The Connected Home –
A smart marketing quest

- Understanding, generating and applying a marketing model for the Connected Home

Daniel Eriksson
Manfred von Richthofen

The Connected Home – A smart marketing quest

- Understanding, generating and applying a marketing model for the Connected Home

Abstract

Title: The Connected Home – A smart marketing quest

- Understanding, generating and applying a marketing model for the Connected Home

Authors: Daniel Eriksson, Technology Management, Survey and Land Management, University of Lund

Manfred von Richthofen, Technology Management, Lund School of Economics and Management, University of Lund

Tutors: Professor Ulf Körner, Department of Information and Communication Technologies, Lund Institute of Technology

Professor Claes Svensson, Department of Business Administration, Lund University

Karna Norén, Concept and Business Developer, New Possibilities Concepts, TeliaSonera, Sweden

Per Gustafsson, Head of New Possibilities Concepts, TeliaSonera, Sweden

Johan Claesson, Manager, Product Management - Home Services, TeliaSonera, Sweden

Problem discussion: The Connected Home is today within reach and possible for the consumer to obtain. All components are available. On the other hand there is only a fragment of the Swedish consumers that as of today have embraced it. The broad public has so far reacted to the offers with a mix of incomprehension and disinterest. Conducted surveys point out a number of problems ranging from problems in breaking down the concept of the Connected Home into comprehensive steps, to the inability to communicate the benefits to the customer. Hence the benefits cannot be communicated, the willingness to pay is minimal.

Another problem with the Connected Home today is to identify the target groups that will find the offers

most beneficial. As the most interested early adopters build their own Connected Home, the mission is to market the concept to those who today do not know that they can benefit.

Purpose:

The master thesis has three purposes:

1) Create an understanding for the concept of the Connected Home.
2) Construct a general marketing model that will generate marketing guidelines and target groups for the Connected Home.
3) Apply the marketing model on Telia Smart.

Methodology:

Due to the pre-requisites of this master thesis the authors have taken a form of advising role for TeliaSonera. When having these pre-requisites an action research method has been used. The action research approach has led to parallel phases of theoretical and empirical information gathering. Parallel to the information gathering an analysis has been carried out. This has been done to grasp the dynamics of the telecommunication environment and create a foundation for the marketing model.

In the second part of the master thesis, when generating the marketing model: theories were combined with related empirics. This gave the authors a solid analysis of a suitable marketing model.

Information search has been conducted from Internet, articles at Lund University's database ELIN, telecommunication literature and articles, industry magazines and surveys from different research institutes.

Conclusion:

Accesses "to" and "within" the Connected Home are in place, together creating a powerful infrastructure for the Connected Home. The devices within the Connected Home are as well in place and are constantly growing in number and improving their capabilities. The right accesses together with the growing number of devices create vast possibilities for existing and new services for the Connected Home. Actors within the Connected Home together create a value network, which increases in value as

4

more and more actors enter. The value network also creates the dynamic character of the Connected Home demanding new marketing strategies.

Since the Connected Home is a dynamic environment, high-tech marketing strategies combined with cohort segment strategies of the 21st century, together creates a suitable marketing model for the Connected Home. Marketing theories together with empirical findings have concluded that the Connected Home concept is in the Chasm, creating further pre-requisites for the marketing model. The marketing model is divided into three stages. The first stage emphasizes the importance of having the right internal pre-requisites for handling high-tech marketing. Vertical and horizontal alliances and partnerships could be established to adjust to the dynamic character of the Connected Home environment. Integration of R&D and marketing together with structured market knowledge gathering ought to be considered. The second stage highlights the importance of understanding the potential Connected Home customer and their purchase process. We have introduced three plausible target groups: The up-to-date man, the persuading teenager and the simplicity-searching woman. Lastly a high-tech marketing mix ought to be used to reach out to the identified customers. Combined out of five steps:

1) Customize marketing strategy towards the identified target groups
2) Make use of price bundling
3) Broaden sales channels to include both internal and external distributors
4) Simplify the marketing message describing the Connected Home solution
5) Make use of new and innovative promotion strategies such as Cobranding, comparative marketing and buzz marketing

Key Words: Connected Home
Telecommunication Industry
Value Network
High–Tech Marketing
Cohort Marketing
Marketing Model

5

Preface

The process of conducting this master thesis has been both educational and very interesting. The master thesis has been created together with TeliaSonera in Malmö. By spending a lot of time at TeliaSonera in Malmö we have had the opportunity to interact and learn a lot about the company TeliaSonera and their competent employees. Every week we have had an evaluation meeting with our internal supervisors at TeliaSonera: Karna Norén, Johan Claesson and Per Gustafsson. They have all guided and helped us when trying to grasp TeliaSonera as a company as well as the fundamentals of the Connected Home. We are especially grateful for the time they spent supervising and helping us. This has provided us with great insight in the understanding of the Connected Home, which then acts as a solid foundation for the creation of our marketing model. During the sessions when we had problems they provided us with guidance, which gave us motivation to continue. Thank you very much Karna, Johan and Per!

Apart from our supervisors at TeliaSonera our academic tutors have also been of great importance for us during the conducting of our master thesis. Claes Svensson and Ulf Körner both possess extensive knowledge and have guided us through many obstacles. Ulf Körner, with his extensive knowledge within information and communication technologies, has been of great help when trying to understand the technological components of the Connected Home. Claes Svensson, with his great knowledge within business strategy, has directed us through the construction of the marketing model with success. Thank you Ulf and Claes!

Without the help of our supervisors the result of this master thesis would not have reached the same level. Apart from our supervisor we want to thank all employees at TeliaSonera for their willingness to cooperate and for taking their time for our interviews. Thank you very much!

Thank you all!

Lund, May 2009

Daniel Eriksson   Manfred von Richthofen

Table of Content

1 Introduction

This first chapter is going to introduce the reader to the topic of the master thesis. This will be done by presenting a background, problem discussion, purposes, scope and delimitations. The target groups and an outline of the thesis disposition will also be presented. Finally the reader will shortly be presented to TeliaSonera, which has been the partner company of this master thesis.

1.1 Background

During the last half of the 20th century marketing strategies have left the concept of mass marketing and instead come closer to specific marketing, or referred to as market segmentation. Instead of using the thoughts of Henry Ford and his *"one size fits all"* concept the marketing theories as of today have to adjust to the increasing dynamics within the surrounding environments. The marketing strategy ought to be tailored to fit the new markets. Apart from the changing trends within marketing generally, strategies within marketing of high–tech products have increased in numbers. Constantly improved technologies make the old marketing strategies static and not adjustable to the new dynamics.[1]

Today high–technological companies need to adjust their strategies not only from classical marketing theories to high–tech marketing theories, but also take the move towards market segmentation into consideration. This thesis has come across one problem related to the changing dynamics within marketing strategies, namely when a company tries to market the Connected Home concept.

Consumers have for many years' embraced digital technologies. The key drivers for this development are for example broadband links to the Internet, wired and wireless home networks, and digital devices e.g. digital cameras, music players, video recorders. These key drivers has led consumer to acquire, enjoy and manage a great deal of digital content. Because of this increasing stock of digital content consumer has started to demand interoperability between their electrical devices. They want to easily share video, audio, and pictures throughout their home.[2]

The authors will now shortly explain the concept of the Connected Home. There is no universal definition of the Connected Home, but industry experts indicate that it is a further development of the Digital Home. Therefore a brief discussion about the digital home is necessary to fully understand the concept of the connected home. Industry experts see the digital home as a home where the consumer has access to digital media through different devices. The consumer has music and videos in digital formats and is able to consume it through some digital devices. An example could be where a consumer has digital music stored on a computer. By connecting an audio cable between the stereo and the computer the consumer can listen to the stored music

---

[1] Meredith, Schewe and Karlovich (2007)
[2] www.allegro.com, 2009-02-10

on the computer through the stereo. The digital home makes it possible to consume digital content between some of the digital devices in the home. But in many cases this experience is not problem free. The consumer often needs to perform some configuration to get the most out of the experience.

The Connected Home on the other hand takes that interaction a few steps further and focuses beyond just the simple interaction. It aims to create a total new experience of digital living. The Connected Home is focused on seamless connectivity between devices and to the Internet.[3] Ease-of-use, functionality and interoperability are key formula for all devices in the Connected Home. When a user fails to configure, or devices are not interoperable, it tends to make the consumer discouraged and reduce the willingness to buy more electronic devices.[4] Because of this reason different industries related to the Connected Home are trying to create standards for how devices should communicate with each other.[5]

As of today the consumers have shown the greatest interest in the entertainment sector of the Connected Home. For that reason the industries naturally have focused on entertainment. It is within the entertainment sector where the most innovations and services have occurred. There is a constant stream of new consumer electronic devices that changes the way digital content is consumed, e.g. network hard drives and Internet radios. Connectivity is starting to become a competitive advantage and in some cases even a requirement on electronic devices. Customers are coming to expect connectivity anywhere, anytime and on any device. The new devices are more user-friendly and communicate with ease with each other. Wireless connectivity has proven to be a key driver for the evolvement of the connected home. When looking back at the digital home consumers themselves for instant had to start up their computer and find the right devices to connect. In some cases even a software configuration was demanded. There are also many services that combine these new devices with Internet access e.g. Video on Demand, Music on Demand and online storage.[6]

To sum up the discussion about the evolvement of the Connected Home the authors want to conclude the following. The aspect making the Connected Home and especially the entertainment sector so wanted and desirable for consumers is the development of compatible consumer electronics and services. These consumer electronics and services must also be easy to use in a home network.[7] A last notation that has impacted the development of the Connected Homes is the Internet access. The capacity of the access has in the last years increased substantially.[8] This has made it possible for more advanced and demanding data transfers. This high-speed access has also reached out to a greater population.

---

[3] Interview, Per Gustafsson, 2009-02-25
[4] www.ericsson.com, 2009-03-02
[5] www.homegatewayinitiative.org, 2009-02-19
[6] Interview, Johan Holmberg, 2009-02-18
[7] Leyden-Li and Pope (2008)
[8] Valcourt (2007)

1.2 Problem Discussion

The Connected Home is today within reach and possible for the consumer to obtain. All components are available. On the other hand there is only a fragment of the Swedish consumers that as of today have embraced it. The broad public has so far reacted to the offers with a mix of incomprehension and disinterest. Conducted surveys point out a number of problems ranging from problems in breaking down the concept of the Connected Home into comprehensive steps, to the inability to communicate the benefits to the customer. Hence the benefits cannot be communicated, the willingness to pay is minimal.

Another problem with the Connected Home today is to identify the target groups that will find the offers most beneficial. As the most interested early adopters build their own Connected Home, the mission is to market the concept to those who today do not know what they can benefit.

1.3 Purpose

The master thesis has three purposes:

1) Create an understanding for the concept of the Connected Home.
2) Construct a general marketing model that will generate marketing guidelines and target groups for the Connected Home.
3) Apply the marketing model on Telia Smart.

1.4 Scope and Delimitations

1.4.1 Scope

The master thesis will be performed during the spring semester of 2009 within in the Master program Technology Management at Lund University. The thesis implicates full-time study for two students during a period of 20 week, which corresponds to 1 600 working hours.

When conducting this master thesis the author firstly must acquire an understanding of the existing and upcoming concept of the Connected Home. After that a general marketing model for the Connected Home will be created. The model will be able to generate marketing guidelines and target groups for the Connected Home. Finally the marketing model will be applied on Telia Smart, TeliaSonera's implementation of the Connected Home.

Information will be gathered through interviews, literature and discussions with industry experts both at TeliaSonera and at other institutions. The interviews will be performed with experts within the related areas. Literature concerning marketing, strategy and technical issues will be studied. Continuous discussions will be carried out during the time at the office in Malmö in order to keep the master thesis to its ordinary scope.

1.4.2   Delimitation

The authors will only focus on the Swedish market when answering the *three* purposes of the master thesis.

The master thesis will only focus on the concept of the Connected Home that is available for a customer on the Swedish market as of today.

The authors will focus on and understand the components creating this Connected Home concept in Sweden. Thereafter the authors only will focus on identifying and understanding the potential target groups for this Connected Home concept.

The marketing model will only be applicable to the Swedish market due the fact that it is comprised out of Swedish cohorts that are presented in chapter *six*.

1.5   Target Group

This master thesis has been part of the Technology Management program at Lund Institute of Technology and Lund School of Economics and Management. During the writing of the master thesis TeliaSonera has been acting as a partner company. The master thesis has therefore been targeted towards students and teachers within the Technology Management program. Apart from targeting the University the master thesis has TeliaSonera as a target group. When targeting TeliaSonera employees with an interest for the subject are primary in focus.

The master thesis has been conducted so that both experienced marketers as well as inexperienced marketers can understand how the authors have created the marketing model for the Connected Home. This process has been vital when formulating the purpose of the master thesis.

1.6   Disposition

Within this section the authors will introduce the reader to the disposition of the master thesis. By doing so the reader will be more familiar with the different parts of the thesis and understand why the authors have chosen the particular structure.

Chapter *one* introduces the reader to the master thesis background and purpose. Chapter *two* explains the methodology used during the writing of the master thesis.

The figure below presents the disposition for the following chapters of the thesis. All chapters will clearly be presented in order to explain how they contribute to the fulfillment of the thesis.
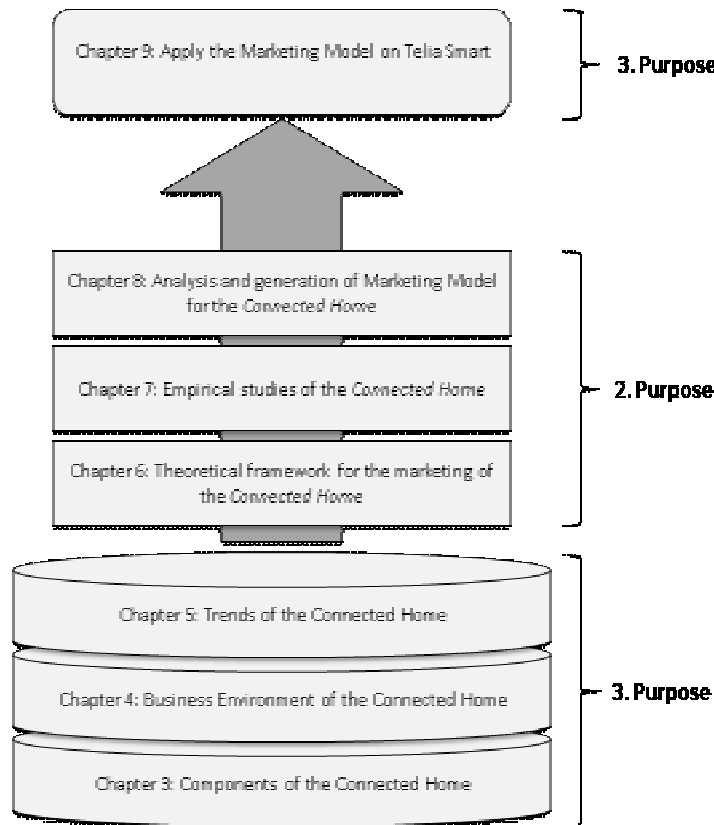
Figure 1- Disposition of the master thesis according to the three purposes

Chapter *three* to *five* aims to generate a solid foundation for understanding the Connected Home. We have divided this foundation into three parts, the components, the business environment and the trends of the Connected Home. Chapter *three* focuses on explain the components of the Connected Home, which we believe is important so that the marketer can understand all the possibilities that can be generated under the concept of the Connected Home. In chapter *four* we will

18

introduce the business environment of the Connected Home. It will be done by presenting the theory of value network. We believe that the business environment is crucial to understand if a useful marketing model is to be created. Chapter *five* is the last part of the foundation. It will present the trends within the Connected Home so that the marketer has the right pre-requisites for the marketing model.

Chapter *six* is the first step in the way towards building the marketing model. This will be done by generate the theoretical framework that later will be used when creating the marketing model.

In chapter *seven* the empirical finding that has been gathered through interviews will be presented.

Chapter *eight* will focus on analyzing the empirical finding from chapter seven and combine these with the theoretical framework from chapter six. This will generate the marketing model for the Connected Home.

Chapter *nine* will be an application of the marketing model performed on Telia Smart, TeliaSonera's implementation of the Connected Home.

Chapter *ten* will wrap up the thesis by presenting the conclusion that can be derived from the application of the marketing model done in chapter nine.

1.7 Introduction to partner company TeliaSonera

TeliaSonera is a market leading telecommunication operator that provides services in the Nordic and Baltic countries, the emerging markets of Eurasia, including Spain, Turkey and Russia. In 2002 the merger of Telia and Sonera resulted in the creation of TeliaSonera. Both Telia and Sonera are market leaders in their countries, Sweden and Finland. In 2008 TeliaSonera had a net sales of 103 585 MSEK and a net income of 19 011 MSEK. The number of subscriptions in 2008 reached over 43 million plus 90 million in associated companies. At present TeliaSonera has over 32 000 employees. TeliaSonera states a vision that indicates that they are to become a genuine service company with simplicity as their trademark and guiding value. TeliaSonera uses *Telia* as their brand in Sweden.[9]

---

[9] www.teliasonera.com, 2009-05-07

2 Methodology

This chapter will introduce the reader to the methodology used when writing this master thesis. It is divided into five sections. The first section will explain the practical approach, which has been useful during the process of writing this master thesis. It describes how data has been collected in order to secure the writing process. Secondly it explains the integrated approach concerning theory and empiric that have been used during some secession of the writing process. An important part of the methodology is to explain the working process of the master thesis. This will be done in the third part of this chapter. The forth section will introduce the reader to the source of criticism. Finally the pre-conception of the authors will be presented.

According to *Lundahl* and *Skärvad* the main purpose of any research conducted is to create knowledge.[10] When trying to create knowledge it is important for the authors to use a methodology for examining the reality surrounding the research. The methodology offers the authors a systematic approach. According to *Halvorsen* the methodology is the set of guidelines how to gather, organize, process and analyze findings in order to enable others to understand the conclusions.[11]

2.1 Practical approach

This master thesis has had three stakeholders; TeliaSonera, Lund School of Economics and Management and Lund Faculty of Engineering. The authors' purpose has during the writing of the master thesis been to satisfy the demands from each of these *three* stakeholders. The practical approach the authors have chosen in order to integrate the demands from both TeliaSonera as well as the academic demands from Lund University is an action research approach. The action research approach is useful when trying to improve organizations' processes as well as creating academic knowledge.[12] The master thesis has been a separate project both for TeliaSonera, as well at Lund University. Due to this pre-requisite the authors have tried to interact as much as possible both with TeliaSonera and Lund University in order to stay on track so that the outcome would add as much value as possible for the *three* stakeholders.

An action research approach has its problems and difficulties. It is important to identify them and understand them when using this approach. The threats will be highlighted and explained shortly beneath. We have chosen to rank their influence from *one* to *three*, starting with the most important threat for this thesis:

(1) Subjectivity[13] – This is the risk of personal involvement of the authors; in this case the researchers of the problem. Subjectivity can lead to misinterpretation of data and lack of objectivity. The conclusions can therefore be affected

---

[10] Lundahl and Skärvad (1992) P.10
[11] Halvorsen (1992) P.13
[12] Kock (2004)
[13] Ibid.

(2) Uncontrollability[14] – This threat is characterized by the fact that the environment investigated can change during the research process. This could lead to flaws in empirical and theoretical data. This master thesis is conducted within the telecommunication industry, which is a changing environment. This increases the importance of taking this threat into consideration.

(3) Contingency[15] – When using an action research approach the result could be too general. This is because the environment it is conducted in could influence the action research.

The threats introduced above have all been taken into consideration. The subjectivity issue has been solved through an iterative dialog with tutors at Lund University and TeliaSonera. This iterative dialog has also helped the authors to handle the other two introduced issues. During the data collection the authors have used many different sources in order to act upon the contingency and uncontrollability problems. By trying to confirm collected data and findings through other interviews at multiply times these two threats have been taken into consideration.

