC Unified Communications, which used previously described Product Development model, was started. The purpose of the project was to develop a Unified Communication (UC) service. Unified Communication service was planned to unify different communications channels (email, chat, video, voice, presence, etc.) to be easily used by the end-users. The need for the development project was initiated by the customers' requirements and market studies that indicated the future growth in Unified Communication services. Later the project name changed to TDC Boost.

First phase of the TDC Boost project was finished in the end of 2011. This was then followed by the second phase that was started in the beginning of 2012. The author of this study was a project team member of the both first and second phase of the Product Development project. While developing the service it turned out that end-users were very important target group, as they were the ultimate users of the service. Due to these reasons, the second phase of the TDC Boost Product Development project was seen as a good case project for the experimentation part of this study.

4.2 Experimentation

From the literature several methods to involve users and increase customer focus were found, as described in previous sections. As a result three methods were chosen be tested in practise. These were interview, prototyping and Service Blueprinting. The reason for choosing these three methods was that 1) they were inexpensive to carry out, 2) they did not require much learning, 3) conducting them did not require long follow-up periods that would delay the study and 4) they promoted user and customer perspective.

Interviews and prototyping were conducted with customers, whereas Service Blueprinting was conducted together with TDC's employees. However, only the prototyping part was conducted as part of the product development project. The reason for these arrangements was that Product Development project was progressed so far that it was not viable to conduct interviews and

Service Blueprinting anymore. Hence, interviews and Service Blueprinting were arranged separately from the Product Development project.

4.2.1 Interview

The purpose of interviews was to experiment if interview as a method is feasible to conduct user studies. First of all, finding out customers' and users' ability to state needs and problems was considered interesting. These ideas would be then used as a basis for new services or improving existing ones.

Interviews were semi-structured personal interviews in nature. Semi-structured interview were chosen because it allowed flexibility compared to structured interview (Hirsjärvi and Hurme, 2001). Main themes of the interviews were planned beforehand, including example questions. However, as would be in the case of structured interview, the questions were not strictly followed; rather they provided support for the author to focus on the most relevant issues during the interview sessions. Additionally interviewer was able the change the order of the questions to best suit the individual interview situation.

The author started by preparing and planning the interview sessions. First, Interview protocol was developed based on the findings in the New Service Development literature. According to Alam (2002, p. 256) service providers used interviews to gather user input on several different aspects regarding the service that were to be developed. These aspects were such as: users' needs, wants, preferences, likes and dislikes, gaps in the market, competitors' offerings, desired improvement in the service delivery process, timeliness of the service delivery, comments on the marketing mixes, and service acceptance criteria. Interview questions used in this study were built around the Alam's findings. When the first version of questions was ready, they were piloted internally. Two interview sessions with co-workers were conducted. In order to achieve as realistic interview session as possible, co-workers were not told that it was just a pilot. With the help of these interview sessions, author was able to refine the questions. To make the interview session more fluent and comfortable, some easy background questions about interviewee were placed in the beginning. Additionally, questions about user's perspective to services in decision making were added. Full interview protocol is presented in appendix A.

After the planning of interview questions, criteria to choose the interviewers were developed. This was done together with marketing department. Selection of companies was made based on the following criteria:

- TDC Communication service in use

- Presence in metropolitan area

- Medium-high (Medium size, High-fit) segment

First, the customer needed to have one of the TDC's Communication services in use or they are planning to buy one – i.e. they are prospect. Second, customer had to have presence in metropolitan area. It was thought that only this way customer's employees could come to interview in the middle of the working day. Otherwise they would require more efforts which may lead to refusal to come to the interview. Third, TDC wanted to focus on medium-high segment that is strategically important to them. Medium-high means that the customer is medium in size and it belongs to a customer category, which is highly important to TDC.

When the criteria were structured, author started to contact customers. This happened during April and May 2012. Customers were contacted first by phone. During a phone call some of the respondents wanted additional material via email after the phone call. The main target persons within the customer organisations were CIO's, IT Directors, IT Managers or if company did not have any of these roles in the organization, persons who were responsible of ICT services. This target group was chosen because managers responsible of ICT solutions within the organizations would have the largest interest in ICT service development and they would know the persons inside the company that could be able to participate in this study. Additionally contacted managers were themselves invited to participate interview so that management level information would be also received. This information is very important in the case of B2B markets where offered service itself is not the only criteria of buying decision but is complemented with many other criteria's like ease of delivery and deployment of the service, service manageability, detailed usage reporting and usage trends and strategic fit of the service.

When contacting customers it turned out to be hard to get them participating in the interviews. Customers were surprisingly hard to reach by phone. Some of the customers needed tens of tries until they were reached. When the customer finally answered, the first call determined whether the customer were willing to participate or not. That is why a script was developed beforehand, which included several possible refusals that customers commonly excuse (Hirsjärvi and Hurme, 2001). Preparing to refusals made it possible to change two customers' minds. Additionally it was tried to approach customer by email but it did not bring any results. Third approach was to use Key Account Managers to agree the times, but it did not even yield any results. Therefore the initial criteria for selection were finally changed, in order to get more customers to interviews. The first criterion was dropped in order to expand company base. The rest of the criteria were kept the same, however. Suggestions about the customers were given by TDC, which they felt to suit for this study.

This change in the initial criterion turned out to be effective from the perspective of getting customers into interviews. New customers were contacted similarly than previous ones, by phone. Some of the companies were first contacted by TDC's Marketing department. Customers agreed to come to the interview easily, compared to the first ones – this was because the customer representatives already knew the referees at TDC – although two of them had to be encouraged by a gift.

All seven interviews were arranged during May 2012 and lasted approximately 30 minutes. Except one, interviews took place in TDC premises in Helsinki, in a TDC's official demo room. One interview had to be arranged in a traditional meeting room because the demo room was in use at the same time when interviewee was able to arrive to interview.

All seven interviews from five different companies followed the same protocol. In the beginning of each interview, interviewees were informed that the interview will be recorded. Author used light weight digital voice recorded for this purpose. Meetings were recorded in order to reduce wrong interpretations of interviews. Interviews covered the same questions, although the order of amount of questions changed depending on the interview. For example if the interviewee was not able to express any issues related to his/her work or what could improve his/her work, the more detailed questions were

not covered. Finally, when the interview ended, interviewees were asked to move to the prototyping zone.

4.2.2 Prototyping

The objective of prototyping was to experiment if prototyping is able to promote user point of view in the service development. Moreover, how user feedback could be collected and used as a basis to develop services further was to find out. User likes and dislikes of using the service were considered important. Additionally, information regarding the usefulness of the developed features was studied. The information would then help the TDC development team in decision making regarding how the service should be developed further.

The author started by preparing and planning the prototyping sessions. First, the content – what to prototype – had to be thought. At the time TDC Boost development project was in a phase where first working prototypes of the service were ready. So, it was decided to prototype the PC-client part of the service. Simply put, purpose of the PC client was to enable users use their PC as a phone, although they provided also more advanced features. Prototyping was limited testing the applications. TDC had developed two alternative ways to use the communication service. Hence, customer input was seen important to make the decision which application customers would prefer.

Based on these objectives, author formed a list of use cases that illustrated the most central functionalities of the service. Use case list can be found in the appendix B. Use cases covered the basic use of TDC Boost communication service. When the preparations were done, author was able to carry out the prototyping sessions.

Prototyping sessions were arranged during May 2012. Sessions were carried out in two ways. First, prototyping sessions were held after each interview session and therefore there were no need to separately contact customers for these sessions. Second, prototyping sessions were also held as individual sessions at Maarintalo in the campus of Aalto University in Espoo. Although both type of prototyping sessions where arranged similarly they are here explained separately.

