Service Design

in the Age of Collaboration

A CASE STUDY ON CUSTOMIZATION OF MOBILE PHONE CONTENT

by VERONICA BLUGUERMANN
ABSTRACT

Not so long ago, cell phones were only used just to make phone calls. Today hundreds of thousands of applications and services are available for smartphones. With them, people can communicate, play games, find places, and organize their day. However, the vast amount of possibilities can confuse users when choosing the best option. In addition, the global mobile content market makes it hard for users to find local solutions. This thesis in collaboration with Nokia proposes services that aim at: (1) helping customers to meet closer their needs by customizing the mobile phone content at the time of purchasing; and (2) generating means of collaboration among content developers, retailers and customers for producing mobile content targeted to local needs.

A Participatory Design approach was applied for developing the customization services. Observation, contextual inquiry and cultural probes methods were implemented to learn from diverse users. A co-design session was conducted to explore new opportunities with Nokia stakeholders. The results are several scenarios envisioned for Mass Customization services of mobile phone content at the point of delivery. The thesis offers (1) a framework of collaborative creation models for Mass Customization (2) insights on customers’ engagement in the activity of customization.
Service Design in the Age of Collaboration

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ACKNOWLEDGEMENTS

First I would like to thank my supervisors Kirsikka Vaajakallio for her invaluable time and feedback.

For his support and trust on my decisions, I would like to thank Sami Mattila from Nokia. As well as Ah Woon Chan for collaborating throughout the project.

The whole Master process would not have been possible at all without the staff and professors of Aalto University, student colleagues and friends.

Thanks to my family who had so much patience understanding my absence.

Finally, I am particularly grateful to Chris, for helping and supporting me in all the stages of this work.
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CHAPTER 1

Introduction

This chapter presents the introduction and research goals. The thesis key concepts, emerged from the thesis title, are briefly explained. Lastly, the methodological approach and book structure are presented.
Thesis Focus and Research Goals

1.1

The starting point of this thesis comes from Nokia’s desire to offer its customers a smartphone that closely meet their needs at the time of purchasing. In other words, Nokia wants to provide a service for retailers that allows them to customize the smartphone content according to the customers’ expectations.

My interest in this project emerged firstly, as a personal concern of smartphone users. I have experienced the difficulties in finding applications that suit my interests. The market is filled with options that are produced worldwide by individuals and small companies. There is not much content related to my needs locally and often applications overlap in terms of what they offer. It is common to find thousands of game applications but none on Finnish cuisine. Secondly, during the design process I realized that mobile content developers have a unidirectional way of producing. They envision solutions that they consider to be needed and develop it only using their personal knowledge in the matter and their skills. Only after the products are released in the market, they get to know the audience’s response.

When starting this project I considered that the mobile content offered for customizing devices had to be special. It would not have much sense just to offer content that is available on the Internet. People normally download and install content in their handset. This service had to offer valuable and different content to the customers. It was found that this special content can be developed by collaboration among users, developers and stakeholders (in this case Nokia and its retailers). The way the value is created in this case, made me reflect on Mass Customization (MC) strategies. In a traditional MC strategy a company would use its own resources to produce modules for customers to choose. For example, the car manufacturer Volvo offers to customers a range of car paint colors and several fabric seats. Customers can select from this limited amount of options. However, in the Nokia case the mobile content is not produced by Nokia nor the retailers; the MC strategy had to be different. This thesis proposes models that allow collaboration for creating these modules. This means, that Nokia is not the one that decides which content should be developed and offered. The customers would decide and help developers to produce the content, while retailers are the enablers and distributors. This way, the MC strategy can offer a vast amount of options fosters innovation and enhance long term customer-relationships.
Finally, I recognized the enjoyment of customization. People create or modify a product not just because a standard one cannot suit their needs. As it was explored in this thesis, one of the reasons that people customize a good is because they like to give the product a ‘personal touch’. These findings led me to investigate on characteristics of enjoyable activities that can be applied to the activity of customizing a good.

In order to achieve the main goal, two research questions were considered simultaneously:

(1) What kind of collaborative creation models can enhance a Mass Customization strategy?

(2) Which factors can engage customers in the service activity of customizing a good?

In order to create concrete outcomes from this thesis, the scope of the service concept only covers Helsinki as a target city.

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Key Concepts

1.2

The thesis title shed light on several important topics that will be further develop

1.2.1. A case study on customization of mobile phone content

This is a project-based thesis in collaboration with Nokia. Its main objective is to design services that enable customization of mobile phones at the point of delivery. These ones will be customized by selecting, modifying or creating mobile content, such as the music, the user interface, the applications and the wallpapers. The content stored in a platform, it is then installed in the devices. The project goal is to solve two special needs detected in the market. Firstly, retailers find difficulties to differentiate among themselves based on the products they offer. Secondly, customers get overwhelmed at the time of choosing a handset in a store over surrounded by possibilities.

The project was supervised by Sami Mattila, Senior Manager at Nokia. A Design Engineer in Customization in the technical development at Nokia, Ah Woon Chan, was also doing her Master's thesis based on this project, but with a more technological approach.

Previous experience and motivation

In 2010 I participated in a school project at Aalto University along with my classmates Antti Kienonen and Chongbei Song. The project briefed by Nokia was also aimed at finding ways of customizing the mobile content in developing countries. Even though we could not do user research in the location, we had to use other methods to understand the problems and user's needs. We watched documentaries, read blogs and local news. In addition, I had the chance to talk online with a few persons from the village where we choose to work with. In this short experience, I became really interested in new forms of collaboration among companies, entrepreneurs and users. In seeing the great potential this collaboration has, I wanted to explore it further in this thesis.
Nokia has experience on working under the scope of customization. Previously the focus was under the customization of physical products (the mobile phone shape). However, in recent years they have looked for ways to customize the mobile phone content. The benefit is that customers would meet solutions closer to their needs since retailers knows better what is relevant in each locality. The projects developed in Nokia with this objective had different approach than this thesis. They started by developing a technology that allows the transfer of content without taking into account the whole service system, e.g., where the content comes from, what kind of content, and how to offer it. Hence, there were high expectations on the User-Centered approach that I proposed. I was motivated to show Nokia team another way of development. Fortunately, I had support from them regarding the design process proposed.

1.2.2. Customization

In the last decade, the changing economic and social environments gave a push for the demands of individualized products and services. Under this premise, Davis (1987) envisioned a one-of-a-kind product manufactured to customer’s specifications without sacrificing scale economies. Mass Customization (MC) refers to a business strategy that conciliates two different business practices, which are mass production and individualized products.

New manufacturing techniques and advances in information and communication technology have changed the way MC is conceived. Instead of understanding it as a strategy to produce variety which customers can choose, MC has lately been defined with a more participatory approach of customer involvement in the product or service development. This thesis reviews the MC definitions and the strategies to achieve MC that helped on guiding the Nokia case study.

FIGURE 2
The retailers offer before Nokia Case and after.

FIGURE 3
Mass Production and Mass Customization.
1.2.3. Service

The growth of the service economy has been widely documented and discussed. According to the report published by the Organization for Economic Co-operation and Development, OECD, in 2000, the manufacturing sector is slipping to less than 20% of GDP and the role of services are rising to more than 70% in some OECD countries. Services are seen as playing a principal role in economies.

“Services are complex, hybrid artifacts”, Manzini (2011). They can be found from many kinds of commercial or non-commercial activities. Services can be seen for example in banking, transport, communication, food and entertainment industries. The variability in services’ nature lead Johns (1999) to recommend that the authors should always lay down parameters for each specific situation, and to give actual examples wherever possible. This thesis reviews the service definition and its characteristics in order to give a more thorough understanding of the case, the challenges and the design strategies.

1.2.4. Service Design

Vargo and Lusch (2004) define that services are co-created by the customer. This customer centeredness point of view in the service domain has opened up a new field for Design, bond with the research and methodology of human-centred design. The definition of Service Design has fluctuated in the last year. However, even if it is a new field, the approach and methods are a combination from many fields of Design and Marketing. It is the ‘object’ of design that seems to be new. According to Manzini (2011), in this new context, the ‘object’ of design itself tends to turn into a ‘process’: something that occurs over time, an activity that aims to achieve results. In this perspective, design is no longer ‘design something’ but rather ‘design for something (or get something to happen)’. This thesis reviews the design approach on developing services and will provide new perspectives on designing services for customization.

FIGURE 4

We are surrounded by services.
A smartphone user can interact with all these services by installing special applications, e.g., Transport Routes, Hostel Booker, Restaurant Guide.
1.2.5. Design in the age of collaboration

In this thesis, collaboration refers to participation of different parties (users, customers, stakeholders) in creating value. This collaboration happens in two different contexts: (1) Collaboration during the service design process and (2) Collaboration when the service for customization is in use.

(1) On the first stages of service development process, Participatory design approach has contributed with several methods and tools that actively involve the potential users. This approach helps to ensure that the designed product/service meets their needs.

(2) Once the service is in use, it is needed the participation of users and retailers for customizing the devices. And it is also needed the cooperation with third party companies which provide the mobile content (e.g., modules for customization). The rise of models of value creation based on users collaboration has set up a new challenge for Design. In these models, customers co-create goods and services rather than simply consuming the end product. Design has to contribute with platforms that allow collaboration for value creation rather than providing fixed solutions. Open Innovation and Mass Collaboration are models that are changing the way designers envision services. Open Innovation is a model that recognizes the potential of customers for generating new products. Companies implement different strategies to integrate their customers deeply into the value creation process (Chesbrough, 2003). Mass Collaboration embrace new model based on community collaboration, and self-organization rather than on hierarchy and control (Tapscott & Williams, 2006). These models can be implemented in a MC strategy to develop modules of customization as a co-creation from different actors.

In this thesis, Participatory Design methods were implemented to envision the service for customizing mobile phone content. Once the service is in use, collaborative value creation models help to enrich the MC offering. The mobile content is co-created by the company, users and third parties. Implementing collaborative value creation models in a MC strategy can balance the company demand and supply, foster long term customers relationship, provide low cost of innovation and increase sales.

FIGURE 5
Types of participation during the service development and types of participation in a service for customization.
Since the Nokia case involved different users and stakeholders (experts, service providers and third companies) that would be part of the service, several Participatory Design (PD) methods were applied throughout the design process. PD is an approach to design that attempts to actively involve the people who are being served through the design in the process to help ensure that the designed product/service meets their needs, Sanders (2008, pp 13-18). In the initial phase, the methods are aimed to unveil the stakeholders needs and wants. While in the second phase, participatory design methods helped stakeholders to contribute in the creation of solutions. As Mattelmäki & Sleeswijk Visser (2011) pointed out in the article entitled Lost in Co-X, the terms co-design and co-creation have been used alternatively in the design field, causing confusions when speaking about design processes or user experiences related to those terms.

Providing perfect definitions for these terms is beyond the scope of this thesis. Instead, a particular way of addressing these terms is provided in this thesis.

The experiments in which users or other stakeholders are invited to contribute to the design process will be called co-design. Whereas co-creation describes the moment of using the service, in which all the actors (service providers and beneficiaries) participate and utilize their resources for the creation of value.

In this thesis, Co-design is a PD method used during the service development process. Co-creation is the act of creating value collaboratively among service provider/system and customers/3rd parties.
The book structure

1. The topics of this thesis were introduced.
2. Presents the literature review based on the main topics discussed in this thesis and how they are described in the literature. Service definition and characteristics. Design approach for developing services, and Mass Customization definition and strategies.
3. Describes the Nokia case study process and results, starting from the project brief to the visualization of service concepts.
4. Discusses the findings in the case study with the help of the theories presented in Chapter 2. It summarizes and reflects what was learned during the process and what kind of future directions can be drawn based on these findings.
CHAPTER 2

Literature Review

THIS CHAPTER PRESENTS THE LITERATURE REVIEW BASED ON THE MAIN TOPICS DISCUSSED IN THIS THESIS AND HOW THEY ARE DESCRIBED IN THE LITERATURE: SERVICE DEFINITION AND CHARACTERISTICS, DESIGN APPROACH FOR DEVELOPING SERVICES, AND MASS CUSTOMIZATION DEFINITION AND STRATEGIES.
The growth of the service economy has been widely documented and discussed. According the report published by the Organization for Economic Cooperation and Development, OECD, in 2000, the manufacturing sector is slipping to less than 20% of GDP and the role of services rising to more than 70% in some OECD countries. Services are seen as playing a principal role in economies, however, the two sectors are becoming more interrelated.

According to Heapy (2011), Founder and Director of Engine Service Design (one of the world’s leading service design and innovation consultancies located in UK) “product manufacturers have turned to service and services to add value to their products beyond the capability and features of the product itself”. He illustrates this shift with Xerox Corporation’s launch of the first plain-paper copier in 1958. This innovative and technological success story was at its launch perceived as an expensive risk by new buyers. However, Xerox learned to mitigate the risk by subsidizing the retail price of the machine and, instead, charging the customer per copy made. As the machines proved their worth, more copies were made and more machines were leased.

Manufacturing businesses have shifted from a goods-dominant logic, selling units of delivery driven by value-in-exchange, to a service-dominant logic, driven by value-created in use, within which physical goods may play a role (Vargo & Lusch, 2004). In service focused thinking the value of a business is not in the goods the company is selling but in the customer’s process of benefiting from the service offering. This shift provokes a change in how the value is created and the roles the company and customers adopt. The role of the customer is not just a consumer of value but rather a co-creator of it. In other word, customers’ role have changed from ‘using up’ or ‘destroying’ value created by the firm, to co-create value through the resources provided by the firm.

This customer centeredness point of view in the Service domain has opened up a new field for a Design bond with the research and methodology from Human Centered Design. The Design discipline has contributed to service development with new points of view starting from the 1990s (Mager, 2009), and a specialization called Service Design has been established. Service design is fundamentally a multidisciplinary approach that “designs for experiences that reach people through many different touch-points, and that happens over time” (www.livework.co.uk). Designers watch and interpret needs and behaviors and transform them into potential future services. In the process, exploring, generating and evaluating approaches are used (Mager, 2008).
The definition of service and its relation to design has fluctuated over the last 20 years. In this section, some definitions of service are reviewed. They are not opposed to each other. Rather, they complement to form a richer definition than one definition alone.

To complete the understanding of service its characteristics are presented interwoven with the design approach in developing services. These definitions and characteristics provide a strategy and framework for the Nokia case in customization of mobile phone content.

**A service is an act | Service Design envisions the stage and the actions**

According to Vargo & Lusch (2004), service is an act of utilizing one’s competences for the benefit of another or the actor itself. This means that four different things are needed for a service to take place: an actor, an act, a target of the act and resources for completing the act. Grönroos (2008) adds that these acts or activities aim at assisting the customer’s everyday practices. This means that we do not buy a product for the sake of having it but people rather acquire goods to fulfill their wants, needs and desires. According to him, a precious painting is not bought only for the sake of the painting. A painting is bought in order to be able to look at it, to show it to others, or just for the sake of knowing that it is in the buyer’s possession. In the same way, a person who takes a coffee at Café las Flores in Saint Germain, is not trying to fulfill the need for a coffee but rather to fulfill the desire of being in one of the most famous café in Paris. According to Pine & Gilmore (1998), an experience is a real offering as any service, good, or commodity. It plays a central role in today’s service economy in which customers desire experiences, and more and more business are responding by explicitly designing and promoting them.

The service experience accounts for the user’s emotions each time they come into contact with a process, products, person or even a building or environment. Designers try to understand these experiences through empathic conversations and research methodologies. Designers create the scene and interfaces where the service takes place and they envision interactions and relationships between the service provider and the user.
Intangibility refers to the quality of services that escape our physical human touch. Services are thus described as ‘performances, rather than objects, they cannot be seen, felt, tasted or touched in the same manner in which goods can be sensed’ (Zeithaml, Parasuraman & Berry, 1985)

In marketing literature, the intangible nature of services is pointed out as a problem for customers. Since the service cannot be tried or felt, customers must rely on the reputation of the service firm, or they have to believe in attributes like reliability, personal care etc., advertised by service provided. The attributes of a service can be experienced only when it is availed. However, Meroni & Sangiorgi (2011:18) state that designers for services should work in making the intangible tangible, to engage customers in the service and provide them with a memorable experience. For that matter we count on the tangible parts of the service: the touch-points. Service touchpoints are the tangibles aspects of a service. For example, spaces, objects, people or interfaces make up the total experience of using a service (Moritz, 2005). Touchpoints can take many forms, from advertising to personal cards; web-, mobile phone- and PC interfaces; bills; retail shops; call centers and customer representatives. In service design, all touch-points need to be considered in totality and crafted in order to create a clear, consistent and unified customer experience (Live|work, 2008).

The intangibility of a service depends on the type of service. Kotler (1997) identifies four types of activities that relate goods and services. There can be firstly, pure products which according to him do not have a service factor associated with them (e.g., soap or salt). However, if these products are sold in the market, then there is a service related to them. Secondly, there are products with which services are associated (e.g., computers). A main service accompanying with minor services such as train journey with 1 Class A.C. service matter a third typology. Lastly, a service such as Paypal is a pure service. If we consider Nokia as an example of these concepts, the Nokia’s service is “connecting people”. The tangible good are the phones and the intangible good are the services that allow people to make a call, send an SMS, use the Internet, an application and so forth. In the case for customization of mobile phone content for Nokia, the service cannot be considered a pure service. Even if Nokia only affects intangible goods, the mobile service is still so dependent on the handset. The characteristics of the device are relevant for designing mobile information services.
Services take place in interactions between customer and service employees and/or physical or goods and/or systems of the service provider, Grönroos (1990). This relationship exists because one of the main characteristics of a service is the inseparability between production and consumption. Since the customer must be present during the production of many services (e.g., haircuts, airplane trips), this means that most services are highly interactive and depend on people-to-person or person-to-person interactions. Quality in services often occurs during service delivery whereas quality in products is usually engineered at the manufacturing plant and delivered intact to the customer. Unlike goods producers, service providers do not have the benefit of a factory serving as a buffer between production and consumption. Service customers are often in the service factory, observing and evaluating the production process as they experience the services (Krishna, Gopala, & Reddy, 2010).