2.1.1   Primary and secondary data collection

This section of the methodology chapter will first of all discuss how the interviews, conducted during the writing of this master thesis, have been performed. Interviews have been carried out to collect primary data. According to *Lundahl* and *Skärvad* interviews can be determined on their degree of standardization. A highly standardized interview contains the questions and their order is static. When an interview is unstandardized the questions and their order is less static. An interview can also be defined as structured or unstructured. When a purpose of an interview isn't in advanced defined the unstructured approach is useful. The interview then aims at directly catching the interviewee's own opinion.[16] Since the interviews were carried out in a dynamic environment the authors used an unstandardized approach when interviewing. Interviews where adjusted to the interviewee competence and where constantly improved as the authors became more familiar with the research area. The purpose of each interview was determined ahead and therefore a structured approach was chosen.

This part will discuss the collection of secondary data. Secondary data is data that has been collected by others.[17] This master thesis has collected secondary data from a wide range of different sources. Since the master thesis is conducted in a high – tech environment that swiftly is changing the Internet has been a useful source. The Internet has primarily been used to access up-to-date information. Apart from the Internet the authors have collected secondary data from articles at Lund University's database ELIN, telecommunication literature and articles, industry magazines and surveys from different research institutes.

---

[14] Kock (2004)

[15] Ibid.

[16] Lundahl and Skärvad (1992) P. 78, 91-93

[17] Ibid.

2.1.2 Qualitative and quantitative data

When performing a research the researchers can focus on collecting either qualitative or quantitative data. When choosing a quantitative research process the data that is collected must be able to be quantified. Surveys or questionnaires are examples of quantitative data collection.[18]

Qualitative data research is based on the fact that the data cannot be quantified; instead interviews try to capture the interviewees' values and opinions.[19]

This master thesis has made use of both quantitative and qualitative data. This thesis is primarily a marketing related thesis, where the authors have tried to understand the Connected Homes existing and potential customers' values and opinions. For that reason the qualitative data is the dominating data and this data has mainly been collected through interviews. The master thesis contains some fact and figures. These are collected from different research institutions and the Internet and make up the quantitative part of the collected data.

The authors of the master thesis have during the writing considered the target groups of the report as important influences when choosing type of data. When trying to understand trends within the telecommunication industry the master thesis have both used quantitative as well as qualitative data.

2.1.3 Reliability and validity

This part of the methodology chapter will discuss the reliability and the validity of the data used in the master thesis. Data that has high reliability has a low presence of random faults. In contrast to reliability, validity refers to the degree of systematic faults within an investigation.[20] Reliability is independent of the validity within a research, but a high validity is dependent upon a high degree of reliability.[21] During the writing of this master thesis several actions have been taken to insure a high degree of validity. When conducting interviews the interviewees with industry experts, where chosen from different departments with different responsibilities at different levels of hierarchy. When interviewing potential and existing customers the authors have chosen interviewees within different age categories with different backgrounds in order to increase the validity of the data gathered. When gathering data the authors have used an iterative working process and gathered relevant data from different sources in order to obtain a high degree of validity. By using a structured interview approach the authors have ensured that the gathered data also has a high degree of reliability.

2.1.4 Objectivity

According to *Lundahl* and *Skärvad* the factor objectivity is a word that has many meanings; such as impartiality, versatility, differentiation of facts and values and

---

[18] Lundahl and Skärvad (1992) P. 78, 91-93
[19] Ibid.
[20] Ibid.
[21] Ibid.

completeness.[22] The authors have strived after achieving a satisfying objectivity for all the parts in the master thesis. In order to obtain this objectivity several actions have been taken into consideration. The master thesis differentiates facts from opinions. This has been possible through separating empirical and theoretical findings. Chapter *three*, *five* and *seven* solely obtain empirical data and chapter *six* only contains theory. In contrast to this chapter *four*, *eight*, *nine* and *ten* have been chosen as the parts where empirical and theoretical findings are integrated together with the authors' own opinions and thoughts, this approach has also been used in the summaries in the thesis. The authors have chosen to separate the master thesis in three main parts according to the disposition outlined in chapter *one*: the Connected Home part (chapter *three* to *five)*, the constructing of the marketing model part (chapter *six to eight)* and the application part (chapter *nine*). Chapter *one* introduces the reader to an objective view of TeliaSonera as a company.

2.2 Integrated Approach

So far in this chapter the authors have introduced the reader to important factors, which have been taking into consideration, during the writing of the master thesis, in order to insure that a satisfying methodology has been used. The authors hope that the methodological outline of this chapter will help the reader to cope with the different parts of the master thesis. The master thesis has used an integrated approach when conducting chapter *two* and *four*. An integrated approach combines theory and empiric in the same chapter. This is different from a more classical approach that more clearly separates theory from empirics. In chapter *two* theory regarding methodology is presented along with our own discussions regarding the different methodology choices. Chapter *four* introduces the theories related to Value Network together with the authors own summary and view upon the Connected Home as a value network. The integrated approach was chosen because the authors believe that it enhances the reader's value when reading the thesis. The reader acquires both collected data together with an analysis, putting the findings of the thesis in the right context for the reader. The authors believe that the integrated approach also ensures the quality of the master thesis, by aiding them to distinguish between value and non-value adding findings.

2.3 Working process

Before continuing reading this thesis we believe it is important for the reader to understand the working process behind the master thesis.

In order to insure that the stakeholders, TeliaSonera and Lund University, both obtained the same understanding for the conducting of the master thesis an all-embracing project plan was created. This project plan was presented and signed by the stakeholders, in order to insure the support of the master thesis, before the writing began.

The master thesis was set to solve *three* different purposes. The *first* purpose created the pre-requisites for the *second* and *third*. The *first* purpose is to create an understanding of the concept of the Connected Home. In order to introduce the reader

---

[22] Lundahl and Skärvad (1992) P.19

to the Connected Home the authors chose, after conducting interviews with supervisors at TeliaSonera, industry experts and tutors at Lund University, to divide the Connected Home into *three* components (*access*, *device* and *service*), each adding their own value to the understanding of the concept the Connected Home. To fully grasp the concept of the Connected Home the authors believed that it was important to create an understanding of the business environment of the Connected Home. This was done in chapter *four* where value network theory is presented together with empirical studies on the business environment. An analysis was then performed on the theory and empirics in order to create the right pre-requisites for the continuing work of the thesis. The authors then believed that by presenting the trends within the Connected Home (chapter *five*) the final pre-requisites was presented in order to completely understand the way a marketing model were to be constructed. When constructing chapter *three* to *five* the authors used Internet as a source for identification of definitions, trends and figures. Internet was complemented with help of interviews with both tutors at Lund University and industry experts at TeliaSonera in order to guide the writing process. Articles from Lund University database ELIN were also a useful source of information.

With the thorough foundation created by answering the first purpose we believed that we were ready to start building our marketing model, purpose number *two*. This *second* purpose is answered in chapter *six* to *eight*. The conducting of chapter *six* was mainly possible through studying of the books *Marketing of high-technology products and innovation* and *Defining markets, Defining moments*. A complementing study was done with articles collected from Lund University's database ELIN and Google Scholar[23]. Chapter *seven* is solely based on the findings from the conducted interviews. Both customers and industry experts were interviewed so that a broad picture regarding customer needs was able to be presented. The interviews with industry experts were chosen to be presented with the key finding highlighted. Ten customer interviews were conducted and generated a huge amount of data. The most important data was chosen to be clustered and presented via storytelling. This was done in order to make it easier for the reader to digest all the relevant data. In chapter *eight* the marketing model is constructed. This was done by combining the theory from chapter *six* with empirics from chapter *three*, *four*, *five* and *seven*.

In chapter *nine* the third purpose has been answered. This has been done by performing an application of the marketing model for TeliaSonera on Telia Smart.

There are two more general statements that we want to make regarding the working process. Firstly we want to notify that the thesis has been a continuous process of writing. Secondly that the writing has been carried out with a working rotation so that both authors would be able to put their opinion on the work being done.

2.4   Source criticism

Firstly the master thesis has been conducted together with TeliaSonera in Malmö and the authors want to raise the issue that TeliaSonera could possible therefore have influenced the master thesis in several ways. *Secondly* a wide range of sources have

---

[23] www.scholar.google.com, 2009-02-27

been used when gathering information. The sources are combined out of oral, published and electronics character. The authors have chosen their interviewees and their published sources carefully. When electronics sources have been used the authors have focused on the quality of the specific source. The electronic sources have been gathered from larger company sites, industry forums and regulatory organizations.

In chapter *seven* the reader will be introduced to the cohort theory. The author of the cohort theory Professor Charles Schewe has together with Professor Benny Carlson at Lund University created the cohorts for Sweden. These have never been practically used and therefore the authors want to raise this issue as a source criticism. The authors still believe that the theory is extremely interesting and have therefore chosen to combine it with theories related to high–tech products.

2.5   The pre-conception of the authors

The authors believe that it is important to introduce the reader of the master thesis to the pre-requisites of the authors and thereby give the reader an insight to in which context the master thesis has been created. It is therefore important to reveal the existing references and history of the authors. If the reader understands these aspects the authors are able to present an as objective report as possible.

Both authors of the master thesis are majoring in Technology Management at Lund University in Sweden. Prior Daniel Eriksson has attended Lund Institute of Technology where he has studied Survey and Land Management. Manfred von Richthofen has prior studied at Lund School of Economics and Management including an exchange semester at the Business School at the National University of Singapore. The Master program Technology Management integrates the knowledge of both business students as well as technology specialized students. It educates the students to subjects such as project management, strategy and management in high-tech industries, group dynamics as well as teamwork and leadership.

Both authors have a great interest in both marketing questions as well as in consumer electronics and the telecommunication industry. Beyond this interest Daniel Eriksson and Manfred von Richthofen have both experiences from marketing both practical as well as theoretical. These pre-requisites ought to help the reader to put the authors' knowledge   prior   to   this   master   thesis   into   a   holistic   context.

3 Components of the Connected Home

This chapter of the master thesis will help the reader to understand the different components of the Connected Home and how they interact. Each component will be described and important characteristics of each component will be highlighted in order to explain how they have contributed to the concept of the Connected Home.
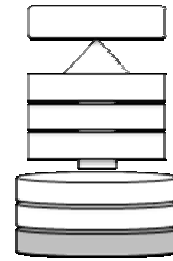
To help the reader to understand the fundamentals of the Connected Home we have chosen to divide it into *three* parts, which are visualized in figure 2.
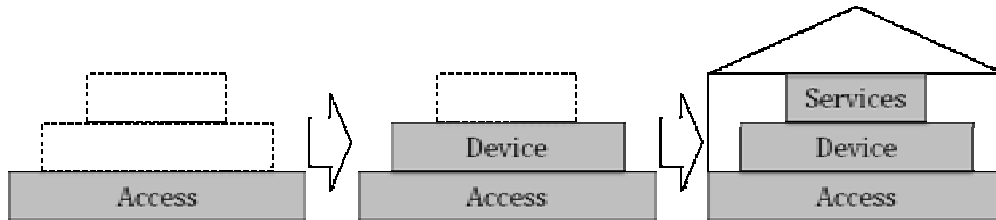
Figure 2 - The Connected Home

The first component of the Connected Home is *access*. Access creates the fundamentals for a Connected Home. Neither devices nor services within the Connected Home can function without the right access. When the access is in place the *devices* make it possible for the user of Connected Home to use the available access. When both access and the right device are interacting, possibilities for a wide range of *service* are created. Therefore we see the services as the last component of the Connected Home.

Each of these components will be introduced and explained in this chapter of the master thesis. The purpose of introducing the suitable access, available devices and available services is to explain the Connected Home to the reader so that a discussion about suitable marketing guidelines and a suitable segmentation later in the thesis will be possible. It is important for the reader to know and keep in mind what the Connected Home actually is in order to understand how it should be marketed. Vice versa it is equally important for the marketer to understand the product that should be marketed.

3.1 Access within the Connected Home

This part will explain and introduce the different accesses available as of today. Before each access is discussed the master thesis shortly presents two important standardization organizations, which have contributed to the standardization of different types of accesses. Thereafter the thesis discusses the Internet usage in Sweden and highlights the important last mile. We have chosen to divide the accesses into four categories; to-home wire line, to-home wireless, in-home wire line and in-home wireless.
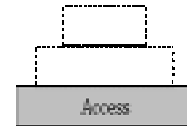
3.1.1 Organizations

Before the introduction to the important access technologies, which are used to access the home, are introduced, the authors shortly want to describe two important organizations that continuously contribute to development of global standards.

3.1.1.1 The Broadband Forum

The Broadband Forum is a global non-profit organization involved in developing broadband networks specifications. It consists of leading industry actors within the telecommunication, equipment, service and networking areas. The Forum was established in 1994 with the name ADSL Forum, which later became the DSL Forum and then finally in 2008 the *Broadband Forum.* At this time the Broadband Forum namely focused not only on the DSL technology but had become wider and wider within its focus areas. An important standardization, which the Broadband forum has established, is the protocol called TR-069. This protocol enables for example remote access and control of devices. The protocol TR-069 will shortly be discussed under the topic devices later in the master thesis.[24]

3.1.1.2 Institution of Electrical and Electronics Engineers

The *Institution of Electrical and Electronics Engineers*, referred to as IEEE, is an international non-profit organization active within developments of technology related to electronics and computer science. There are more than 350 000 members in over 150 countries active in the organization. The members are a combination of scientist, engineers and allied professionals working together in order to improve technology developments. IEEE is a leading developer of standards and is responsible for the families; 802.11, 802.15 and 802.16, which are explained in the coming section of this master thesis.[25]

---

[24] www.broadband-forum.org, 2009-03-10
[25] www.ieee.org, 2009-03-10

3.1.2   Internet usage in Sweden

The Internet usage in Sweden 2008 has been the highest all time and is still increasing.[26] The statistics visualized in the table 1 beneath will illustrate how the access to Internet within Sweden is distributed.

Age (years)	Share in %			Absolute figure		
	Total	Male	Female	Total	Male	Female
16-24	94	96	92	1 011 960	529 731	482 229
25-34	94	95	92	1 070 732	554 461	516 271
35-44	95	93	96	1 227 732	614 939	612 794
45-54	93	93	92	1 091 706	557 338	534 368
55-64	84	87	82	1 032 561	535 264	497 297
65-74	55	59	56	476 963	237 702	239 261
Family type						
1 adult without children	75	78	69	991 916	612 467	379 449
1 adult with children	89	96	86	127 678	43 553	84 124
2 – adults without children	87	89	86	2 831 927	1 420 432	1 411 495
2 – adults with children	98	97	96	1 960 134	952 982	1 007 152
Income						
Under 25 000 SEK	77	79	75	1 999 440	1 010 636	988 805
25 000 or higher	97	97	96	3 018 845	1 614 557	1 404 288
Information unknown	87	86	88	893 369	404 242	489 126
Sweden	**88**	**89**	**87**	**5 278 769**	**2 744 853**	**2 533 916**

Table 1 - Internet access at home in Sweden 2008[27]

Over 88 percentage of the Swedish population have access to the Internet at home. This is one reason why Sweden is ranked as the second best connected country in world shortly after the United States of America.[28]98 percentages of families with two and more children are connected to the Internet. The connections to the Internet are available through different technologies. This section will highlight and explain the dominating technologies as technologies for the future, both for wire line – and wireless access to the Internet. A consolidation within the different technologies used to access the Internet from the home is fact.[29] This leads to standardizations around several dominating technologies explained in following part of the master thesis. The

---

[26] Statistics Sweden (2008)

[27] Ibid

[28] Ibid

[29] Ibid

figure 3 illustrates how homes can be connected to the Internet, either through wire line – or wireless connections.[30]

3.1.3   Last Mile

The figure 3 beneath also illustrates the *last mile,* also referred to as the local loop. It is the last line between the communication provider last hub, if there exists one, and the end user. The technologies used for the last mile are found to the right within the figure 3. They can both be characterized as wire line – as well as wireless connections.[31]
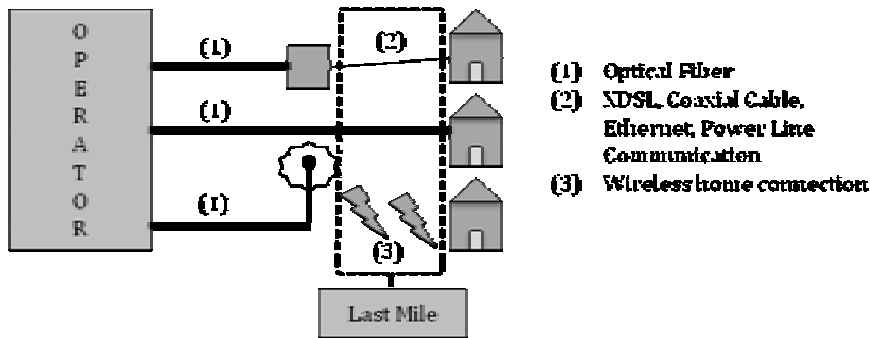
Figure 3 - Access to the home

In Sweden the xDSL technology is the most common technology used for the last mile.[32] We believe it is important to highlight the last mile as a crucial factor creating the pre-requisites for an effective usage of a Connected Home for the existing or possible future user.[33]

The thesis will now carry on with explaining the four different types of access available; to-home wire line, to-home wireless, in-home wire line and in-home wireless.

3.1.4   To-Home Access - Wired

There are three dominating wire line accesses available today in order to obtain broadband in the home. These technologies are XDSL, Cable (Coaxial) and Optical Fiber. The three technologies will now be explained.

3.1.4.1   Optical Fiber

The territory, which needs to be covered in order to establish a connected community, is big and is continuously growing. The new technologies have to; apart from deliver superior speed, also deliver superior range. A technology, that delivers a high transfer rate for superior range is *optical fiber*.[34]

---

[30] Interview, Ulf Körner, 2009-02-24

[31] Ibid

[32] Interview, Johan Holmberg, 2009-02-14

[33] Ibid

[34] www.thefoa.org, 2009-02-18

The first fiber optic was installed in Chicago in 1976. In the 1980s the fiber optic technology became a popular solution for long distance links. Optical fiber has a big advantage over copper lines and coaxial cable (found in the section beneath), when it comes to bandwidth and range. A further advantage that fiber has is that it consumes 4-8 times less power than for example copper lines.[35]

The technology behind fiber is a bidirectional link, transmitting information in two different directions on two different fibers. Both links have a transmitter that creates optics from electronics signals and a receiver that converts the optics back to electronics at the end of the line. The high speed of fiber is obtained by combining many optical fibers into one cable.[36]
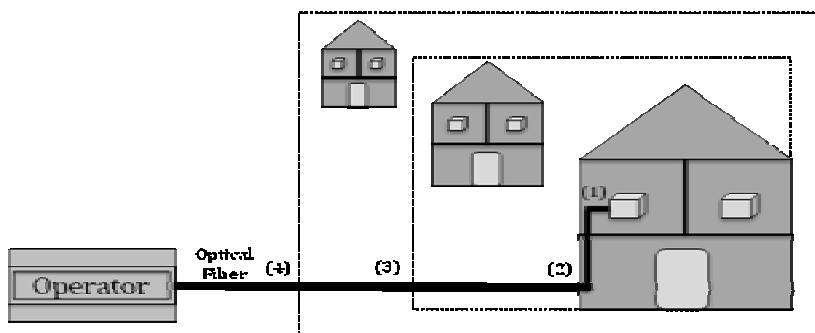
Figure 4- Illustration – How can a home be connected[37]

(1) FTTH – Fiber to Home (Point-to-Point and Passive Optical Network (PON))
(2) FTTB – Fiber to Building
(3) FTTC – Fiber to Curb
(4) FTTN – Fiber to the Neighborhood

As the illustration above visualizes, the different scenarios, how close to the end user fiber is deployed, differs. One big problem, namely the cost of deployment, decreases, but it still prohibits optical fiber to be the most common technology used for the last mile. As optical fiber has big advantages over coaxial cable and copper line communication operators use it as technology to the last curbs before the data begins its journey through the last mile.[38] Through this usage optical fiber has to be combined with other wire line technologies in order to connect the end user. The usage of optical fiber will increase in the future and will perhaps replace DSL technology as the most common technology used for the last mile and a combination of technologies would not be necessary.[39]

---

[35] www.thefoa.org, 2009-02-18

[36] Ibid

[37] www.dslreports.com, 2009-02-19

[38] Interview, Johan Holmberg, 2009-02-14

[39] Ibid

3.1.4.2 XDSL

The term DSL stands for *Digital Subscriber Line* and summarizes the broad range of available technologies available over the existing telephone line made of copper. There are over 200 million lines using the DSL technology deployed in the world, making it one of the most common technologies within digital communication.[40] The potential of DSL has created a lot of possibilities in the area of data communication and the technology is constantly improved. It offers seemingly high speeds for data transport at low-cost, creating possibilities both for private users as well for businesses.[41]

The technology DSL uses the existing outside-plant telephone cable infrastructure of the public switched telephone network (PSTN) when transporting information. Through using an existing network the service providers can use old cable in order to achieve new revenues. At the same time the users obtain the possibility to acquire a fast Internet connection at a lower price.[42]

In 1999 the International Telecommunication Union (ITU) standardized the DSL technology as a global activity. The technology is possible because of the unused capacity of the telephone lines. Analogue telephone service requires a maximum frequency of 3.3. KHz[43]. Through using DSL techniques the copper line can carry much higher frequencies[44], which leaves unused capacity in the already existing telephone lines. With the DSL technology data is split and filtered into two different types at each end of the wide-open range. With help of a splitter at each end of the lines traditional telephone signals can be transported beside high-speed DSL signals to the central office (CO). DSL is available in two versions in an asymmetric version referred to as ADSL, using a wider bandwidth for downstream (receiving) data than upstream (sending) data and a symmetric version where downstream – and upstream bandwidths are equal distributed.[45]

Clarification of different DSL technologies
The table beneath illustrates the leading DSL Technologies used today. Each technology will briefly be explained.