In the first case, prototyping sessions were held after each interview session. Each session lasted approximately 30 minutes. The author prepared the prototyping zone 30 minutes before the interview. There were two laptops in the desk, the other for customer and the other for author. Laptops were equipped with external camera. In order to analyze sessions later, a video camera was placed right behind a customer to record the laptop's screen to see what kind of actions user was taking. Before starting the prototyping, users were asked to think aloud so that the choices they make could be understand by the developers. A list of use cases where located in the desk. Users were asked to perform each use case one by one. First with application A and second with application B. Users were allowed to comment their use when performing use cases. After finishing use cases, users were asked to evaluate the user interfaces and tell which one they would prefer.

In the latter case, prototyping sessions were arranged in Maarintalo in the campus of Aalto University in Espoo. This was done during one day on 24th of May. Author picked up one room and equipped it according to the prototyping sessions held in the TDC demo room. When the setup was ready, author started to look for users within the building. Users were random students found in the Maarintalo building. Students were rewarded with few candies if they decided to participate in the study. First user was afraid to participate, because she was afraid of not having adequate skills. User was encouraged by saying that the study does not require any previous skills, and it is enough that user just explains what she would think of the service. Nevertheless, user refused to participate in the session. Except the first user, all other six users gladly participated the prototyping session. Each of the sessions followed the same protocol as was carried out in the first prototyping case: users were asked to carry out the use cases listed in the paper one by one. First with application A and second with application B. Users were allowed to comment their use when performing use cases. After finishing use cases, users were asked to evaluate the applications and tell which one they would prefer. At the end of prototyping session, users were awarded with candies. It was surprising how happy users where when they received their pay for their efforts.

4.2.3   Service Blueprinting

The purpose of the Service Blueprinting workshops was to experiment if the method is able to promote service and user point of view in the design of services. Moreover, it was considered interesting how Service Blueprinting should be carried out in practise. For this purpose, it was compiled a handbook for TDC how to perform Service Blueprinting. Finally, it was examined how participants experienced the Service Blueprinting workshop.

Service blueprinting was arranged in the form of a workshop two times in May 2012. Workshops were arranged both in Design Factory at Otaniemi and at TDC in a traditional meeting room. Both workshops were conducted similarly, applying the hand script proposed by Bitner et al. (2008, p. 78-81). The hand script is also presented in the appendix C. The only difference between the workshops was in the service that was blueprinted.

Workshops started with an introduction to this study. Participants were informed why this study was conducted in the first place and what was the central theme of the study. Then it was moved to the actual topic of the day: Service Blueprinting. First few basics were carried out. The concept of Service Blueprinting was first covered: what does it mean, why it is important, it has customer focus is in the core, and what the Blueprinting elements are. Then a generic Blueprint was walked through to give an illustration how does Service Blueprint look like.

After the basics were gone through, participants were asked to blueprint a simple service outside their current operating environment. It was decided to use the example of IKEA shopping journey. All participants had experienced IKEA and they were able to call to mind the shopping journey, most importantly, from the customer's perspective. Participants were asked to use big whiteboard to outline the shopping experience. It was emphasized that the Service Blueprint should outline the shopping journey like it usually happens. Otherwise there would be so much different alternatives that they would not fit into the Blueprint. Participants were 'onstage' one at a time and the other participants collaborated from the back. It turned out that although the shopping journey were on the face of the same among all participants it had some major abnormalities, To give an example, few participants first went to restaurant and drank a cup of cafe after which they started their shopping round. When they had finished the shopping round on upstairs they usually

went to restaurant again to eat some food. Others went to restaurant just once finishing the upstairs shopping round. So, to be able to illustrate these different options, it was decided to use decision blocks – like if-else structures in programming – to track different alternatives.

When the IKEA example was finished, it was moved to apply Blueprinting in practise. Blueprinting followed the guideline of Zeithaml et al. (2006, p. 273) of how to build a Service Blueprint:

- Identify the service process to be blueprinted

- Identify the customer or customer segment experiencing the service

- Map the service process from the customer's point of view

- Map contact employee actions, both onstage and backstage

- Link customer and contact person activities to needed support

- Add evidence of service at each customer action step

Subjects were already given in the workshop requests. The first workshop was designated for "End-user services" and the second one for "Billing/invoicing services". End-user services include the tools to manage mobile services at TDC self-service portal in Internet. Customers can perform actions ranging from creating new subscriptions to checking subscription balance in real time. Billing/invoicing services covers actions such as agreeing the structure of the bill with the customer, teaching customers how to read the bill and compensation of bills. Participants started to outline the service in question from the customer's point of view in chronological order. At the same time they outlined the physical evidences of the service and the required onstage actions that TDC should be performing in order to serve the customer. Then participants added the required backstage actions that were required in order the service process to work. At the end, supporting systems and processes were added to the bottom of the blueprint.

Finally, when the blueprints were ready, participants were asked to provide feedback. Comments on topics such as what they generally thought about the Service Blueprinting method, was it feasible and would they recommend using the method in New Service Development projects were requested. Feedback part lasted approximately 15 minutes.

4.3 Results

Next a compilation of the results from the experiments is presented. First results from interviews are covered, then from prototyping and finally from Service Blueprinting. Results are then analyzed in section 5 Analysis and discussed in section 6 Discussion and Conclusions.

4.3.1 Interview

Although, stating problems or needs was hard for some of the interviewees, some had many of them in mind. For example one manager instantly answered listing several problems that would ease their work. First he mentioned the interoperability issue between different devices, especially video conferencing devices. As an example he remarked the issue of hosting video meetings: users cannot arrange video meetings without concerns about compatibility issues, i.e. they have to think if the participants are able to join the meeting with their own devices. With this compatibility issue he referred to Google, Tandberg (Cisco), Polycom and Microsoft. But he was confident that time will fix the compatibility issues. Second, he mentioned the issue of presence information. He remarked that although presence information may be utilized in the organization internally, like they had themselves, exploiting it externally is experienced to be the problem. He mentioned that Microsoft Lync is capable of doing federation with other Lyncs but added that Lync is far too expensive to distribute presence information. Third, he remarked the issue of training users. As he acknowledged: "User training: what is possible, what is not. Still surprisingly little, both the technically more advanced and normal users, surprisingly little they know."

Another interviewee, had experienced the same kind of interoperability issues. He mentioned that finding a common collaboration platform to be used internally in USA, Europe and Asia and with their partners has proven to be an issue. They had tried Cisco Webex, and Microsoft LiveMeeting but they did not work because they had also MACs in addition to PCs. Finally, they ended up using Skype. However, he finally put it as follows: "We do not have single method per need of use but it depends on the situation … Yeah, it is flexible (regarding what methods to use to communicate), but then it is that every time when one is going to do something, they are like 'okay how I should do this now?'" So they had several ways to be connected but these solutions were not interoperable with each other and they worked differently.

One interesting case was a switchboard operator, who distinguished several issues she had at work. The problems she had all related to functional requirements of the system she was using. According to her, issues she had were rather business critical – i.e. the problems occurred daily several times - and affected customer service.

In minor of the cases, interviewees had problems stating their needs or problems they faced at work. Expressing problems spontaneously in interview session seem to be difficult to some interviewees. Like one manager answered: "I cannot suddenly recall (long pause) actual restrictive factor or anything that could be managed better." One company's employee mentioned that only problem they had was staff shortages. Another manager stated: "Well, I don't actually identify problems but rather I identify opportunities." He explained that by opportunities he meant utilizing the latest technology that they had put in place. They had new technology that enabled flexible remote work but they still worked "old-fashioned way". So eventually, they had a problem, but it was not in the service but how they used – or did not use – the possibilities provided by the technology or service.