In marketing field the presence of users of a service represents the lack of control of quality. However, in design field, the users are taken into account as a source of resources. “Besides being a source of insights and ideas, users have been engaged in design processes to generate more desirable and usable solutions, and to explore new collaborative service models”, Meroni & Sangiorgi (2011:19).

In the project presented in this thesis, user participation was conducted in several stages. Firstly, users were involved to understand their needs, desires and knowledge (view pg x). Secondly, the users took an active role in the service proposal (view pg x). Thirdly, because a customization service implies high customer participation, new ways of collaborations are explored to engage and enrich a service once it is deployed (view pg x).

A user being at the heart of the design process is not new. However, the terminology used to identify different types of participation is still confusing. The participatory design approach has been used terms such as co-design and co-creation alternatively, Mattelmäki & Sleeswijk Visser (2011). In this thesis, two types of participation of users and stakeholders are defined according to the moment of realization: (1) co-design is a type of participation that takes place when users and stakeholders get involved in the process of designing a service; while (2) co-creation refers when users and stakeholders collaborate once the service is in use.

(1) The service development process in the Nokia case has a Participatory Design approach (PD). PD is an approach to design that attempts to actively involve the people who are being served through design in a process to help ensure that the designed product/service meets their needs. Many studies (Binder &
Brandt, 2008; Sanders, 2008; Miettinen, 2009) have pointed out the benefits of involving users in the design process. Greenbaum (1993), mentioned three different motivations for Participatory Design: pragmatically, it helps to get ‘the job done better’; theoretically, it is needed in order to facilitate communication and cooperation between people with diverse backgrounds during the research and design processes; and politically, it is desirable that 'people have the right to influence their own workplace, including the use of computer technology’. In this thesis, the experiments in which users or other stakeholders are invited to contribute to the design process will be called co-design. Several methods were applied under the PD approach: Observation and contextual inquiry, cultural probes and a co-design session.

(2) When talking about the involvement of people while using the service, Manzini (2009) has made a division between standard services and collaborative services. Standard services are based on the traditional idea of serving, to reduce the user’s effort and the time needed to achieve a given result. Services, such as laundry, food delivery and elderly care, work in this manner. Even though a standard service does not require much participation of customers, they still are co-producers of the service. For example, a person taking a coffee if he/she is served by the waiter the participation will be low (but at least has to pay and does require participation). If the coffee is taken in a self-service café the customer participation raises. In any case, the customer is involved to produce his/her own value, leaving nothing behind when the operation is over.

Collaborative services, on the other hand, utilize the resources of all the actors. The type of participation that refers to customers creating value with the company will be called, in this thesis, co-creation. The company acts as an enabler of such creation. For example, Ikea provides a 3D platform that allows customers to arrange furniture and visualize their future home. The design of that room will be used for the customer, and Ikea will receive a monetary profit out of it. This thesis will also recognize different types of co-creation according to the receptor of the value. The type of service participation in which the creation of value is done and perceive by several people will be called collaboration. Users can collaborate in the creation of value in numerous ways. Doan, Ramakrishnan, & Halevy, (2010) have identified two ways of web based collaborative systems. Explicit systems, in which users can contribute by evaluating “items”, sharing products, services and knowledge, networking, building artifacts, and executing tasks. In Implicit systems, users collaborate implicitly to solve a problem of the system owners. Buy/sell/auction websites (e.g., eBay) and massive multi-player games (e.g., World of Warcraft) for instance fit this description. Here, by simply joining the system, users can be viewed as implicitly collaborating to solve the target problem (of growing user communities). This thesis will focus on explicit systems of users’ collaboration.

Nokia already embraced these practices with the MeeGo Linux-based open source software platform utilized until 2011. Currently, they also launched a crowdsourcing competition for developing a new ringtone. In this new paradigm the designers’ role becomes the one to facilitate the connections among actors by providing tools for co-creation (Cottam & Leadbeater, 2004).
Users and stakeholders participate in the design process to provide information and ideas. The designer, first, facilitates the participation. Then, he interprets the information and propose a solution.

The customer co-produces the service without leaving any value into the service, e.g., taking a tea, sending a mail.

The role of the designers in Collaborative services is to provide platforms that allows users and/or companies to create solutions.

A) Collaboration among users for value creation, e.g., Firefox

B) Users collaborate with a company for value creation, e.g., Dell IdeasStorm

**FIGURE 7**
*Participation during the service development and participation based on the type of service.*
2.4.1. Users and Customers, a Terminology Based on Relationships

According to Keinonen & Takala (2006), the terms used to describe the person for whom the future concept is intended varies depending on the point of view of the author and the relevant research tradition. “User”, “customer” and “human” are the most commonly used expressions. The authors refer to “User” as someone who is in operational and goal-oriented interaction with the product, such as “uses” a mobile phone to call someone. While “Customer” underlines the decision-making behaviour when purchasing a new product.

In this project the term “users” and “customer” will fluctuate according to the relation product/service in use or purchasing interaction. When we try to understand people’s past and current actions in order to envision a solution the term “user” it is used. However, when we outline the solutions related with the service for customization which is interwoven with the purchasing process, the term “customer” is adopted.

2.4.2. A business perspective of service relationships

There are different types of commercial service relationships based on the main creator and recipient of the value. Some of these are present in the Nokia case such as Business to Business (B2B), Business to Consumers (B2C), Business to Employee (B2E), Person to Person (P2P) and Industrial (Plant maintenance and repair, installation, project management). The following figure represents the business relationships in Nokia case.
Perishability, one of the main service’s characteristics, means that services cannot be stored, such as, Gym classes not delivered, hotel rooms not occupied, Internet connection not used. Hence, service businesses frequently find it difficult to synchronize supply and demand (Zeithaml, Parasuraman, & Berry, 1985:34). Services, such as laundry and banking, have a constant demand and the capacity needed for delivering the service stays the same or the changes are slow. Oppositely, hotels and restaurants can be fully booked during the holiday season and empty in the off-season (Lovelock, 1983 pp9-20.) These issues have a strong connection to service delivery and how well the chosen delivery methods can be adjusted depending on demand. In the case presented in this thesis, solutions to empower the participants in the production and decision making were considered in order to synchronize the demand with supply chain capacity. An alternative direction to meet the demand was proposed by Meroni & Sangiorgi (2011). They proposed that by sharing knowledge and strategies it is possible to transfer or replicate the service according to the demand. Engagement of participants is important in this kind of services to persist over time. Hence, through a user study and a literature review on what makes engaging activities, it was possible to detect factors that would enhance the participation of users in a customization service (view pg.x)
A service is heterogeneous | Service Design supports people’s diversity

Heterogeneity concerns the potential for a high variability in the performance of services. The quality and essence of a service can vary from producer to producer, from customer to customer, and day to day. Service heterogeneity depends on the interaction among different factors that cannot be predicted in advance, but that manifest only during each service encounter. People can interpret the service situation based on their experience, motivations and personal characteristics.

Lovelock (1983, pp9-20) distinguishes services according to the level of standardization in the service. There are highly standardized services, such as a fast food restaurant, which can suffer the heterogeneity of demand. However, a service could be customized, in which the service personnel can take individual customer needs into account, such as an architectural design or a health care service.

The Nokia case for customization is a clear strategy for meeting people’s diverse interest. Furthermore, the project presented here does not tend to find a fixed solution but rather platforms with modular entities aiming to fit different users’ preferences and needs. (view pg x) The proposed case, articulates relationships that allow the service to update and innovate through time (view pg x). Finally, it was understood in the case that the service should learn from the customers to rapidly respond to new interactions. (view pg x)
A service is a channel of experiences
Service Design shape experiences

Forlizzi & Battarbee (2004) differentiate three types of experience: experience, an experience and co-experience. The first, experience, is the constant stream of “self-talk” that happens while we are conscious. For example, walking in a park or doing light housekeeping (This definition is based on cognitive scientist Richard Carlson’s theory of consciousness). An experience (based on John Dewey) is something that can be named and has a beginning and an end, like a dinner party. It is made up of smaller experiences relating to context, people, and products. Lastly, a co-experience is about user experience in social contexts. Experiences are created together, or shared with others. Social situations greatly influence a co-experience. For example, whether running out of gas when driving to the countryside with friends is viewed as an adventure or a disaster depends on how the friends decide to interpret the situation. One person might be upset, another might point out the humorous potential, and a third might agree (Forlizzi & Battarbee, 2004).

According to Schank (1990) experiences can be seen as stories. Stories are the form of experiences when they are condensed, remembered and communicated to others. Through creating stories out of experiences people make sense of the things that happen around them.

Experiences are built up from a series of interactions with objects, people and systems. The user-product interactions are categorized into three groups: fluent, cognitive and expressive interactions. (1) Fluent interactions are automatic and well-learned. Things such as tying shoelaces or taking the same route to work every morning do not require too much attention. Unexpected changes in a situation or a different context can make the user more alert and a fluent interaction can turn into a cognitive one (Forlizzi & Battarbee, 2004). (2) Cognitive interactions focus on the product at a hand (Forlizzi and Battarbee, 2004). For example, in a driving school the students’ attention is completely focused on the situation at hand operating the vehicle. In the media and advertising business there is often an aim at changing a fluent interaction into a cognitive one in order to get the user’s attention. (3) Expressive product-user interactions help the user to form a relationship to a product. In expressive interaction users may change, modify, or personalize, investing effort in creating a better fit between person and product. These interactions may be expressed also as stories about product relationships. For example, restoring an old piece of furniture, customizing cars or creating workarounds using a word processor are expressive user-product interactions.
The service experience accounts the user's emotions each time they come into contact with a process, products, person or even a building or environment (Meroni & Daniela, 2011). In addition, the service experience handles the user's perception not only in the process but also the result of service interaction or relationship (IfM & IBM, 2008).

Design for an experience brings into services the challenge of understanding and designing emotional aspects of people's interactions with objects, environments and other individuals. Gupta & Vajic (2000) proposition is that a service experience should be coordinated around a clearly designed core activity that engages customers. Furthermore, the activity has to be reinforced by additional elements such as a physical layout and human components. They point out that customer participation is the key for creating a unique and a memorable experience. However, they fail to refer to the types of participation, factors that enhance participation or in explain of engaging activities.

Customization is an activity of creating or modifying something. The question is how to engage customers in this activity? According to Csikszentmihalyi (1990) enjoyable activities have clear goals, stable rules, and challenges well matched to skills. When this happens a person's attention is completely absorbed by the activity that self-consciousness disappears and the person's sense of time becomes distorted. People are so involved in an activity that nothing else seems to matter; the experience itself is so enjoyable that people will do it even at a great cost, for the sake of doing it. This is what Csikszentmihalyi calls flow: the “process of optimal experience.”

Even though the flow theory is applied to understand enjoyable experiences in activities such as games, sports and hobbies, Novak, Hoffman, & Yung (2000) proposed that creating a commercially compelling website depends on facilitating a state of flow (Csikszentmihalyi 1990) for its consumers. The authors showed that previous researchers have noted that flow is a useful construct for describing more general human-computer interactions.

The key of optimal experience is that it is an end in itself. Even if this is initially undertaken for other reasons, the activity that consumes us becomes intrinsically rewarding. Customization has a clear problem-solving nature with the goal of producing something that better suits customers' needs or taste. If the activity of customization is enjoyable it can become a end in itself. Through literature review and the case study this thesis aims at identifying factors that can enrich the experience of customization.
Although MC has been part of research for more than a decade “extant literature has not established good conceptual boundaries for Mass Customization, nor has that literature presented a means to distinguish among the vast array of mass customization practices in a way that lends clarity” Duray et al.,(2000). Through a review on the MC definitions (located in the appendix) it was possible to detect the development of the field. Incipient definitions, consider that MC creates variety of products that nearly everyone finds exactly what they want. (Pine, 1993: 44). However, this view is criticized since Duray et al., (2000) object that customization and variety are distinct. Variety provides a choice for customers, but not the ability for the customer to specify the product. A great deal of variety in the marketplace may satisfy most customers and be a substitute for customization. However, the availability of hundreds of varieties probably limit the market appeal of customized products for most customers.

New manufacturing techniques and advances in information and communication technology have changed the way MC is conceived. Instead of understanding it as a strategy to produce variety for customers to choose, MC has lately been defined with a more participatory approach of customer involvement in the product or service development.

This thesis understands Mass Customization aligned with a definition provided by Kaplan & Haenlein (2006), who state that mass customization is a strategy that creates value by some form of company. This value can be in the customer interaction at the fabrication assembly stage (working definition) or at the design stage (visionary definition). In the design stage the operations level to create customized products.

This definition conveys the concept of customer participation (to meet their needs) given by some sort of customer-company relationship, and envisions this participation at different stages of the product development.
How to reach Mass Customization - a business strategy

Literature on Mass Customization has been developed under Marketing or Business fields. Thus, the focus of research is based on the company's customization strategies and practices, rather than a customer perspective. These production-based strategies were taken into account for defining the service model in this project.

For implementing MC and defining the boundaries of the MC concept, Duray et. al., (2000) identified two critical MC dimensions:

(1) The basic nature of customization; and
(2) The means for achieving customization at or near mass production cost.

(1) The first dimension concerns a customer's involvement in the value chain process (e.g. design, production, assembly, delivery, usage) and is used for determining the degree of customization.

Pine, et. al., (1995) identified four customization levels based mostly on empirical observation (view figure x): Collaborative customizers conduct a dialogue with individual customers to help them articulate their needs, to identify the precise offerings that fulfill those needs, and to make customized products for them. An example of this could be the service offered by a tourist office for making a vacation package. Another approach for integrating the customers in customization is adaptive customizer, in which standard products can be altered by customers during use. An example of adaptive customizer is a car user that can adapt the seat level and positions as he/she wants. Cosmetic customizers present a standard product differently to different customers as it is possible to see in food manufacturing. In the mobile phone industry, devices are already customized to provide settings such as language, Internet browser and calendar according to the locality. Finally, transparent customizers provide individual customers with unique goods or services without letting them know explicitly that those products and services have been customized for them. This approach is appropriate when customers' needs are predictable or can easily be deduced, and especially when customers do not want to state their needs repeatedly. Offerings were customized within a standard package for individual customers. For example, Amazon.com provides book recommendations based on information about past purchases.

According to Kaplan & Haenlein (2006), the literature has not come up with a commonly accepted terminology or definition for describing this phenomenon of customer participation. Hence, terms such as co-production, collaboration, and cooperation are often used interchangeably to describe this form of industrial value creation. In addition, participatory design approach has also used terms such as co-design and co-
creation alternatively (Mattelmäki & Visser, 2011). For the purpose of clarity, in this thesis, the participation of customer in the process of customization will be called co-creation. If several people contribute in the creation of value for customization, or several people perceive value from the action of one, the type of participation shifts its name to collaboration.

(2) The second dimension of MC is related with the means for achieving customization at or near mass production cost. In this sense, modularization is often regarded as a key success factor for mass customization (Duray, et. al., 2000, pp. 605–25; Feitzinger & Lee, 1997, pp. 116-121; Pine, 1993, p. 196). Modularity is used as the critical aspect for gaining scale volume or “mass” in mass customization. As a modular approach it can reduce the variety of components while offering a greater range of end products. It also allows part of the product to be made in volume as standard modules. The modular approach creates distinct product through combination or modification of modules. Component modularity restricts the range of choice, decreasing the possible variety of components and thus allowing for repetitive manufacturing.

Modularization is clearly evident in mobile phone services as the later consists of different components, e.g. ringtones, screensavers, games, user interface themes, from which one can dynamically create its own mobile device and service. Hence, software, hardware and information-based features of mobile phone services can be considered as MC modules. Users can customize mobile phone content by: changing colors of devices’ covers; customizing the functionality menu; choosing the payment from and their tariff-services program; and selecting the delivery medium of mobile phone services (Kar & Verbraeck, 2008). Figure X shows Ulrich & Tung (1991) typologies of modularity. The modules can be used separately or in combination to provide a customized end product.

Pine (1993) suggested five stages of modular production combining products and services (view figure x): (1) Customized services around standardized products and services. These are standard products that are tailored by people in marketing and delivery before they reach customers. (2) Embedded customization: creates customizable products and services; standard products that can be altered by customers. (3) Point-of-delivery customization: additional custom work that can be done at the point of sale. (4) Providing quick response through the value chain: short time delivery products. (5) Modular production: standard components can be configured in a wide variety of products and services.