Technology	Downstream Rate	Upstream Rate	Reach (meters)
ADSL	1.5 – 6 Mbps	16 – 650 kbps	3 700 m
ADSL2	12 Mbps	1 Mbps	3 700 m
ADSL2plus	20 Mbps	1 Mbps	1 500 m
VDSL	12 – 56 Mbps	2 – 7 Mbps	1 000 m – 3 000 m
VDSL2	20 – 250 Mbps	2 – 7 Mbps	1 000 m – 3 000 m

Table 2 - Comparison of DSL technologies[46]

---

[40] Valcourt (2007)

[41] www.blackbox.co.uk, 2009-02-19

[42] Ibid

[43] Interview, Ulf Körner, 2009-02-24

[44] Ibid

[45] www.broadbandinfo.com, 2009-03-01

[46] Valcourt (2007)

ADSL is the first version within the asymmetric DSL family and was introduced as mentioned above in 1999 as a global standard for using the existing PSTN for high-speed data transfer. The capacity of the ADSL line depends on the quality of the telephone line, impedance, signal power, loop length, used frequency and service glitches.[47]

The next generation of DSL technologies after ADSL was ADSL2, which enabled increased loop length and performance in data rates. As ADSL2 was developed and trials were undergoing testing the ADSL2 technology, a new technology called ADSL2plus was standardized, enabling a near double capacity potential for downstream transfers on distance of 1 500 m. The frequency used for downstream transfers was increased from 1.1 MHz to 2.2 MHz creating a more effective technology. This improvement depends as all DSL technologies on the condition of the local loop.[48]

The latest technology within the DSL family is the one offered by VDSL (Very High Speed Subscriber Line). It offers speeds for downstream between 12 and 56 Mbps according to table 2. VDSL allows loop lengths between 1 000 m and 3 000 m creating an efficient way of transferring data fast over the PSTN. VDSL2 called Very High Speed Subscriber Line 2 offers an even faster and more advanced DSL standard. VDSL2 offers a usage of the DSL technology that is both flexible and cost efficient as it is dependent on the same infrastructure as ADSL.[49]

3.1.4.3 Coaxial Cable

Apart from the optical fiber and the DSL technology other technologies are continuously being improved. We still believe it is important to raise the question if these technologies have the capacity to challenge DSL as the most common technology used for the last mile of access.[50]

The way of transferring information through the TV network is possible through the usage of the *coaxial cable* technology. Coaxial cables are used for connecting a TV to digital and cable satellite services and antennas. The coaxial cable technology uses, as the DSL technology an existing infrastructure making it, yet not as popular as DSL, an interesting solution for the last mile.[51]

The coaxial cable technology is achieved by using a cable modem that converts the content into a digital signal that can be transported over the coaxial cable. The TV signals do not use the whole bandwidth enabling the possibility of transferring more data. The technology also creates the possibility of transferring data in two directions, generating the right pre-requisites for using the existing infrastructure for broadband Internet usage. The coaxial cable technology is used for the last mile meaning that the technology is often utilized together with optical fiber similar to the DSL

---

[47] Valcourt (2007)
[48] Ibid
[49] Ibid
[50] Interview, Ulf Körner, 2009-02-24
[51] www.thisiscable.com, 2009-03-02

technology.[52] The speed offered by coaxial cable is more unpredictable than the one of DSL due to the fact that other users log on and off to the existing coaxial cable.[53] The maximum speeds that are offered without any contention are 27 Mbps downstream and 9 Mbps upstream.[54]

3.1.5 To-Home Access - Wireless

After the presentation of the existing dominating wire line connections enabling fast broadband to a potential Connected Home user, the master thesis will carry on introducing the different technologies enabling *wireless* broadband access to the home.

3.1.5.1 3G and Hot-spots

The first part of the wireless access will discuss technologies available for the Connected Home user to reach his or her Connected Home from outside the home through a portable device. The user can transfer different amounts of data traffic depending on the purpose of the connection to the home. The important technologies are *3G* and *Hot-spots*.[55]

3G – Third Generation
3G is the third generation of mobile communication. As 3G was introduced it enabled the mobile phones to act as true multimedia phones. The technology uses cellular access technologies enabling the user's mobile phone to access the Internet. This enables the cellular phone to stream video, browse the Internet and sending larger multimedia files. 3G technologies are based on the GSM family, but in order to create a functional network new access towers have to be deployed. The technology offers speeds up to 7.2 Mbps, but with this limited performance the future of the 3G technologies could be questionable. The mobile phones using the advantages of the 3G technologies are known for the user as smart phones.[56]

The 3G technology is a flexible and common technology used today for transferring smaller amounts of data between portable devices and the Internet.

Hot-spots
The term Hot-spots describes a wireless router located in a public area. This wireless router offers its surroundings wireless access to the Internet. The router itself is connected to a landline broadband connection. The trend within Hot-Spots has increased. In 2003 there existed 43 500 units in the world compared to over 200 000 units available in 2008 in the world. A great number of players have entered this market leading to a fast and vast increase in the number of available Hot-spots connections.[57]

---

[52] www.thisiscable.com, 2009-03-02

[53] www.computing.dcu.ie, 2009-03-02

[54] Ibid

[55] http://computer.howstuffworks.com, 2009-02-26

[56] Interview, Ulf Körner, 2009-02-24

[57] http://computer.howstuffworks.com, 2009-02-26

Internet connection through Hot-spots can either be accessed with or without payment. Hot-spots offering Internet connection without any payment, can often be more crowded leading to a decrease in performance. Some operators choose to charge a fee for the usage but at the same time they offer a faster connection to the Internet.[58]

One problem with the concept Hot-spots is that the availability and coverage of these devices is sparse.[59]

Over the past years this the concept *wireless mesh networks* has steadily developed as one of the latest methods for utilizing wireless broadband connections for high-speed data transfers. The development of the wireless mesh network has accelerated due to improvements in wireless standardization, increasing processors capacity, increase in the deployment of hotspots and a growing competitive landscape within the high-tech industry.[60]

The technologies of wireless mesh network use Access Points (APs) in order to communicating with each other. The AP can be referred to as a "wireless bridge" and is a member of a wireless network. The data is then transferred over these APs down to the targeted device. An AP consists of a wireless router that communicates with different clients and other AP. These clients can consist of other Wi-Fi connections, e.g. Wi-Fi Card or Wi-Fi Phone. The different devices are able to communicate with each other independent of a central transmission point. The range of transmission between the devices only needs to be as far as the next AP. The last AP is connected to the Internet through a landline broadband connection. The Wi-Fi transmission uses the common Wi-Fi standards 802.11a, b, and g. The Wi-Fi technology will later be explained under section *In-Home Wireless Connections.* [61]

The benefits of the mesh networks could be summarized in three key issues:
- High flexibility to extend Wi-Fi coverage
- Offers high portability/mobility
- Potential low cost deployment

The deployment of *Municipal Wireless Network* in cities using mesh networks solutions is increasing creating further possibilities for broadband Internet connectivity.[62]

The hotspot, Mesh Networks and MAN concepts create possibilities for transferring larger amounts of data between portable devices with Wi-Fi compatibility and the Internet. The Connected Home user can therefore use the hotspots to connect to their specific Connected Home and transfer larger amounts of data compared to what is possible with the 3G technologies.

---

[58] http://computer.howstuffworks.com, 2009-02-26
[59] Ibid
[60] Ibid
[61] Ibid.
[62] Ibid

3.1.5.2 WiMAX and LTE

After introducing technologies giving the Connected Home user the possibility of reaching their home network from everywhere, we will continue to describe two types of wireless accesses enabling both a connection to home from a portable device such as a mobile phone and enabling a fixed high-speed wireless connection to your home for permanent use.

WiMAX

The technology can be seen as the 4th Generation of the Wi-Fi family.[63]WiMAX is short for *Worldwide Interoperability for Microwave Access* and is also addressed as IEEE 802.16. The technology WiMAX operates similar as Wi-Fi but with increased speeds, availability for a larger amount of users and over greater distance. In some suburban and rural blackout areas operators are not able to deliver broadband due to bad infrastructure. WiMAX could potential solve this accessibility problem and deliver broadband Internet access to these areas, increasing the number of homes connected to the Internet through broadband. WiMAX is transmitted from tower similar to cell-phone towers. The reach of one WiMAX tower can provide broadband coverage for areas as big as 8 000 square km. At the other end of the transmission a receiver must be placed. These receivers can be as small as a PCMCIA card or be built in as a Wi-Fi receiver is today.[64]

The speeds that theoretical are available with WiMAX are 79Mbit per second.[65] The WiMAX technology creates the wireless pre-requisites for creating a Metropolitan Area Network (MAN) connecting e.g. a whole city.[66]

The concept of global area networks (GAN) is the last step in the evolution of area networks. A GAN network would work similar to a cell-phone zone enabling the users constant access to broadband Internet. GAN would be called IEEE 802.20.[67]

LTE

The technology of *Long Term Evolution* (LTE) is the beginning of the 4th generation of technologies within the GSM family. The goal of the operators involved in the development of LTE is to integrate the Wi-Fi technology with the GSM technology making it possible to utilize the technologies to create a technological symbioses them in between.[68] LTE is a natural upgrade path for the GSM technology to take.[69] The GSM technology will provide 89 % of the global market connections in 2011, which indicates a positive future for LTE as a dominating technology. In Sweden the big actors Tele2 and Telenor together plan a major rollout of the LTE technology for 2013.[70]

---

[63] Interview, Johan Holmberg, 2009-02-20

[64] Ibid

[65] www.computerworld.com, 2009-02-20

[66] Ibid

[67] http://computer.howstuffworks.com, 2009-02-26

[68] Interview, Johan Holmberg, 2009-02-20

[69] www.computerworld.com, 2009-02-20

[70] www.telenor.se, 2009-02-18

LTE will take usage of cell-towers, as the GSM network is doing today. It will be possible to receive the technology LTE with devices depending on lower-power sources.[71] The LTE technology will use a radio frequency spectrum up to 2.6 GHz enabling, together with other technologies, a transfer speed up to 100Mbps.[72]

Many experts believe that LTE will dominate the future market even if the deployment of WiMAX is more developed today. LTE carries the information over the GSM standard, which dominates the global market. Operators are therefore able to use the GSM network as a natural path to assist and guide the upgrade to LTE decreasing the time to market.[73]

3.1.6   In-Home Access – Wired

When the connection to the home is established through a receiver, further technologies transfer the information within the home to the desired destination. The most common and useful technologies will shortly be explained beneath.

3.1.6.1   Power Line Communication

The technology transmitting data over the power lines is called *broadband over power lines* (BPL)[74]. The technology power line communication offers two different types of solutions for creating power line Internet at home. One way of accessing the Internet is through using a Power Line Internet Provider transmitting data through the power lines to a home Internet gateway. The electrical system both supplies the home with power as well as connectivity to the Internet. This version is called Access BPL. The other, in this master thesis more important, method of using power line technology within the home is called In-House BPL. The communication within the home between the different devices will then be carried out using the existing power line network within the house enabling a flexible connectivity. BPL has some limitations that affect the usability. When BPL is used radio interference is created within the lines used, this interference has resulted in a decrease in popularity of the technology. Speeds between around 85 Mbps are possible with the BPL technology.[75]

3.1.6.2   Ethernet

The Ethernet technology is referred to as standard 802.3 set by the IEEE (Institute of Electrical and Electronics Engineers, Inc). This standard has grown and has become very popular. The communication is enabled over a single cable, which is shared by other device within the network. If you connect a device to this cable it is able to communicate with other attached devices within your network. It is easy for the user to connect additional devices to the network, namely only by connecting the device to the existing cable network.

---

[71] www.computerworld.com, 2009-02-20
[72] Ibid
[73] Interview, Ulf Körner, 2009-02-24
[74] http://computer.howstuffworks.com, 2009-02-20
[75] www.netgear.com, 2009-02-20

Today cables are available supporting speeds up to 1 Gbps. Due to the Ethernet fundamental existence within LAN the future existence of Ethernet is positive.[76]

Ethernet is also used as an access technology to the home from a nearby optical fiber connection. We choose to place Ethernet as an in-home technology due that it is a very common technology used in-home.[77]

3.1.6.3 Firewire

The technology *Firewire* is also known as IEEE 1394. It is a high-bandwidth interface used for computers and supporting devices. Apple Computers originally developed the technology as a high-speed interface. Firewire is often used as interface when transferring digital data between two closely located devices (e.g. digital cameras and camcorders), due to its capacity in speed. One advantage of the technology is that many devices have the Firewire interface from beginning making it very pluggable.

The speeds that are available with Firewire are around 400 Mbps. The next version of Firewire, Firewire2, will increase the speeds of the technology even more.[78]

3.1.6.4 USB technology

The technology USB is one of the most common interfaces used within the personal computing area. There are over 6 billion products with USB technology available on the market. Previous standards of the USB have been USB 1.0 and USB 2.0. The newest standard introduced during CES 2009 is the USB 3.0 standard. The technology delivers the same compatibility, but with increased speed and better power handling. The technology USB 3.0 is called SuperSpeed 3.0 and enables a data transfer speed of 5 Gbps compared to USB 2.0, which delivers a speed of 480 Mbps. With SuperSpeed 3.0 Intel has created possibilities for the future to transfer data up to 25 Gbps, enough to keep up with the market during the 5 coming years.[79]

3.1.7 In-Home Access - Wireless

After the reader has got an introduction to the different wire line technologies used within the home, the master thesis will continue to describe the wireless technologies available. The wireless technologies use frequencies around 2.45 GHz. These frequencies are allocated to *ISM, industrial, scientific* and *medical devices*. This means that the frequency 2.45 GHz is free for everyone to use.

3.1.7.1 WLAN - The 802.11 Family

The wireless technology revolutionized communications in the 1990s. When the technology is used to create a local network, the network is called WLAN, which stands for *wireless local area network*. This is a network consisting of different devices communicating wireless with each other. As mentioned above the IEEE has

---

[76] Interview, Ulf Körner, 2009-02-24

[77] http://computer.howstuffworks.com, 2009-02-20

[78] www.pchardware.co.uk, 2009-02-22

[79] www.pcworld.com, 2009-02-22

set the standard for this wireless communication. The WLAN family consists of four different standards, each with different speeds and frequencies. The standards of the technology make the development possible of a wireless communication infrastructure.[80]

The standard *802.11.a* is active within the frequency 5 GHz and enables speeds of data transfers up to 54 Mbps. The next standard which is often used within home networks is the one called *802.11b* giving the user the possibility of transferring data with speeds up to 11 Mbps at the frequency of 2.4 GHz. The faster version of wireless standards using the 2.4 GHz frequencies is the *802.11g*, which enables a speed up to 54 Mbps[81]. The fastest standard within the WLAN family available today is *802.11n*, which enables speeds up to 300 Mbps on either frequency 2.4 GHz or 5 GHz, yet to be decided.[82]

The technology of WLAN is utilized not only in the home, but also within the *wireless mesh network* introduced earlier in the master thesis. The future of the WLAN family is bright and the technology will be a dominating actor within home networking.[83]

3.1.7.2 802.15 – Family

The organization IEEE's family 802.15 describes mainly two important technology the authors want to introduce. These technologies are *Bluetooth* and *Zigbee*, both wireless technologies with limited speeds but with big possibilities when it comes to the usability.

Bluetooth

The technology called *Bluetooth* makes the small area networking easy and flexible. Bluetooth devices transmit a signal on the 2.45 GHz frequency via low-power radio waves. It sends a very weak signal within a short range, approximately 10m. With help of Bluetooth technology the user can communicate flexible with low power usage. Bluetooth 1.0 standard offers a maximum data transfer speed of 1 Mbps, meanwhile Bluetooth 2.0 can send data with speeds of 3 Mbps.[84] These speeds are not that high, but with the flexibility of the Bluetooth technique many opportunities for cable replacement are created.[85]

ZigBee

The second important technology to highlight is the one called *ZigBee* or standard *802.14.4*. The ZigBee technology uses even less power than the Bluetooth technology making it useful when wanting to use less complex wireless communication to monitor and control devices. The technology can be used with the industry as well as within the home when communicating with lower data rates. It can be used for

---

[80] Marks et al (2001)
[81] Interview, Ulf Körner, 2009-02-24
[82] Marks (2001)
[83] Interview, Ulf Körner, 2009-02-24
[84] http://electronics.howstuffworks.com, 2009-02-22
[85] Interview, Ulf Körner, 2009-03-04

example for home entertainment control, mobile services and for monitoring industrial machines wireless.[86] The future of the ZigBee is as for the Bluetooth technology stable, because the demand for low power transmissions will be stable.[87]

3.1.7.3 DECT

The abbreviation DECT represents a technology called Digital Enhanced Cordless Telecommunications. It is a radio access standard, which offers flexible and local wireless communications. The technology provides solutions for multimedia and voice traffic transfers and can be combined with other wire line and wireless technologies. It provides a high security level through combining dynamic channel selections and digital radio technology with different encryption technologies. DECT can provide data links with speeds up to approximately 0.5 – 2 Mbps.88 The speed offered is not that high but the flexibility it provides makes it usable for local low-speed transfers. The technology can for example be used within building– and security control systems allowing automatization of different devices.[89]

3.1.7.4 Z-wave

The technology called Z-wave enables electronic devices to communicate with each other via remote control. Z-wave is, as ZigBee, based on low-power radio waves making it power efficient. It can be added to many different types of electronics within users home, such as for example windows shades and home lightning. Through plugging in a Z-wave module and controller, Z-wave integrates the different home devices into a wireless network. Through a connection from a PC and Internet you are able to control your Z-wave devices from anywhere where you have access to Internet.[90]

3.1.7.5 TransferJet

In January 2009 Sony introduced a new technology, called TransferJet, which is a new Close Proximity Wireless Transfer Technology. The technology enables high-speed transfer of data between electronic devices. These devices can be for example digital cameras, mobile phone, computers and TVs. The speeds available with TransferJet are around 560 Mbps. The technology is simple to operate and can be used as a Universal Interface between consumer electronics. The goal of Sony wants to introduce the TransferJet technology across many consumer electronics industries and hope that the market for mobile device-based content will increase due to continuous new introduction of various services and products.[91]

---

[86] Marks et al (2001)
[87] Interview, Ulf Körner, 2009-03-04
[88] Marks et al (2001)
[89] www.dectcordlessphones.co.uk, 2009-02-22
[90] www.z-wave.com, 2009-02-22
[91] www.sony.net, 2009-02-22

3.1.8   Summary of access

This part of the master thesis has introduced the different *access* available for the Connected Home. We chose to divide them into four categories. The first two categories are the accesses available to home, both wire line and wireless. After that we shortly explained which accesses are available within the home creating the possibilities for a Connected Home. These accesses together create the fundament for the Connected Home but need to be complemented with the right device and a suitable service in order to establish the whole concept Connected Home. In the figure 5 the different access used when creating and using a Connected Home are summarized.
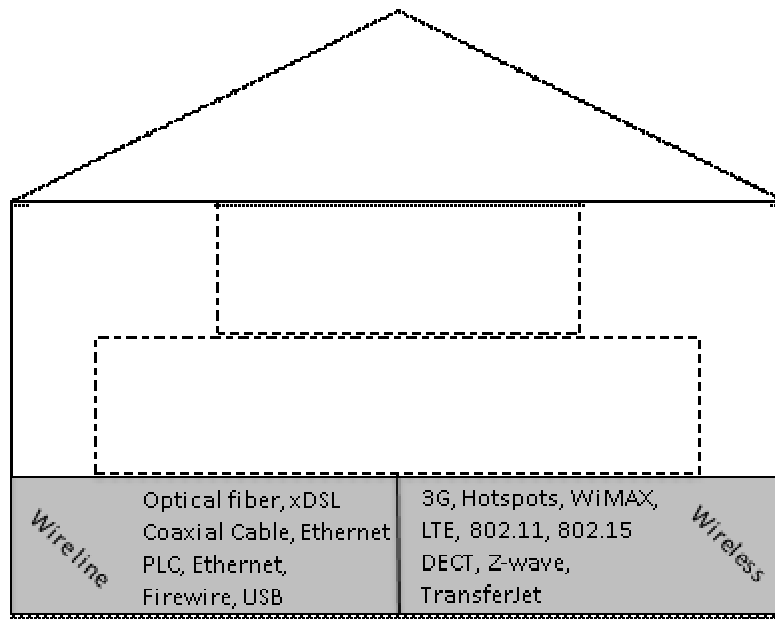
Figure 5 - The Connected Home (Access)

When later discussing the different approaches how to market the Connected Home it is important to know that there exists several different ways for the customer to obtain the access. It is vital for a marketer to know that the access is a crucial part of the Connected Home and that it set the pre-requisites for different devices and services.