However, when the discussion got started and interviewees had explained about their operating environment, they were able to – unconsciously probably – state problems or needs. One manager expressed that being in contact to USA triggered problems. When they want to arrange a video conference from Finland to USA all the participants had problems with times. It was either too early or too late to everybody. Another manager told that they had identified already a year ago a need to utilize presence information between mobiles and Lync and bring telephony functionalities to Lync client. So, when discussing with customers, although some of them were unable to state any specific problems or needs at first, it turned out that they eventually had problems. The problem was in the first place, that users themselves did not recognize that they had problems or needs.

One interesting finding was that when suggesting something new to interviewees, few of them where rather ignoring. The first words were "No". Like one manager who knew Lync to some extend commented about presence information: "Presence information has not ever been significant to us, all these, like reserve systems and that, they work just fine and we haven't had any problems with them. Or at least I cannot identify anything that as such."

Although they had Skype in use internally in PC's and mobiles that, to authors understanding, provides presence information to users.

4.3.2 Prototyping

Users started with performing use cases (see Appendix B). First, use cases related to calling, such as placing a call, adding another participant and transferring the call to another person were carried out. These were done both by using Application A and B. In the case of placing a call, as a whole, users preferred the Application A way of calling more non-intuitive. The main reason was in the way how call was established. In the case of Application A user first typed the number into the toolbar, then the user's mobile started to ring and when answering to incoming call that was initiated from the system mobile started to call to the number that user just typed in the toolbar. This was too complicated to users, like one user commented "No. Ugh. Let's say that, there would be too high barrier to use this, really… why should not I then just use mobile?" In line with this many users ended up asking that why would not they just use their mobile instead.

On the contrary, Application B was able to straight call the number that user typed. Additionally users experienced that making a call using Application B was intuitive. How it works was learned almost instantly. Hence, users experienced that placing a call with Application B was easy and straightforward. For example one user commented Application B: "I am a friend of simple and straightforward technology and solutions so as such I like perhaps more that it calls directly". Two of the users also said that placing a call reminds Skype a lot. This means that starting to use this type of a service in a company is easier because user has previous experience from similar services and behavior.

However, in the end the need of having telephone call functionality on a PC divided opinions. Only four of the 13 users experienced that calling from PC would provide benefits for them at work. In addition to normal calling, one use which users saw that this type of a service is good for was teleconferences. Learning issue was seen as obstacle by one user. He mentioned that it requires some learning to get one used to make calls from PC. Finally, users who had to travel a lot, had rather small company or were not working in offices, experienced that mobile phone was enough for making calls.

The first call feature, i.e. adding another participant to call, was experienced by the users to be easier in Application B, with the exception of one user. Users did not prefer Application A because it turned out to be too complex and non-intuitive. In application A, user had to establish another call, i.e. make a new phone call while current was on, answer to new incoming call initiated from the system after which mobile started to call to the other end and then when the other end answered, use the PC to click "Conference" button. Now all three participants were in the same call. For example one user commented: "Let say that, this would remain unused, this is somehow, not modern at all". In most of the cases, users tried to find a "add a partici-pant" button. But not all were so strong in their opinions. One user admitted that although adding a participant was not that easy in Application A than was in Application B, if one learns to use Application A, it can be evenly good.

Then, in the case of Application B there were two ways to add the participant to the call. The first one was using the menus in the current call to find a "add participants" button. The second one was dragging and dropping a con-tact from contact list to current call. The first, menu way of adding partici-pants was what users first were looking for. The button was found in a short time and all users knew how to use it. The second way of adding was not regarded that intuitive in a Windows operating system. Without a hint, none of the users tried to drag and drop contacts from the list to the current call. Like one user commented: "It would have taken a really long time for me to start adding participants by drag drop ... It was easy as making hay ... but that it is like a MAC behavior in this (Windows) environment, it cannot even be thought of that it would work that way." So, what was intuitive or easy for the users depended on user's background and their past relation with similar systems.

However, when asking users would they use this kind of "add a participant to a call" feature in their work, only one user saw use for it. He described that in a construction this kind of feature would be useful because they often have needs to speak to architect and construction manager at the same time. Now they had to call each of them separately. Half of the rest of the users thought that this feature is unnecessary. The other half considered it was handy but was not sure whether it provided any benefits. Like one user men-

tioned that they would not have use for this type of feature because usually they have prearranged calls why they do not need ad-hoc capability.

The second call feature was call transfer. Also this feature was experienced to be easier in the Application B. In application A, users again had to make a new call only after they were able to transfer the call by clicking the button in the toolbar. Users experienced this way too complex, illogical and non-intuitive. However, when getting familiar with the calling logic, few users said that it was not that hard to transfer the call. On the contrary in Application B, users pressed an arrow button and typed the participant they wanted to transfer the call to. Users felt that this was easier, simpler and more straight-forward than in Application A. Once again, when asking users how important this kind of feature would be for them, only one user felt it as important. This user was switchboard operator who transferred calls for living. The rest of the users told that they just give the number to the caller and say that call that number.

Users were also asked about the look and feel of the applications. Look of Application A received rather contradictory feedback. Many users experienced Application A confusing and uncomfortable, like one user commented: "It does not seem very logical ... I don't see structure there". Another comment was: "there are terrible amount of small icons… at first glance, it does not open to me". However, there were also users that experienced Application A rather comfortable. For example one user commented: "It looks rather simple" and another "It looks very simple and it looks like that if one would use time to use it, all those icons would be learnable". On the other hand, look of Application B received mainly positive feedback from the users. Application B had structured look and it was not that incoherent. Five of the users, mainly students but also users who worked on an IT sector said that Application B looks familiar because it reminded MSN Messenger or Skype.

Finally, users were asked to try out and comment three control features. These features were simultaneous ring, diversion and presence. First, simultaneous ring means that the user's PC and mobile rings at the same time and user is able to answer from either of these devices. This feature divided the opinions evenly. Three users regarded it as useful. All six users that were students said that it might be useful, especially at work. For example one said that it is hard to say if it's useful or not because he had not appro-

priate experience. However, he suggested that probably in an office this feature might be rather useful. The rest four users were clearly against the feature. Like on user said: "It creates a cacophonic feel. I would probably disable either one". Second, diversion means how the incoming calls are handled. For example when having a vacation user could divert the calls to their switchboard. Six users thought that this kind of feature would be useful. Among those half believed and the other half had a need for diversion feature. Third, presence is the status information that tells to others whether the user is available, in a call, in a meeting, away, not available or offline. This feature was prototyped only with all seven corporate users. From those seven, only one expressed that he would not have a use for this kind of feature. Other six were very interested of the presence, especially if it's automatic, i.e. users don't have to manually put their presence information. One who had previous Lync experience even said that it is very important.

Finally, when users were asked to name which application they would use in their work, all ended up to suggest Application B. For the majority decision was easy because of its familiarity and ease of use. One user said that in principle he would use Application A because it was located in a browser which he had always open. However, because there were several issues regarding the logic and usability of the application he finally ended up to chose Application B.

As a result, the obtained output from the prototyping sessions was finally given to development team. Information retrieved from the users was considered valuable and helpful to direct resources to focus on right tasks. As a result development team decided to drop off the application A and continued development with application B.

4.3.3 Service Blueprinting

The outputs from the Service Blueprinting workshops were service process maps. Participants in both workshops learned the blueprinting technique in a short time. Participants felt that doing the blueprinting was simple although they did not have any previous experience of the technique; even the term was unknown until the workshop. Participants in both workshops got the point and they were able to use the blueprinting technique in the right way. As a result, customers focus remained till the end which resulted in a customer-centric service processes.