Mintzberg (1988) defined customization as taking three forms (view Figure x): (1) A pure customization strategy furnishes a product developed from scratch for each unique customer. This type of customization affects the entire chain, from design, fabrication, assembly and delivery, and provides a highly unique product. An example of this type of customization is building a house. (2) Tailored customization alters a basic design to meet the specific needs of the customer. The customer affects the value chain at the fabrication level, where standard products are changed (e.g., eyeglasses). (3) In standardized customization, a final product is assembled from standard components. Here, the customer penetrates the assembly and delivery process through the selection of the desired features from a list of standard options. For example when you order a pizza from a prescribed list of toppings that are assembled then delivered.
Mass Customization strategies

Mintzberg (1988)

Tailored
- Allows a basic design to meet the specific needs of the customer

Standardized
- A final product is assembled from standard components

Pure
- A product is developed from scratch for each unique customer

Component-ware Modularity
- Common components used in the design of a product. Products are uniquely designed around a base unit of common components.
  - Example: Elevators

Component-sharing Modularity
- Common components used in the design of a product. Products are uniquely designed around a base unit of common components.
  - Example: Personal computers

Mix Modularity
- Also similar to component swapping, but is distinguished by the fact that when combined, the modules lose their unique identity.
  - Example: House painting

Bus Modularity
- Ability to add a module to an existing series, when one or more modules are added to an existing base.
  - Example: Track lighting

Cut-and-fit Modularity
- Allows the dimensions of a module before combining it with other modules. Used where products have unique dimensions such as length, width, or height.
  - Example: Eyeglasses


Combining product modules

Combining products and services

Pine, et al. (1993)

Collaborative customers
- Adaptive customers
- Cosmetic customers
- Transparent customers

Modularity
- Let users participate

Adopt a production strategy

Mass Customization: How to implement mass customization?
The pursued value for customers in customizing goods

By examining the various definitions and MC strategies, it becomes evident that all of the above-mentioned approaches share a common notion that there is a strong product development emphasis in MC. Indeed, it is a product strategy for describing company-customer interaction at the operations level of the value chain (Kaplan & Haenlein, 2006). However, these MC models are more operator rather than customer value oriented, as they also provide limited insight regarding the customer value and benefits that customers get from MC.

Dellaert & Dabholkar (2009) assure that customer benefits is the higher value of the product as result of choosing product modules according to individual specifications. In the same way, Piller et al. (2004) argued that MC enhances the customer value when customers are allowed to customize the form, fit, functionality and modality of a product feature. Furthermore, design involvement afforded by mass customization may add symbolic meaning to the product for consumers.

The case presented in this thesis aims at finding the value perceived by customers in customizing mobile phone content. Several user studies were implemented for this purpose.
Bridging MC with collaborative value creation models

Mass Customization (MC) is broadly understood as a strategy implemented by a company to closer meet the customers’ needs and wants. Companies have implemented MC by transforming the way they produce goods. MC companies either produce modular products or services for customers to make selections, or they tailor products according to customers’ specifications. In other words, MC has been implemented as an added value to the company’s products and services by using their own resources. For example, the car company Volvo allows customers to choose the interior and exterior color, as well as other features, from an available and limited offering.

However, in the Nokia case, the modules to be produced for customization are not developed by the company. The mobile phone content (i.e., modules for customizing mobile phones such as applications) should be developed by third-party companies. Moreover, users of mobile phones play an important role in generating this content. By social networking, review and rating, users can influence in the mobile content. For example, the application users can rate services by using the application Yelp.

Therefore, this thesis aims at understanding collaborative value creation models which can be integrated in a MC strategy. Two models were considered as having potential for this case:

1. Open Innovation because it provides strategies for including third party companies in the product development; and,
2. Mass Collaboration, because it provides strategies to include the users in the product development.
2.13.1. Open Innovation

In the Nokia case, the role of startups as producers of mobile phone content is key on the service for customization. Thus, it is important to understand how a MC strategy can be shaped under an open innovation model.

The term open innovation was first introduced by Henry Chesbrough in 2003. He defined open innovation as a new paradigm for innovation that assumes that firms can and should use external and internal ideas, and internal and external paths to market. The boundaries between a firm and its environment have become more permeable; innovations can easily transfer inward and outward. The central idea behind open innovation is that in a world of widely distributed knowledge, companies cannot afford to rely entirely on their own research, but should instead find it outside in e.g., universities, suppliers, venture capital start-ups (Chesbrough, 2003).

Gassmann & Enkel (2004) identified three archetypes of core processes in companies following an open innovation approach: the outside-in process, inside-out process and coupled process. The outside-in process refers to cooperating with customers and suppliers and sourcing external knowledge to enhance a company’s innovativeness. The inside-out process is about bringing ideas to market, selling or licensing intellectual property (IP) and multiplying technology by channeling ideas to the external environment. The coupled process is defined as linking outside-in and inside-out processes by working in alliances with complementary companies. This thesis is primarily focused on the outside-in process of open innovation to be implemented in a customization service.

Brand partnership

Brand partnership could be understood as an open innovation model. This one is based on collaboration among companies. The model offers a huge potential for customization of products and services. Meaning that the traditional way of producing modules of products for customers to choose, it could be the result of co-creation from different actors. One way of achieving this is through brand partnerships such as ‘Nike + iPod Sport Kit’; Garmin and Asus partnered to create the Nüvifone product line, the new cell phones focused on location-based service; and Mattel and Fiat joined forces to create the 500 Barbie. Although these examples are not based on Customization they reflect the potential of partnerships that has not been explored. For example, thisismykea.com a small – Amsterdam based – company lets people customize their Ikea furniture with exclusively designed vinyl prints. Furthermore, they offer the possibility to designers around the world to offer their designs. This service is for people who own an Ikea furniture, and after a while (right after buying it or years later, it does not matter), they want to give a ‘touch’ to this piece of furniture. Thisismykea.com offers vinyl prints to customize the furniture. This service is not related in any way to Ikea services. However, it shows that different companies could partner and offer a customization service, benefiting themselves and increasing the value of the product or service.
2.13.2. Mass Collaboration

Mass collaboration is a form of collective action that occurs when large numbers of people work independently on a single project, often modular in its nature. Such projects typically take place on the Internet using social software and computer-supported collaboration tools such as wiki technologies.

In the book Wikinomics: How Mass Collaboration Changes Everything, Tapscott & Anthony (2007) describe how to ‘deep changes in technology, demographics, business and the economy, are giving rise to powerful new models of production based on community, collaboration, and self-organization rather than on hierarchy and control’. The authors state that this new participation has changed how goods and services are invented, produced, marketed, and distributed on a global basket. It is possible peer produce an operating system, an encyclopedia, the media, a mutual fund, and even physical things like motorcycle. Customers become “prosumers” by co-creating goods and services rather than simply consuming the end product. This change presents far-reaching opportunities for every company and for every person who gets connected.

The Principles of Wikinomics are based on four powerful new ideas: openness, peering, sharing and acting globally.

Being Open: Companies that make their boundaries porous to external ideas and human capital are gaining unprecedented access to important information about corporate behavior, operations and performance.

Sharing: Firms are treating intellectual property (IP) like a mutual fund — they manage a balanced portfolio of IP assets, some protected and some shared.

Peering: New low-cost collaborative infrastructures - from free Internet telephony to open-source software to global outsourcing platforms - allow thousands of individuals and small producers to co-create products in ways that only large corporations could manage in the past.

Acting Globally: The new globalization is both causing and caused by changes in collaboration and the way firms orchestrate capability to pioneer and produce things. Companies will need to know the world, including its markets, technologies and people.

This new model of collaborative creation has appeared under many names, including peer production, user-powered systems, user-generated content, collaborative systems, community systems, social systems, social search, social media, collective intelligence, wikinomics, crowd wisdom, smart mobs, crowdsourcing, and human computation (Doan, Ramakrishnan, & Halevy, 2010).

Following, models for collaborative creation on the Web will be presented. These ones were analyzed in order to find solutions for developing local mobile content in the Nokia case. The local development of mobile content relates all the actors in the service: Nokia, retailers, content developers and customers. The participation of every party is crucial. Hence, these models will help to develop the case.
2.13.3. Open Innovation and Mass Collaboration
Web models

There are numerous models for collaborative creation based on the Web. Following the existing models are categorized based on the users or third parties degree of participation.

<table>
<thead>
<tr>
<th>DEGREE</th>
<th>MODELS</th>
<th>EXAMPLE</th>
</tr>
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| 1<sup>st</sup> DEGREE | Stand alone<sup>1</sup>  
Faggy-back<sup>1</sup> | Google, search engines, tracks users’ actions to make improvements in the system |
| 2<sup>nd</sup> DEGREE | Evaluating<sup>2</sup> - Idea screening<sup>2</sup>  
Sharing<sup>2</sup>  
Networking<sup>2</sup> | Ranking movies in The International Movie Database (www.imdb.com) |
| 3<sup>rd</sup> DEGREE | Building Artifacts<sup>3</sup> - Collaborating<sup>3</sup> - Peer Production<sup>4</sup>  
Executing Tasks<sup>5</sup> - Crowdsourcing<sup>5</sup>  
Tinkering<sup>5</sup>  
Idea contest<sup>5</sup> | In the online encyclopaedia, Wikipedia, participants integrate new contributions into the system and make modifications and improvements to existing contributions. |
| 4<sup>th</sup> DEGREE | Submitting<sup>7</sup>  
Co-design<sup>7</sup> | The appliance manufacturer Electrolux sponsors an annual competition called “Designlab” in which participants are asked to submit new technical designs and product prototypes. |

*1- Doan et al. (2010)  
*2- Piller & Ihl (2009)  
*3- O’Hern & Rindfleisch (2010)  
*4- Benkler (2002)  
*5- Howe 2006, 2008

FIGURE 10
Collaborative creation models on the web
**1st degree:** In these models, the participants are not completely aware of their contribution they are making to a company.

Doan et al., (2010) propose two models that let users collaborate implicitly to solve a problem of the system owners:

1- A stand-alone system provides a service such that when using it users implicitly collaborate (as a side effect) to solve a problem. For example, the game World of Warcraft.

2- Piggy-back back system. Such a system exploits the user traces of yet another system (thus making the users of this latter system implicitly collaborate) to solve a problem. For example, Google, Yahoo!, Microsoft. These systems exploit the traces of search engine users (e.g., search logs, user clicks) for a wide range of tasks (e.g., spelling correction, finding synonyms, flu epidemic prediction, and keyword generation for ads).

These models can provide the information necessary to implement the MC strategy suggested by Pine (1993): Providing quick response through the value chain. A company, who learns about its customers’ likes and needs, can produce accordingly.

**2nd degree:** The user’s contribution is minimal. They do not create any product or service, they rather help the development.

Under this category, Doan et al., (2010) present three models:

1. Evaluating: These systems let users evaluate “items” (e.g., books, movies, Web pages, other users) using textual comments, numeric scores, or tags. In the same context, Piller & Ihl (2009), propose Idea screening model. It is a way to identify ideas with high potential after a contest. An example for idea screening in practice is the company Threadless.com. Customers not only create and submit many T-shirt designs in the first place, by means of a poll they also determine the winning designs that will later on be transferred into mass products.

2. Sharing: These systems let users share “items” such as products, services, textual knowledge, and structured knowledge. Systems that share products and services include Napster, YouTube, CPAN.

3. Networking: These systems let users collaboratively construct a large social network graph, by adding nodes and edges over time (i.e., homepages, friendships). Then they exploit the graph to provide services (e.g., friend updates, ads, etc.).

**3rd degree:** The participants contributes responding to the company demands

Under this category, Doan et al., (2010) present two models:

1- Building Artifacts: is a system that let users build artifacts such as Wikipedia often merge user inputs “tightly”, and require users to edit and merge one another’s inputs. A well-known artifact is software (e.g., Apache, Linux, Hadoop).

Under the same premise, O’Hern & Rindfleisch (2010 pp. 84–106) propose the model called collaborating. They define collaborating as a process in which customers have the power to collectively develop and improve a
new product’s core components and the underlying
structure. This form of co-creation offers customers
the greatest power to contribute their own ideas and
to select the components that should be incorporated
into a new product offering. Collaborators are often
responsible for forming their own project teams.
These teams exist outside the traditional boundaries
of the firm. Moreover, unlike traditional new product
development projects, which have finite start and end
dates, collaborating is an ongoing process.

For this innovative institution where many individuals
together produce a rather complex common good,
Benkler (2002) has coined the term peer production.
Peer production describes the fact that there are a great
number of internet-based projects where many users
are working on the collective production and further
development of knowledge and information products.

2. Executing Tasks: Examples include finding extra-
terrestrials, mining for gold, searching for missing
people, and cooperative debugging. As a recent well-
known example, in the 2008 election the Obama team
ran a large online mass collaboration operation that
asked numerous volunteers to help mobilize voters. To
apply mass collaboration to a task, we must find task
parts that can be “crowdsourced”, such that each user
make a contribution and the contributions in turn
can be combined to solve the parts. Finding such parts
and combining user contributions are often task specific.
Crowdsourcing is a distributed problem-solving and
production process that involves outsourcing tasks to
a network of people, also known as the crowd. This
process can occur both online and offline (Howe, 2006).
The difference between crowdsourcing and ordinary
outsourcing is that a task or problem is outsourced to
an undefined public rather than a specific other body.

3- Another model that allows participation under
company demands is called Tinkering. O’Hern &
Rindfleisch (2010 pp. 84-106) define tinkering as a
process in which customers make modifications to a
commercially available product and some of these
modifications are incorporated into subsequent product
releases. A present, tinkering is most apparent in
the computer game industry, where user-generated
contributions (that is, modifications) are not only widely
tolerated, by actively encouraged. For example, many
games manufacturers invite users to make alterations
ranging from incremental changes, such as edits to
a character’s physical appearance, to more radical
innovations, such as the creation of a completely new
computer game. In order to assist tinkerers in making
these changes, several computer game manufacturers
provide customers with free or low-cost design tools
that are similar or even identical to those used by their in-
house software developers. The increasing availability
of user-friendly development tools, consumers who are
not expert users can readily acquire base tinkering
capabilities with moderate learning costs.

4- Idea Contest. According to Piller & Ihl (2009) in an idea
contest, a firm seeking innovation-related information
posts a request to a population of independent
(competing) agents, e.g. customers, to submit solutions
to a given task within a given timeframe. The firm then
provides an award to the agent that generated the best
solution. Thus, idea contests overcome a core challenge
for firms when opening the innovation process: how to
incentivize customers to transfer their innovative ideas.
The participants contribute freely to the company.

O’Hern & Rindfleisch, (2010 pp 84-106) propose two modalities that fall under this category:

1- Submitting. It is a process in which customers directly communicate ideas for new product offerings to a firm. Firms that employ submitting-bases co-creation actively solicit input from either current or potential customers. Submitting begins when customers contribute detailed new product ideas, solutions, or prototypes. Based on these inputs, a firm then decides which concepts to further develop, test, and eventually launch. For example, the appliance manufacturer Electrolux sponsors an annual competition called “Designlab” in which participants are asked to submit new technical designs and product prototypes. Then, Electrolux selects a small set of finalists and invites them to a six-day, company-sponsored retreat, where they participate in workshops, present their inventions, and compete for cash prizes (www.electrolux.com/designlab).

2-Co-Designing. According to the authors co-designing is as a process in which a relatively small group of customers provides a firm with most of its new product content or designs, while a larger group of customers select which content or designs should be adopted by the firm. One of the best examples of co-designing is the online clothing manufacturer Threadless.com. The firm actively solicits original T-shirt design from current and potential customers and then invites its extensive network of online customers to evaluate and select a short list of prospective new products. From the perspective of a firm, co-designing appears to offer several advantages. Most importantly, this approach should dramatically reduce a firm’s cost of developing its own original designs or creative content, as this function is largely outsourced to customers. In addition, because customers actively assist a firm by both contributing new content and selecting the content that should appear in future product releases, firms should reduce their cycle times and launch new products more quickly compared to traditional new product development processes. Moreover, co-designing is an approach in which both highly skilled (design contributors) and lower-skilled (design selectors) customers can freely participate.
2.13.3. Mass Collaboration and Open Innovation - Nokia Platforms

The following online sites foster innovation of Nokia products. They are meant to connect developers, allow users to comment and by provide tools to help the development. These ones were taken into account for designing the service for customization.

(1) Nokia Developers. It is an online forum for software developers. The site has the tools, resources and support developers need to create mobile applications.
http://www.developer.nokia.com/

(2) IdeasProject is an online community for everybody from all around the world to brainstorm. It enables the two-way exchange of ideas between users and developers around innovation powered by Nokia.
http://www.ideasproject.com/index.jspa

(3) Nokia Beta Labs brings together developers and consumers keen on improving products and accelerating innovation. They facilitate trials for applications, software, or services currently being developed by teams in Nokia or by selected 3rd party developers.
http://betalabs.nokia.com/
CHAPTER 3

The Nokia case

THIS CHAPTER DESCRIBES THE NOKIA CASE STUDY PROCESS AND RESULTS, STARTING FROM THE PROJECT BRIEF TO THE VISUALIZATION OF SERVICE. CONCEPTS.
The case study aims at designing and visualizing end customer-oriented service models that enable mobile phone content customization at the point of delivery. The new service should be suitable for different kinds of mobile phone retailers in Helsinki and the customization should be feasible to execute on several handset models. The rather straightforward perspective of the project brief soon opened up when understanding the context, users and stakeholders’ needs.

3.1.1. Opportunities

The relevance of this customization service can be expressed in terms of the benefits which will be perceived by each party involved. By offering this customization service it is possible for retailers to increase the average selling price of devices and/or to obtain profit by differentiation and store visibility. In addition, it is expected to increase customer retention by providing a valuable service and possibility to balance in the retail stock.

From Nokia’s point of view, this service is a means to increase sales and solve a technology aspect related with device settings. These settings or variants are designed and implemented at the factory, such as language, Internet browser, and calendars. The variants are installed in the handsets before delivering to every location. Giving the rights and possibility to retailers it will ease the work-flow at Nokia and the variants would meet closer the local needs. Customers who acquire customized phones have the opportunity to obtain the extra benefit from purchasing a handset if it comes with valuable content. In addition, the service could make it easier to filter the vast amount of content in the market and/or provide free or low cost content.

These points were assumed at the starting point of the project, although later on throughout the process, more opportunities and benefits were detected for each stakeholder. These will be described when the scenarios are presented.