3.2 Devices within the Connected Home

This part will start with the basics of what actually defines a device. Dividing devices in to hardware and software does this. Then we will go on and describe interoperability, the thing that makes it possible for devices to interconnect with each other. This is a crucial and dividing line when discuss the Connected Home. Finally we will introduce the Residential Gateway (RGW), this is a device that can make the Connected Home an easy and trouble free experience.
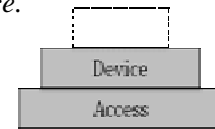
3.2.1 Hardware and Software

To bring up the differences between hardware and software might at first seem as a trivial thing. Obviously everybody knows how to distinguish hardware from software, or do they? To fully understand what a consumer electronic device is and the complexity surrounding them, we think that it is crucial that there is no doubt in the readers mind about how to make a distinction between hardware and software.

Hardware, or to be more specific computer hardware, is all the physical components of an electronic device. All of the components that you are able to touch and see are referred to as hardware. It could for example be the circuit boards, processor or keyboard of a computer. Hardware could also be the physical parts that build up your printer, mp3-player and the cable that connects your stereo to your computer or even the power supply unit that delivers electricity to your devices. [92] The term hardware came up as a way to separate the assembled parts of an electronic device, the "box", from its programs, the thing that makes the box do things. The programs also needed a collective name and so the term *Software* was introduced. Hardware is always permanent and invariable; software on the other hand can with ease be changed to create totally new user experiences.[93] Software could for example be a computer game, operating system or a text editor. Some of the most influencing software companies are Microsoft, SAG, Oracle Corporation and Adobe Systems.

There is an absolute dependence between hardware and software; none of them can function without the other. One of them creates the others ones value and vice versa so they must coexist. By a structure and ordered sequence of instructions the software can make the hardware change in a particular way and thereby creating a user value. It is important to have the relationship/dependence of software and hardware in mind when trying to create an understanding of the *Connected Home* and devices in specific.

3.2.2 Interoperability

Interoperability will be exemplified by describing UPnP and DLNA, two different standardisation organisations for making hardware and software function together with other hardware and software. Under this section we will also mention the

---

[92] www.hardwaremarketplace.com, 2009-03-13
[93] http://searchcio-midmarket.techtarget.com, 2009-03-13

possibility of creating a home network through the use of different media and music bridges.

It is important to understand that different standards work in different levels of the communication chain. [94] The illustration beneath visualized the five different layers enabling interoperability.

Figure 6 - Important levels of Interoperability [95]

These five layers must be available in order to enable interoperability between different devices. These levels will be discussed further, when introducing the *Universal Plug and Play* concept and the *Digital Living Network Alliance.*

3.2.2.1 Universal Plug and Play

As a response to consumer demands of interoperability and ease of use fourteen Personal Computer and Consumer Electronics manufacturers in October 1999 establish the Universal Plug and Play Forum (UPnP). Since the start the number of members has increased to almost *nine hundred* and the Forum now has a worldwide presence. The organization's goal is to create standards for trouble-free and robust connectivity between consumer electronics, intelligent appliances and mobile devices. The benefits of the UPnP technology are that it is independent of operating system, programming language or network technology. UPnP interoperability is available within the third and fourth layer within the concept of Interoperability. This is visualized in figure 7 beneath. [96]

Figure 7 - UPnP as a standard within interoperability [97]

It all started out with emergence of the Plug and Play Forum that aimed towards making it easier to connect external peripherals to your PC. With other words they wanted to make it easy for the user to connect an external mouse or mp3-player to the computer. But this vision was not sufficient for the organisation and the demand from consumer and so the Universal Plug and Play Forum was created. UPnP then extended the vision to involve many different devices that could be included in a network, from printers to audio/video entertainment. The UPnP standards enable a device to [98]:

---

[94] www.dlna.org, 2009-02-18
[95] www.upnp.org, 2009-02-17
[96] Ibid
[97] Ibid
[98] Ibid

(1) *Connect* dynamically to a network
(2) *Acquire* an IP address,
(3) *Communicate* its capabilities
(4) R*ecognize* the presence and capabilities of other devices.

This procedure occurs automatically with help of self-configuration. After this procedure is accomplished devices can communicate directly with one another creating a further peer-to-peer networking.[99]

3.2.2.2 Digital Living Network Alliance

UPnP did not create the interoperability and ease of use that the consumers wanted. The standards could still demand some unwanted efforts from the consumer. It may for example require some configurations from the user when it came to make the devices connect and interact with each other. UPnP managed to created interoperability between devices in some levels of device communication chain and was in many ways a success. But to be able to deliver completely interoperability and ease-of-use for the consumer the standard must take every level of the communication chain in to consideration, according to figure 4. UPnP did not consider the interoperability of media formats, this led personal computer, consumer electronics and mobile device manufacturer to establish another standardization organization, Digital Living Network alliance (DLNA). This organization focuses solely on the UPnP category Audio/Video (A/V). This means that DLNA is focusing on digital media content and digital media devices. DLNA was established in 2003 by 21 companies and now have over 300 members and is growing each year. The members today reach from computer companies to consumer electronics and software developer. All members are seeking to create products that are totally compatible with each other by using open industry standards. DLNA's most important contribution for interoperability and ease of use within home networking is the attention paid towards media formats. This is the main aspect that differs DLNA from UPnP.[100]

In order to get approved and marked with the DLNA logo a product must go through the DLNA Certification Program, which insures that the product can interoperate with other DLNA marked products. The certification Program is more strict and specific than the one for UPnP certification.[101] The DLNA certification specifies what kind of digital content (e.g. video, audio, images) it supports and also points out the service or feature that it will provide (e.g. printing, playing).[102]

Before going deeper into the technical solution of DLNA, we want to exemplify how DLNA can affect the *Connected Home* by creating interoperability. This procedure will be visualized in four steps in the figure 8..

---

[99] www.upnp.org, 2009-02-17
[100] Ibid
[101] www.dlna.org, 2009-02-18
[102] Ibid
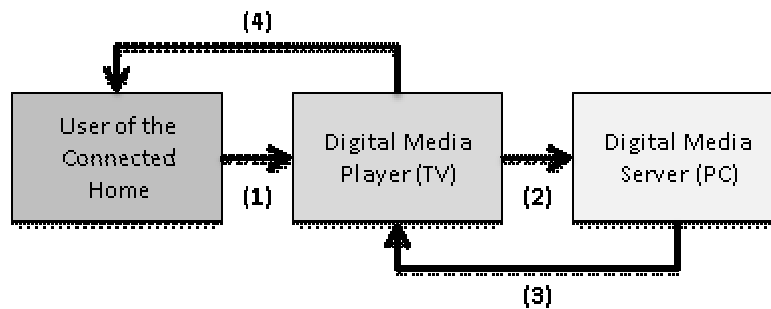
Figure 8 - Example how DLNA can create interoperability[103]

A user of the *Connected Home* needs a Digital Media Server (DMS) when storing digital media, e.g. a PC or a Network Attached Storage with stored content. Then DLNA enables the following process.

(1) A user uses a Digital Media Player (DMP), for example a TV, to discover the Digital Media Server over the home network with help of UPnP.

(2) The Digital Media Player then browses the content directory of the Digital Media Server and creates a list of content items.

(3) The user then selects content items on the Digital Media Server retrieving the content over the Digital Media Player over the home network, using the HTTP protocol.

(4) The Digital Media Player then transmits the media to the user through for example the television screen.[104]

With this process in mind the master thesis now will explain the different device classes of DLNA.

Device Classes

The DLNA has created twelve different *device classes,* structured in three *devices categories* found in table 3. The different classes exist so that every device's feature and the service they provide is better determined. The requirements on the network connectivity and the set of shared media formats define a category. The functional capabilities determine in which class a device should be placed. In many cases a specific device can fulfill all the requirements of several devices classes and therefore be allocated to more than one device class. By having this breakdown structure DLNA secures the interoperability between devices in a network. Today the *device class* of the Digital Media Server (DMS) and the Digital Media Player (DMP) are in use; the other classes are under development.[105]

---

[103] www.dlna.org, 2009-02-18

[104] www.dlna.com, 2009-02-23

[105] www.allegrosoft.com, 2009-02-23

CATEGORY	HOME NETWOKING DEVICES (HND)	MOBILE HANDHELD DEVICES(MHD)	HOME INTEROPERABILITY DEVICES(HID)
CLASS	Digital Media Server (DMS)	Mobile Digital Media Server (M-DMS)	Mobile Interoperability Unit (MIU)
	Digital Media Player (DMP)	Mobile Digital Media Player (M-DMP)	Mobile Network Connectivity Function (M-NCF)
	Digital Media Renderer (DMR)	Mobile Digital Media Downloader (M-DMD)	
	Digital Media Controller (DMC)	Mobile Digital Media Uploader (M-DMU)	
	Digital Media Printer (DMP)	Mobile Digital Media Controller (M-DMC)	

Table 3 - DLNA devices categories and classes [106]

Device layers

It is important to understand that when devices interact with each other this is done in different layers. Within every layer there are many different standards competing for recognition. Not until there is a complete seamless sequence throughout the whole communication chain devices can interact with each other. DLNA is in this matter different from other standards. DLNA has created a total sequence of standards within devices interoperability, which are able communication through the different layers. By introducing the DLNA architecture for device interoperability, figure 9, we can discuss the different layers of communication.[107]
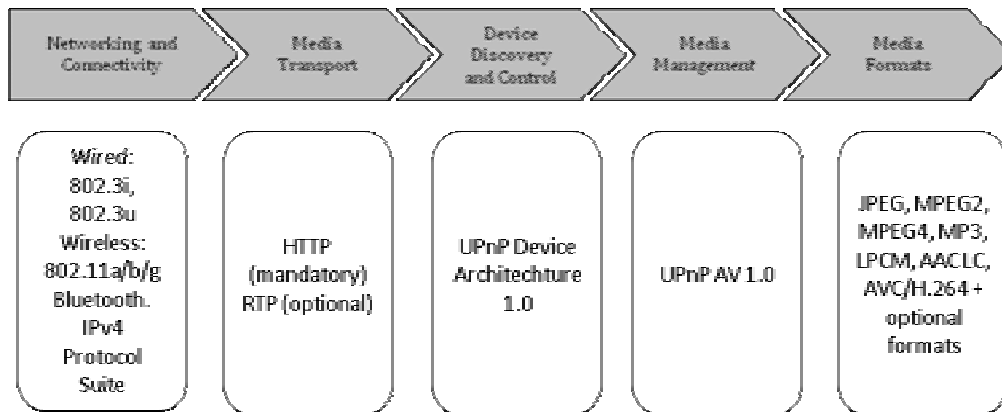
Figure 9, DLNA architecture[108]

---

[106] www.dlna.com, 2009-02-23
[107] www.dlna.com, 2009-02-23
[108] Ibid

The architecture is divided into *five* layers that each has a specific task to perform for creating the interoperability. At the top of the communication chain we find *Media Formats*, this layer describes how the digital media is encoded and formatted for interoperability. For every of the three classes of digital media (images, audio, video) that is included in the standard there are only some formats that are allowed e.g. image (e.g. JPEG, PNG), audio (e.g. LPCM, MP3), and AV (e.g. MPEG2, MPEG4).

The second layer, within figure 9, is called *Media Management* and it is this segment that makes it possible for the devices and applications within the network to *identify, manage* and *distribute* digital content across network devices. The standards that are being used here is an extension of the standards created by the UPnP Audio and Video class, simple called UPnP AV 1.0. [109]

The third layer is referred to as *Device Discovery and Control* and is also an UPnP standard called UPnP Device Architecture 1.0. This standard describes how devices can notice the existence and qualifications of other network devices. It also enables the co-operation among the network entities.[110]

Media Transportation is the forth layer in the DLNA architecture and expresses how the media content is transferred between different devices in the network. The transfer is done by using Hypertext Transfer Protocol (HTTP) which is a communication protocol used to transmit data. HTTP is a request-response protocol, which means that e.g. a browser sends a request to a server often by using a TCP/IP connection which the server then responds on.[111] Within this layer it is also possible to send the media content by using Real-time Transport Protocol (RTP), but HTTP is always mandatory.[112]

The last layer explains and determines the physical connection and communication between devices and is called *Networking and Connectivity*, this layer is divided into two segments. First it determines which protocol should be use for data transportation from one device to another. In DLNA architecture Internet Protocol version 4 (IPv4) is the protocol that is being used, this is the most common Internet protocol. The second part describes which type accesses/connection that should be supported by the devices.[113] For detailed information about the accesses see section *access* in the forth chapter.

3.2.2.3 Music and Media Bridges

At a first glance the Connected Home concept can look demanding from a device perspective. All your devices must be able to talk to each other in order to experience a fully Connected Home. This means that all of your consumer electronic must be of the latest model and therefore probably expensive. We want to raise the question if all

---

[109] www.allegrosoft.com, 2009-02-23
[110] Ibid
[111] www.silicon-press.com, 2009-02-20
[112] Ibid
[113] Ibid

the old devices, that are not compatible with DLNA and UPnP, are useless and if a potential Connected Home user has to replace every device at once?

The industry has solved this problem by creating *music and media bridges*. This means that even with your old stereo you can connected to the home network and play the stored music on your server/hard drive or you can watch that digital stored movie on your old TV. By using *music and media bridges* all of these possibilities are created. The concept of media bridges is visualized beneath in figure 10.
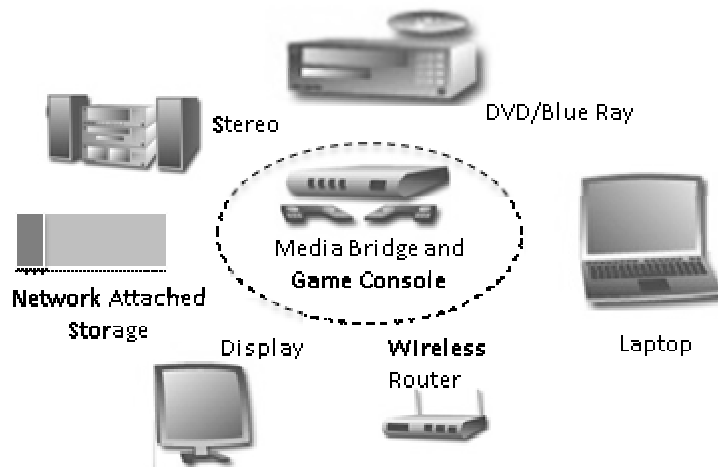
Figure 10 - Connected Home solution with Media Bridge

So, how does this work in figure 10? The bridge is compatible with home networking standards thereby bridging/converting the digital music/video into signals, which your stereo/TV can understand can play. Examples of a media bridge could be computers or game consoles. There also exist special bridges with displays enabling the user to browse through his or her content without any other device. The development of specializes bridges substantially lower the capital requirements for a connected home.[114]

3.2.3 Residential Gateway

When looking at the first modems used within home networks they enabled a single PC to connect to Internet. When operators extended their portfolio to include TV and telephony (triple play), which will be discussed further on, the modems also developed. The modem then first came with multiple Ethernet interface and later developed to a wireless modem/router. The next generation of services will require a more functional device, which is easy to use. This is the Residential Gateway.[115]

---

[114] www.philips.com, 2009-05-27
[115] www.homegatewayinitiative.org, 2009-02-17

When being introduced to the Connected Home and its devices it is important to mention the Residential Gateway. A Residential Gateway (RGW) combines the functionalities delivered by a modem and a router into one device. The RGW takes the technical evolution of modem and router one step further. It is designed with a more advanced technical platform then the one used by a modem-router solution. In the figure 11 on page 44 the RGW is visualized surrounded by components available as of today in the *Connected Home.*
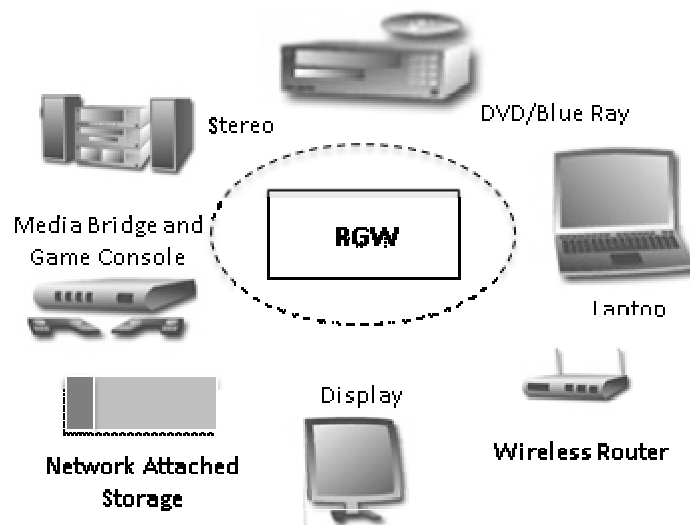
Figure 11 - A Connected Home selection together with the RGW

One most common platform in the RGW is called OSGi. This technical platform enables the operator to expand their product/service portfolio. One of the major differences with OSGi compared with modem-router solutions is the TR-069 protocol. It was the Broadband Forum introduced earlier that deployed the management protocol called TR-069. This was done as a response to the demand for increased high-speed communication accesses, which has increased the demand of broadband deployment.[116]The telecommunication operator is, through the usage of TR-069, able to remotely manage the service of the gateway. Important areas of use are the possibilities for the telecommunication operator to update software and remotely manage the home networks. These applications ease the administration and usage of a home network for customers. The RGW makes it possible for the operators to move beyond just being an access provider and deliver more specialized/advanced services and products to customers.[117]

The residential gateway (RGW) is a core device within the connected home concept; it is the device that controls the traffic in the home network. The gateway is also the

---

[116] Valcourt (2007)
[117] www.osgi.org, 2009-03-19

connecting hub between your home network and the Internet.[118] Well informed consumers have for many years been able to create their own home networks by using modems, routers and other networking devices. The feature that makes the gateway a mass-market product is that it gives individuals who are not that familiar with *home networking* the possibility of creating a well functional home network. The gateway enables an easy connection to Internet and enables communication between the different devices within the home network for the customer.[119]

As mentioned the TR-069 will enable remote managed services for the home gateway and the devices beyond. The gateway will thereby improve the home environment by finding the different devices and offer the right service to the right product. The protocol also enables a secure access for families and authorized friends from distant locations to services and devices in the home network.[120] This security administration is another important feature that comes with the RGW. Due to that the usage of the broadband connections differs, different variations of information are sent over it. The information could for example be of financial or personal character. Communicating this type of information requires a security system preventing any tampering or overhearing of the information. The protocol TR-069 enables this security model, which provides and increases the degree of security. This security model can be adjusted to fit its requirements using two different levels of security.[121] One layer enables a basic security level, mean while the other layer offers higher security. The more secure layer uses certificates for identification as insurance to prevent copying of important information.[122]

The flawless integration between devices in the home network and the quality of the services delivered is according to the industry the solution that will make the gateway a mass-market product.[123]

3.2.3.1 Home Gateway Initiative

Home Gateway Initiative (HGI) is an organization that strives to improve and increase the home communication services. [124] They want to create interoperability between gateways and devices in your home.[125]Nine different telecommunication operators, including TeliaSonera, formed the organization in December 2004 with the goal to create specifications for home gateways. In January 2009 the number of members has increased to 62 and now also includes major manufacturing companies e.g. Zyxel, D-Link and Thomson. The members stretch over the entire world.[126]The dividing line between HGI and Broadband Forum, DLNA and similar organizations is

---

[118] www.homegatewayinitiative.org, 2009-02-17
[119] Ibid
[120] www.homegatewayinitiative.org, 2009-02-17
[121] Valcourt (2007)
[122] Ibid
[123] www.ericsson.com, 2009-02-22
[124] www.homegatewayinitiative.org, 2009-02-17
[125] Ibid
[126] Ibid

that HGI exclusively focuses on the home gateway and its surrounding environment.[127]

To be able to increase the home communication services the residential gateway is a key element. Therefore HGI wants to promote and endorse the evolvement of residential gateways supporting the delivery of services. HGI works with manufacturers to create larger product volumes and also match user requirements to the product developed and finally to generate interoperability. The initiative will work with existing standards (e.g. Wi-Fi, DLNA, Broadband Forum, ITU) and then analyze the gap between the different requirements.[128]

HGI has identified five key drivers for the home networking:

- Wi-Fi, promote the consumer to move away from wired connectivity.
- Content sharing; the amount of personal digital content is growing incredibly. Different devices such as mp3-players, digital cameras, etc, are making this content amount bigger and bigger. With all this content people want to share with one another.
- Multiple devices, there are many products competing about the connection in the home e.g. PC, mp3-plyer, game consoles. The consumer needs a product that can enable sharing between these different devices.
- Multiple service providers. Companies from the consumer electronics, entertainment and PC industry want to provide different services to the consumer that demands broadband connection.
- VoIP, the number of users for this way of communicating is instantly increasing.