There were several benefits that participants felt that Service Blueprinting might provide. For example, how the Blueprint splits the whole service process in to pieces was found good. This way everyone was able to see how the user is linked to the whole service. Additionally the customer point of view was seen important. Like on participant commented: "Customer point of view was greatly involved; we should also take it into account, the whole house should take it more into account." Participants felt that customer point of view was mandatory: If customers and end-users were in the center, it helped to develop the services for the real use of users. If the service was experienced poor by the user, user would not use the service at all, no matter how fancy it was. The way how Service Blueprinting took customer and user point of view into account received a good response. "This was the first time when we did the process from the customer point of view. Very Good. We have just done internal process descriptions by this far."

Based on the experiments Service Blueprinting also turned out to be a good method to generate ideas. The blueprinting workshop that was made to end-user services triggered seven new ideas how to develop the service further. Like one participant commented: "This definitely works for brainstorming." Another participant added "This activates to think." On the contrary, billing service workshop did not trigger any new ideas. However, the explanation might be in the difference between the types of these two services.

Participants also saw that Service Blueprinting already in a product development phase would be valuable. One participant commented: "This would definitely be useful; all parties would be on the same map." And another one said "This was interesting; this could be in our internal use." Participants thought that with the help of this kind of methods the holistic view of the services could be highlighted and it would reveal from which the service really consists of. Like one participant described: "Services does not consist of one product only, they are a collection of products and personal service." Some of the participants felt that current product development has too much focus in individual products and that product managers do not know things outside their own product range. Again customer focus was stressed as one participant said: "Customers do see the service, not the individual products."

Now the experiments have been described and their results been presented. Next the findings are analyzed, which is the topic of next section.

5   ANALYSIS

In this section the results from the experiments done in previous section together with literature review are analyzed. In the beginning the following research questions were formulated:

- RQ1: How can TDC Product Development function ensure that they develop right services to the customers and users?

- RQ2: How the right services can be developed so that they provide favorable service experiences?

The first research question is answered based on not only the literature but also the experiment of interview as a method, as reported in the section 4.1, Likewise, the second research question is also answered based on literature review and the experiment of prototyping and Service Blueprinting, presented in sections 4.2 and 4.3.

5.1   Fuzzy Front End of the Development Process

In the beginning – i.e. fuzzy front end – of the New Service Development process it is vital for the service developer to ensure that they are developing right service, like Cooper (2011, p. 88) puts it "Are we doing the right project?" Qualitative market researches usually only skim the surface (Sandström, 2008, p. 26) and moreover they do not provide information to develop user experiences (Miettinen, 2011, p. 13). In order to be able to develop services that meet customer and user requirements, it requires understanding of customers and their end-users (Cooper, 2011; Miettinen, 2011, p. 13; Stickdorn & Schneider, 2011, p. 36-37). What kind of problems do they face at work? What are the needs, what do they like and dislike etc. Hence, in the beginning it is mostly listening to customers and users and, of course, finding needs they do not recognize at the moment.

In the literature interview as a method to understand customers' needs and problems was widely recognized. Cooper (2011, p. 41), for example, recommends conducting one-on-one personal interviews in addition to market research, customer site visits and ethnography. Moreover, Alam (2002) found in his study that most frequently service providers used interviews to obtain user input. This was due to the fact that they were easy to arrange

and were inexpensive for the service providers to use. However, based on the experiment of interview, it turned out that interview as the only method to gather users' needs, problems and interests was not enough. Users that did not have severe problems or interesting needs were easy to identify. On the contrary users that had problems and interesting needs could not be understood enough with the help of just interviews. Interviews enabled to understand problems and needs on a general level but did not help to capture the insights that may be found. Because the problems users have are always relative, it would require understanding of their context to see if the solutions would be viable on the customer company level – i.e. if the customer is willing to pay for the service.

In respect to this matter, Hämäläinen et al. (2011, p. 65) suggests that usually data collection and understanding of users should begin with interviews. This data gathered from interviews is then specified and studied more detail with the help of ethnography (Hämäläinen, 2011, p. 68). Because the interview is inexpensive and light way to obtain user needs it can be used extensively. Then, if in the interview it turns out that the customer or user doesn't have problems or specific needs, one knows that it is unwise to continue the study any deeper. Hence, many resources would not be wasted. On the contrary, if the customer expresses that they are having problems or needs or they just want to improve their practices, it would be the time to investigate them in more detail. In this case the methods presented in section 2.5 – empathic design and ethnography – could be used. As a result further investigation may reveal much more ideas and potential than was first indicted on customer's part.

Although interviews can be later in the process complemented with other methods, interviews can also be used to deepen understanding after other data collection methods. For example, Hämäläinen et al. (2011, p. 68) argues that the process of data collection and understanding is spiral process. Hence, after initial data collection – e.g. interviews, observation and ethnography – interviews can be used again to increase the understanding of the phenomena.

Interview as the only method to obtain user input did not reveal much detailed information. Interviewees came to interview without preparing and therefore they did not much bring ideas or needs, except one. This inter-

viewee, switchboard operator, was prepared when she arrived to the interview. She was instantly able to specify what kind of problems she had. The problems she described where implementable functions to the service and there were several of them. And most valuable, she was the expert with that kind of systems and most probably other switchboard operators would have the same issues. So, interviewing just anybody is not effective. One must have users that have ideas, are motivated, have or have had problems or by other means have previous experience about the topic. Otherwise the results – if one can even get any – can be unreliable.

It was also find out in the experiments that users may be unable to state their needs or opinions if they do not get something tangible in front of them. For example one manager, who had strategic responsibility in middle sized company, did not recognize any missing features in the current voice service compared to prior one when asked in the interviews. However, when he had opportunity to prototype the service he suddenly remembered one valuable feature that he kept missing. Previously they were able to see the name of the caller even though the number was not saved in the phone memory. He suggested that making this kind of feature available and extending it also to PC client would bring added value to already good service. This finding is in line with literature. For example Cooper (2011, p. 49) has noted that "People don't know what they're looking for until they see it or experience it." Hence, it is recommended to prototype right from the beginning of the project (Vaahtojärvi, 2011, p.141). At first it may be for example just paper mockups, or it can be something else tangible (Cooper, 2011, p. 49).

As a conclusion, conducting user studies in the "fuzzy front end" of the project is recommended in order to ensure that one is developing the right service to customers and users. In order to be able to develop services that meet customer and user requirements, it requires understanding of customers and their end-users (Cooper, 2011; Miettinen, 2011, p. 13; Stickdorn & Schneider, 2011, p. 36-37). This can be done with the help of user-centered study methods. Based on the experiment, interview as method to obtain user input was feasible. It was inexpensive and light to do. However, interview as the only method to obtain user input did not reveal much detailed information. One reason might be that interviewees came to the interviews to just participate in study, not bringing their needs and wants. However, there was

one exception, where interviewee stated several features that she would need in order to efficiently cope from her work. In order to get more detailed information, interview requires observing methods. For example ethnography or empathic design, could be used to complement the data collection (Hämäläinen et al., 2011, p. 65). Only this way one is able to determine what services users really want and need and further, to understand from the user point of view what are the most important things of the service.

5.2 Developing Favorable Service Experiences

In order to develop services that provide favorable experiences, both the functional and emotional level of the service experience need to be addressed. The functional level describes the hygiene level of the service, which means the necessities of the service. Functional level must work in order the service to exist in general. If it does not, the above emotional level does not improve the service experience. Only when functional level is working as expected, the emotional level can increase the service experience to a new level. However, it is important to note that service experience is relative. For example, customers and users previous experiences may have a significant impact on perceived service experience (Sandström et al., 2008, p. 122). Hence, it is not the same for every user and even not for the same user at different times, although the service would be delivered similarly.

Service providers cannot design experiences but they can design prerequisites for service experiences (Sandström, 2008, p. 18). To deliver favorable service experiences, service provider must understand functional and emotional level of the service from the customer and user point of view. Hence, there is a need to involve customers and users in the actual service development. This can be done with the help of user-centered design methods, e.g. with the help of Service Design.