3.1.2. Threats for research

One aspect to overcome was the target required by the company concerning the handset models. The service to be developed aimed at pushing out in the market the Operator System (OS) Symbian, that is already out of production, and Windows OS, which it was about to be released. This situation made it hard to rely on mobile developers’ collaboration. Developers tend to go after stable OS, ease of use of programming languages like Apple, and sales leaders mobile phone companies.

Acknowledging these threats was important for organizing the design process and to understand the situation at the time of testing the service.
Service Design Process and Methods

3.2

The Service Design process of this project was first defined by the deadline imposed by the company. The project started in middle of September 2011 and Nokia required the service concepts by middle of December 2011. The following schedule shows how these three months were thoroughly planned to achieve that goal.

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### OBSERVATION AND CONTEXTUAL INQUIRIES

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### CO-DESIGN SESSION

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<td>Prepare material</td>
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### CULTURAL PROBES

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### DEVELOPING IDEAS

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<td>Select concept and refine</td>
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<td>Make visualizations</td>
<td>05-11</td>
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### FINAL PRESENTATION

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The design process used was divided in five phases: Mapping the context, Understanding the users and stakeholders, Exploring possibilities, Developing Ideas and finally Implantation. However, the Implementation phase was left out of the scope due to time constrains. Nonetheless, it was included in this thesis to express the way the design process was planned in general and how it works.

These design stages are characterized by being flexible in terms of the methods or the approaches utilized. These stages do not have a clear end, they rather conclude at some point in order to move forward. In the process, returning to previous stages is always possible and necessary. It helps to reflect on the results obtained in order to improve ideas or come up with new ones. The stages sometimes overlap during time. However, they are presented in chronological order for the reader to have a better understanding.

**FIGURE 12**
Service Design process in the Nokia case.
This section reviews aspects from the mobile phone ecosystem that are involved in this project: smartphones, mobile content, and special Nokia tools that helped to implement the service.

3.3.1. Nokia – Description of Company

Nokia is a manufacturer of mobile devices and a leader in covering the Internet and communication industries. They produce a wide range of devices for all major consumer segments and offer Internet services that enable consumers to experience a wide array of services (music, maps, media, messaging and games). They also provide digital map information through NAVTEQ and equipment, solutions and services for communications networks through Nokia Siemens Networks.

3.3.2. Nokia Product-line

Nokia has a broad range of products, more than any other mobile manufacturer. However, its broad product portfolio has not proven to increase its market share. Though Nokia is a market leader and its sales are larger than its competitors, its wide product portfolio results in customers being confused when trying to differentiate between handset models across each product line.

According to the International Telecommunication Union, there are 5.9 billion mobile subscribers by November 2011; that is 87 percent of the world population (see statistics in Appendix). The smartphone segment is one of the rapidly growing segments in the mobile handset industry. These devices capture a large share of the overall mobile handset market, making this segment more lucrative (Morin, 2010). Though Nokia is a market leader in the entire mobile industry, its performance in Smartphone market is low in comparison with its competitors. According to the International Data Corporation (IDC) Nokia has lost its smartphone market share in its homeland, Finland (see statistics in Appendix). This past spring the market share was 76%, now it has dropped to 31%. This situation not only affects sales but also the content developers’ decision for producing mobile application for Nokia’s Operator System.
3.3.3. Smartphones

Smartphones are not just a small computer. By combining the latest mobile technology of our times, smartphones became an integral part of our lives, they are profoundly changing our daily life and our social interactions.

According to Oxford Dictionaries, a “smartphone” is “a mobile phone that is able to perform many of the functions of a computer, typically having a relatively large screen and an operating system capable of running general-purpose applications.”

While there is no standard definition of the term “smartphone” across the industry, there are a few features that characterized them:

### Smartphones Characteristics

![Smartphones Characteristics](image)

- **Applications**
- **GPS**
- **Messaging**
- **QWERTY Keyboard**
- **Media Player**
- **Camera**

**OS**

A smartphone is based on an operating system (OS) that allows it to run advanced application programming interfaces (APIs) produced third-party companies. Such operating systems can be installed on many different phone models, and typically each device can receive multiple OS software updates over its lifetime.

**Web Access**

A smartphones offer access to the Internet. They provide web browsers that can access and properly display standard web pages rather than just mobile-optimized sites, and high-speed data access via Wi-Fi and mobile broadband.
3.3.4. Smartphones differentiation

Product differentiation in smartphones is achieved through a lot of applications, services and the user experience. In three years over 300,000 mobile apps have been developed (IDC - Press Release). A mobile application is a software developed for small low-power handheld devices such as personal digital assistants, enterprise digital assistants or mobile phones. There are several ways to have access to applications: they can be pre-installed on phones during the manufacture; customers can download the applications from various mobile software distribution platforms; or they are accessible via web applications, which is an “application-like” experience within a Web browser. (Fling, 2009). There is a projection that application downloads from all application stores by 2014 will be 6.67$ billion (Morin, 2010).

The most used apps across all smartphones in the US, are Facebook, Google Maps and The Weather Channel (TWC). The most popular categories are games; news; maps; social networking and music. On average US smartphone users have 22 apps (of which iPhone users have the most with 37). The Facebook App, for example, has been downloaded 100 million times from the independent app store GetJar. See the statistics in the Appendix.

3.3.5. Customizing Smartphones - feasibility issues

As it was mentioned before, smartphones became conduits of enormous amounts of content. There are several types of mobile phone content that can be suitable for the customization service: User Interface (UI) themes, Ringtones, Music, pictures and videos. All of these are components that will be used for customizing the devices. However, the possibility of customization depends on the (1) devices’ Operating System, which determines the types of content and (2) the transferring tools, that allows the user to install content in the devices.

(1) Device OS

The customization service has to suit two Operating Systems: Symbian and Windows. The possibility to customize the mobile phone content is limited by the OS and the technology to transfer the content. In addition, the service depends on the collaboration of mobile developers for producing the content. However, mobile developers have been reluctant to produce for Nokia because they have to serve for several OS and screen size. These comments emerged in interviews done for this project.

(2) The transferring tools

Once the content is developed, it has to be stored in a platform that retailers can have access. They have to be able to select the content and install it on the handsets. One of the key elements for a fast implementation of the service was to consider a technology already available at Nokia that could be used to storage content and transfer it to the devices. At the moment of this project development we identified three tools that even though they are not specifically for this purpose, they could be modified according to the service requirements.

Following, these tools are described with further aspects that enable or prevent them to be used for retail customization.
1- PC TOOL
PC tool is a software installed into a computer. It is a personal tool to back-up the phone and transfer personal contents. Users can choose the content they have already in their computer, or they can purchase it at the Nokia app store. Finally, the content is installed in the device via USB cable.

Opportunities
The UI is easy and understandable
The process is very straightforward and fast
Multiple transfers of content at the same time could be possible.

Challenges
It has only been used as a personal consumer software.
It can be used only for Symbian products

2- ONLINE TOOL
The access to the online tool is through a browser with login credentials. It is used to customize the mobile content at the factory. All these variants are created by the manufacturer and installed before delivering the handsets to each locality.

Opportunities
Already existing tool for customizing a large amount of devices
Can be used for both Symbian and Windows OS
Highly customizable (can customize everything)

Challenges
Requires additional tools to transfer the content
It requires security policies to access to Nokia intranet
Very technical and might be too difficult for retailer
3- MOBILE TOOL

The Mobile tool allows transferring the contents directly to the device. A chip built in the phone is needed. Customers can use a touch screen or monitor to select content. Then they approach the mobile phone to a chip reader for transferring the content.

Opportunities
No need to open a box so it does not alter warranty issues
Interactive way to choose and transfer the content
Easy to use for end customers
Fast transferring

Challenges
Requires a chip installed in the devices.
The suitability for different devices is still imprecise.
The tool is still under development
5.3.6. Retailers

There are several different kinds of retailer shops. Therefore either the service has to suit them all or the service has to be adaptable to the retailers’ capabilities. The main differences that affect this project are related with the customer assistance and the physical space available if needed. These are the main types of Nokia mobile phone retailers in Finland:

**Operator/Carrier Stores**

These retail sell mainly mobile phones and plans. They offer multiple handset brands, but they only offer plans for one operator/service provider/network.

**Manufacturer Stores**

Manufacturer retail stores which sell only that brand of device.

**Big Box Retailers**

Mass merchandisers or general retail stores (e.g., department stores or hypermarkets) sell many different types of merchandise.

**Consumer Electronics**

Retail outlets which only sell personal electronics including mobile phones and/or plans. The stores can be independent or part of a store chain.
In the previous section the feasibility was introduced with aspects that allow the customization service to be developed: type of content, device OS, and transferring tool.

This phase is focused on participatory methods for understanding users and customer’s needs and wants, for getting inspired by them and to give them a means for expressing ideas. In addition, the aim also is to understand retailer’s services and customization expectations. These methods were also used for acquiring knowledge from mobile developers’ practices and business. For that purpose the following methods were implemented: observation accompanied with contextual inquiry, cultural probes and undercover.

**FIGURE 15**

Methods implemented for understanding users, customers and stakeholders

- **Observation + Contextual Inquiry**
  
  AIM:
  
  1. To map the current service provided at retailers.
  2. To understand customers’ expectations at the time of purchasing a device

- **Cultural Probes**
  
  AIM:
  
  1. To gain insights on users’ purchasing experience.
  2. To get inspired by users’ expectations in customization

- **Undercover**
  
  AIM:
  
  To understand mobile phone developers. Their business, practices and motivations
In the past decade, changing economic and social environments gave the push for the demands of individualized products and services. Under this premise, Davis (1987) envisioned a one-of-a-kind product manufactured to the customer specification without sacrificing scale economies. Mass customization (MC), once considered a paradox to be resolved in the future, has become an everyday reality for many manufacturers. MC refers to a business strategy that conciliates two different business practices, which are mass production and individualized products. The major objective of MC is to improve the ability of companies to react faster to changing customers’ needs and to address the heterogeneity of demand more efficiently.

In his book, Mass Customization: The New Frontier in Business Competition, Pine (1993) described the factory system of mass production that emerged in the 19th century. This mechanistic system was characterized by interchangeable parts, specialized machines, reliance on suppliers, focuses on the process of production, a division of labor, a skilled workforce and continuous technological improvement. The Old Paradigm of Mass Production was well suited to the homogeneous, mass markets of the latter part of the 19th century and most of the 20th Century. Pine (1993) described a New Paradigm of Mass Customization, beginning in the 1960’s and emerging into management consciousness in the 1980’s. Mass Customization responds to market turbulence. This is characterized by unstable and unpredictable demand levels; heterogeneous desires; price, quality and style consciousness; high levels of buyer power; competitive intensity; product differentiation; and market saturation. The characteristics of the market helped to shift manufacturing from Mass Production to the new paradigm of Mass Customization.

Sigala & Christou (2006) describe certain trends that led to MC in the mobile phone industry. First, technological advances enable information personalisation and customization of mobile content like in any other product. Furthermore, the need of operators and retailers to find individual solutions in order to gain customers loyalty and increase transaction values of existing customers. In addition, the increased mobility of customers is accompanied by their increased expectation for ubiquitous personalised services.
Observation and Contextual Inquiry
3.4.1. Observation and contextual inquiry

Objectives

The aim of this method was to acquire an understanding on retailers, typologies and current service offered. Since customization will be one phase in the purchasing process, it is important to understand how these services are going to be integrated. In addition, this method aimed at understanding customers’ expectations at the time of choosing a handset, and how the mobile content is taken into account for the purchasing decision.

Method

My team member, Ah Woon Chan and I visited four Mobile Phone retail stores in Helsinki: The Nokia Flagship Store, Veikon Kone, Apple Store and Verkkokaupa. We interviewed four employees and nine customers. We observed customers’ actions at the stores. Then, we interviewed them once they have finished the purchasing or consultation.

Following the findings from the Observation and Contextual Inquiry are presented.
Findings

1- Services provided by retailers

Some stores offer services such as: data transfer across devices, installing an email account, downloading applications, and repairing service. The assistance and services provided varies according the relationship between the customer and employee. According to some employees, their role is to dig out what customers really want and they instruct and teach on the device usage. Employees sometimes operate in behalf of customers, for example to transfer data or set up personal accounts.

Obstacles:
The application market is too wide to show all the possibilities to customers at the moment of buying the phone. At the moment before the launching of Windows Phones, there were 50,000 apps at Nokia Store. Besides the vast amount of options, some customers do not know the possibilities of content. They only recognize the ones that are installed in the demo devices at the store. Downloading content requires from customers to set up a personal account at Nokia Store. This private information makes this service difficult to handle by employees.

2- Expectation at the time of purchasing

Before acquiring the product customers want to try and to feel it, even though they are familiar with it from research done in Internet. Curiosity about new device models attracts customers, regarding of their intentions to buy. The role of demo devices on display, play a key role in the exploration and comparison of handset.

Obstacles:
With demo devices on display it is easy to compare the physical characteristics. Although the content is more difficult to test and compare because certain content might not be suitable for all customers. For example: the phone might have Facebook installed but if the person does not use it, it has no value for him/her.

3- Relevance of mobile content at the time of purchasing

According to some employees the content installed in advanced could help differentiate the phone if no other retailers offer the same. At the same time they recognize that certain types of content would be good to have pre-installed such as Social Media and Navigation tools.
Through customers' interviews we perceive that people might change their mind about the phone choice (at least model) if it comes with relevant content for them.

Obstacles:
Some customers are not interested on having content pre-installed in the device since it is possible to download after the phone is purchased.
When analyzing the context it was detected that a more thorough understanding of customers was needed. Different and deeper customer's insights cannot be found in figures and facts. The observation was a starting point in this vain. However, the lack of time spent with customers at the store, and the difficulty to win their trust in such a short time, makes it hard to gain deeper knowledge about them. This phase was intended to discover the conscious and subconscious information regarding customers' experiences at the time of purchasing a mobile device. In addition, this phase aims to gain insights of customers' needs and expectations for customizing a mobile phone.

**Objectives:**

To explore the purchase experience of the mobile phone as well as the customization of content that users have done after buying the device. This section also explores on people's reasons for mobile phone customization and the emotions involved at that moment. The method used will provide insights for developing a service that fosters those experiences. It is important in this section to get inspiration by users' dreams and expectations when buying a device.

**Method:**

For this purpose it was decided to use Cultural Probes as a user study method. According to Mattelmäki (2006), design probes are a user-centered design method for understanding the human phenomena and exploring design opportunities. They are based on user participation by means of self-documentation. Probes look at the user's personal context and perception and they have an exploratory character. Mattelmäki (2006) classifies the objectives of probes in four groups: Inspirational Probes, Information probes, Participatory Probes, Dialogue probes and Evaluative Probes. Considering this method was used at a very early stage of the project only the first two kinds of Probes were utilized. Inspiration probes aim to provide new views to support designers' inspiration. While Information probes aim at finding information about a specific user needs. The ethnography orientation aims at understanding the present situation.

The probe kits were delivered to five people. They develop the tasks in one week and followed by interviews to obtain more information and make sense of their production.

**The users**

Five people with different backgrounds and genders were selected. The first requirement was to own a smartphone preferably bought in Finland in the last six months. Furthermore, the selected users had to be tech-savvy or active mobile phone users. This requisite was important since the idea was to get knowledge on the phone usage and personalization.
Tasks

The kit box contained four tasks. One of them was meant to be performed every day, while the other four could be done one each day.

(1) Diary

Task: The users register a diary with all the purchases they made over the course of five days. They were given a notebook with a special template to evaluate the purchase experience right after it has been done.

Aim: Customization involves the participation of customers. Looking at other purchasing situations it is expected to get insights on: different ways of customers contribution in the service, how customers decide to participate, how they take decisions, how they manage to get what they want, how they make their voices heard, and what do they enjoy when they shop. At the same time it will be possible to see the ways sales representatives approach customers, how do they learn from customers, and what do they teach them.

(2) I pimped my phone

Task: the user has to categorize certain given topics with all the functionalities and characteristics that she/he have changed or added in the phone since their purchase.

Aim: This task will show clearly how the customer has customized the mobile phone. It will be possible to detect types of content related to their purpose, the decision making, the long term value of content, the information required to obtain them.
(3) My shopping cart

Task: the user will receive several pictures of purchasing situations (online and offline) For example, Amazon, Ikea, a vending machine. He/she has to choose which service they used and respond to some questions: How was the experience? What do you like about this service? Why do you prefer to buy here?

Aim: Customization is one part of the service provided by retailers. It is important to see the overall experience of buying and what customers expect. How will customization be integrated in the service? In which moment of the buying process the customization activity can takes part?

(4) Dali style

Task: the participant had to visualize through a collage the “dreamed” experience of buying a mobile phone (thus the name of the task). They had to represent how could be the best way of purchasing a mobile phone. Pictures and written prompts were provided to inspire them.

Aim: one of the Probes strengths is the possibility to get inspired by the users. This tasks aims to gain insights on user’s needs and expectations.
Cultural Probes Findings

1- Retailer experience

There are different experiences generated by a multi-brand, a Nokia flagship store and an online store. Multi-brand retailers are chosen because they seem to offer inexpensive handsets compared to others. Some retailers build a customer relationship by providing a membership card, while others are completely forgotten. When the price is similar then the location of the store is also important. Stores providing a wall full of possibilities seem to work for comparing once the person has an idea. Otherwise it confuses the customer. At the same time, the assistance provided at multi-brand stores are less expected than at the flagship Nokia store, however, customers accept this lack of service. Some people go to mobile retailer ‘just for fun’, to see what is new, and to try the devices.

“The giganti experience is...the big wall with all the mobile phones. I bought there because it’s supposed to be cheap.”

“I can’t remember the name of the store (where I bought the phone) after four years. maybe it doesn’t exist anymore.”