3.2.4 Summary of device

We have now introduces the fundamentals within the second component of the Connected Home, devices. We have notified the importance of interoperability between devices for the further deployment of the Connected Home. This interoperability is then dependent on the expansion of different standardizations such as DLNA and UPnP. These standardizations are today available on the market to the customers and thereby so is the Connected Home. In figure 10 beneath different aspects, presented in this part, concerning devices are visualizes.

---

[127] www.homegatewayinitiative.org, 2009-02-17
[128] Ibid

Hardware	RGW (HGI)
Software	Personal Computer
UPnP	NAS
DLNA	Music and Media Bridges
Optical fiber, xDSL	3G, Hotspots, WiMAX,
Coaxial Cable, Ethernet	LTE, 802.11, 802.15
PLC, Ethernet,	DECT, Z-wave,
Firewire, USB	Transferjet

Wireline   Wireless
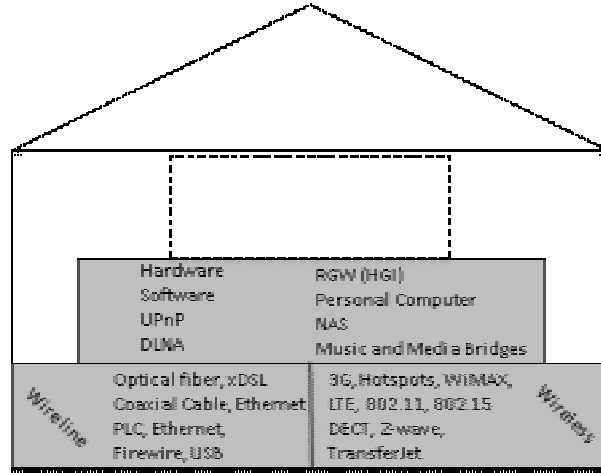
Figure 12 - The Connected Home (Access, Device)

When marketing the Connected Home it is important to know which devices are included in the concept. A marketer needs to understand that in order to deliver the Connected Home to customers the devices need to carefully be chosen so that the interoperability (DLNA and UPnP) is secured. If this is not taken into consideration there is little chance for the marketer to be able to generate a successfully marketing strategy.

3.3   Services within the Connected Home

The last component of the Connected Home is the one that uses the possibilities that the access and devices provide, in this thesis defined as services. In the text below you will find a breakdown of the services provided within the Connected Home in Sweden. It has been divided into three parts,

starting with the most basic services. Thereafter this part will continue with additional services and finally the more advanced services.

3.3.1   Basic Services

The first and the most basic service that will be addressed is the *Internet connection.* It is this service that makes many other services possible. The Internet connection has changed dramatically over the last years and decades. It has moved from a low speed dial-up connection to a substantially faster broadband link. The shift from dial-up connection to broadband has created many new possibilities when it comes to deliver services through an Internet connection.

Broadband operators often provide their customer with a *broadband package* when they sign up for an access account. This includes email accounts, web pages, virus program etc. This is included in the service portfolio for almost every operator.[129]

---

[129] www.telia.se, 2009-02-28

3.3.2 Additional Services

IPTV

A service that has gained a lot of interest and increased substantially in the last years is television via the Internet connection; this service is called *Internet Protocol Television (IPTV)*. This form of television got an extra push in Sweden when the analog television was shut down in February 2008[130]. The digital television is sent with Internet protocol over a network infrastructure and is based on the media format MPEG2 and MPEG4, which are two of the standards, supported by DLNA. The operators only distribute IPTV to their own customers; therefore it is not possible to get IPTV from another operator than the one that is delivering the Internet access to the home. [131]

Within IPTV the operator can generate plenty of content services e.g. different TV-channels and *Video on Demand* (VOD). *Video on Demand* gives the operator the opportunity to deliver a movie or another video program to a TV or web browser when the user requests it.[132]

It is also possible for the operator to deliver radio channels within IPTV-technology.[133] The benefits of IPTV are that it is based on Internet Protocol. This makes it easier to build services that are compatible with the computer and the mobile e.g. you can start to watch a movie on your TV and then finish watching it on your mobile on the way to a friend. The technical platform also enables more interactive services e.g. you will be able to vote for your favourite candidate of a reality show directly through the TV, instead of having to pick up your phone and call in your vote.[134]

Music on Demand

The service *Music on Demand (MoD)* is also available over the *Connected Home*. Music on Demand is a service that refers to the possibilities of downloading music from Internet. Many operators are also offering a radio services via Internet.[135]

Voice over IP

A third service that also consists in almost every operator offerings is *Voice over Internet Protocol (VoIP)*. The IP-telephony was introduced on the Swedish market in 1999 and the bigger launch was made in 2002. As with IPTV the information is send over Internet using an Internet Protocol. An IP-call can be made in a numerous of ways: computer to computer, computer to telephone (and vice versa), telephone to telephone. If the telephone is an analog telephone the IP-signal need to be transferred to PSTN technology, the operator solve this by having a gateway that transfer the PSTN technology to IP. The downside of IP-telephony is that the conversation quality cannot be guaranteed. This problem is due to the way information is send over

---

[130] www.regeringen.se, 2009-02-28
[131] Interview, Karna Noren, 2009-02-24
[132] www.pcmag.com, 2009-02-24
[133] Ibid
[134] http://computersweden.idg.se, 2009-02-22
[135] www.telia.se, 2008-02-28

Internet where the data packages are taking different ways to get to the recipient. This can lead to latency, often just a few milliseconds but when it comes to real-time communication this can be perceived as disturbing. The same thing can happen with IPTV, the audio and video data packages can sometimes be unsynchronized.[136] Operators are trying to solve this by prioritizing the traffic to the access, IPTV and *VoIP* are prioritized before other Internet traffic, and thereby increasing the quality.[137] The fair for *VoIP* is much lower than the ones for PSTN; this is mainly because of the lower maintenance cost than the old PSTN has.[138]

Triple Play

In the telecom industry it has become very usual for operators to bundle the Internet access, IPTV and VoIP and offer all three to the customer, this is called *triple play*. There is also discussion about including mobile services and thereby expanding to quadruple play.[139]

3.3.3 Advanced Services

Lastly the authors want to introduce advanced *three* advanced services available within the *Connected Home* concept in Sweden.

Storing

The increase of individual stored digital content has been mentioned as one of the drivers for the connected home concept (sector HGI). Closely linked to this is the increased desire to share this content with others. People are also saving more and more vital information in digital formats. These two trends have been identified by the industry and have lead to the development of secure storage solutions.

There are mainly two dominating solutions. First we have the *networking hard drive*, this is a hard drive that the consumers themselves integrate in their home network. This device is also referred to as a *network attached storage* (NAS).[140] The other type of storing is *on-line storing* on an external server, referred to as "the cloud". By having your digital content on an external server you create a secure backup in case of e.g. a hard drive breakdown, theft or fire.[141]

Support and Video surveillance

If the consumer has an RGW the services offered by the operator expands to include, *support* for home network functionality and *video surveillance*. The technical platform of the RGW makes it possible for operators to generate these services (see the section device). The new services that are created on the RGW are expected to increase in the near future.[142]

---

[136] www.pts.se, 2009-02-22

[137] Interview, Karna Norén. 2009-02-24

[138] Interview, Per Gustafsson, 2009-02-24

[139] Ibid

[140] www.lacie.com, 2009-02-24

[141] www.storegate.se, 2009-02-24

[142] Interview Industry expert, 2009-04-17

Gaming

One example of service that can be offered by operator are Gaming. This means that the operator provides the possibilities for the consumer to buy and play video games online

3.4   Summary of the understanding of the Connected Home

This most important notation from this chapter is that all the components of the Connected Home are in place and ready to be explored by the customers. We can see that there exist plenty of ways for a customer to obtain an access to start building the fundaments of the Connected Home. The interoperability between devices has through UPnP and especially DLNA reached a sufficient level to be able to deliver a satisfying problem free customer experience. We can also identify that there are organizations that solely focus on boosting the market for the Connected Home. One example is HGI that with the residential gateway aims to further push the limits of the Connected Home. The industry has also deployed several services that set new pre-requisites for the Connected Home. A few examples are Video on Demand, online storage and gaming services. The customer could easily start using these
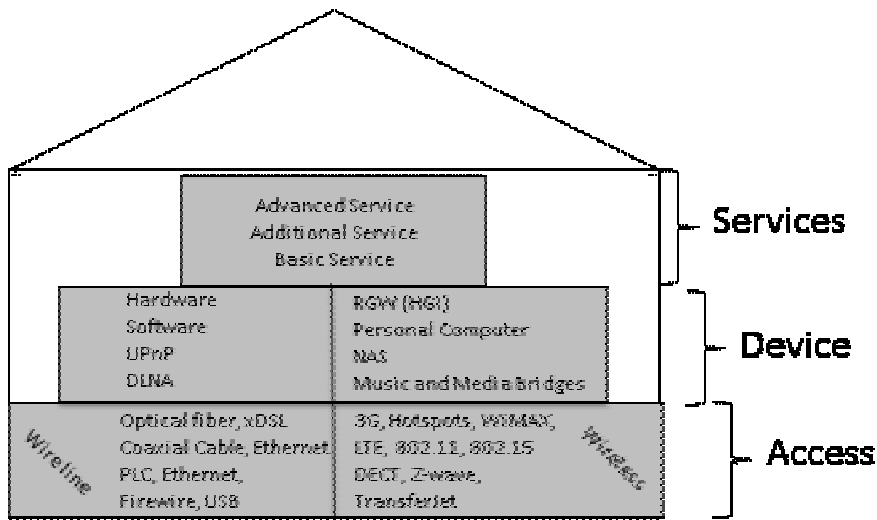
Figure 2 - Complete picture of the Connected Home

In figure 13 above we have chosen to create a complete picture of the components building up the Connected Home. To be able to generate a marketing model we believe that it is important for a marketer to understand all the components that then combined create the Connected Home. We believe that only by having this insight is it possible to generate a profitable product within the Connected Home concept.

54

4   Business Environment of the Connected Home

This chapter will unravel the business environment of the Connected Home. During this chapter we have used an integrated approach of theory an empirics. This is done by first introducing the theoretical background and the characteristics of value networks, which then will be applied on the Connected Home. The roles of the different components (device, service and access) of the Connected Home will be discussed from the value network perspective. Secondly empirics related to actors within the Connected Home will be introduced. We will then analysis how these actors affect each other from a value network perspective.

4.1   Theory - Business Environment of the Connected Home

According to *Biem* and *Caswell* at the IBM T.J. Watson Research Center the business environment facing today's companies is getting more and more complex. Improved connectivity leads to an increase in globalization making it harder for researchers to understand different industries. The old strategic tools used to investigate different industry characteristics need to be enhanced. This is a reason why we shortly want to introduce the thoughts behind the term *value network*.[143]

In 1980 Michael Porter introduced the value chain model, this is a model that focuses on solving production-based problems. It is applicable when looking at asset heavy companies that have a business idea of transforming inputs into products. With the changes of the industry environment, as mentioned above, this model does not deliver a complete a thorough understanding. This view (model) on how value for a business is created needs to be enhanced. We need a model that takes the relationship factor into serious consideration and we believe that this is the model of value network. A value network business increases in value with the number of users. In many ways it is like a physical network. An example is the PSTN, the more users the PSTN has the more value is created for the user. This kind of phenomenon is referred to as Metcalf's Law, which defines the usefulness of a network as the number of network users squared.[144]

Successfulness in an environment like the one introduced above, demands scaling up and at the same time uphold a balance between efficiency and effectiveness. Relationship management, outstanding service operations and operational infrastructure are the key factors for a firm to be able to build and manage a network that delivers value logic.[145]

---

[143] Biem and Caswell (2008*)*
[144] Harris and Burgman (2005)
[145] Ibid

When looking at companies from a value chain perspective, researcher can only identify horizontal relationships.[146]

Within the complex industries of today, vertical dependence is also important to take into consideration. Firms cannot only be classified from a supplier, customer or competitor point of view. There often exist further dimensions important to evaluate and understand when analyzing the surrounding of firms. What *Caswell* and *Biem* mean is that in the more global, complex and connected business environment of today it is possible for a firm to both be classified as a supplier, customer and even a competitor.[147]

The telecommunication industry has during the last years undergone a transformation. This transformation has created new challenges for the actors within this industry. Due to a liberalization of the telecommunication market a consolidation has been a fact and many new actors have tried to catch new business opportunities.[148]These opportunities have been created due to the dynamic character of the industry and the decrease in entry barriers. The telecommunication industry could therefore be seen as a value network and not as a value chain.[149]

Until now the reader ought to be familiar with the characteristics of a value network. This master thesis will not discuss the characteristics of the telecommunication industry further in this part. In the next part of this chapter the authors want to use theories behind a value network in order to introduce the actors within devices, accesses and services correctly and identify their interaction. In this scenario the value network is comprised of these different components, together creating the Connected Home.

4.2 Empirics - Business Environment of the Connected Home

During the past years the business environment within the telecommunication industry has radical changed.[150] During "Telekomnätverkets"[151] first gathering in 2009 the theme of this thesis once again came up for discussion. The industry is constantly changing, creating new pre-requisite for all the actors active within this environment.[152]

After introducing theory related to value networks, we believe it is important to discuss potential actors of the Connected Home within the different component segments. These actors can both be competitors as well as potential partners. Due to the dynamics in the Connected Home segment the actors continuously change.

---

[146] Biem and Caswell (2008*)*
[147] Biem and Caswell (2008*)*
[148] Li and Whalley (2002)
[149] Ibid
[150] Ibid
[151] http://www.telekomnyheterna.se, 2009-05-28
[152] Joakim Damgaard, Telekomnätverksträff , 2009-02-17

Industry experts' opinions about actors' role in the value network differ. Some industry experts discuss the fact that actors in the telecommunication industry try to interfere in new areas and thereby try to obtain increased market shares. They believe that new business models created by entering new areas are the key for success and vital for surviving.[153]

Other experts such as Paul Moonga CEO at Greenwich Consulting think, that the roll of operators should stay as an operator and not as content provider[154].

Each component, access, device and service, will be introduced individually. The structure for the introduction is visualized in figure 14 beneath.
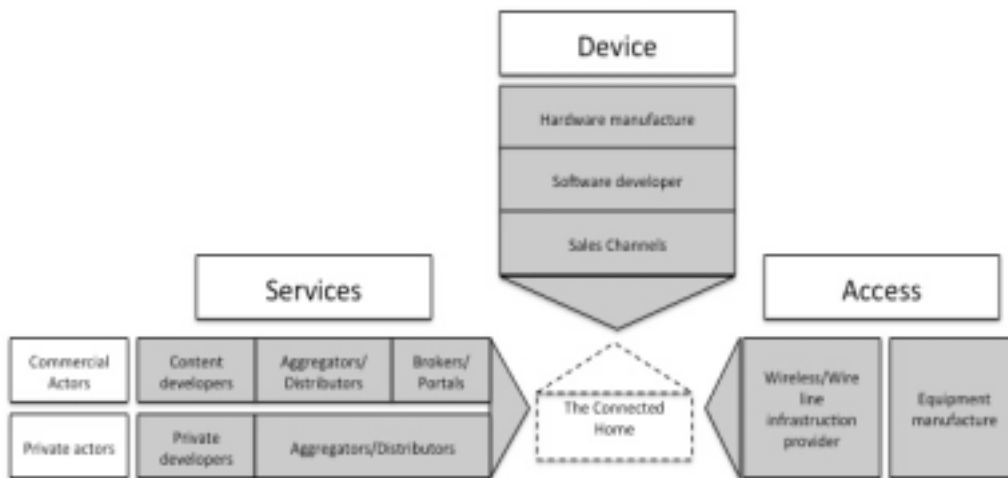
Figure 14 – Business Environment of the Connected Home

4.2.1 Access

In order to explain the actors within the area of access, we have chosen to divide them into two separate categories. We have chosen to name the two categories:

(1) Equipment manufacturer
(2) Wire line/wireless infrastructure provider

The category consisting of *equipment manufactures* create and manufacture devices such as mobile phones, cable modems and different terminals enabling data traffic over the different types of connections. The data is through these devices converted into different shapes enabling efficient communication over the access infrastructure. Within this segment, important actors as *Ericsson, Thomson, AT&T* and *Nokia*, are present.

---

[153] Joakim Damgaard, Telekomnätverksträff , 2009-02-17
[154] Paul Moonga, Telekomnätverksträff, 2009-02-17

At *Telekomnätverkets* meeting in Stockholm Lars Axelsson, responsible for the *Connected Home* at Ericsson, introduced *Ericsson* company's view upon the concept *Connected Home* and its future. The leading words of Ericsson were *any service, anywhere, any device.*

The second category of actors we have chosen to call wire line/wireless infrastructure provider. These actors create or take use of an existing infrastructure in order to enable data transfers over broadband for the common Internet user. These infrastructure providers do not manufacturer any devices themselves. Their role in the Connected Home concept is to establish and maintain a connection either through wire or wireless access between themselves, as an operator, and the Connected Home user. This is done through devices developed by the equipment manufacturers such as *Ericsson* and *Thomson*.