Service Design promotes prototyping approach to develop services. This means that service is made concrete and visible so that customers and users are able to provide feedback on the service (Vaahtojärvi, 2011, p. 131). Based on the experience and results gained in the experiments of prototyping it looks promising also to take the functional and emotional level of the service into account. For example, users provided valuable information regarding the functional level. Information like, what are the most important

features and functions users want, what is unnecessary for them, what is the level of usability and how versatile the service is, were obtained. Additionally, information regarding the emotional level of the service was attained. Users expressed for example their instant feelings, personal experiences, easiness, attractiveness and style of the service. However, the purpose of this study was not to research the value pyramid elements in detail but rather show that there is a connection between practice and theory of the value pyramid and service experience.

The value pyramid must not be too general. In order to design right prerequisites for services to be valued by the customers and users Sandström et al. (2008, p. 123) suggest that, as they put it, "Companies should identify and analyze favorable and unfavorable service experiences and thus create a knowledge base for designing services that deliver value and which result in favorable service experiences." Hence, the general model of the value pyramid provided by the literature must be complemented by collecting more concrete input from customers and users (Cooper, 2011, p. 206). Additionally, Tuulaniemi (2011, p. 74) suggests that in order to design great customer and service experiences, one must understand the structure of the value pyramid and how and when the customers encounter the companies offering. Therefore, it is not enough to focus on only limited amount of individual services – although it is a good start – but take a more holistic view on total offering to develop the experience. Moreover, the value pyramid may be different to different user groups. Hence, there might be a need to develop several knowledge bases, i.e. value pyramids.

From the experience of prototyping there were discovered three important points. First, the users with whom the service is prototyped should have the kind of experience where the service can help to solve their problems. This is due to the fact that users then have needs they want to satisfy with the service. If users don't have needs, they most probably don't need the service and hence their motivation towards the service is low. For this reason they are not then the most reliable feedback givers. This issue was discovered clearly between working users and student users. Users that were working were able to state whether a specific feature of the service is necessary or not from their point of view. Whereas student users mostly provided guess-

es, like it might be a beneficial at work or they might use this features in the future.

Second it was found that user studies and prototyping should be conducted right from the beginning of service development. This is also supported by the literature (see for example Cooper, 2011, p. 49; Vaahtojärvi, 2011, p. 140-141). In the case project there were no user-studies conducted beforehand. Strong focus in the users may give competitive advantage by being able to differentiate against competitors in the eyes of the users. Additionally, if service development is done without user studies a lot of unnecessary work might be done. To give an example, while prototyping the case service with users it turned out that many of the features were unnecessary for the users. If this would have been known before hand, the resources could have been used for prototyping other things. Yet, it was a great finding already at this point of the service development what users really needed and what they did not. This way it was avoided that these things did not come to light just until the end of the project, i.e. before piloting or market launch.

Third, there is a need to pay a special attention to user groups. While prototyping it was discovered that different users valued different things and their needs have large variation. So, it is important to segment users to different groups and develop service to satisfy the chosen user group's needs. If developing service generally, i.e. not specifying the target audience but developing the service to the entire audience, it may mean that instead of service to satisfy everyone, it does not enough satisfy no one. This way prototyping can be targeted appropriately and the received results would be accurate and reliable.

In addition to prototyping, literature suggests a Service Design method called Service Blueprinting for customer-focused service development (Bitner et al., 2008). Based on the results and feedback received from the experiment of Service Blueprinting, the method turned out to be feasible in promoting customer and user point of view. The major difference to traditional process maps was in the view point. Traditionally processes have been described from the service provider point of view. This means that several internal processes are then combined to provide the service to the customers and users. However, Service Blueprinting turned this around: the service is described from the customer point of view and only after this the

service provider's internal processes are adjusted to support the service delivery. This enables the company to see and discover what the important internal processes are in order to provide the service. Additionally, possible problems, overlappings and conflicts may be revealed (Gummesson & Kingman-Brundage, 1992).

In section 3.3 the transform from product to service and experience oriented economy was described. This meant that companies are not able to anymore differentiate from each other only with the help of products but more and more based on services and experiences they offer. As can be seen from the results, Service Blueprinting was considered as a good concrete step towards customer- and service-oriented approach. With the help of Service Blueprinting, products inevitably become services. This is due the fact that Service Blueprints are captured from the customer point of view and hence, it does not only take into account the product but rather the whole service and even the experience.

So, in practice this would mean that when developing a core service (often also referred to as product) the integration to enabling services is evenly important. This would, of course, require strong co-operation inside the company. According to the Service Blueprinting experiment, there still seems to be product-oriented people at TDC. Especially product managers were highlighted several times. However, when using Service Blueprinting in service development, it should be easier also for the product management to focus on the service aspect rather than on individual products.

Based on the literature, experiments and experience the author proposes a Service Layer Model (see figure 20) to highlight and increase the understanding of how customers and users see the services.
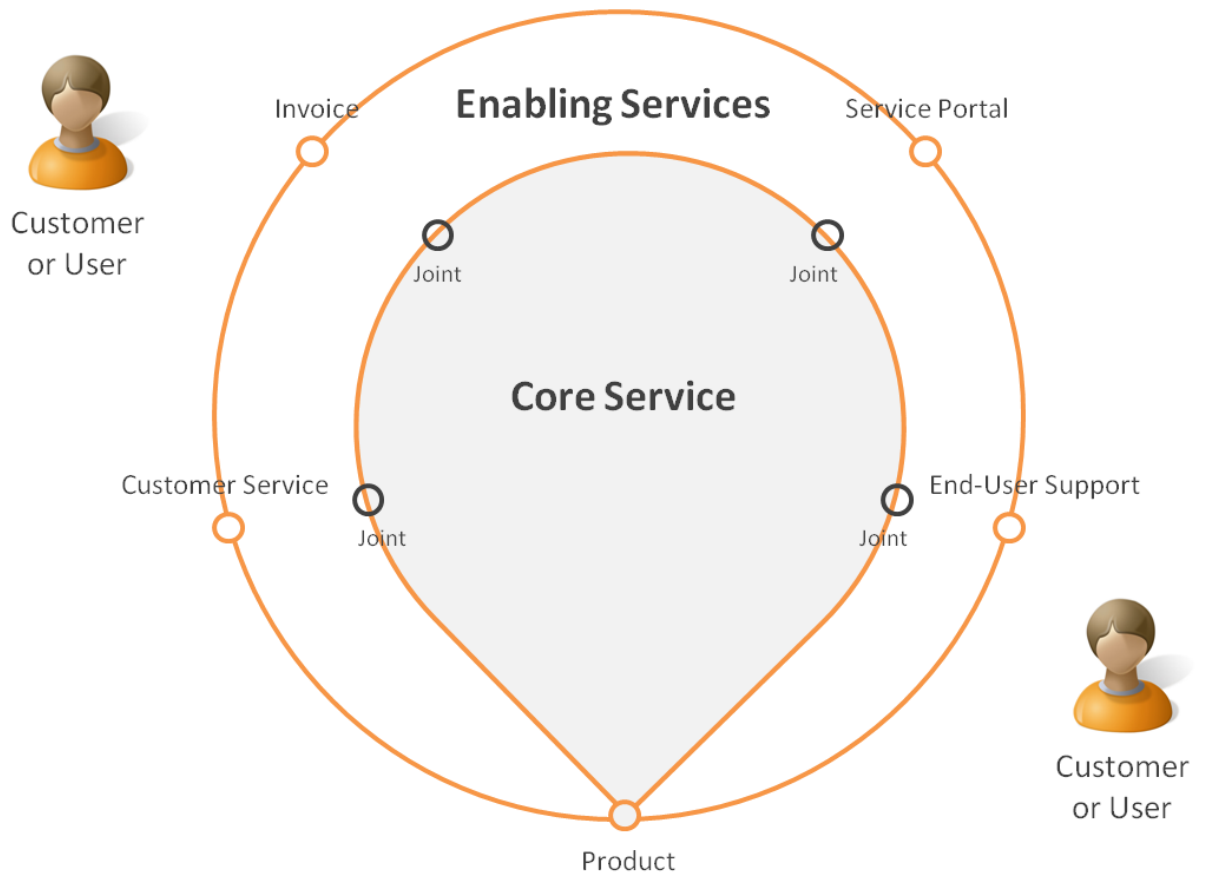
Figure 20: Service layer model