2- Assistance

Some people feel that an employee is a seller and not a personal assistant. This view generated distrust between the customer and the seller. However, there is always a source of assistance that does not have to be an employee. It can be found in a personal relationships (friends, workmates, relatives), and from other users commenting on online forums, and specialized websites. People want to know the price, functions, the feeling, and possibilities, when buying a phone. The store lacks information about these possibilities, what other customers have done, are using and so forth. One general overlook provided was that sometimes it feels that employees offer what they want to sell more, rather than understanding customers’ needs then offering something according to it.

“When buying a mobile phone I really need people to assist me. I don’t like big stores with a lot of phones.”

“I don’t like to have much communication with employees. I don’t trust them much, they push you to buy something.”

“In cheap stores you don’t expect the salesperson to give recommendations”
(3) Trying the handsets

For some people in this study, trying the handset was an important step before acquiring it. People want to ‘feel’ it, they already know the characteristics and capabilities learnt from the internet or other source. They want to know how much space it will take in their pockets, the keyboard size, how easy are to open and close if needed, and so forth. Some people realized things after buying the phone and they regretted that they have not tried that before. A check list to try these features and characteristics at the point of sale would be beneficial.

For others, more tech-savvy users, who are more interested in the software than hardware, they do not care to test the phone first. They research a lot on the Internet, they figure out things on their own, they want to be in control. They want to know the possibilities, e.g., what kind of application they can install, how can the upgrade the software.

In any case, the whole process of buying a phone is time consuming and in most cases it is a serious business. Customers do not want to fail. Considering the amount of phone brand and model options, acquiring something that was not the expected is disappointing.

“I tried the demo phone. For me, it was important not only the appearance but I wanted to know all the functions.”

“I went to the store knowing what I was going to buy. Determined. I didn’t even look the demos.”

“I didn’t need to try the phone before buying it. I knew what I was going to get.”

(4) Mobile Content

Expectations

Some people already knew what kind of content they wanted to install in their handset once they have purchased the device. Others realized later that they have to pay for the content so they did not acquire. Other haven’t had time to look for content. Some others realized that they did not need the content or it was not as they expected. Trying before buying could be a good way in some cases.

Pre installed content

Since buying a smartphone, a device which a person can install any applications want, the users did not expect any content to be already on it. However, they recognize that some basic ones could have been offered or free ones. Also, if the retailer offers some it helps to filter the options. The pre-installed content most of the time has a negative image. People find useless applications installed in their handset.
5- Acquiring content

People acquire applications from the mobile phone brand application market such as Nokia app store or Apple store. Before acquiring the application, some people read forums, look in top ten lists, ask to friends what do they have or just find application through a search engine.

A few probe users found difficulties at the time of choosing from the vast amount of applications. Other users did not want to spend time on it.

Some people share what they had gotten to friends and family.

It is quite common to install applications just to try in order to see something new, or as a way to find the right one.

People try to give a person touch by selecting the ringtone and wallpaper.

They do not know/have much about local content, although they would like to have.

7- Wished customization

Some users would like to define how the handset looks, while others are interested in the inside, the operator system along with the possibility to upgrade.

The User Interface for some brands is quite customizable while for others is not an option and users get frustrated when they are tight to options they do not use.

Some users mentioned that all the handset look alike and they would like to give them a personal touch. Even the cases are the same.

8- Dream Purchasing Experience

The ultimate purchasing experience was described in many ways with the users’ collage. There were some topics recurrent:

The process should allow users to acquire knowledge and inspiration from others, e.g., what they have done, what can be made. The process can also aid in trying to predict the future where you can observe how the phone is going to evolve, as well the upgrade possibilities.

The service should provide Technical information and background.

Users want to be advised based on their interest and what is trendy among users sharing the same interest.

Exploring content was suggested in two forms: in a retail form through a touchscreen, and at home, with time to read reviews in a relaxed atmosphere.

Social Interactions are important. Going with friends to shop can advise you in making your purchase decision. It has to be a fun experience to allow easy engagement of purchaser and companion.

Retails: Users envision retail shops as a high-tech space with technology that assists them and allows them to do things, e.g., review phone models or select content through touchscreen. However, the role of the employees was important for users at the time of asking for advices. The retailer establishment should be a place for trying, having fun, learning, and exploring.

‘Doing it yourself’ was important to one user. This probe user envisioned the purchasing experience like a market square but with mobile phone components. He argued that “Only when you do it yourself you know what is important and what is not.” This is out of the scope of the project, but it was important to acknowledge the users will in creating products not just acquiring. “One can’t know everything, that results in social interaction, exchange of knowledge in small communities”
5.4.3. Undercover

Through the previous methods motioned it was detected that the key of the service is the content. Having unique and relevant content will provide retailers with a means for differentiation. In addition, unique and local content will meet closer customers’ needs and wants. Hence, it was necessary to understand the source of mobile content from the content developers.

The mobile content market has attracted a lot of interest among entrepreneurs, operators, major corporations and media during the past ten years. The development of mobile handsets, software and networks has continuously opened new opportunities.

It was relevant for the project to understand Mobile Developers from a closer perspective since they would play an important role in the service to be designed. Fulton Suri, chief creative officer at IDEO manifested in this context: “Design research often means changing the way work gets done. It means getting out of the office, being where customers are, becoming aware of, and sensitive to, social trends and the broad ecology of stakeholders, rolling up our sleeves to try out unfamiliar things first hand” (Suri, 2008)

To understand the mobile developers business and practice I personally got involved in several events related to mobile content development. These organizations reveal the importance that is been given in Helsinki to mobile development. This undercover was done at Future Female Tech Camps, Bonnier Dev Camps and Android Aalto hackathons. I was not just a spectator; I was involved in teams with developers for producing mobile applications.

A hackathon, a hacker neologism, is an event when programmers meet to do collaborative computer programming. The spirit of a hackathon is to collaboratively build programs and applications. (Lufkin, 2012; Leckart, 2012)

Undercover Findings

- Although some individuals engage in collaborating for extrinsic rewards (such as enhancing their career opportunities or gaining status or recognition), many collaborators appear to be intrinsically motivated by a strong philosophical belief in the importance of their work as well as by a deep enjoyment of contributing their thoughts and ideas.

- Many developers form small entrepreneurship. In Helsinki, there are several organizations that boost this modality such as StartupSauna. They also organize numerous hackathons and workshops that help in their development.

- Online communities and open source software boost the development.

- The preferred platforms are the ones that are easy to develop for and have significant market share. Android and IOS are in the top of the list.

- Nokia platforms development for smartphones applications is quite low (until Windows). Some developers pointed out several bad experiences when developing for Nokia products. The main reason was that Nokia served different platforms, as well as screen sizes. Thus they have to develop several time the same
product. In addition, the platform was not as easy to code for as in Android one.

- Concerning the development of an application, it was noticed that there was a lack of user research and feedback. It seems that developers produce applications based on their knowledge and understanding. They get to know the customers' acceptability only when the product is in the market.

- Looking into several application markets such as Nokia Store and Apple store, it was noticed the overlapping of applications that offer the same service or functionalities. The market gets competitive at the time that users get confuse.

- Compared to other entrepreneurship, the application development seems to have better reach in the worldwide market. Once the app is the app store, it is almost accessible for the whole world. However, the promotion of their work is mostly by word-of-mouth and users’ rating.

- I also had the opportunity to learn from the technology point of view what is needed and possible to do.
Exploring possibilities

3.5

3.5.1. Co-design Session - Objective

This stage involves different stakeholders in a co-design session in order to explore issues, challenges and their views for the service of customizing mobile phone content at the point of delivery. The expected outcomes of this co-design session were: (1) outline different paths of service models for customization, (2) defining tools and technology needed to implement.

The co-design session took place at Nokia premises in Espoo during a working day.

3.5.2. Participants

The participants were seven Nokia representatives from different areas such as technology, marketing, retail and customization. They were recruited by Sami Mattila and Ah Woon Chan, since they both work at Nokia. I designed the workshop activities and facilitated it.
3.5.3. The method - The Future Workshop

The structure of this Co-Design session was an adaptation from the Future Workshop structure by implementing participatory design methods and tools. In this thesis, the adaptation will be called Alternative Future Workshop.

The original Future Workshop is a technique meant to shed light on a common problematic situation, to generate visions about the future, and to discuss how these visions can be realized. It was developed by Robert Jungk, an Austrian writer and journalist. The main purpose was to activate a basis, which through a joint critique of the establishment was able to develop a proposal for a desirable future. Valqui Vidal (2006:2). There is a lot of literature in German and Scandinavian languages, but in English there is only one book that is not easily accessible (Valqui Vidal, 2006). Hence the literature of the Future Workshop was reviewed from the book Creative and Participative Problem Solving - The Art and the Science by Rene Victor Valqui Vidal (2006) and Future Workshop by Heino Appel (2004).

A ‘classic’ Future Workshop (FW) consists of five phases:

- The preparation phase: The themes, the invited participants, the methods, their rules and the timetable of the workshop are settled by the organizers of the workshop and the facilitators. The room and local facilities for the workshop are settled.
- The critique phase: The problem is critically and thoroughly discussed and investigated. Brainstorming is the preferred creative technique follow up by a structuring and grouping of ideas in some main sub-themes.
- The fantasy phase: The participants try to develop a utopia, to draw an exaggerated picture of the future. Brainstorming and other creative technique might be used. The social fantasies of the participants are developed in this phase.
- The implementation phase: The ideas found are checked and evaluated in what concerns their practicability. An action plan is elaborated.
- The follow-up phase: The action plan is monitored; eventually changes are performed and if needed new FW’s are planned.

In the following: The co-design session phases are presented based on the Alternative Future Workshop.
3.5.4. Alternative Future Workshop for a Co-Desing Session

Phases:

(1) Sensitizing

The Preparation phase the methods, its rules and scheduled course of the workshop are introduced. In this case, instead of preparing the room as a way of first interaction among participants, it was used a sensitizing to open up conversation. The participants were asked to bring in advanced a picture or an object that represent the moment of truth in the service that they provide. Something that, in their opinion, has the biggest influence on a customer’s service experience. During the round of introduction, the pictures and objects were supposed to be presented as a way to understand their field of work and discuss issues related with the customization service. Unfortunately, none of the participants brought the sensitizers. However, we did a round of introduction followed by their motivations of attending this workshop.

(2) Questorming

Originally, the Critique phase was the start of the workshop. Here, the problem is investigated critically and thoroughly. Firstly, a brainstorming is performed and a general and critical question concerning the problem is framed. In this stage the Questorming method was used. Questorming is a variant of brainstorming; the technique was developed at MIT in the 1950s to allow a group of participants to come up with more creative solutions to problems. Its aim is not so much to get a group to come up with “solutions” to a “problem”. Rather, its aim is to come up with well-stated and well-selected questions or problem formulations. It is a brainstorming in which the problem for the group is to find the answer to the metaquestion, “What are the best questions we need to ask right now?” The Questorming method is based on recognizing that if people can ask the right questions, the answers are often easy.

The participants were divided into three teams. The criteria to form the teams, was to join participants based on different backgrounds. The questions concerned with in-channel customization were approached by the teams through different perspectives provided by the facilitator (myself). These topics were: the retailers, the customers, the mobile content and the content developers.

The questions were written individually on sticky notes following the rule of no excessive discussion among the team members. This rule was given to inhibit quantity over quality.

The results found were grouped accordingly to topics (‘clustered’) and the groups were titled. After this, a selection of the most relevant questions were selected and briefly presented to the rest of the participants.
(3) Fantasy

After dealing with the problem, the future workshop does not immediately search for the solution. Firstly, all participants try to discuss their utopia, to draw an exaggerated picture of future possibilities. In this so-called Fantasy phase images were provided to the participants with the aim to elicit different ways of answering the questions formulated in the previous stage.

Hogan C. F., (1999:185) states that the use of visual techniques is even more important to enliven communication, interaction and understanding. He claims that visual language is already a global language and that it will rapidly become an international auxiliary language (IAL) in the 21st century. Visual help us process the escalating masses of information that emerge daily in our lives. The participants respond to the question previously stated by making a collage with the images provided. The pictures provided were previously selected based on categories that I was interested to rise discussion among the participants. Some of them were abstract intending to respond to feelings and emotions and others were more concrete such as images of technological devices. Furthermore, several images of services related and not related with customization were provided. The overall idea was that the groups might find connections or processes to helped them identify future opportunities (picture x). All ideas were collected and put onto a poster, regardless of their possibility of implementation (picture x). In a second step those visual concepts were discussed among the team. The team then negotiated real solutions to answer the questions previously formulated. At this stage it was already possible to identify service solutions, new users’ experiences and technology that could be used for customizing mobile content at the point of delivery.
(4) Implementation

In the Future Workshop in the Implementation phase the ideas found are checked and evaluated in regard to their practicability. In this case the Implementation phase consisted in evaluating the ideas, framing ideas and developing them further.

First, the teams presented their ideas to the rest of the participants. After evaluating all the options, issues, challenges and opportunities that previous stages brought up, the participants had to choose three paths to follow. The discussion helped to frame different service models that support in-channel customization of mobile phone content. For example, one path chosen was ‘customization with customer participation’.

To develop the ideas further the teams used the Business Model Canvas developed by Osterwalder & Pigneur, (2010). It was modified in order to give more emphasis on the customer than economic factors. This reformulated canvas was called the Service Value Proposition. It consisted in eight blocks:

1 & 2. The segment(s) of clients. It refers to the customers who are addressed by the value proposition. Nokia through its customer portal has done numerous studies on customer segmentation. Four personas were selected from Nokia studies and they were provided to the participants. The team chose a persona they believed would be a customer of their service and then they describe them further in relation with the service. Based on this persona they develop the Empathy Map. It is a tool developed by XPLANE that helps to sketch the profile of a customer segment and to understand his environment, behaviours, concerns and aspirations. It made participants think how to provide a better user experience by viewing the perspective of the user and identifying how to improve what they see, hear, think, gain, and are challenged.

2. The value proposition. It consists on describing the company’s offers to the market. Here the participants had to describe what the customization service would offer to customers, retailers, Nokia and developers.

3. The key activities necessary to implement the service model;

4. The key partners and their motivations to participate in the service model;

5. Customer relationship: the relationships established with clients;

6. Key channels: The communication and distribution channels. It is used to reach clients and offer them the value proposition;

7. The key resources needed to make the service model possible.

The task was developed in teams, and then presented to the rest of the participants. Finally a summary discussion closed the co-design session. Find the canvas in the Appendix.
3.5.5. Co-design Session Findings

The findings were organized in categories after analyzing the co-design material: (1) a poster with questions and answers, (2) the Service value proposition and (3) the recordings taken from the team’s discussions. Each task individually does not provide much, but when linking the results from the tasks and the team’s discussions, it was possible to make sense of the data. For analyzing the material it was used mind-maps drawn on white boards.

The findings were categorized under the main topics discussed in the workshop and their different solutions that participants came up with. These topics could be grouped under four areas: content, customers, retailers, developers and service experience.

1- On Mobile Content

Limits of mobile content customization

This should be stated by determining levels of possible mobile phone content customization. These levels would vary according to technological and economic factors. Some OS have more possibilities than others and some content could have different economic value than others. So, it was discussed how this level could be presented to retailers and customers.

Relevant content for customization

Besides what it possible to customize according to technological and economic factors, there is certain content that has more potential than others. Two main factors identified have more possibility to impact in customers’ decision to purchase a particular phone. One is the User Interface (UI) and the other is the selection of applications. They considered that the UI is an important factor for user engagement and self-identification. One possible idea was to engage developers on generating UI with a software platform and then allow them to publish it and commercialize it. Applications were seen as main feature for customization. All the participants agreed that they are needed for this service to develop and provide local content and local applications. The locality of the content implies that it will be unique and close to customer’s needs and wants (nobody will be interested in an application for Movie theatres in Berlin when the customer lives in Helsinki). On the other hand, developers are interested on producing content that can be sold to masses, so ideas were thought on how to make the local content relevant for the rest of the world. Here two ideas were proposed: the retailer could commission the application to developers without the need of making a worldwide application. The other idea is to commission a platform that could be tested in one locality and then expanded to the rest of the world. For example, if a platform application for the movie theatre is developed, then each locality would feed it with the local information. Some ideas were discussed in which local content could be interesting, such as events and local stores.

Availability and quality of content

If the content will be developed for a specific retailer, a way to ensure availability of specific content in time and in quality is needed to be developed. Two ideas were thought out: one would be that the retailer could commission the development of content to content developers. The other solution could be the use of crowdsourcing model. Through crowdsourcing the retailer’s idea for a specific content is published.
Developers can propose solutions and the better idea would be paid. To ensure the quality of content it was proposed to set up a testing method previous to the installation of the content into the devices. Another way could be to form a community of content developers, retailers and testers. All together there would be participants in the creation of local content.

**Content storage**

If there is a special Market place, an online platform, it can be possible to access to unique content. If the content comes from Nokia Store (where all the applications can be acquired) there are more options but less differentiation.

Transferring content from an old phone to a new phone

Even though transferring content from an old phone to a new one is not customization per se, it could be an important part of the service. Usually a customer already owns a device and they would like to transfer its data, such as contact information, pictures, and calendars. This action, according to the participants, it should be easy and provide a relaxed feeling that your data is safe. According to the nature of the content this service could be carried out by customers or with further assistance. It is also important to develop a tool for that purpose and this one will depend on the service cost for customers.

**2- Customers**

**Customers’ participation**

Here there are two clear options that lead to different service models. One option is to offer content to customers, meaning that the customer can select what he/she wants to have installed in the mobile phone. The opposite option would be to pre-customize the mobile phones according to a customer target or campaign. Here, the retailer would select the content, install it and offer it to customers. This point was an influential factor for developing the service. However, where would the customer participation be?