The companies use dominating wire line technologies such as ADSL, Coaxial Cable and Optical Fibre and wireless technologies such as 3G to establish a broadband connection. Actors in Sweden offering these types of connections are for example *Telia, Comhem, Glocalnet, Tele2, 3* and *Bredbandsbolaget*.[155]

4.2.2 Device

The second group of actors contributing to the concept Connected Home are part of the group creating the *devices*. We have divided this group into three separate sub-groups each contributing to the Connected Home. The names we have chosen for these groups are:

(1) Hardware manufacturer
(2) Software developer
(3) Sales Channels

Hardware manufacturer

The group of actors, belonging to the Hardware manufacturers, are companies developing and manufacturing devices through which the Connected Home can be experienced. The different categories of devices available are explained in chapter *three* under the heading *devices*. The table beneath summarizes a selection of the devices within the Connected Home and their hardware manufacturer.[156]

Device	Manufacturer
Personal Computer	Dell
External Hard drive	LaCie
TV	Sony
Digital photo frame	Kodak
Wireless camera	Axis
Network compatible printer	Hewlett Packard
Network compatible stereo	Philips

Table 4 - Selection of devices and their manufacturer

---

[155] http://bredband.compricer.se, 2009-02-20
[156] www.telia.se, 2009-02-22

Software developer

The second sub-group is the one containing the *software developers*. This group of actors develops software systems enabling the usage of personal computers, TV, wireless photo frames and a horde of other devices included in the Connected Home concept. An example is Ericsson, who has launched software for their Connected Home Gateway.[157] Other important actors within this second sub-group are for example *Microsoft*[158],*Apple*[159] and *Cabot.*[160]

Sales Channels

We have chosen to name the third and last subgroup in figure 14 *sales channels.* The hardware and software has to be available for purchasing for the end user. The components containing compatible software are in Sweden available through either superior consumer electronic chains such as Elgiganten, ONOFF, SIBA, Expert or Media Markt. Apart from the physical sales channels there exist e-commerce sales channels as well. Important e-commerce sales channels in Sweden are NetonNet[161] and Dustin[162].

There also exist smaller consumer electronics sales channels distributing the components of the *Connected Home*. We have chosen not to go deeper in these smaller chains, because we believe that the majority of components existing within the *Connected Home* are available at the sales channels shortly mentioned above.

4.2.3 Services

The last component of the Connected Home is the *service*. We have categorized the actors within services as two different segments:

(1) *Commercial* actors
(2) *Private* actors

Commercial actors

The *commercial* segment is combined out of *Content Developers, Aggregators/Distributors* and *Broker/Portals.*

Content Developers are the reason why for example *video on demand*, *music on demand* and *gaming* are possible. These actors invest money in developing games, creating films and recording music. Together these actors are responsible for the *commercial media,* which can be distributed with help of the *Connected Home*. The table 5 shortly summarizes a selection of actors.

---

[157] www.ericsson.com, 2009-02-19
[158] www.the-connected-home.co.uk, 2009-02-19
[159] www.apple.com, 2009-02-26
[160] www.cabot.co.uk, 2009-02-26
[161] www.netonnet.se, 2009-02-26
[162] ww.dustin.se, 2009-02-26

Content	Content Developer
Video on Demand	Walt Disney
Music on Demand	Sony Music
Gaming	Electronic Arts

Table 5 - Selection of Commercial Services

The media create by the *content developers* are thereafter either distributed by themselves or aggregated and distributed by other companies. Examples of aggregators/distributors available in Sweden are ITunes[163], SF Anyway[164], CDON[165] and now a day also for example TeliaSonera[166]. Commercial actors are also able to reach out to potential *Connected Home* customers though brokers/portals. In Sweden common portals are for example Google and Pricerunner[167].

Private actors
Private Developers are individuals who create their media by themselves. The media can have different shapes, e.g. digital photos or digital videos. The amount of private developers is continuously increasing[168] and therefore the demand for both storage and possibilities to share increases. We see the *private developers* segment as a two-step process; *content developers* are helped by *aggregators* and *distributors* to spread their digital content.

Aggregators and distributors available for private content developers in Sweden are for example YouTube[169], FlickR[170] and MySpace[171]. These aggregators/distributors are also used worldwide increasing their capacity.

4.3 Analysis – Business Environment of the Connected Home
We conclude that the *value network* approach is useful for understanding how a *Connected Home* can add value to the end user. The figure 15 illustrates the *Connected Home* and how we see it as a *value network* and not as a value chain. The value network could easily change form due to the dynamics and innovations within the telecommunication industry.

---

[163] www.apple.com, 2009-02-26

[164] www.sfanytime.se, 2009-02-26

[165] www.cdon.se, 2009-02-26

[166] www.telia.se, 2009-02-26

[167] www.pricerunner.se, 2009-02-26

[168] Lars Axelsson, Telekomnätverksträff, 2009-02-17

[169] www.youtube.com, 2009-02-26

[170] www.flickr.com, 2009-02-26

[171] www.myspace.com, 2009-02-26
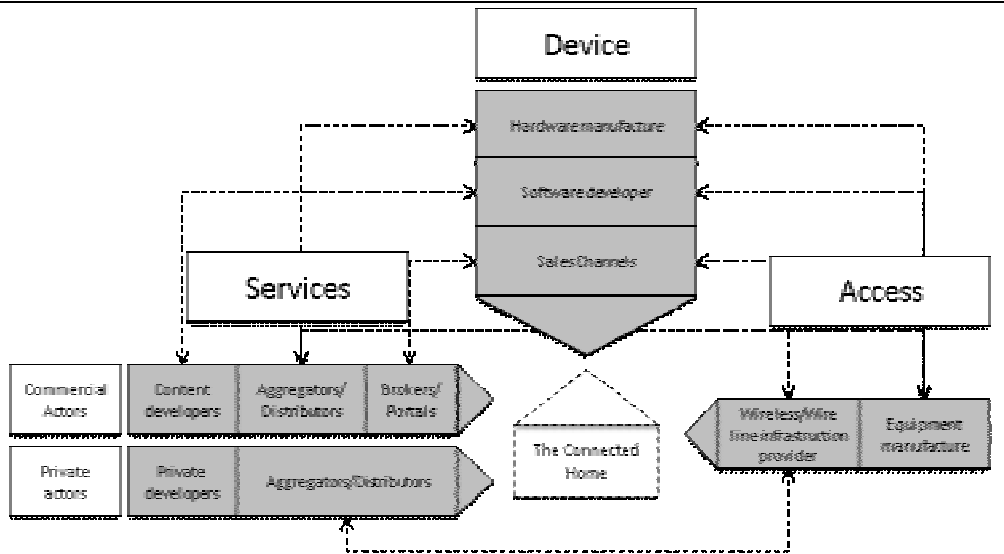
Figure 15 - Example of the Connected Home as a value network

TeliaSonera is for example according to the empirics identified as an *access provider* and a *service distributor*. Today TeliaSonera offers the Connected Home user the possibilities for *video on demand*. By doing this TeliaSonera is both an infrastructure provider as well as an distributor/aggregator of commercial content. By doing this we believe that TeliaSonera tries to adjust their business model to the dynamics of the telecommunication industry. TeliaSonera is also acting as a sales channel for Connected Home devices. According to industry experts this is a common behaviour to adjust to the new pre-requisites.

Ericsson's statement to deliver *any service*, *anywhere* on *any device* clearly defines the changes that the telecommunication industry is going through and must go through to be able to deliver the vision to the customer. This change of business dynamics is known and accepted throughout the whole industry. We think that the statement *anywhere* could be solved by the right access and if so Ericsson's statements are analogue to our findings within the fundamentals of the Connected Home found in chapter *three*. The Connected Home is, as we chosen to define it, a combination of accesses, devices and services and the actors within each component. These actors then together create a value network. The value for the user increases when the number of actors within the Connected Home increases.

The *Connected Home* as it is available today introduces much more complex interoperations between the different accesses, devices and services. In figure 15 different components have been visualized. Each component can be seen as an individual component of the *Connected Home* with different characteristics, able to deliver one or many specific values to the user. We believe as the industry changes, the environment within the *Connected Home* shifts, changing the pre-requisites for each component. Due to the characteristics of the telecommunication industry, new components are added and old components are abolished. In order to stay as an important value-adding ingredient within the Connected Home, components have to

61

increase the value they add. This is then done through cooperating with other components. This form of cooperation is for user perceived as increased interoperability between the different components, access, devices and services. We also believe that this leads to a collusion of three different industries; operators (access), consumer electronic manufactures (devices) and content providers (services), together increasing the perceived value of the end user of the Connected Home.

4.4   Summary – Business Environment of the Connected Home

We want to conclude that the environment surrounding the Connected Home could be classified as a value network. This has two important conclusions. First it increases the importance of standards within and among the involved industries of the Connected Home. At the same time it concludes the importance of building and maintaining strong relationships with vital actors in the industries. Only by having this in mind the industry and thereby individual companies will be able to deliver the full experience of the Connected Home to the customer. We believe that the standards and partnerships are uniting the three different components (access, device, services) of the Connected Home.

When gathering the empirics about the business environment of the Connected Home we found strong indicators of a dynamic and ever changing market. There exists many different types of actors continuously striving for new profitable positions. Actors within this symbiosis must be on their feet and act when opportunities arise in order to stay a value adding component of an ever more complex environment. We believe that the consequences of a value network are important factors for a marketer to take into consideration when generating a marketing strategy.

5   Trends of the Connected Home

This is the last chapter of the foundation of the Connected Home. It aims to introduce trends of the Connected home concept among consumers. The authors mean to deliver this is by first looking at trends within the Connected Home industry. Collecting both qualitative and quantitative data especially from Ericsson Consumer Labs has done this. The second part is a market update investigating the amount of components (access, devices, and services) within the Connected Home possessed by consumers.
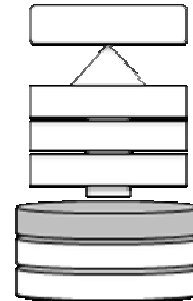
5.1   Trends within the concept of the Connected Home

New trends are constantly found within the *Connected Home* segment. Increased demand for multiple communications channels, enabling different types of communication at the same time, e.g. video streaming and data transfer. The consumer is giving up the demand for *mass media* and is instead demanding more customized media, referred to as *me media* or *social media.* An example is the growing popularity of *online communities*, which increases in usage. One up-to-date example is the online community Facebook, which has more than 175 million users.[172]The consumer nowadays wants to share the digital media with friends creating a convenient and shared experience.[173] The media should be able to access globally, with high quality and from many different types of devices.[174]

The authors believe it is important to mention the drivers for consumers and challenges for suppliers when revealing different trends within the *Connected Home.* The table 6 and 7 beneath shortly summarizes these drivers and the challenges as Ericsson Consumer Lab sees them today.[175]

Drivers
Any service, anywhere, any device
Freedom and flexibility
Sharing of media
New ways for communicating
Ease-of-use

Table 6 - Drivers with the Connected Home

Challenges
Usability
Stability and quality
Service
Pricing
Availability of suitable devices

Table 7 - Challenges with the Connected Home[1]

---

[172] www.facebook.com, 2009-02-26
[173] Statistics Sweden (2008) P.11
[174] Lars Axelsson, 2009-02-17
[175] Ibid

Customer Value
Enabling access to their home
Enable access between devices
Ease of Use
One help desk for all services

Supplier Value
Multi-bundling of services
Ease of administration
Service differentiation
Strategic advantage for future

Table 8 - Customer Values
for the Connected Home user

Table 9 - Supplier Values
for the Connected Home

Table 8 and 9 illustrate the customer and supplier values.[176] As the *Connected Home* is presented in chapter *three* these are the values that could be created by using the concept. With these trends in mind the vision of for example Ericsson is that the Connected Home concept will be a mass-market product in the future.[177]

5.2 Market update within the concept of the Connected Home

This section will introduce the reader to an idea about how spread the Connected Home *is* among potential and existing consumers today and how plausible its future is. This will be generated by investigating the amount of components (access, devices, and services) within the *Connected Home* concept possessed by consumers as of today.

5.2.1 Access

The broadband connectivity is an important criterion for the *Connected Home*. As mentioned in chapter *three* where the component *access* is discussed, 88% of the population have Internet connection. More specified 98 % of the Swedish families with two or more children have an Internet access.

Another interesting notation is that the number of mobile broadband consumers is rapidly increasing. The number of mobile broadband consumers is now reaching ten percent and industry experts are predicting a growth for over 200 per cent in 2009.[178] These *ten* percent corresponds to 650 000 people which is 22 percent of the population that own a laptop computer. The mobile broadband mostly functions as a complement to the fixed broadband when the consumer is outside the home. Only two percent uses the mobile broadband as the main connection in the home.[179] The technology used for mobile broadband is 3G, but as mentioned in chapter *three* the two Swedish telecommunication providers Tele2 and Telenor will deploy LTE in the year 2013 so that 99 % of the Swedish population will have access to mobile broadband with speeds up to 150 Mbit/s.[180]

---

[176] Lars Axelsson, 2009-02-17

[177] Ibid

[178] Ericsson consumer Labs (2008)

[179] Statistics Sweden (2008) P. 9

[180] www.etn.se, 2009-02-19

5.2.2 Device

The *Connected Home* is, as described in chapter *three*, based on the connectivity and interoperability of different electronic devices. With the introduction of a mobile broadband access the industry's vision of *any service, anywhere, any device* is coming closer to a reality. To fully explore this vision the consumer must have a substantial set of devices in their possession. Therefore we will start by taking a closer look at this possession of consumer electronic.

The authors can identify a big increase in almost every multimedia device such as flat screen TVs and game consoles. Almost 40 % of the population has a Wi-Fi/LAN router, Web camera, external/portable hard drive or recordable DVD-player. This altogether indicates a constant growth of products that are potential devices for the *Connected Home*. The biggest increases are digital TV set-top boxes (16 %), laptop computers (15 %) and external/portable hard drives (10 %).[181]

During visits to different consumer electronics distributers the authors could identify a big increase in the appearance of DLNA and UPnP logos. These two market leading standardization organisations are also increasing their number of members every year. This expansion of networking standardizations indicates that manufacturers are starting to see networking compatibility as an edge when it comes to sales arguments. The consumers are starting to ask, if only in a little scale, after interoperability between the devices they possess in the home. When consumers are being informed of the possibilities of interoperability they are instantly showing interest.[182]

In today's home there are many devices competing for Internet connectivity e.g. several computers, gaming consoles and TV's, just to mention a few. There is also many more on the way into the home e.g. Home Storage Server, Internet radios, digital photo frames, VoIP telephones. All of these devices demand connectivity in order to experience their full potential, which then creates a demand for multiplied connectivity.[183]

There is a fierce competition between mobile manufacturers in today's telecommunication industry. The trend for the last couple of years there has been the attention paid towards smart phones. The features of these mobiles are making them an even more integrated part of the *Connected Home*. The market for smart phones is the only segment within the mobile market that is expecting to grow in the next few years. The industry is expecting over twenty per cent growth during 2009.[184]

5.2.3 Services

The number of IPTV customers is instantly increasing and is expected to do so for a foreseeable future. The main driver for this is the possibilities for interactivity that

---

[181] Ericsson Consumer Labs (2008)

[182] Interview, Johan Pettersson, 2009-03-10

[183] http://thefutureofstorage.com, 2009-05-09

[184] www.svd.se, 2009-02-25

IPTV creates for the user. [185] More and more telephone communication is done using VoIP. The old PSTN system is losing customer every year to the VoIP technology.[186] Gaming has started to reach the mass-market, Internet gaming consoles are the fastest growing segment.[187]

A notation is that service delivered through the Internet access to different devices in the home has not yet gotten any strong recognition among consumer. This kind of services is still waiting to be explored by the mass market. The operators are struggling to compete with many of the free-of-charge service that is offered by actors on the Internet.[188] The operators are putting a lot of effort into creating profitable and user-friendly services regarding "personalized media/me media".[189]

Statistics from 2008 shows that Internet usage in the ages from nine and below is rapidly growing. In the age of ten almost every child is a frequent user of the Internet. This is a new phenomena and the industry should be aware of this new frequent Internet user group and observe its evolvement.[190]Another notation regarding Internet usage is that in general many more is using the Internet on an everyday basis and at the same time also spending more time at every usage situation.[191]Internet is becoming just as usual and ordinary as the TV for the modern family. The computer is almost on all the time and is a natural part of the everyday life, even for the youngest members of the family.[192]

5.3   Summary – Trends of the Connected Home

Multiple communication channels are becoming a demand for the consumers. They want to be able to handle several types of communication at the same time. A notation is the fading interest in mass media. Consumers are instead starting to pay attention towards more customized media. This is referred to as me media or social media and can in many times be exemplified by online communities such as Facebook. We believe that the drivers presented in table 5 can be exemplified through these findings. The customer and supplier value presented in table 6 are indicators for further development and a prosperous future for the Connected Home.

The access is present in almost every home in Sweden. An important notation concerning the Connected Home is the large increase in the number of mobile broadband subscriptions. We believe that this will make the Connected Home more available and desirable to customers. Another identified trend is that more and more customers are starting to acquire different devices closely linked to the Connected Home concept. This is also true for the last component of the Connected Home

---

[185] www.prylportalen.se, 2009-02-17

[186] Ibid

[187] www.reportbuyer.com, 2009-05-28

[188] Interview, Consumer Electronics sales channel, 2009-03-22

[189] Lars Axelsson, 2009-02-17

[190] Statistics Sweden (2008) P. 11

[191] Ibid

[192] Ibid

services. The usage of Internet related services and the number of IPTV and VoIP customers are continuously increasing.

The customer's recognition of the product is an important factor for the marketer to consider while creating a marketing strategy. When studying the trends and the market update in this chapter we believe that the Connected Home is on the move but has not yet gotten any strong recognition in Sweden.

6 Theoretical framework for the marketing of the Connected Home

This chapter of the master thesis will introduce the reader to theories useful when marketing the Connected Home. The theories will deploy a three-step framework for the generation of marketing strategies for the connected home. These three steps will be presented in the figure below and they will also stand for the disposition of this chapter. The theories will act as a foundation for our marketing model.
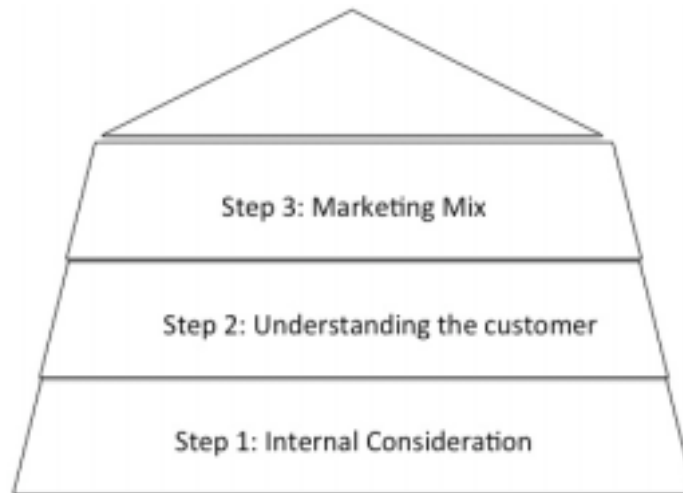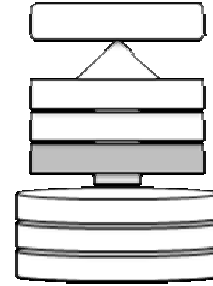
Figure 16 - Disposition of the theoretical framework for marketing the Connected Home

The master thesis will introduce a new mindset used within marketing segmentation, called *cohort marketing*. Professor Charles Schewe, who is Professor in Marketing at the University of Massachusetts, has introduced the theory of cohort marketing. The Cohort Theory introduces a different way of segmenting a market through dividing a country's population into different cohorts. The cohort theory states that a marketer must identify each cohort's underlying values in order to address the right cohort. The cohort theory will help us to understand the segmentation better and will be further explained later in this master thesis.

All three stages of the marketing part of this master thesis are visualized in the figure 16. We will use this figure to guide the reader through the next chapters related to marketing. Through combining high technology marketing with the view of cohort marketing the master thesis hopes to be able to introduce useful marketing guidelines for TeliaSonera and later Telia Smart.