Customers and users interact with service provider through different touchpoints (Moritz, 2005, p. 208). These touchpoints can be for example physical products, customer service, invoice, advertisement or website (Miettinen, 2011, p. 92). Touchpoints are the spots where service experience occurs (Moritz, 2005, p. 208). The core service itself can have only one or few touchpoints seen by customer or user – although they can be the most critical ones. On the other hand, the number of touchpoints in the enabling service zone can be tens of even more. Moreover, customer or user sees the core service also through these touchpoints. So, from the customer or user point of view the service is seen as one packet that is independent of the touchpoints (see figure 10). It is the service. Therefore, the internal integration or joints between the enabling service and core service must work in order to give the impression of one-service. Furthermost, integrating core service to enabling services must be the focus since the beginning of the service development.

Agile or spiral development ensures that projects go right. Cooper (2011, p. 32) even argues that developing services in iterative fashion in one of the critical success drivers of service development. Agile or spiral Development reinforces customer- and user-centricity and provides the means to ensure successful service development. Today especially Service Design literature also recognizes the power of iterative development in the development of services. Moritz (2005) even argue that there is no linear Service Design existing but it is always iterative in nature. Iterative development promotes fast paced "build-test-feedback-and-revise" iterations (Cooper, 2011, p. 48), which is why it differs a lot from traditional linear or parallel development. In addition, especially methods promoted by Service Design are collaborative and "not traditional", which requires learning of new ways of working. So, if applying Service Design – which inevitably means agile or spiral development – to service development, service provider must be prepared to change their working habits and practices in general.

Agile or spiral development was not tested in full scale in this study. It was possible to carry out only one iteration. This was conducted with help of prototyping. According to literature iterative development is about building something light, then testing it, getting feedback from it and finally revising it accordingly (Cooper, 2011, p. 49). This was exactly what was done when prototyping experiments were carried out. The experience was overall encouraging. First, building a prototype that was functional enough turned out to be fast. Second, testing the prototype with customers and users was more complicated. Especially it was time consuming. This was due to the fact that there was no prior information about target customers or users who would be willing to participate in the prototyping session. Hence, tens of customers were contacted before even some of them expressed interest. Additionally agreeing on timetables was not fast; usually users were able to come to session within few weeks. When developing agile, two weeks is way too long. To overcome this issue, there would be a need to make an agreement with customers that they would be able to agree sessions in short notice or alternatively one time slot per week would be dedicated beforehand for prototyping sessions. With student users this problem did not occur. Users were able to spontaneously participate in prototyping session and hence the second part of the prototyping experiment was done within a day. Third, getting feedback from the customers and users, turned out to be easy. Especially

working users gave straight and truthful feedback. They also gladly provided improvement ideas and recommendations. Finally, after prototyping, service developers were able continue to develop the service according to customer and user input. Then again after a while the latest service prototype could be tested with customers and users to see that development efforts are moving to right direction

Repeating these iterations would have been required in order to receive more practical evidence of the benefits of agile or spiral development. Therefore, the benefits of agile or spiral development are mainly based on literature. However, to some extent some of the benefits of agile or spiral development became visible already in this one iteration, like explained in the previous paragraph.

So, as a conclusion, to take the service experience into account already in the development phase, author suggests the following. First, the prerequisites for favorable service experiences from the user point of view should be studied. The presented value pyramid structure can be used to understand the structure of service experience and how it provides value in use for the user. Second, the Service Layer Model provides a holistic view to see the service from the user's perspective: it highlights the importance of enabling services and provides a checklist to different touchpoints to be taken into account during the service development. Third, the Service Design methods Service Blueprinting and prototyping may be used to increase the user point of view in the development. This way the focus of the development is in the service and additionally the service experience is also taken into account. Finally, in order to be able to flexibly develop services and utilize Service Design methods, use of iterative process model should be imposed. Otherwise the methods may not work.

5.3 Suggestion

Based on the analysis of literature and experiments done in this study the following process model is suggested to be taken in use at TDC:
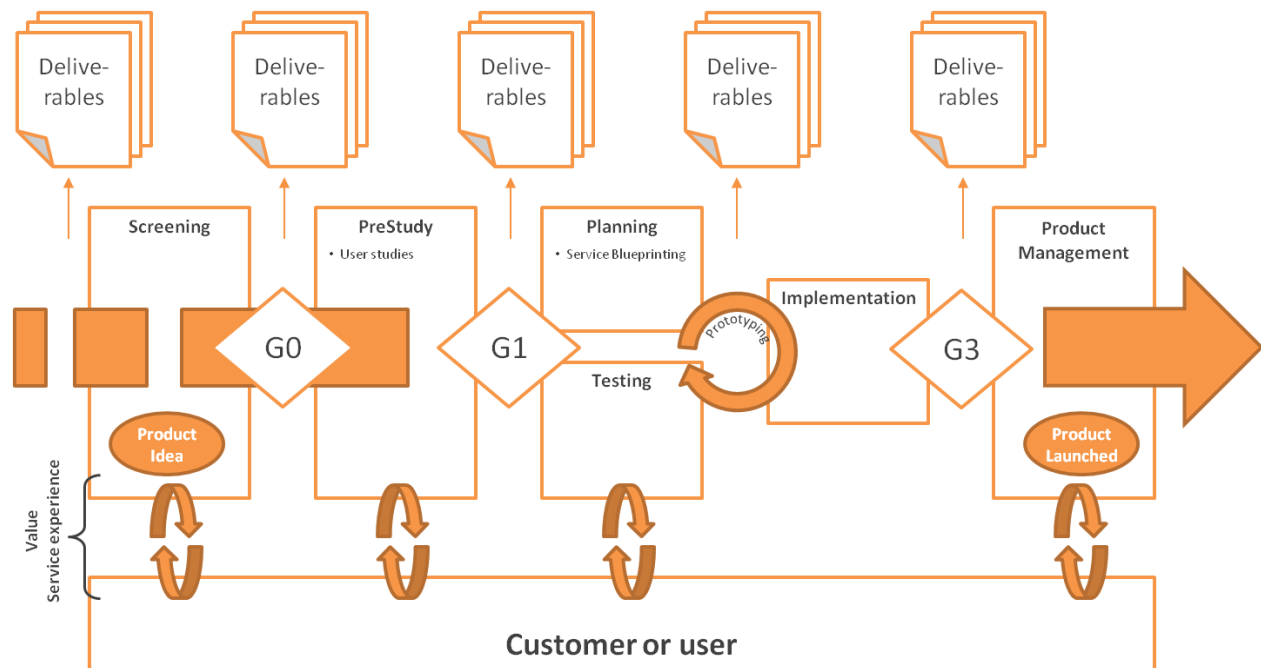
Figure 21: TDC Service Development model

First, Product Development process used at TDC is suggested to be Service Development process. As was illustrated in the figure 20 it is not only the core service or product that is experienced by the user but more the ena-bling services around it. Moreover, TDC states that service is top priority for them. Hence, it is important to stress service viewpoint already in the devel-opment process. The recommended practical tool for addressing the service view is Service Blueprinting. Service Blueprinting should be used especially in the planning stage.