**Acknowledging customers’ needs.**

The participants stated that is important that retailers acquire an understanding of their customers in order to provide them with relevant content. For that purpose they discussed possible tools and platforms that could be used to identify customers’ needs and wants: (1) a list of Top 10 content sales (2) crowdsourcing ideas for producing content (3) good filtering done by customers (4) learning from users actions like Amazon suggestions based on previous selections (5) Profile users built with questionnaires (6) building communities.

**Customers’ acknowledgement of the available options**

As it was detected in the Observations, and confirmed by the retail specialist, that sometimes happens that customers do not know which content they would like to have at the time of purchasing a device. So, the participants manifested the importance of Demo devices at the stores and how they should be in order to show customized devices. Furthermore, it was suggested that the utilization of screens for customers to interact with the content can be developed.
Long-term relationships

Keeping a long relationship with customers is not usual in this kind of business. Although providing content by retailers could be a means of starting a new way of retailer-customer interaction. Loyalty membership, subscription system, handset upgrades are examples of maintaining long term relationships among customers and retailers.

Motivation of customers to customize

The value of the customization service for customers could be perceived by different means. Customers could have the possibility to access to free content through the retail that otherwise they would have to pay in Nokia Store. Other options like offering limited edition content or premium content might be beneficial.

3- Retailers

Motivation of retailers to acquire a service for customization

The customization service would be a tool for differentiation between stores. Even if many retailers are provided with this service they could still differentiate by the content they offer.

If the retailer is always providing new content, they could maintain a long term relationships with customers.

Business model

Here, different business value propositions for retailers were discussed. If the customer is a ‘Content buyer’, meaning that he/she owns a device, the retailer could charge a service fee, offer a loyalty model or apps fee. If the customer is a ‘Device buyer’, someone who purchase a bundled (device + content) then they would have access to a free service to acquire content. The retailer could also offer the mobile phone plus a subscription of content. Another way to offer content, is providing a limited time of use of the phone. Customers to try the phone and applications before buying.

One of the most important benefits that the customization service could provide to retailer is that instead of lowering the price of mobile phone, they only have to provide free or premium content.

Differences is Nokia brand retail from multibrand retail

Nokia brand retail could identify the customers needs at the time of purchasing and offer a tailored customization. While multibrand could pre identify customer needs (with questionnaires, crowdsourcing, or top 10 list) and pre-customized the devices. Nokia brand have expert employees who could advise customers and offer possibilities while the multibrand would have to focus on self service modality.

Retailers investment

Even though not clear answer was defined, it was agreed that it would depend on the nature of the service and Nokia decision.
4- Developers

Developers should know customers and the retailer's needs and wants

In order to provide relevant content for customers it is important that developers acquire a better understanding of the customers. Retailers could be a source of that information or customers could provide direct feedback in exchange of some kind of reward.

5- The Service Experience

Showing, selecting and transferring content

One of the ideas that brought much acceptance among the group implied a high participation of customers. The content could be explored in some kind of interactive wall in the retail in which customers can see and try, then select and put it in the “basket”. As an ultimate step they should be able to transfer the content to devices.

Some other ideas that are meant to bring retail exposure and increase content sales were thought out but exceed the scope of this project. For example, taking the service outside the store. A printed version of the retail content store (like Nokia store) could be embedded in a wall in a supermarket or other store. This kind of Pop up retail does not occupy space. The customer could pay with mobile wallet or free. Anyhow, this idea was quite inspirational for me at the time of developing the concepts.

The experience of exploring content, selecting and transferring should be different from the one perceived on the Internet or doing it in the Nokia Store. The idea is to provide a fun experience, which is another way to experience normal retail stores. The participants gave many insights on how the user experience should be. Some are contradictory but it will depend on the nature of the service. For them the experience of customization should be: easy, convenient, fast, simple, a surprise, a new experience; a new way to learn something.

6- Nokia’s service support

According to the participants Nokia should provide training for employees and 24/7 nokia care support for the service
Developing Ideas

3.6

This section starts with a review on the Project requirements and design drivers. Then the three service models are introduced and then explained in detailed.

The project started with a quite open brief based on certain requirements. The requirements are based on the company expectations. While the Design Drivers were not determined in advanced, they were constructed during the process when all the whys are explored. They are based on the designer's understanding and reflection on the case.

3.6.1. Project Requirements

The main objective of this project is to develop a service (or service system) that allows the customization of mobile phone content at the point of delivery. The role and of the customizer was open to be determined during the process, as well as the moment for doing so.

Considering the short time implementation expected, it was necessary to consider existing technologies. There were detected three tools existing in Nokia that could be adaptable for transferring mobile content: PC Tool, Online Tool and Mobile tool (presented in Stage 1).

Finally, this service should be possible to implement in different types of retailers and it is targeted to both Symbian and Windows OS.

FIGURE 16
Requirements and Design drivers in Nokia case.
3.6.2. Design Drivers

1-The customization service should allow consumers to participate in the creation and selection of content in different ways according to consumer’s capabilities and expectations.

Participation increases engagement, the relevance of content and knowledge of consumers.

2-The service has to give means for creation and acquisition of valuable content for customization. Four main characteristics were detected that make content valuable for customization:

- Exclusivity, content that only one retailer is offering. This was one of the main motivations for retailers to be involved in such a service. As soon as every retailer offers the same, there is no differentiation and the service loose value.

- Local content. Most of the applications tent to be produced for global market. This is because the revenue stream is so that developers will perceive more profit the more they sell. It is quantity that matters. However, a change in the system can boost developers to create more local content, closer to customers lives.

- Personal. Not every customer wants the same type of content so it is necessary to find the way to learn from the customer and offer a solution closer to his/her needs. Another way is to make them participate in the creation of content they would like to acquire.

- An extra value: since most of the content is available to download from application stores or similar, it is necessary to offer the customers something extra, something that they cannot find out there. For example, premium, limited edition or free content.

3- The service aims at building long term retailer-customer relationship. It was detected during the users studies that people enjoy going to retailers to discover new products, play and try. At the moment only Nokia flagship offers a minimum quote of entertainment. Even though this does not guarantee long term relationship, customer will remember the brand at the time of choosing. At the same time, offering subscriptions, memberships and upgrades are stronger strategies to be implemented.

4- The customization is not an end but a means that enhance the purchasing experience. “Customers do not purchase customization per se, they purchase service value”, Pine & Gilmore (2000). That value is not only expressed in terms of the product but also in the experience customers perceive at the time of customizing or acquiring a customized device.

3.6.3. Service Models

The service models were created after the workshop. They are based on what is technically possibly on the time constrains. These three different options can be complemented.

The contextual inquiries and cultural probes helped to define the user perspective.
<table>
<thead>
<tr>
<th>CUSTOMIZATION</th>
<th>PRE-PURCHASE</th>
<th>PRE-CUSTOMIZATION</th>
<th>CUSTOMIZATION</th>
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<tbody>
<tr>
<td>Customers customize the mobile phone content in an online platform embedded in the retail website. Then they proceed to purchase the customized device.</td>
<td>The retailers customize the mobile phone content before offering to customers.</td>
<td>Customers customize the mobile phone content at the retailer store right after the purchase.</td>
<td></td>
</tr>
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**SCENARIOS**

1. 

2. 

3. 

4. 

**BENEFITS FOR RETAILERS**

Ideal for a marketing campaign. It strengthens retail differentiation and brand recognition.

**BENEFITS FOR CUSTOMERS**

Ideal for low-tech customers. It helps them to filter the vast amount of content.

If the content is exclusive (it is not on the general app store) it can also attract active users.

**KEY ISSUES**

Knowledge of customers, in order to customize the devices with valuable content.

**IMPLEMENTATION PERIOD**

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<th>FIGURE 17</th>
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<tr>
<td>The service models</td>
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</table>
3.6.4. Scenarios

In the previous section it was described the project requirements and design drivers. In this section the service solutions and/or opportunities are presented based on the background research and the outcomes from the participatory design methods. The services are depicted in several Scenarios.

According to John Carroll, scenarios are stories about people and their activities. They are used to model the service in the context of many interactions. When scenarios are used to describe future situations, they present certain elements. (1) a setting, (2) agents or actors, (3) a plot; scenarios include sequences of actions and events, things that actors do, things that happen to them, changes in the circumstances of the setting, and so forth.

Scenarios of use reconcile concreteness and flexibility. They are concrete in the sense that they simultaneously fix an interpretation of the design situation and offer a specific solution. At the same time the scenario is flexible, deliberately incomplete and easily revised or elaborated. (Carroll, 2000)

Scenarios can describe designs at multiple levels of detail and with respect to multiple perspectives. They provide a vision for different stakeholder to converge and work together. In this case the Scenarios have to be interpreted as guidelines that convey users and stakeholders’ goals, motivations and key activities.

Following, visual scenarios are presented. A deeper explanation of each one can be found in the Appendix.
SCENARIO 1
CUSTOMIZATION PRE PURCHASE

1. The customization platform is embedded in the Retailer’s website.

2. First, the customer has to choose a device. Providing certain information, the platform suggests the most suitable device.

3. Once the device is selected, the customization begins...

4. The retailer installs the content package created by the customer in the selected mobile phone. Then, the retailer brands the packaging.

5. The customer picks up the device from the store.

Several tools are provided for selecting, modifying and creating different kind of content:

- Compose a Ringtones
- Make a UI Theme
- Design the Skin
- Create a Wallpaper
- Select the apps you want

Sharing and consulting the result before purchasing brings the offline purchasing experience into the online world.
The customization service is provided through an online platform embedded in the retailer’s website. Customers who purchase a handset in the online store would have the chance to customize the device in advance.

This platform is important for two reasons:

1) It embraces the huge amount of customers that shop online. A study of online behaviour indicates that Finland is the second country in the world with highest potential in e-commerce (Hannula & Comegys, 2003). The Finnish e-commerce statistics, carried out in 2010, reveals that online purchases of consumer electronic devices has the highest online trade volume, after Tourism and Travel, reaching more than a thousand million euros. Furthermore, a study developed by Nokia that analyzes the steps of the mobile phone purchase, exposes that 42% of customers in established markets investigate online about devices. In this study, investigating refers to actively seeking and analyzing information, and narrowing choices.

2) The second reason to purchase in the online store is to take advantage of the situation that customers would customize the device in the comfort of their homes. This gives the possibility to offer more aspects that can be customized. As well it provides a huge source of customer information.

“I don’t like to have much communication with an employee. I don’t trust them much; they push you to buy something.”

“Most of the process of buying a phone was done on the Internet, and then I just went to the store to pick it up and pay”
The customer has to choose a device model to purchase. To do so, and to improve the experience on finding the right one, the online platform offers a tool for customer identification. Through different categories such as profession, hobbies, age, budget, etc., it is possible to filter the options and provide a few devices suitable for the customer.

It is important to know which phone the customer already owns to offer the possibilities of how to transfer the content to the new device. It should also be known the other devices the customer owns (e.g., pc, music player) to specify the compatibility.

“First I went to the stores and I realized ‘I have to figure out what I want first’. Then I went to the Internet on a website where you say what characteristics you are interested and it gives you the phone options. It was really confusing because most of the phones are not sold in Finland. then I had to ask my boyfriend”

“I’d like to lay down in the sofa, relaxed and read reviews in forums”
The customer selects content, modifies it and creates new one.

Considering that the customization service is an online tool, customers have more time to spend on making the device as they want it. For this purpose the customization in this case goes beyond selecting. The service would provide tools to users for creating content themselves.

1- User Interface theme

The user interface would be possible to customize by selecting already made UI themes or it can be created by the users. A theme offers a way to change the visual appearance of the UI components on a device. It allows the user to change the look and feel of the user interface, while leaving the functionality unaffected. Examples of services for creating UI themes: Nokia Carbide.ui, JQuery

2- Ringtones and Wallpaper

The customers should be able to create ringtones and wallpaper, not only selecting from a list.

There are several site that offer this tools. Nokia should integrate them into the customization service platform.
2- Applications

The service should offer valuable applications for customers. If the applications are unique (only provided by that retailer), free, premium, or limited edition, the customer would be interested to use the service instead looking for applications on the Internet.

If the applications are not available in the market, the retailer could implement some strategies to obtain them: crowdsourcing, contest, commission. The ideas of which content to be developed could come from customers, retailers or developers. The platform should have a section in which customers could give feedback, and earn points to get free apps. This way it is possible to acquire knowledge from customers and improve the products. Nokia Ideas Project site could be used for this purpose. (See conclusions for more collaborative creation models)

3- Appearance

It is possible to customize the device by choosing the covers’ color or a sticker to apply on the covers. The sticker could be designed by the customers, by other companies or artists. There is already a company that offers this service (www.uniqueskin.com). The opportunity is to include the online tool into the customization service. The retailer could also create a limited edition with brand partnership, e.g., Nokia + Marimekko.
Platform tips:
- The process of choosing a device, exploring the possibilities of customization and selecting it could be done like a story line. This way the customer knows how many steps they have to go through and the time it will take for every operation.
- The platform should inspire people, and not just give pieces of information. It should suggest and learn from the customer previous selections.
- The platform UI should be flexible, allowing users to change the variables easily

Social Interaction
Social interaction brings inspiration and confidence. With this service, customers can see what people with similar interest have chosen. For example, Amazon.com offers more book titles under the slogan ‘if you like this, you’d like that’. Customers who customize the handset should be able to share their selection with friends to receive opinions. This exchange of knowledge or suggestions by sharing with others, brings the offline buying experience to the online platform. According to McKenna (2000), reference becomes a part of the product and it affects the purchase decision. When customers are buying a costly, long term, and pervasive product; they cannot afford to take their investment

The retailer receives the order, transfers the content to the phones and brands the packaging.

Once the content is developed and stored, the retailer has to transfer the content to the handsets. Since the packaging has to be opened to plug the phone to the computer, it is important that the customization service offers a means to do it properly without avoiding warranty regulations. A check list should be included so the employee would not forget to include any component. Furthermore, the retailer could brand the packaging and component with its own logo. This way, the customer brand gets closer to the customers, building a relationship. Nowadays there is no retailer evidence on the purchase beside the receipt.

The customer picks up the phone

After the customer has done the online transaction, he/she receives an appointment to pick up the phone. This way it’s clear when the phone is going to be ready and offers the possibility for a better sales assistance.
The retailer creates a campaign. Based on the campaign theme, he creates a package of content to customize the devices.

He can select content from Nokia Store.

The content can be package based on a user profile. E.g.: gamer

"...may make my life easier if they can recommend what I need. Filtering the huge amount of apps, or giving apps for free."

He can commission a special content that is not available in the market.

Examples: Flow Festival, Nokia + Marimekko

The content can be commissioned to local developers or it is crowd sourced.

"I recommend to shop in the local market because it is not coming from mass production. It makes me believe that I help the local producers."

Customers purchase the customized devices and later on...

They can acquire new package of content every time the retailer launches a new campaign.

The content is transferred to all the devices needed. The packaging is branded with the retailer’s logo/membership cards/gift.

Users can provide feedback, vote and evaluate.

"I’d like a test drive, use it for a few days and change it if I don’t like it. It’s good to improve the mobile phone."

Note: the quotes are from Proto users.
The retailer creates a marketing campaign.

Based on the campaign theme, the retailer has to create a package of mobile content to customize the devices. He has two options:

2a) He selects content available at Nokia Store, or
2b) He commissions the content

The retailer selects content from Nokia store.

Here the retailer could select several applications, ringtones, wallpaper, music under different categories and build packages of content that would suit a specific target. He can package the content under a topic or user profile. For example, he could select several games and target that device for ‘gamer’ customers.

For this to happen, the Nokia store would have to be modified in order to allow retailers to download more than one time specific content. Another option is to allow direct agreements between developers and retailers.

The content pre-selected by the retailer filters the wide options available in the current market. There are several applications that aim to serve the same functionalities (for example, there are several PDF reader applications), but only a few do it perfectly as they promote in their summary. In order to avoid unwanted content, the retailer could also offer to try versions of applications.

“Sometimes you download apps and they are not what you expected, so you have to try several until you find a good one”

“Choosing apps at the store can be difficult to know what you need but maybe makes my life easier if they can recommend what I need, filtering the huge amount of apps, or giving apps for free”

“I’d like a test drive, use it for a few days and change it if I don’t like it. I think it’s good to improve the mobile phone”
The retailer can commission a special content that is not available in the market. The content package could be based on an event or on a brand partnership.

1- An event such as the Flow Festival (a music festival).
2- A brand partnership (e.g., Nokia + Marimeko). The partner company can include services (e.g. discount coupons, news, promotions)

During the research for this project it was identified that local content would be the main source for retail differentiation. Furthermore, this type of content is most likely to be relevant for customers, although there is a lack of this type of content in the market. In order to achieve this, the service has to provide means that foster local content development.

If special content has to be developed for the campaign the retailer has to commission it. The Nokia developers site (http://www.developer.nokia.com/) could be the type of online platform that allow this interaction.

Two different modalities could be implemented. One is to open a marketplace where developers offer their services and retailers hire them for producing the content. Another option is to use crowd-sourcing modality which is frequently used nowadays.

It is important to include customers feedback as a source of inspiration for developers and evaluation. By people voting or commenting it could be possible to acquire knowledge of the users’ wants and needs. Another option is to build communities teaming up retailers with developers and ‘expert’ customers.

People have an extra value when something is produced by people in their own communities. A Probes users commented on this when talking about shopping for groceries at the local market.

“I recommend to shop in the market because it is not coming from mass production. It makes me believe that I help the local producers.”
Transferring and branding.