It is important to understand that marketing within a high–tech industry is different. Therefore this chapter will introduce theories with unique characteristics related to the marketing within these industries.

6.1   Internal Considerations

This part will handle the internal considerations related to marketing for a high technology company. If a company addresses and understands these topics the odds for success are enhanced. The issues that will be addressed here are corporate strategy, culture and climate. We will also take a closer look at Relationship Marketing and what Market Orientation means. These considerations are the foundation for an effective marketing strategy.
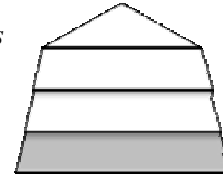
6.1.1   Corporate Strategy

There are four aspects that always should be addressed in a corporate strategy.[193]

   (1) Define the targeted *customers*
   (2) Clarify what is *offered* to the customers
   (3) State the companies thoughts concerning *market entry*
   (4) Make clear how to *execute* the outlined strategy

Firstly the corporate strategy should always start by putting *customer* needs in first hand. The articulated and unarticulated needs of the customer and how they might change in the future should be the point of departure when creating a strategy. At the same time having the present and the future customers in mind, will help the company not to get stuck in the ever changing business environment that the high–tech firms a operating in. A clearly defined target group will help the company to reach their goals.[194]

Secondly a strategy should focus on what actually is being *offered* to the customers. Products, services and technologies should be looked upon as components that when aggregated, delivers value to the customer. Whenever a new product proposal comes to the managers they should always start with the mindset of value creation for the customers.[195]

Thirdly the issue regarding *market entry* is crucial. The managers have to decide if the company should be a market pioneer or a late mover. As a market pioneer you will set entry barriers due to your market entry. The early market entry leads to many advantages such as monopoly profits, setting standards, brand-name recognition and consumer awareness. But there are also many disadvantages of being a market pioneer. These are often related to the *market uncertainty* of the actual market size and the true *customer needs*. There are studies that show that up to 47 percent of all first movers fail with their incentives[196].

---

[193] Mohr, Sengupta and Slater (2001) P. 46
[194] Ibid.
[195] Ibid
[196] Golden and Gerald (1993) P. 158-171

A late mover on the other hand has several advantages against the first mover. He will benefit of a superior overlook of the market positions and lower market development costs related to the already educated customers. Introducing products with better performance and higher price-quality ratio are also some of the winnings of being a late mover. To sum up it is notified that the matter concerning early or late entry is dependent on the market's and the firm's specific characteristics. But when it comes to technology firms the theory often addresses the profitability of evaluating opportunities, assessing competitive threat and then enter the market with an improved offering build on the right allocation of resources.[197]

Lastly theory states that strategy is worth awfully little if not executed in a superb manner. The key factor for excellent strategic *execution* is transmission of value. The company must be able to transmit the value as they see it into the mind of the customer. Taking the right decisions when it comes to distribution, pricing and promotion enables this transmission. The execution also has to be flexible due to the rapid change in high-technology business environment.[198]

Constantly creating new ways to compete is a key factor to maintain being a competitive player in today's dynamic markets. A firm must look beyond the static boundaries of the industry to create new values to the customer. A way of doing this is to look at business boundaries and thereby changing the mindset of the company. By having the ability to look from the outside and in instead of vice versa give the company the ability to create new rules for the established industry.[199]

6.1.2 Corporate Culture and Climate

This part of the master thesis will shortly introduce the important aspects concerning *corporate culture and climate*. The norms of how to behave in a company is grounded in the deeply rooted values and beliefs, this is what we call corporate culture. The climate is the behaviors that are supported and rewarded because of the existing corporate culture. The culture is deep embedded in the company and thereby hard to change and this implies that if unsatisfying behavior exists these are hard to break.[200]

When we look at high-technology firm there are especially two obstacles for creating new enhanced value to customers. These are *core rigidness* and something that we would like to call the *innovators dilemma*.[201]

Core Rigidness refers to that the core competences in the company are often the same over time and thereby are products and services build on these known skills preferred instead of looking for new influences. The ingrained routines, procedures, preferences

---

[197] Mohr, Sengupta and Slater (2001) P. 47-49
[198] Ibid
[199] Ibid
[200] Ibid
[201] Ibid

for information sources, and existing views of the market are some of the examples that often lead to barriers towards seeing new market possibilities.[202]

The *innovators dilemma* submits the problem that market leaders very often have when it comes to creating new radical innovations. This is caused by the unwillingness to allocate resources from known markets where focus lies on incremental innovations to new markets and customers. Market leaders usually have great problems adapting to new radical innovations that revolutionize the way business is being done in that industry.[203]

However there are some *solutions* that can be realized to stop these obstacles from gaining recognition in the corporate culture and climate. These are the:

- Creative destruction
- Unlearning
- Expeditionary marketing.

Creative destruction states that a firm should always try to develop a better product/service than the ones they are offering right now, a product that makes their own obsolete. The reason for this is that if they are not push for better products their competitors will surely do and then they will gain market shares.[204]

Unlearning set out to challenge the traditional pre-determined practices. The companies must confront the conventional mindset of how business is being done.[205]

Expeditionary marketing helps the company to gather information during the marketing. The firms make many small introductions and after every launch they gather the information from the market making every launch better. Many firms do the opposite, they try to gather all the information before a launch since they believe they increase the hit rate of the product by doing this.[206]

6.1.3 Relationship Marketing

Relationship marketing is about creating win-win situations. It refers to the long-term relationship towards customers and business partners. In a high-tech environment were the development cost and risks are high and the time to market often very short companies can gain a lot from working in alliances and partnerships. These alliances and partnership can in many cases also be prosperous if carried out with competitors within the same market e.g. GM and Toyota work together in creating new fuel vehicles.[207]

---

[202] Mohr, Sengupta and Slater (2001) P. 47-49
[203] Ibid
[204] Mohr, Sengupta and Slater (2001) P. 59-66
[205] Mohr, Sengupta and Slater (2001) P. 82-102
[206] Ibid
[207] Ibid

Another important notation to *relationship and alliances* is that it could be absolutely crucial to work together with a partner to be able to deliver an end-to-end solution to the market. When more and more companies are focusing on their *core competencies,* their scope in business is lessened. This implies that they have to work together with partners and develop different versions of the total offer to the market.[208] There are two main ways of looking upon partnership, either you form vertical or horizontal partnerships along the supply chain of your company (see figure 17).
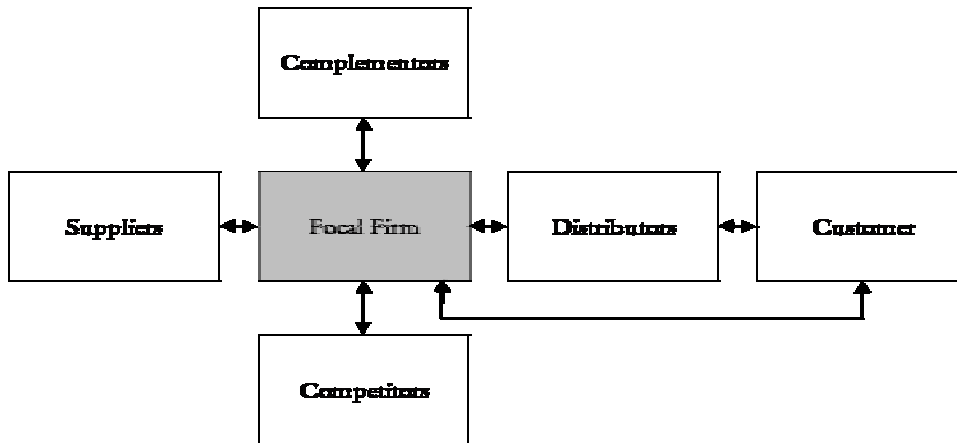
Figure 17 - Possible Alliances Partners along the Supply Chain

Vertical partnerships
The *vertical partnerships* can be formed in *three* different levels of the supply chain (suppliers, distribution and customers) as seen in the figure above. If a firm wants to create efficiency in the access to parts and materials they will probably form a supplier relationship. When a firm is forming partnerships with distribution channel members the goals is to increase the efficiency and effectiveness in accessing downstream markets. The last way of creating *vertical partnerships* is with the company's own customers. In high-tech markets it is the lead user and early adopters that are the most important customers to form partnerships with, they can provide the firm with important updates that are needed before releasing it to a broader market. [209]

Horizontal partnerships
Horizontal partnerships are formed in the same level of the supply chain as the firm. At this level of the supply chain a firm can either form partnerships with competitors or complementary. The partnerships that enable an integrated solution for the product are referred to as complementors. In a horizontal complementary partnership the involved firms are able to focus on their core competencies. Another positive effect is that this form of cooperation tends to enhance the demand through synergistic innovations. The other form of *horizontal partnership*s is alliances with competitors. These kind of alliances then imply that the involved firms collaborate in some areas and compete in others.[210]

---

[208] Mohr, Sengupta and Slater (2001) P. 82-102
[209] Mohr, Sengupta and Slater (2001) P. 82-92
[210] Ibid

72

6.1.4 Being Market Orientated

According to *Mohr et al* being *market orientated* is challenging when marketing to a high-tech market.[211]

The master thesis wants to introduce one important tool that can be taken into consideration when trying to apply a market-orientated approach. It will shortly be explained beneath.

Market-based reward system

According to *Mohr et al* this is the factor that has the strongest impact on the market orientation within a firm. The reward system shall reward employees when they are able to create high levels of customer satisfaction though generating and sharing *market intelligence.*

6.1.5 R&D Interaction

It is vital for a high–tech company to effectively bridge the R&D department and the marketing department in order to be successful when distributing high–tech products. This stage is referred to as the *R&D – marketing interaction.* The marketing department ought to have the knowledge about the customer, their preferences and the competitive situation. The R&D department is responsible for translating the technology into a design that addresses the customer's needs. Figure 18 visualizes four important steps trying to create interaction between the R&D department and the marketing department.[212]
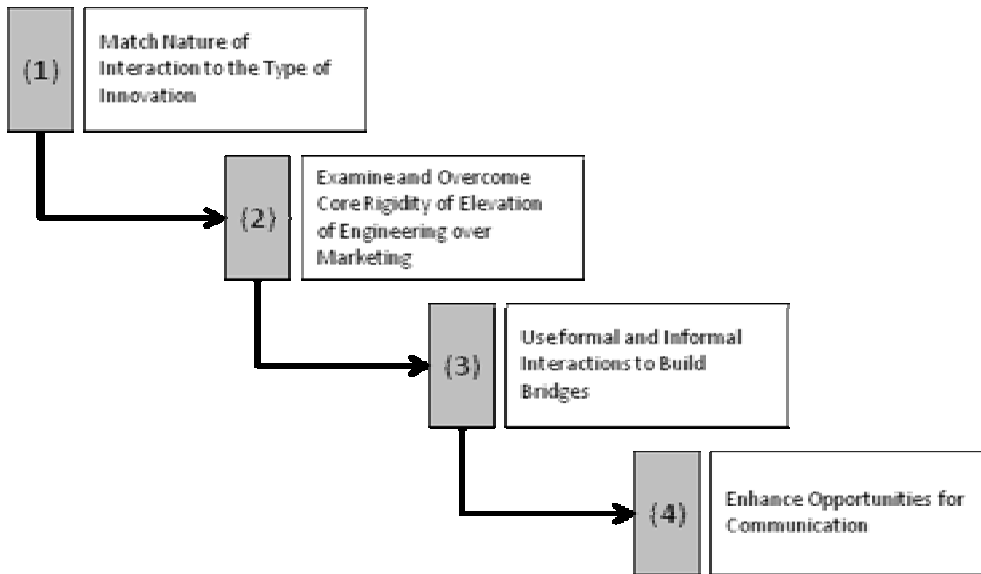
Figure 18 - Effective integration of R&D and Marketing[213]

---

[211] Mohr, Sengupta and Slater (2001) P. 108-115

[212] Mohr, Sengupta and Slater (2001) P. 117-121

[213] Ibid

(1) *Firstly,* as shown in figure 19, the reason for interaction must be defined and matched to the type of innovation the company is promoting.[214]

(2) *Secondly* the organization must overcome the barriers to interaction. This master thesis wants to highlight two different types of barriers. One barrier is the one depending on the corporate culture within the high – tech firm. The culture must respect and value both engineering knowledge as well as marketing knowledge. Within high-tech firms the dominant engineering culture can be identified as a *core rigidity* preventing a successful integration. Another important issue is the location of the R&D and the marketing departments. They are often located in different parts of the facility. This prevents their interaction making it harder for the company to succeed with R&D and Marketing integration.[215]

(3) The *third* step is to make use of both formal and informal methods for creating interaction between the R&D and the Marketing department. Formal methods can be structured *document handling* and *review phases*, those that are *planed and verifiable* [216]. *Informal methods* are unplanned and spontaneous ways of interaction. These can provide greater openness and clarification opportunities; meanwhile the *formal methods* are more credible.[217]

(4) The last step is to *enhance the opportunity for communication* within the high–tech organization. An example of this enhancement is to increase the *frequency of interaction* between the R&D and the marketing department.[218]

The master thesis has so far discussed the vital aspects concerning the internal considerations for high-tech firms. The next chapter will introduce thoughts on how to understand the customer.

---

[214] Mohr, Sengupta and Slater (2001) P. 117-121
[215] Ibid
[216] Maltz and Kohli (1996) P. 47-61
[217] Mohr, Sengupta and Slater (2001) P. 117-121
[218] Ibid

6.2   Understanding Customers

This part of the master thesis will introduce the cohort theory to the reader. The cohort theory will be introduced as a way of segmenting a high- tech market. Thereafter we will introduce the theory behind the purchase process. As shown in the figure to the right we are discussing the second stage within marketing strategies for the Connected Home.

6.2.1   Cohort Marketing

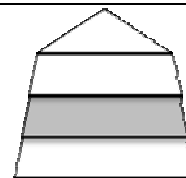During this part of the master thesis we hope to introduce a new way of thinking about market segmentation, namely *cohort marketing* introduced by *Schewe*, *Meredith* and *Karlovich*.[219]

6.2.1.1   Introduction to Cohort Marketing Theory

The cohort theory emphasizes the importance of knowing the values of your customers. According to *Schewe et al* a way to get a grip of these values is to look at the defining moments in the customer's lives. According to *cohort theory* these moments are created as the individual is in the age range from *seventeen* to *twenty-three*. It is during these ages that people create their values that lasts a lifetime.[220]

Schewe et al emphasize the importance of tailoring your marketing strategy to meet the real expectations and needs of your customers. The challenges thereby are to treat the customers as individuals, in that way taking their unique *tastes* and *values*, namely the underlying factors that drive the purchase decision, into considerations. When doing this the company is able to maximize their marketing resources.[221]

Schewe et al have created a framework called *Multi-Dimensional Marketing*. The framework offers a marketer the opportunity to go beyond only statistic and instead try to understand what actually drives and motivates the customers. According to cohort marketing the core values of the customer does not change over time. When understanding the customers core values a marketer is able to reach out to the customers several times, by rooting the marketing message within their core values.[222]

According to *Schewe* and *Meredith* the cohort analysis ought to be complemented with four other factors, making it *five* factors all together that influence the buying behavior. These *five* factors will shortly be explained beneath.[223]

> **Cohort Values**
> People that are in a certain age have often shared important life experience when they were young. The authors of the *Defining Markets, Defining Moments* argue

---

[219] Meredith, Schewe and Karlovich (2007) P. 14
[220] Ibid
[221] Ibid
[222] Meredith, Schewe and Karlovich (2007) P.14
[223] Ibid

that these experiences help shape the cohort's long-term values. These values are then carried throughout life virtually unchanged.

Lifestage
The *cohort theory* underlines the importance of the different *lifestages* a person passes through, such as marriage, parent, divorcee, retirement and so on. These *lifestages* affect our outlooks, attitudes and daily activities. *Schewe et al* argues that different cohort often react differently when facing the same lifestage.

Physiographic
As people and so customer's age they face different changes in their bodily appearance and function. Middle-aged people can notice gray hear and older people often suffer from reduced strengths.

Emotional/Affinity Effects
When aging people tend to change their attitudes towards different issues. Teenagers for example worry about their appearance. Meanwhile parents tend to worry about their children's needs ahead of their own.

Socioeconomics
With socioeconomic factors the *cohort theory* includes educational, financial, career, marital and other economic and social states. In this case *Schewe et al* argue that a person's socioeconomic status tells the marketer little about the underlying factors affecting the consuming behavior.

These *five* factors together make it possible for a marketer to understand the underlying *values.* These factors can be greater or lesser important depending on the product the marketer plans to market. According to *Schewe* and *Meredith* a large number of marketers today believe that they are doing *cohort marketing*. In many cases their successful marketing is bases on intuition and not on theoretical frameworks. As the authors of this master thesis want to combine theories when creating a marketing model for the *Connected Home*, we believe that it is useful for us to apply the *cohort theory* when marketing a high–tech product. [224]

Five new rules within 21st Century marketing
According to *Schewe et al* there are *five* new rules that have to be taken into consideration within marketing in the 21st Century. The master thesis will shortly introduce these rules, because they are important to keep in mind, when trying to understand why the authors have chosen to make use of the *cohort theory* as a second dimension.

Rule 1: Today demographics don't define well enough anymore.[225]
Today people in the same age can be in different lifestages. In the past lifestages were easier to predict. Today it is much different. People are for example going back to school, getting married several times, retiring earlier or later or not all. Today's life

---

[224] Meredith, Schewe and Karlovich (2007) P.14
[225] Meredith, Schewe and Karlovich (2007) P. 18

expectancy has increase leading to that people tend to do different things for longer time.

Rule 2: Generational Cohorts re-interpret lifestages[226]
Today a marketer cannot assume that tomorrow's *young*, *middle* and *older* customers are going to respond the same way to the marketing message as they do today. *Schewe et al* bring up the example when Mazda in 1986 introduced a sports car targeted towards young and mostly single people. The results later showed that buyers in their 40thes dominantly purchased the sporty, but small and inexpensive sports car and not young single people. The buyers in their 40thes wanted to relive their youth and now had enough money doing that.

Rule 3: The intersection of cohorts and other age-relation motivators is critical[227]
When marketers focus on the intersection point of different cohort values and other age-related motivators, a marketer can understand details affecting the customer. The marketer will get a better picture to whom he or she is selling and is therefore able to customize the message to fit the core values of their target group.

Rule 4: Values define cohorts, and core values don't change[228]
The *cohort theory* argues that the purchase decision is affected by the customer's core value. According to *Schewe et al* these core values do not change over time.

Rule 5: Younger generational cohorts are converging around the world[229]
According to *Schewe et al* their work with client indicate that the underlying values of the younger cohorts are becoming increasingly similar around the world. This trend is strengthened by the advanced possibilities for communication available today.

This part of the master has so far introduced a new way of segmenting a company's target market, namely by identifying the *core values* of your customers. *Five* new rules affecting the 21st century marketing have been introduced and ought to be kept in mind. According to the authors *Schewe* and *Meredith* the cohort values should be complemented by *four* different factors revealed above. The master thesis thereby aims at using the *cohort theory* as a new *mindset* for segmenting a company's market.

Professor *Benny Carlsson* active at the Department of Economic History at Lund University has together with Professor *Charles Schewe* mapped the *Swedish Cohorts* with help of the *cohort theory*. This master thesis will continue to introduce the *Swedish Cohorts* highlighted by *Schewe* and *Carlsson*. These cohorts will later be used within the analysis when discussing suitable marketing guidelines for the Connected Home.

---

[226] Meredith, Schewe and Karlovich (2007) P. 18
[227] Ibid
[228] Ibid
[229] Ibid

6.2.1.2 An introduction to Swedish Cohort

After conducting interviews with customers we have chosen to focus on four *Swedish Cohorts.* These four cohorts will be introduced and used as a framework for segmenting and understanding of the values of each potential customer group. The first and youngest of these cohorts is the *Fragmented Network Cohort.*

The Fragmented Networks Cohort

This is the youngest cohort identified through the collaboration of the Swedish Professor *Benny Carlsson* and Professor *Charles Schewe.* They are born from 1974 and onwards. This cohort created their values after 1994 and are today in the age up to 35 years. This cohort represents about 11.8 % of the Swedish population.