Second, it is suggested to conduct user studies in the beginning of the pro-cess. User studies can be conducted using methods described in this study (e.g. interviews, empathic design, ethnography). For example, when negoti-ating or starting a project with customer, both parties would agree, that TDC would deepen the understanding of the customer by studying them deeper. However, especially the initial user study can be also more informal. For ex-ample when TDC employees are in contact with customer's users they could interview users informally, ask questions or observe how they work and see if they find any obstacles there. These ideas collected from the field can then be brought to Service Development process to see whether they have po-tential or not.

Third, moving to use more agile and flexible development process is recommended. Current linear process does not provide means for user-centric development. User-centric development requires more fast-paced development, feedback and testing with real users. Hence, especially planning, implementation and testing should be done iteratively. However, it might require also taking user studies in the iteration loop because later deeper understanding of users might be required. This iterative development means applying prototyping approach to service development: Making first version of the service first and then revising it iteratively until it is ready to be piloted and launched.

Finally, customers and users are suggested to be illustrated in the process model. If the customer and user are at the center of service development, why not then add them to the process model? This way the importance of customer and user involvement is addressed and important aspects such as service experience and value in use can be added to process model.

Next the findings of this study are discussed and some remarks for the future are given.

6 DISCUSSION AND CONCLUSIONS

In this final section the practical implications of this study are described. Then methods used in this study are evaluated and finally suggestions for future study are given.

6.1 Practical Implications

In this study it was found out that in order Product Development to support TDC to achieve the vision of being service leader in the business-to-business telecom market, it requires several changes in the Product Development process. Based on the current Product Development process and TDC's strategic direction together with literature and experiments, the following changes to TDC's Product Development process are suggested:

- Product Development process must become Service Development process. Instead of focusing on products, focus must be on service. This creates more value to customers and users.

- Make the process to take into account customer and user point of view. Customers and users must be part of the Service Development process and this requires user-centric development methods to be applied in the Service Development.

- Change the process from rigid to agile and flexible. In order to co-develop together with customers and users it requires iterative process model to be used. However, pay attention to requirements that agile development poses to organization.

- Apply Service Design. All the previous three points are the fundamentals of Service Design. Additionally, Service Design has several similarities with the objectives and strategy of TDC.

With the help of these abovementioned suggestions the process model should be able to support TDC in achieving the vision to be the service leader in B2B telecom market. The process model emphasizes the importance of service aspect instead of focusing on individual products. Moreover, the process model puts the customers in the centre of the development. The process model also enables TDC to develop services so that they provide favorable service experiences.

Because the suggestions require changes in organization's working methods and processes, their execution should be well-planned. It is important to notice that suggestions may require educating personnel. With the help of education, the benefits of new habits are understood correctly and in optimal case the old habits are replaced with the new ones. Suggestions also require strong commitment from the top management. Otherwise the changes would remain useless and sooner or later the organization would continue to use the previous practices.

Next the methods used in this study are evaluated.

6.2 Fuzzy Front End of the Development Process

In the beginning of service development, it is important to understand customers and users. The suggestions given in this study was to conduct user studies to increase the understanding. Further, in this study interview as a method to collect input from customers and users was experimented.

Interviews were arranged with seven users representing five companies. It can be argued that the amount of interviews was not enough to draw conclusions whether the users would be able to state needs or not. However, the author of this study argues that it is not the amount of interviews but the selection of users to interviews that matters most. Even if the amount of users in interviews would be high but how the users are selected is not systematic and well-thought, results would not be fruitful. Among those users who did not notice problems in their everyday work the interview session was rather inconclusive. On the other hand, those users who had noticed problems in their everyday work and even were able to suggest solutions to the problems, turned out to be a good source of ideas. Finding users like previous would matter most.

Except one company, in all other companies only one user was interviewed. It can be argued that this might lead to one-sided opinion that does not capture the need of a larger user group. Therefore, it might have been beneficial to interview several users within each company to see whether the ideas would be worth of developing.

The interview sessions were planned to take approximately 30 minutes of time. For some users this was too short time whereas for others the time

was too long. To overcome the issue of having too short interviews, the interview protocol should have had to include more questions.

Interviews were held in TDC office which might have affect to user's ability to remember problems and state their needs. If conducting interviews at customer premises the natural working environment might have positive impact to their brainstorming ability. Additionally interviewee would be able to understand the environment where user works and hence some latent information might be also received.

6.3 Developing Favorable Service Experiences

To develop services so that user's point of view is captured and the ground for a favorable service experience is created this study ended up to experiment two methods: Prototyping and Service Blueprinting. Prototyping was conducted with 13 users representing five companies and six students. Each prototyping session was arranged outside user's normal working environment. Especially Service Design literature emphasizes the importance of the natural environment where service consumption occurs. Therefore it could have been more reliable to conduct prototyping in places where users normally would use the kind of services. However, it turned out that users rather well were able to empathize with normal usage of the service also in demonstration environment.

Prototyping was done once with each user. As was suggested in the literature, prototyping should be carried out several times. After each iteration or loop, prototype should be revised based on the collected feedback. Hence, in order to get more reliable results from the prototyping method, it would have required more iteration rounds. However, the literature provided several case studies where the prototyping method was successfully used to develop services. Therefore, the results received from the experiments of prototyping can be considered to be reliable as they are in line with the more comprehensive studies conducted in the literature.

Service Blueprinting was arranged in two workshops. It can be argued that conducting just two workshops might not be enough to draw reliable conclusions about the method but more workshops would have been needed. However, the literature already provided several empirical studies where the benefits of applying Service Blueprinting were studied. The results in those

studies were positive and encouraging. The experiments of Service Blue-printing method in this study can be considered as confirmative to the results presented in the literature.

Service Blueprinting workshops were arranged with TDC employees only. Because Service Blueprints captures the service from the customer or user point of view, it could have been beneficial to involve also customer's users in the workshop. This way the user point of view could have been empha-sized more.

Next suggestions for future research are given.

6.4   Suggestions for Further Research

Because the proposed Service Development process model is not empirical-ly tested in full scale, suggestions should be taken as indicative. Applying the proposed Service Development process model in real projects can re-veal several aspects that have not been taken into account in this study. Hence, to get more empirical evidence of the Service Development process model, it is suggested to conduct a study where the Service Development process model is put in practice.

Additionally, several recommendations were related to Service Design. Therefore, it is recommended to further investigate how Service Design can be applied as efficiently as possible to TDC's Service Development. Moreo-ver, because Service Design provides means to develop the activities of the entire organization, Service Design could be studied not only from one busi-ness unit point of view but in terms of whole organization.

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APPENDICES

Appendix A: Interview Questions

Background

- Your role in the company
- What kind of communications devices you currently use at work? Desk phone? Mobile phone? Video phone or TelePresence? Email? PC-client? Browser?
- To which kind of communication you use these devices? Internal communication? External communication?
- How often you use these devices? Almost all the time? Every now and then?
- How important are communication services to your business (from the point of your daily work)? Why?

Idea generation

- Do you have any needs that you think we could help you with?
- Do you have any problems and possible solutions that you would like to solve with us?
- Are you experiencing challenges using your current communication solutions?
    - What is good? What is bad?
    - Are there any gaps in the market?
    - What would be the wish list of a new service? What would be the requirements?
    - Which factors affect the service acceptance criteria? Usability? Reliability?
- Are you familiar with the communication services provided by our competitors? Do they have something superior compared to our services? Do they have something we should never do?

End-users

- As an end-user what do you wish from a communication service? Usability? Reliability?
- How the end-user perspective is taken into account in your company? Do they play a key role in decision making? Are you trying to take them in-to account? They do not have a relevant role?
    - When choosing the service?
    - When using the service?