Once the content is developed and stored, the retailer has to transfer the content to the handsets. Since the packaging has to be opened to plug the phone to the computer, it is important that the customization service offers a means to do it properly without avoiding warranty regulations. A check list should be included so the employee would not forget to include any component. Furthermore, the retailer could brand the packaging and component with its own logo. This way, the customer brand gets closer to the customers, building a relationship. Nowadays there is no retailer

Install content but be careful

The content installed has to be valuable for customers. When asked to Probes users about the content that is was installed in their mobile phones, they said:
“I don’t even recognize some of the content, so many things i don’t need.”

For that purpose the service provides means to acquire knowledge on customers. By allowing customers to vote, comment and propose ideas for content, it is possible to know which content can well accepted.
From ‘demo’ device to ‘real’

The handset exhibited at the store are ‘real’ ones and not just ‘demos’. The customer will see exactly what they are going to acquire. They can try the main functionalities and the content before purchasing.

The store theme

The campaign theme could be used to improve the customer experience at the store. It could be a place to have fun, discover, spend time. The theme can be renewed with every campaign launched. Surprise, curiosity, and exploration are some aspects that wanted to bring out the service experience at the store.

Nokia brand retailers vs multi brand retailers

It is probably that Nokia brand retailer could adopt the modality of developing special content while multi brand retailers would have to download it from Nokia market and make packages of content.

The expert employees at Nokia brand retailers are able to assist customers on exploring the content and advise them on what else they could get according to their needs. In multi-brand retailers that assistant is not always present, so it has to be thought out the self-service modality.

Long term relationship

Since campaigns would be renewed through time, retailers could offer customers a subscription system or loyalty membership in order to acquire new content when it is available. This could strengthen customer relationships, which is a priority in the service model.

“I like apple store but there are too clean. I went for fun”
The retailer is provided with a tool for building an application without coding skills.

The retailer embeds content that is interesting for customers.

The application is installed in the devices.

Customers purchase the device.

The Retailer's app can offer free content, news, assistance and much more!
A simpler way for retailers to maintain a closer relationship with the customer could be through the retailer’s application installed in the devices. Even though it is not customization per se, it offers the possibility to provide customers with different kinds of content, such as new applications to download, sales, coupons and so forth.

1- Building the application

The retailer is provided with a tool for building an application without coding skills. There are several examples in the market that provide this service (e.g., www.theappbuilder.com). Here the retailer can choose to embed content that might be interesting for customers. It is believed that when the amount of customers with this application increases the retailer would gain knowledge on the customer and they could provide more targeted content for them.

The application is installed in the devices using PC suite or another similar tool.

2- The customer acquires the device.

The application installed in the device could provide a link to download content that the retailer “curated” in advanced. It could be premium or limited edition content that is offered only this customers.

It is important to offer valuable content to customers. Therefore, this tool should also be a platform to acquire customers’ feedback on what is it offered or what they would like to receive.

"If the phones are smart, why not the stores too?"

"I’d like it to be a fun experience at the store. A place where I can interact with friends."

"I love IKEA because it is emotional and inspirational. Everything is so smart, it’s kind of an adventure."

"I’d like that at the store high tech devices assist me. It also shows quality. Like saying: we know what we are doing. The device should suggest me what I might find interesting, what is trend among users sharing my interest."

Note: Quotes are from the Probe Users.
Customers customize the device at the Retailer store after the purchase.

According to Nokia research on the purchase process of mobile phones, Stores are a major source of information. In-store sales associate and In-store demonstration represent the main source of shoppers influential information sources. In developed market 80% of customers have bought the device in the store, while 66% use stores as a key information source.

Since mobile specialty stores are one of the most influential information sources, this service can provide experiences that engage customers with the retailer and with the brand. The customization at the store has the potential to redefine or enhance the retail experience. It is a way to attract customers to the retail store. By customizing the device at the store, customers can make more profitable their purchase and they can spend an enjoyable time with friend. For some customers, the service is a means for learning how to personalize the device.

The retailer has to change from being just a mobile phone store, to be a place where customers can have a memorable experience. Pine and Gilmore suggest that every experience has a compelling and captivating theme. They suggest five principles to accomplish this:

1. Alter a participant’s sense of reality. At the soul of creating a sense of place, it is important to establish something other than everyday, regular reality.

2. Fully change one’s sense of place through space, time and matter. Shopping at the Forum Shops at Caesars in Las Vegas is vastly different from shopping at Cabela’s. Both offer awesome shopping experiences by engaging guests in two completely different worlds. The Forum is a great staged experience for the high-fashion shopper while Cabela’s is a Mecca for outdoors sports people.

3. Incorporate “space, time, and matter into a cohesive realistic whole” (p. 51). Storytelling techniques can help in scripting a theme to accomplish this. Pine and Gilmore credit Lori’s Diner in the San Francisco Bay area as a great example of this principle.

4. Make stronger by having more than one place within a place. Disneyland and Disneyworld are two most would recognize.

5. Fit in the character of organization staging the experience (p. 51).
Finally, Pine and Gilmore suggest, “The theme must drive all design elements and staged events of the experience towards a unified storyline that wholly captivates the customer. That is the essence of the theme; all the rest simply lends support” (p. 52).

“The Finnish experience of buying is usually ok but similar. So then you notice a ‘wouu’ place different from the blurry stuff”

“I love Ikea because is emotional and inspirational. Everything is so smart! It’s kind of an adventure. It’s a day trip of dreaming. I love how you can just wander around as long as you want. The whole concept is so fully thought through that it’s just admirable. Great weekend activity specially.”
Exploring and selecting content

Customers can explore mobile content with the interactive tool. The content is firstly filtered based on what is available at that retailer for the specific phone the customer has purchased. Secondly, the content can be filtered with e.g., a tool for customer identification, providing ready made packages of content, or showing a top 10 list.

An interesting way of interacting with mobile content was developed by the Swedish company 3LiveShop. It is a live online shop / customer service solution for the customers of the telecom operator. This is where the users can interact with a real salesperson face to face online, while products and service plans are displayed dynamically by a stroke by the salesman’s fingertips.

It can also be done by exploring content with the mobile phone. Such is the way Tesco idea of shopping groceries. They palced real size images of products in the subways walls and customers buy by reading the QR code with their devices. (see picture x)
Transfering the content

Three options can be implemented based on the technology available:

(1) Mobile tool: allows to transfer content immediately to the device
(2) The employee transfer the content with the PC tool
(3) The customer gets a link using NFC or QR code and later on, he/she installs the content.
CHAPTER 4

Discussion

This chapter discusses the findings in the case study with the help of the theories presented in chapter 2. It summarizes and reflects what was learned during the process and what kind of future directions can be drawn based on these findings.
Mass Customization is broadly understood as a strategy implemented by a company to closer meet the customers’ needs and wants. Companies have implemented MC by transforming the way of production. This is either done by producing modular products or services for customers to make selections, or by tailoring them according to customers’ specifications. In other words, MC has been implemented as an added value to the company’s products and services by using their own resources. In the Nokia case, the objective was to provide customers with content that closer meet their needs and expectations. If the company would have adopted a traditional MC strategy, it would look like this:

Under this model, Nokia should understand exactly what do customers want in each locality in order to produce the content they want. Considering the difficulties that this implies this model was not proper. However, by understanding the benefits of collaborative value creation models it was possible to outline a MC strategy suitable for this case. Open Innovation and Mass Collaboration provided with strategies for customers and third parties collaboration in the production of mobile phone content. Hence, the model proposed for Nokia case on customization of mobile content looks like this:

**FIGURE 18**

*Traditional MC strategy vs MC strategy based on collaborative creation models*
This thesis proposes a framework for Mass Customization models based on collaborative value creation. These models are based on customers and third parties participation in the creation of products for Mass Customization. The Piller F. & Ihl C (2009) typology of “open innovation with customers” was the starting point for generating this framework.

The framework consists of three dimensions: the degrees of freedom, the degree of collaboration and typology of product developed.

(1) The degrees of freedom refers to the task that has been assigned to customers and/or 3rd parties; i.e. it could be a narrow and predefined task with only a few degrees of freedom or it could be an open and creative task.

(2) The degree of collaboration refers to the structure of the underlying relationships in an open innovation setting; i.e. whether there is a closed collaboration (among customers and 3rd party companies) or whether the collaboration is open to anyone who wants to be part.

(3) The typology of the product developed refers to the outcome of the collaborative value creation; i.e. whether the product is a module for customization (for example a ringtone or a T-shirt print) or whether the outcome is a platform for generating a product (a tool for composing a ringtone or drawing a T-shirt print).

According to these three dimensions, six models of collaborative value creation for MC are proposed. In the following, these models are described and examples are given based on the Nokia case and other companies’ cases.
Development of modules for customization

There are four models that support collaborative development as modules for customization. These are: Crowdsourcing, Commission, Community of development and Submitting. The product developed will be a module to later customize the end result. For example, in the Nokia case ringtones, applications and wallpapers are modules for customizing mobile phones.

(1) Crowdsourcing

It is a type of product creation with open collaboration since anyone can participate. It has a low degree of freedom, since the company determines what kind of product should be produced. Jeff Howe coined the term crowdsourcing and the early stages of the model’s development. Crowdsourcing is a distributed problem-solving and production process that involves outsourcing tasks to a network of people, also known as the crowd. This process can occur both online and offline. The difference between crowdsourcing and ordinary outsourcing is that a task or problem is outsourced to an undefined public rather than a specific other body (Howe, 2006). In this model, third parties make a proposal based on the company requirement for the users to vote the best proposal. Voting, even if it is not mandatory for crowdsourcing, gives the opportunity for users to participate. The user participation raises the relevance of the product (closer to users’ expectations). The role of the company is to facilitate this type of contest. For example the Fashion Company, CutOnYourBias, produces garments designed by young designers who submit sketches for the public to vote on.

(2) Submitting

It is one typology of customer co-creation proposed by O’Hern & Rindfleisch (2010 pp. 84-106). They define submitting as a process in which customers directly communicate ideas for new product offerings to a firm. Submitting begins when customers contribute detailed new product ideas, solutions, or prototypes. Based on these inputs, a firm then decides which concepts to further develop, test, and eventually launch. In the Nokia case, third parties propose ideas of mobile content and retailers have to decide which one to produce. Another option is that all of the concepts are produced and can be part of the pool of products for customers to choose. In a way the application market like the Nokia store or the Apple store already offer the possibility of thousands of developers to submit their product and the customer decides which one to purchase. However, in this case, the idea is that the company takes a stand in filtering this vast amount of options and providing unique content that distinguishes from other companies. An example of submitting is done by Dell with the platform IdesStorm (www.ideastorm.com 12.03.2012) in which customers propose new products or improvements and if they get enough votes, the company decides to implement them.

The open model creation gives the possibility for everyone to participate. The challenge is to obtain a critical mass with the added advantage to obtain a vast amount of product ideas at a low cost.
(3) Commission

It is a close creation mode in which the company orders the development of a product to a 3rd party. A closed creation model can also be achieved by brand partnerships. For example, by integrating myikea.com (the company that lets people customize their Ikea furniture with exclusively designed vinyl prints) in Ikea services. A customer who purchases furniture in Ikea before taking it home, he/she could customize it. In the Nokia case, brand partnerships were proposed using local brands such as Marimekko. The advantage is to use already existing services that are integrated in a service package increases the offering value.

(4) A Development Community

It is formed by expert customers and 3rd party companies. In the Nokia case, the retailer facilitates the links among developers and customers. The role of customers in this case is to provide feedback and to test the product before delivering. Customer communities have been shown to be an important locus of innovations. However, these communities may be operating entirely independent of firms or even dealing with firms’ products in an unauthorized manner. The opportunity is to use the potential of these communities but integrated them into the company strategy.

Development of platforms for customization

The product developed by 3rd parties is a platform that customer can use to customize a product. So far there were two models detected: User limited creation and User unlimited creation.
In this case the company outsources the development of a product that can be customized through a platform. O’Hern & Rindfleisch (2010 pp 84–106) call this type of customer creation as ‘tinkering’. They define tinkering as a process in which customers make modifications to a commercially available product and some of these modifications are incorporated into subsequent product releases. According to the authors, tinkering is most apparent in the computer game industry, where user-generated contributions (modifications) are not only widely tolerated, by actively encouraged. For example, many games manufacturers invite users to make alterations ranging from incremental changes, such as edits to a character’s physical appearance, to more radical innovations, such as the creation of a completely new computer game. In order to assist tinkerers in making these changes, several computer game manufacturers provide customers with free or low-cost design tools that are similar or even identical to those used by their in-house software developers.

In the Nokia case, these tools are used for customers to modify for example a user interface. Increasing the availability of user-friendly development tools, allow many other users (and not just expert users) to acquire basing tinkering capabilities with moderate learning costs.

The results can be shared to the community for other customers to make use of it. For example, the company INDI, whose customers can customize their jeans and then share the model to inspire others.

In this model 3rd parties produce platforms for Customers to generate content in order to personalize the product to his/her expectations. In mobile content there are examples of platforms that allow the customer’s creation of content. For example, the company The Kakophone provides a tool to compose cell phone ringtones in real time. (http://www.kakophone.com/EN/kakoPhoneMain.php 12.03.12)

As well there are online platforms for creating wall papers (http://wallpapers.x3studios.com/ 12.03.12) and user interface themes (carbide.ui)

The result of the user generated content can be shared for other users to customize their devices or to get inspired.
Engagement in the customization activity

4.2

Customization is one step in the purchase process. Hence, customization will be affected by the service experience provided by the retailer. For example, the purchasing service might include payment modalities, delivery system, warranty etc., which might affect the customer’s decision and perception. Furthermore, the purchasing service experience is embedded in the customer experience. According to Verhoef et al., (2009), the customer experience construct is holistic in nature and involves the customer’s cognitive, affective, emotional, social and physical responses to the retailer. This experience is created not only by those elements which retailer can control (e.g., service interface, retail atmosphere, assortment, price), but also by elements that are outside of the retailer’s control (e.g., influence of others, purpose of shopping, etc.). It is acknowledged that the customer and service experience will affect the customization experience itself, but it is out of the scope of this book. This study will focus only on the factors that affect the customization experience, regardless of the customer’s brand perception, price of the products, location of the store etc. It is expected that identifying factors for making a compelling customization experience will lead to a more effective service experience and hence, better customer experience.

Gupta and Valjic (2002) stated that an experience should be coordinated around a clearly designed core activity that engages customers. Furthermore, the activity has to be reinforced by additional elements such as the physical layout and human components. Customization is an activity of creating or modifying something. The question is: how to engage customers in this activity? According to (Csikszentmihalyi) enjoyable activities have clear goals, stable rules, and challenges well matched to skills. When this happens people’s attention is completely absorbed by the activity that self-consciousness disappears and the person’s sense of time becomes distorted. People are so involved in an activity that nothing else seems to matter; the experience itself is so enjoyable that people will do it even at a great cost, for the sake of doing it. This is what Csikszentmihalyi calls flow: the “process of optimal experience”
Through user studies, literature review on experience and theory of flow, it was possible to draw the factors that make customization an engaging activity. Customization is an activity that can have different phases according to the goals. Here they are called: awaken, creating and involving.

**PHASES OF CUSTOMIZATION ACTIVITY**

1. **AWAKING**
   - explain the **GOAL** of customization
   - inspire customers based on previous creations
   - present the **CHALLENGE**
   - provide **TOOLS** for creation and self expression
   - divide the customization process into **STEPS**
   - provide **FEEDBACK** based on the customer’s actions
   - inspire on what can be done
   - make customers **NAME** their creation

2. **CREATING**
   - **STORE INFORMATION** to keep long term relationships
   - allow customers to **SHARE** their creation
   - Let them spread the voice

3. **INVOLVING**
   - using the information generated

**FIGURE 21**
*Phases of customization activity*
First, there is an awaken phase in which the customers get interested in the idea of customizing a product. This goal has to be instructed. It is important for the customers to understand the benefits they will perceive. “The reason it is possible to achieve such complete involvement in a flow experience is that goals are usually clear and feedback immediate” (Csikszentmihalyi, 1990: 54). The feedback at this point is clearing out doubts about the process. For that assistance of employees or the system is necessary. The Harley Davidson customization website, shows videos in which ‘experts’ explain how the service works, what it is possible to do and why the reasons to do it. The awaken phase aims at attracting customers by demonstrating the value of customization; what it is possible to reach in contrast to acquire a standard product. A good way is to show what other people have done and their comments they have shared. This is further shown with Nike ID, the online platform for customizing Nike shoes. It provides a gallery showcasing previous customers’ creations. In this phase customers feel inspired. In this context, a probe user commented (regarding the ultimate purchasing experience of mobile phone): “inspire me. Show me what others around me have done, used, what can be made”.

In the Nokia case the awaken phase might differ according to the service concept. In the Customization Post-purchase concept, in which the customization happens at the store, the awaken phase could be done by the store theme and with interfaces that support human-product interaction. The customer could get a ‘trip’ that shows the customization possibilities.

Then the creation phase takes place. This phase introduces the customization challenge and presents the steps that need to be followed. In each step feedback is provided according to customers actions and inspiration prompts on what can be done. Even if the customization happens in a semi-public environment (in a retail shop for example) or in the comfort of the customer’s home, the platform of interaction should respond to the same premises. Probably, some constraints have to be taken into account in the public situation, to limit the time of usage.