Appendix B: Prototyping

Users are asked to perform a number of use cases. These use cases are normal routines that users perform when they are using the service.

Use Cases

USE CASE	TYPE	NOTES
Call to your colleague using PC	Calling	
- Add another participant to the call		
- Transfer the call to another person		
- Transfer the call from PC to your mobile		
Arrange a conference call	Calling	
- Add participants to the conference		
- End the conference		
Answer a call	Answering	
You are leaving on vacation. Meanwhile you want to divert work calls to company's exchange so that work call do not bother you on your vacation.	Control	

Appendix C: Applying Blueprinting in Your Organization: A Workshop Guide

Presented in Bitner et al. (2008, p. 78-81).

"Teaching the Blueprinting Technique

1. Share Blueprinting Fundamentals

- Explain blueprinting and its importance
    - o Emphasize that given the intangible nature of services and their complexity, discussing them verbally can be challenging. Describe how blueprinting helps create a visual depiction of the service process that highlights the steps in the process, the points of contact that take place, and the physical evidence that exists, all from a customer's point of view.
    - o Stress that blueprinting helps those within an organization identify failure points, areas for improvement, and innovation opportunities as well as opportunities to enhance profit. It gets participants "on the same page" in terms of how a service currently works or how a new service process might be designed.
- Walk through a generic blueprint
    - o Show participants a generic blueprint and describe each of the components (see Figure 1). It is also helpful to show participants a sample blueprint of a service so they can get an idea of what one looks like (see Figure 2).

2. Blueprint a Simple Service

- Have participants learn the technique by blueprinting something simple
    - o It is best to have participants learn the technique by first blueprinting something other than their own service. Pick a straightforward service and provide a description for them to read to get them started. In our workshops, we have used a description of a river tubing service, a diet food delivery service, and a business cafeteria service.
- Have them work in teams to create the blueprint
    - o The power of blueprinting becomes evident when it is used in a group setting. We have participants learn the technique working in teams of four to ten people although we have found that smaller and larger groups can also work.
    - o If there are multiple teams blueprinting a service, we have each one create a blueprint of the service and then share what was developed, on white boards, or by hanging their paper blueprints up so others can see them. We have one or two teams share their blueprints with the larger group. We then have participants compare and contrast the various blueprints that were developed.

3. Brainstorm Insights and Uses of Blueprinting

- Share insights about the blueprinting outcomes
    - o The blueprints that are created are rarely identical. It is useful to discuss what led groups to make different decisions regarding how the service was depicted.
- Share insights about the process of creating the blueprints
    - o After working in a team to create a blueprint, it is usually very clear to participants that it is the process of trying to create a blueprint that is so powerful. Participants typically have process-related questions that should be addressed. They often ask about the level of detail that is required, which is something that depends on the objective of the blueprint (e.g., a concept blueprint versus one depicting role responsibilities).The level of detail needed can be agreed on prior to blueprinting the company's own service processes.
- Brainstorm ideas for using blueprinting

o   Once participants understand blueprinting and its potential, it is a great time to brainstorm how blueprinting can be used within the organization. At this point in the process, many "ah hahs" and creative ideas emerge spontaneously. Participants might identify ways to use the technique to improve internal processes (e.g., IBM and the San Francisco Giants) or services that are offered to external customers (e.g., Yellow Transportation and ARAMARK).

Applying Blueprinting in Practice

1. Decide on the Company's Service or Service Process To Be Blueprinted and the Objective

Select the service or service process and the customer segment that will be the focus of the blueprint. Different segments of customers may receive service differently, which would necessitate that separate blueprints be developed. External or internal customer segments can be examined. Make sure everyone is clear on the goals of the blueprinting process. For a new service, it is likely to be to specify the desired service process whereas, for a currently offered service, it is often to blueprint how the service is currently being offered. However, at times, it may be useful to create what a desired service process might look like for a service that is already offered. Additionally, for some services, a goal might be to develop a very general concept blueprint that just highlights the key steps in the service process—in the early stages of a new service innovation for example. Alternatively, the goal might be to specify specific role responsibilities, which necessitates a very detailed blueprint.

2. Determine Who Should Be Involved in the Blueprinting Process

Some thought should also be given to who should be involved in the blueprinting process for a particular service. Ideally, representatives of all groups involved in the design, delivery, and support of the service, including in some cases the customer, should be involved. This provides the greatest opportunity to capture diverse perspectives concerning how a service currently is or a new service should be experienced by consumers and executed by the firm.

3. Modify the Blueprinting Technique as Appropriate

In some circumstances, it makes sense to modify the traditional blueprint. For example, when blueprinting an Internet or kiosk-based service that does not have any onstage contact employee activities, it could be beneficial to remove the onstage contact employee action row and replace it with an onstage technology row that would capture how customers interact with the company's technology. Some services might require both an onstage contact employee activities row and an onstage technology row (e.g., an airline where customers check in via a self-service technology and also interact face to face with airline employees). Also special symbols that identify failure points, revenue generating or cost cutting opportunities, or places where service quality perceptions could be enhanced can be incorporated. Any modification that enables better assessment of a particular service (e.g., time to perform each step), and achievement of the blueprinting goals should be considered (e.g., as with Marie Stopes International Global Partnership). Its adaptability is one of the key strengths of the blueprinting technique.

4. Map the Service as It Happens Most of the Time

There are always idiosyncratic things that happen when providing a service but participants should focus on what typically occurs during the service process, at least initially. Once the typical service process is blueprinted, it can be compared to ideal or competitor blueprints, depending on the goals. In the case of a new service innovation, the initial blueprint can show how, ideally, the service will be experienced by the customer.

5. Note Disagreements To Capture Learning

When blueprinting their own service, participants will often come across points of disagreement about how the service works and how it is delivered to customers. It is important to note these disagreements because they usually indicate problem areas within the service that are worth exploring. However, it is also important not to let the disagreements derail the process.

6. Be Sure Customers Remain the Focus

It is common for participants to get engrossed with the steps in the process that happens within the organization and to lose sight of the customer. It is important that the customer stays top of mind as the blueprint is being developed.

7. Track Insights that Emerge for Future Action

It is often just the act of trying to create a blueprint that leads to big insights that can improve a service. Be sure to note them as you move through the process so you can create action items to pursue once you have finished the blueprint.

8. Develop Recommendations and Future Actions Based on Blueprinting Goals

Once the process of blueprinting the service is substantially completed, recommendations for action can be compiled depending on the goals of the blueprinting exercise. If the purpose was to develop a new service innovation, then the next steps in evaluation of the service will follow. If the purpose was service improvement, then improvements will be developed, assessed, and monitored.

9. If Desired, Create Final Blueprints for Use within the Organization

In some companies and in some situations, as noted above, going through the blueprinting process itself is enough to gain important insights. At other times, companies want to create finished blueprints that then can be shared in the organization and can be used for training and other purposes as well as a resource for employees. In these circumstances, the final blueprints should be shown to participants to make sure they are correct. The accuracy of the blueprints will be enhanced to the extent that all groups involved in the design, delivery, and support of the service process participated in their development. The blueprints must also be updated overtime to make sure they still accurately capture how the service is being delivered.

Concluding Thoughts

Although blueprinting can be useful at every level of an organization, there are a few additional considerations to keep in mind if one wants to undertake a blueprinting initiative on a larger scale that involves a significant number of employees within an organization. In these situations, senior level support will be critical in getting the necessary employee participation and buy-in. If there will be numerous groups blueprinting, it may be useful to designate someone who will become the blueprinting expert, who will be in charge of overseeing the process, capturing ideas for improvements and possible action items, and creating the finalized blueprint(s) if desired."