The creation phase starts by introducing the “challenge” and the customer will evaluate his/her skills. According to Csikszentmihalyi (1990: 52), any activity contains a bundle of opportunities for action or “challenges” that require appropriate skills to realize. For those who do not have the right skills, he says, the activity is not challenging; it is simply meaningless. The challenges should be a balance between challenges and skills. Csikszentmihalyi (1990) exemplifies with a mismatched tennis game, which turns out to be boring if our competitor is either too good or really bad. The platform for customization should work in the same way. If the capabilities or skills of the user are optimal, it should challenge him/her more. Some customers might only be able to select options from a limited set, while others, more tech savvy customers, might want to try doing things by themselves. For example, uniqueskin.com offers the possibility to create a customized cover for the mobile phone. It is possible to select standard images to compose the cover or you can upload an image from your computer, as well as drawing in the online canvas. In the Nokia case, the challenge of customizing the mobile phone content goes from selecting existing
ringtones to creating them using a specific tool. The user's studies revealed that owners of mobile phones are discontent with the similarity of the handsets. Providing them with tools for self-expression will allow users to give their devices a 'personal touch'.

The tools for creating (drawing, composing music) are becoming quite popular thanks to the user-friendly interfaces. In order to operate efficiently, toolkits should fulfill five basic requirements (von Hippel & Katz, 2002): (1) Trial and error learning: Toolkit users should receive simulated feedback on their solution in order to evaluate and to improve on it in an iterative process. In this way, learning by doing processes is facilitated. (2) Solution space: A toolkit’s solution space defines all variations and combinations of allowed possible solutions. Basically, the solution space only permits those solutions, which take specific technical restrictions into account and are producible from the manufacturer’s perspective. (3) User friendliness: User friendliness describes how users perceive the quality of interaction with the toolkit. Expenses influence the user’s perception of quality, (time, intellectual effort), as well as the perceived benefit, (satisfaction with the developed solution, fun), of interacting with the toolkit. (4) Modules and components library: Modules and components libraries allow users to choose from predefined solution chunks for their convenience. Such libraries may also contain additional functionalities such as programming languages, visualization tools; help menus, drawing software, etc. (5) Transferring customer solutions: After users have developed the best possible solution for their needs, it should be transferred to the manufacturer. A transfer over toolkits allows for perfect communication of the customer’s solution, which is conveniently translated into the manufacturer’s ‘language’.

It is important to determine the amount of steps in the customization process, and the goals for each of the steps. People need to be aware of the time they need for achieving the result. “An engaging activity requires concentration, and because of that it has a similarly narrow window of time” Csikszentmihalyi (1990: 58).

Managing the amount of steps related to the levels of customization is crucial. In the Nokia case for the online concept, the steps are divided as follows: identification (the customer provides personal information in order to receive suggestions on the most suitable device), then the customization per se, in which the customer selects, creates or modifies mobile content. And finally, in the last step the customer can share the results and get opinions.

Customizing a product implies a lapse of time in which the customer cannot evaluate the physical result of that product until it is produced. If you customize Nike shoes it will take some days until you receive it at your door. Hence, it is important to provide some kind of feedback related to the person’s actions. The person who is customizing has to have a clear picture of the decisions taken before proceeding to the purchase. The company crearmoda.com offers a 3D platform for customizing a shirt which is a strong visual reference of the creation. A probe user mentioned that it is an advantage to easily exchange the selections when we are trying to find the best option. So, it is important to go back to the steps, make changes, see the results and continue.
Suggestions or inspiration prompts at the time of creating should be included. The online retailer Amazon.com suggests customers at the time of selecting a book by providing other related choices. “If you like this, you might like that”. In this study, it was noticed that most of the customization platforms specify the price of the product increment or decrement according to the customer choices. However, if the act of creation is decontextualized from the purchasing process it can provide a more enjoyable moment.

Once the customer has achieved the result, naming the creation is an important step. It provides the person with a sense of ownership even before having the product. This is my creation, and I am proud of it.

(3) Involving

Purchasing the customized product should not be the end. The involvement phase provides the opportunity to build long term relationships.

The company can acquire a vast amount of valuable information from the customer. Gilmore & Pine (2000) state that mass customization binds the producer and consumer together in a learning relationship. In learning relationships, they explain, individual customers teach the company more and more about their preferences and needs, giving the company an immense competitive advantage. A customer involved in a learning relationship with the company would have to spend an inordinate amount of time and energy teaching the competitor what the company already knows, (ibid). All this information produced by the act of customizing should be stored for further interactions creating a long term relationship among the service provider and customer. For example the company INDI (www.indicustom.com 12.03.12) offers the possibility to customize jeans. Once you have purchased the jeans you can always go back, and make changes to the former creation. Possibly you might purchase again.

People like to share their lives in Social Media platforms. Explaining the reasons is out of the scope of this thesis. However, it is recognized how this powerful tool has been used in business. Ikea has used Facebook to spread the voice about a new local shop in Sweden (http://youtu.be/0TYy_3786bo 12.03.12). They used the existing features of Facebook to let people participate in an engaging activity (the first one to be tagged in a photo featuring furniture, owns it). It is a campaign made by people sharing the content with friends. Furthermore, sharing the ‘creation’
for others to be used responds to the new models of openness. People are willing to provide their time in order to contribute to the society, to feel they belong to a certain community, to do something different from their ordinary life. These are some examples which can explain the success of Wikipedia, for instance.

This section reflects how the activity of customization can be designed in order to engage customers. Challenges according to different customers’ skills, tools for self-expression, feedback and inspiration are some features that can enrich the customization experience.

Conclusions

This project based thesis proposes a system of services for customization of mobile phone at the point of delivery. Several participatory design methods were applied during the project. Some of these methods were aimed at acquiring information, others were to get inspirational insights from users and finally the methods helped stakeholders to participate in the creation of ideas. As a result, the literature review and case study in this thesis provide new insights in the field of Mass Customization. This is accomplished firstly from models of Mass Customization based on collaboration and secondly from customer’s engagement in the activity of customization.

The framework for collaborative creation models to enhance the MC strategy has the potential to offer richer customization. With this strategy a company can provide more options for customers to choose. As well, a company can provide a means for customers to create. However, the models that are briefly outlined need further research. One main question emerged from this proposal is concerned with role and practices of designers in these models (considering that designers give the space for others to create). According to Meroni & Sangiorgi (2011) designers can contribute with tools and platforms and generate scenarios that provide a vision for different stakeholders to converge and work together. It is still uncertain how these platforms could be designed for being replicated in different scenarios (e.g., customer’s skills, companies’ capabilities, and technology available). Moreover, it is important to understand the incentives for every party (customers, retailers and developers) to be interested in collaborating. In this regard, the Nokia case is missing an evaluation of the concepts from these parties. Developers and customers should state their interest in participating in the conceptualized services.

The mentioned findings in this thesis helped to frame the activity for customizing a good. The activity has to be reinforced by additional elements such as physical layout and human components Gupta and Valjic (2002). These components have to be further researched to understand how to they would enhance the engagement in the activity.
The Nokia Case

With this case I learnt to conduct a Service Design process from start to finish. I had freedom in terms of planning and conducting the design process. I decided to implement four main research methods: observation, cultural probes, co-design session and what I called undercover. During the project I realized that perhaps I should have constrained it to observation with contextual inquiries and a co-design session. To design the tasks for the cultural probes and co-design session, analyze the findings and combine them required a lot of extra time. Nonetheless, it was an experience that I am glad I had and the findings added to the thesis.

I gain experience working for a big company like Nokia. The co-design session was a significant challenge. Managers and experienced members were engaged in the activities such as collage and brainstorming. It was a challenge for me to give instructions to managers that normally are not used to getting instructions from a non hierarchical level. At the end, I was satisfied with the results and the participants were glad to have participated in such a different work methodology.

The Process

The thesis started with the case and a quick literature review. Considering that the project had to be developed in three months, I had to rely on my previous design experience to approach the problem. After the service concepts were developed and presented, I took a deeper exploration on the literature review. The theoretical approach was a way of organizing, compiling and analysing findings. The outcome of this thesis is much an exploration of theoretical understanding reflected on the case experience. The final research questions emerged after analyzing the case and the literature review. I found interesting two topics that I wanted to write about: collaborative creation models for Mass Customization strategy and factors that engage customers in the activity of customizing a good. I realized that the time constraints limited the deepness of investigation on this topics. However, I consider that it was relevant to open discussion about them.

The research and writing

It was a major challenge for me to write the thesis in academic format. This challenge made me reflect on the notion and practice of design research. According to Saikaly’s literature review on design
research, there are no common definitions of design research among researchers. What is agreed on, she adds, is that design belongs to a third area of human knowledge distinct from the science and humanities. The thesis process made reflect on the different research approach designer have compared to science, however the way to show the evidence align with other practices, seems to constrain or difficult our duty. It was not clear the best approach on how to write academically for a design research project for a practical case. I believe the design study programme should instruct more in this regard for those students who pursue a research career.
APPENDIX
### Mass Customization definitions

<table>
<thead>
<tr>
<th>Author (Year)</th>
<th>Definition of Mass Customization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toffler (1970, 176–177, 296)</td>
<td>MC is the consequence of super-industrial revolution where standardization ends and diversity blooms as technology becomes more sophisticated and the cost of introducing variations declines.</td>
</tr>
<tr>
<td>Davis (1988, 143)</td>
<td>MC means that a great amount of customers can be reached similarly to industrial mass markets and simultaneously they can be addressed individually like in pre-industrial customized markets.</td>
</tr>
<tr>
<td>Pine II (1993, 44)</td>
<td>MC creates variety and customization through flexibility and quick responsiveness.</td>
</tr>
<tr>
<td>Pine et al. (1993)</td>
<td>MC is a method of providing low-cost, high-quality, customized goods and services.</td>
</tr>
<tr>
<td>Hart (1995)</td>
<td>MC is the use of flexible processes and organizational structures to produce varied and often individually customized products and services at the low cost of a standardized, mass production system.</td>
</tr>
<tr>
<td>Tseng &amp; Jiao (1996)</td>
<td>MC aims to provide customer satisfaction with increasing variety and customization without a corresponding increase in cost and lead-time.</td>
</tr>
<tr>
<td>Tseng &amp; Jiao (1998)</td>
<td>MC identifies each customer as an individual and offers tailored solutions that customers can afford due to low production costs.</td>
</tr>
<tr>
<td>Duray et al. (2000)</td>
<td>MC can be defined as building products to customer specifications using modular components to achieve economies of scale.</td>
</tr>
<tr>
<td>Piller &amp; Müller (2000)</td>
<td>MC delivers goods and services for a (relatively) large market that exactly meet the needs of every individual customer with regard to certain product characteristics (differentiation option) at costs roughly corresponding to those of standard mass-produced goods (cost option). The information collected during the process of individualization serves to build up a lasting individual relationship with each customer (relationship option).</td>
</tr>
<tr>
<td>Lee et al (2000)</td>
<td>MC is a business strategy that customizes goods for each individual customer in massive volume.</td>
</tr>
<tr>
<td>Da Silveira et al. (2001)</td>
<td>MC relates to the ability to provide customized products or services through flexible processes in high volumes and at reasonably low costs.</td>
</tr>
<tr>
<td>Tseng &amp; Jiao (2001, 685)</td>
<td>MC produces goods and services to meet individual customer's needs with near mass production efficiency.</td>
</tr>
<tr>
<td>Jiao et al. (2003)</td>
<td>MC enhances profitability through a synergy of increasing customer perceived value and reducing the costs of production and logistics.</td>
</tr>
<tr>
<td>Broekhuizen &amp; Alsem (2002)</td>
<td>MC entails the ability to provide customized products and services and superior customer value to individual customers using technology (information) at optimal production efficiency and cost levels.</td>
</tr>
<tr>
<td>Source</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Bardakci &amp; Whitelock (2003)</td>
<td>MC produces the exact products required by customers</td>
</tr>
<tr>
<td>Blecker et al. (2004)</td>
<td>MC is a business strategy that aims at satisfying individual customer needs, nearly with mass production efficiency</td>
</tr>
<tr>
<td>McCarthy (2004)</td>
<td>MC is a capability to manufacture a relatively high volume of product options for a relatively large market (or collection of niche markets) that demands customization, without tradeoffs in cost, delivery and quality</td>
</tr>
<tr>
<td>Kaplan &amp; Haenlein (2006)</td>
<td>Working definition: MC is a strategy that creates value by some form of company–customer interaction at the fabrication or assembly stage of the operations level to create customized products with production cost and monetary price similar to those of mass-produced products</td>
</tr>
<tr>
<td></td>
<td>Visionary definition: MC is a strategy that creates value by some form of company–customer interaction at the design stage of the operations level to create customized products, following a hybrid strategy combining cost leadership and differentiation</td>
</tr>
<tr>
<td>Fatur &amp; Dolinšek (2009)</td>
<td>MC develops, produces, markets and delivers affordable goods and service with variety and customization that nearly everyone find exactly what s/he wants</td>
</tr>
</tbody>
</table>
**Most downloaded applications**

### Nokia loose shares in the Finnish smartphone market

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Market share, % (Q3/2010)</th>
<th>Market share, % (Q3/2011)</th>
<th>Change in % points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nokia</td>
<td>70</td>
<td>31</td>
<td>-45</td>
</tr>
<tr>
<td>Samsung</td>
<td>3</td>
<td>20</td>
<td>17</td>
</tr>
<tr>
<td>Apple</td>
<td>10</td>
<td>16</td>
<td>6</td>
</tr>
<tr>
<td>Huawei</td>
<td>0</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>ZTE</td>
<td>0</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Sony Ericsson</td>
<td>11</td>
<td>11</td>
<td>0</td>
</tr>
</tbody>
</table>

Source: IDC


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### Categories of Applications Used in the Past 30 Days

<table>
<thead>
<tr>
<th>Category</th>
<th>Smartphone</th>
<th>Feature Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Games</td>
<td>68%</td>
<td>56%</td>
</tr>
<tr>
<td>Music</td>
<td>46%</td>
<td>40%</td>
</tr>
<tr>
<td>Social Networking</td>
<td>30%</td>
<td>54%</td>
</tr>
<tr>
<td>News/weather</td>
<td>32%</td>
<td>56%</td>
</tr>
<tr>
<td>Maps/Navigation/Search</td>
<td>25%</td>
<td>38%</td>
</tr>
<tr>
<td>Video/Video</td>
<td>31%</td>
<td>20%</td>
</tr>
<tr>
<td>Entertainment/Food</td>
<td>21%</td>
<td>29%</td>
</tr>
<tr>
<td>Sports</td>
<td>25%</td>
<td>30%</td>
</tr>
<tr>
<td>Communication</td>
<td>15%</td>
<td>29%</td>
</tr>
<tr>
<td>Banking/Finance</td>
<td>15%</td>
<td>31%</td>
</tr>
<tr>
<td>Shopping/Retail</td>
<td>12%</td>
<td>29%</td>
</tr>
<tr>
<td>Productivity</td>
<td>12%</td>
<td>29%</td>
</tr>
<tr>
<td>Travel/Localise</td>
<td>9%</td>
<td>21%</td>
</tr>
<tr>
<td>Lifestyle</td>
<td>11%</td>
<td>21%</td>
</tr>
</tbody>
</table>

Base: Feature Phone (n=1,914), Smartphone (n=2,301)


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### Key Global Telecom Indicators for the World Telecommunication Service Sector in 2011

<table>
<thead>
<tr>
<th>Region</th>
<th>Mobile Cellular Subscriptions (billions)</th>
<th>Fixed Telephone Lines (millions)</th>
<th>Per 100 people</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global</td>
<td>5,881</td>
<td>6,520</td>
<td>284</td>
</tr>
<tr>
<td>Developed nations</td>
<td>4,461</td>
<td>4,133</td>
<td>240</td>
</tr>
<tr>
<td>Developing nations</td>
<td>1,411</td>
<td>2,387</td>
<td>399</td>
</tr>
<tr>
<td>Africa</td>
<td>430</td>
<td>419</td>
<td>280</td>
</tr>
<tr>
<td>Arab States</td>
<td>400</td>
<td>400</td>
<td>240</td>
</tr>
<tr>
<td>Asia &amp; Pacific</td>
<td>350</td>
<td>349</td>
<td>240</td>
</tr>
<tr>
<td>OECD</td>
<td>280</td>
<td>280</td>
<td>280</td>
</tr>
<tr>
<td>Europe</td>
<td>280</td>
<td>280</td>
<td>280</td>
</tr>
<tr>
<td>The Americas</td>
<td>280</td>
<td>280</td>
<td>280</td>
</tr>
</tbody>
</table>

Source: International Telecommunication Union (November 2011)


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### Most Popular Used Apps on the iPhone OS

- Facebook: 58%
- iPod/iTunes: 48%
- Google Maps: 47%
- Weather Channel: 46%
- Pandora: 27%


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### Most Popular Used Apps on the BlackBerry OS

- Facebook: 51%
- Google Maps: 34%
- Weather Channel: 28%
- ESPN: 19%
- Pandora: 18%


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### Most Popular Used Apps on the Android OS

- Facebook: 51%
- Google Maps: 34%
- Weather Channel: 28%
- ESPN: 19%
- Pandora: 18%
**What key resources do our Value Proposition require?**

**TYPES OF RESOURCES**
- Physical
- Intellectual (brand patents, copyright)
- Human
- Financial

**What key activities do our Value Proposition require?**

**CATEGORIES**
- Production
- Platforms/Network
- Service

**What type of relationship does the customer expect us to establish and maintain with them?**
- Personal Assistance
- Dedicated personal Assistance
- Self-Services
- Communities
- Co-creation

**Through which Channels do our Customer segments want to be reached?**

**CHANNEL PHASES**
- Awareness: How do we raise awareness about our company products and services?
- Evaluation: How do we help customers evaluate our Value Proposition?
- Purchase: do we allow customers to purchase specific products and services?
- Delivery: How do we deliver value proposition to customers?
- After sales: How do we provide post-purchase customer support

**What value do we deliver to customers?**

**CHARACTERISTICS**
- Newness
- Performance
- Customization
- “Getting the job done”
- Design
- Brand / Status
- Price
- Cost Reduction
- Accessibility
- Convenience / Usability
References

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