This cohort has been influenced by the increase immigration into Sweden, in combination with today's trend within internationalization. This cohort is deeply engaged in the globalization as a phenomenon. A factor contributing to the internationalization is that Sweden entered the European Union in 1995. The cohort is fragmented into very "small question" groups, each with different opinions and solutions. The Internet has helped this cohort to communicate their believes outside Sweden to the global forum. This cohort has experienced *information overflow* and they have therefore become confident *multi-taskers.* They can watch television, work on the Internet and talk on the phone all at the same time.

How to market?

According to *Carlsson* and *Schewe* the Internet and other technologies as they become available, would offer marketers substantial opportunities for communicating their message. Marketing over mobile phones could be another option to reach out the cohort. Due to that this cohort's parents have left them alone most of the day, they have become more self-sufficient than the older cohorts. This cohort therefore appreciates independence and not relying on others while maintaining their life style. Therefore slogans associating to such context can be useful.

The Lost Innocence

The members of this cohort were born between 1966 and 1973. They comprise approximately 11.2 % of the Swedish population and between 1986 and 1993 they shaped their values. According to *Schewe* and *Carlsson* this cohort has been influenced by the assassination of Olof Palme in 1986 and the nuclear disaster in Chernobyl also in 1986. These two events showed that Sweden also was vulnerable to chaos and violence. These two events both created a sense of insecurity within this Swedish cohort.[230]

How to market?

According to the collaboration of *Carlsson* and *Schewe* this cohort longs for security, which they lacked during the period when they were in their value shaping ages.

---

[230] Schewe and Carlson (2003)

Suitable market strategies for the *Lost Innocence* cohort are strong brand names, product guarantees and continued relationship assurances. [231]

Janus (Two-Faces) Cohort

This cohort is born in the 1960s and between 1976 and 1985 they were in their value shaping ages. Today this group is aged between 44 and 53 and corresponds to approximately 13.7 % of the Swedish population. The cohort is divided into two separate groups of people. One of the groups values expensive habits. The early and mid 1980s were in Sweden characterized by an economic boom. This lead to that a part of the cohort became wealthy. The new acquired wealth together with the new global perspective offered this group many ways to spend their money. [232]

The second part of this cohort was the environmentalists. They were influenced by both the oil crises and the possible effect of nuclear power. This cohort responds well to the icon of "Greenpeace"[233]

How to market?

When marketing to the group characterized by expensive habits a marketer should focus on embracing designer goods and well-known brands. When marketing to the environmentalist within this cohort a marketer should focus on environmentally friendly certifications and contexts. The package and the products components must be recyclable. [234]

The Revolutionary Boomer Cohort

The last cohort, whom this master thesis wants to introduce, is the one born between 1942 and 1949. During the years between 1966 and 1975 their core values were created and shaped. They comprise 13.7 % of the Swedish population. This cohort was the first, which began to travel by charter to distant locations. Therefore this cohort values mobility in their life. Since they traveled more than their parents they have great expectations for the future and they believe that soon anything in the world will be accessible. This cohort has also experienced Sweden becoming more of an international community, through example the introduction of the pizza in Sweden. [235]

According to *Schewe* and *Carlsson* this cohort has experienced a lot of technological feature, such as the *moon landing*. This makes the cohort believe that "anything is possible".

How to market?

Marketers can address the international tone, created by for example the introduction of the pizza in the 1970s. Another method can be to place the advertising in global a

---

[231] Schewe and Carlson (2003)

[232] Ibid

[233] Ibid

[234] Ibid

[235] Ibid

context. This cohort has icons like, Bob Dylan, the Beatles and Che Guevara, which can be used as marketing symbols, when marketing to this cohort.

6.2.2   Understanding the purchase process of the customers

This theoretical part will start by presenting the purchasing process of customers. Thereafter different types of customers existing within a high–tech market will be presented. The theory behind a phenomenon called "The Chasm" will also be introduced.

An elementary step in order to understand the customers is to map and understand the purchase process of a high–tech product. The purchase process can be described as shown in figure 19. The unique characteristics when purchasing a high–tech product will be discussed within each of the *five* steps.[236]
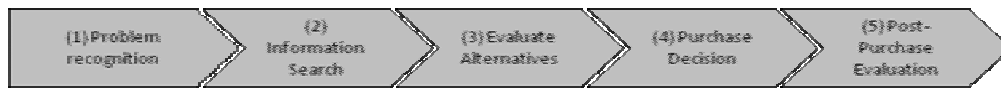
Figure 19 - Purchasing Process of High-tech products[237]

(1) Problem Recognition
It is important to understand that a customer must *recognize a need* before purchasing a product. Recognizing the need can be to identify a problem the customer is facing, as well as an opportunity the customer wants to obtain. This *need recognition* can be of an *internal* or an *external* character. An *external* need can be created through for example advertising. An *internal* need could be the identification of a bottleneck that prevents the customer to experience his or her environment as preferred. When a customer has understood the problem the *information search* for possible solutions is the next step.[238]

(2) Information Search
When searching for information the customer often identifies several alternatives for solving their problem. Many different sources are used during this process. Here are some general examples[239]:

- Personal sources such as *colleagues* and *friends*
- Commercial sources such as a *vendor* or *advertising*
- Public sources such as *reviews* within different publications or through the *Internet*
- *Real life examination* of the product is a useful source

When searching for information for high-tech product trade shows such as *CeBit* with over 4.300 companies present[240] are very useful for retailers and distributors. These trade shows often attract the newest technology.

---

[236] Mohr, Sengupta and Slater (2001) P. 172-174
[237] Ibid
[238] Ibid
[239] Ibid

(3) Evaluate Alternatives

The next step within the purchasing process is the *evaluation* of the relevant alternatives. The decision of adopting new technology can be characterized with *high-risk* and *anxiety*.[241] Due to both *market uncertainty* and *technical uncertainty* customers are afraid of making the wrong decision when purchasing a high-tech product leading to for example further required training or high switching costs. The switching cost can both be of monetary and tangible character or of intangible character, for examples feelings of exposure and risk.[242] The book *Marketing of High-Tech Products* refers to the *six* factors stated by *Everett Rogers' Diffusion of Innovations* when evaluating high – tech products and innovation.[243] These *six* factors are shortly summarized in the table beneath. It is vital for a marketer of high – tech products take these *six* factors in to consideration.

Purchasing decisions are affected by following factors	
Relative advantage	A marketer must communicate the benefits of the new technology compared to the cost. The marketer must therefore handle the FUD(Fear, Uncertainty and Doubt)-effect.
Compatibility	The high-tech product must be compatible with the existing ways of doing things.
Complexity	The marketer must know how the new product is to use for the customer and thereby try to find ways of making the product simpler.
Trialability	Through enabling the customer to try the product on limited bases the marketer reduces the risk that a potential customer perceives. In immature and high-tech markets it is particular important to meet the customers expectation.
Ability to communicate products benefit	*Firstly* the marketer must be able to communicate the benefits of the high-tech product, which can be difficult. *Secondly* the marketer must avoid communicating only in technical terms.
Observability	*Firstly* the benefits of the product must be easy to observe for the customer. *Secondly* other customers should be able to see the benefits obtained by the customer, who already purchased the product.

Table 10 - Factors affecting the purchase decision[244]

---

[240] www.cebit.de, 2009-04-07
[241] Mohr, Sengupta and Slater (2001) P. 173
[242] Ibid
[243] Ibid
[244] Ibid

(4) Purchase decision

When the customer has *recognized a problem, searched for information* and *evaluated relevant alternatives* he or she will base the purchase decision on the obtained information until now. Three parameters can characterize the purchase decision:

(1) Scope of offering
(2) Price
(3) Terms of payment and delivery

When the customer has carried out the purchase of the product a post-purchase evaluation will be the last step within the purchase process. [245]

(5) Post-Purchase Evaluation

The customer will for example ask himself or herself the following question in order to assess how well the product lives up to its potential. Examples of questions a customer of the Connected Home can discuss are:

- Have I successfully learned what the Connected Home is about?
- Were the promised benefits of the Connected Home obtained?
- Has there existed hidden cost for using the Connected Home?

With these post-purchase questions in mind the master thesis will continue to discuss the importance of knowing what type of customer categories the specific high – tech product can address. [246]

6.2.2.1 Categories of Customers

According to Moore there exist *five* different categories of customers. These are *innovators, early adopters, early majority, late majority* and *laggards. Innovators, early adopters* and *early majority* accept and adopt an innovation prior to the average time of adoption. [247] Compared to these segments the *late majority* and *laggards* take longer time than average to adopt an innovation.

With these categories of customers in mind the master thesis will discuss a phenomena called *The Chasm* introduced by Moore. [248] The chasm is the gap between the categories referred to as the *early adopters* and the *early majority.* In figure 20 on the next page the *Chasm* is visualized. The grey shaded area in figur 20 symbolize the share of the total market that have adopted the innovation at a specific time.

---

[245] Mohr, Sengupta and Slater (2001) P. 173
[246] Ibid
[247] Moore (1991)
[248] Ibid
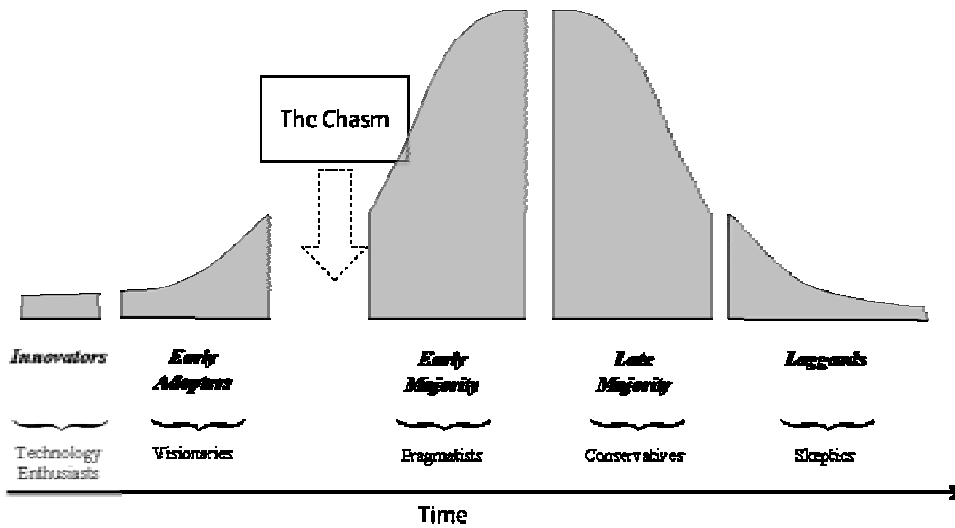
Figure 20 - The Chasm[249]

Moore has allocated a characteristic to each category of customers within the different levels of adoption. These people characteristics are also found in figure 20 above, beneath the customer categories.

According to *Moore* the difference between how visionaries (early adopters) and pragmatics (early majority) adopt a technology is the biggest and therefore this gap is the most difficult one to bridge. The visionaries for example want to be first when new ideas are introduced and the pragmatics want to adopt the new ideas slow and steady. A problem occurs when the early adopters are saturated and the early majority, compromising the mainstream market, yet hasn't adopted the new product. The chasm is then created. The marketing used for selling to the *early majority* is according to theory much different than the one used to sell to the *early adopters*. The master thesis will therefore carry on discussing how a marketer can try to cross *the chasm.[250]*

6.2.2.2 Crossing the Chasm

Early adopters referred to above as *visionaries* demand customized products and technical support. When a company adjusts their products range to match the demand of the *visionaries* (early adopters) the *pragmatics* (early majority) have difficulties finding a credible reference within the different customized products. The pragmatics are therefore unwilling to adopt and purchase the new product. They feel unfamiliar and confused by the wide range of customized products.

According to *Moore* it is important to minimize the time a high-tech company spends trying to bridge the Chasm, because the longer a company stays in the Chasm the harder it will be to get out. The authors of the book *Marketing of High – Tech*

---

[249] Christer Kedström, (2007)
[250] Moore (1991)

Products and Innovation confirm that the Chasm is a problem for every big company and there is no other way of passing the Chasm. Every big company has to go through the scenario, bridging the chasm.[251]

When discussing *the Chasm* the solution is to understand the differences between marketing to a *visionary* and to market a product to a *pragmatic*.

Marketing to the visionaries: Best possible solution
When marketing to visionaries it is important for the high-tech company to establish a reputation within the industry. The visionaries often adopt the new idea quickly. Thereby the focus lies on the product itself, giving the high-tech company the incitement to focus on *the best possible solution* in order to act quickly. The visionaries are more tolerate than the pragmatics concerning incompleteness of the product.[252]

Marketing to the pragmatics: Best solution possible
When marketing to the pragmatics the chosen vendor has to take full responsibility for the system integration of the product. A company can focus on marketing a *whole product* instead of one *separate* product. Therefore it is vital for the marketer to understand what the customer means when they demand a whole product.[253]

According to *Moore* there are several solutions for understanding how to market to pragmatics. One solution could be to find an ally or a partner, with whom you can provide a complete product solution. Though cooperating with a partner the company can calm the pragmatics down, because the pragmatics experience that not only one but several companies stand behind the new technology. Partners can also help to drive further expansion.[254]

Companies ought to focus on the *best solution possible*, and not on the best possible solution. Therefore it is recommended that R&D work within cross-functional project teams closely to partners and other allies. Many engineers do not think that this kind of work is as motivating as developing new ideas. It is therefore vital to motivate the R&D personnel. Engineers can for example visit customer sites in order to grasp how the customer behaves in action.[255]

Another marketing strategy is that a company simplifies the product concept instead of continuously adding new features. New features will only make the pragmatic more confused. In this case competition needn't be something negative. When the pragmatic is confronted with several companies offering the same product, the pragmatic has greater chance of experiencing the product in real life. Looking and feeling the product namely calms the pragmatic down.[256]


[251] Moore (1991)
[252] Ibid
[253] Ibid
[254] Ibid
[255] Mohr, Sengupta and Slater (2001) P. 171
[256] Ibid

Before continuing we want to highlight a statement of *Moore*, who suggests that a company, which wants to cross the chasm should pick specific segments within the pragmatics for their high–tech product. The company will thereby be able to focus all their resources on these segments. If a company focuses on less important segments, when crossing the Chasm, it will only spread their resources and not being able to build a lasting and strong brand.[257]

6.3 Marketing Mix

The purpose of this part is to unravel how companies effectively can market their product within a dynamic environments as the Connected Home. We want to discuss the marketing mix suitable for high–tech environments. A successful markets mix within complex environments is according to relevant literature unique.[258]
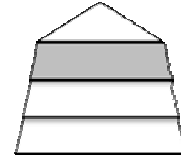
According to *Mason and Staude* marketing in dynamic environments demands a different approach than the traditional marketing theory. The usage of product life cycles can for example be misleading due to the quick changes in the environment affecting the new and mature products.[259]

The master thesis will therefore discuss the *marketing mix* useful within high–tech markets. The marketing mix in this master thesis is comprised out of four different factors and will be addressed as followed:

(1) Product – Marketing high–tech product in high–tech Markets
(2) Place – Being in the right places when marketing a high–tech product
(3) Price – Pricing Strategies in high–tech markets
(4) Promotion – Promoting within high–tech markets

6.3.1 Marketing high–tech product in high–tech markets

This part of the master thesis will discuss two issues concerning the marketing of a high-tech product. The authors believe that there are two characteristics important to mention when marketing high-tech services within a high-tech market.[260]

- Intangibility
- Inseparability

Intangibility
Due to the fact that services are intangible the customer cannot examine nor touch the service before making the purchasing decision. The marketer should in this case try to reduce the perceived risk for buying the high-tech product. This can be done through

---

[257] Moore (1991)
[258] Mason and Staude (2008)
[259] Ibid
[260] Mohr, Sengupta and Slater (2001) P. 201

free trials, money-back guarantees, training, product demonstration, technical support or extended warranty. [261]

Inseparability

A service is often inseparable from the product enabling it. The customer evaluating the product will at the same time receive the service experience. This means that a company cannot simulate the benefits of the service in advanced making it dependant on the product enabling it and vice versa.[262]

The next part of the master thesis will discuss issue of being in the right place within a high – tech market.

6.3.2   Being in the right places when marketing a high – tech product

After being introduced to two important issues concerning the *high-tech services* within the *marketing mix* for high-tech products the master thesis continues to discuss the factor *place*. Distribution channel is an important tool when marketing a high-tech product. It is important to understand the different stages within the distribution. If a company understands its distribution channel it will develop important alliances and relationships with key players, making the distribution even more efficient. The theory defines a good distributions channel as a channel that "*meets customer need for channel functions in the most effective and efficient mode possible*"[263].

Distribution channel partners can also be seen as marketing partners. By using this mindset companies can improve their branding for the user and making their service more efficient for the customer. An example for this is when Apple gave TeliaSonera in Sweden the privilege of selling Apple Iphone the first *six* months without any competition from other Swedish telecommunications providers.[264] Distributions channels are therefore according to theory important tools for creating a brand identity within a preferred market.

6.3.2.1   Choice of sales channel for new high – tech products

The illustration in figure 21 exemplifies how a company can choose their sales channels when launching a new product. As the product is accepted and sold to an *early, early market* the company should focus on *direct sales channels*. When early adopters have accepted the product the company can begin to use external distributors as sales channels in order to improve their presence on the market.[265]

---

[261]Mohr, Sengupta and Slater (2001) P. 201

[262] Ibid

[263] Ibid

[264] www.teliasonera.se, 2009-04-13

[265] Mohr, Sengupta and Slater (2001) P. 262
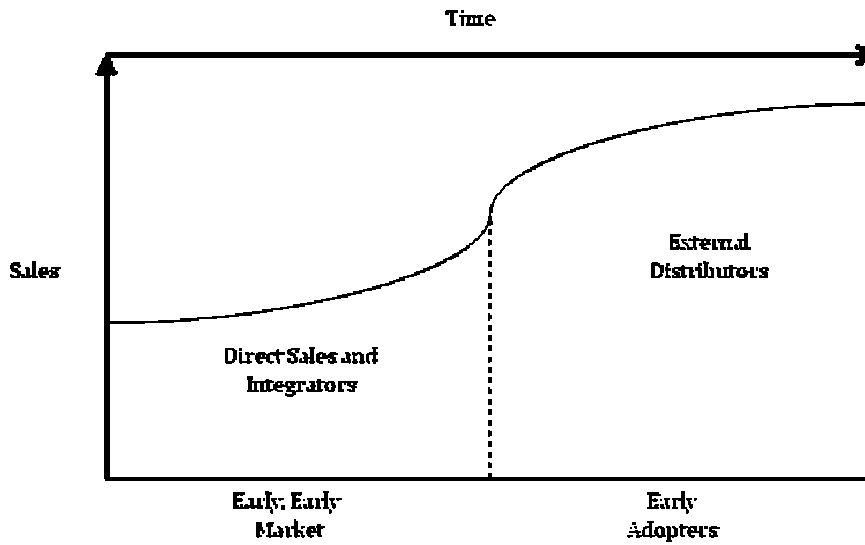
Figure 21 - Evolution of High-tech Sales Channels[266]

6.3.3 Pricing Strategies in High-tech Marketing

Pricing strategies can differ in high – tech industry. They can be used to attract customers through being stable or they can attract customer through being aggressive. If a company decreases the prices for their products the competitors often follow them and a price war can arise. The companies starting the price war can then quicker take advantage of the new pre-requisites within the market compared to its competitors and thereby create competitive advantages. This comparative advantage is called *price leadership.*[267]

Aggressive pricing strategies can create short-term sales benefits. If the environment is price focused companies can use *proactive* pricing strategies such as rebates or coupons deals to in order to be innovative, sophisticated and flexible.[268]

Another type of pricing strategy is the one characterized by visible and transparency. These strategies are then often more complex and customized to the specific product. The aim of these pricing strategies is to signal the product's value and the company's objective behind the product launch. On the other hand a company can take advantage of the customer's inability to estimate the cost of the product and thereby set their price strategically.

An important part of the pricing strategies in high – tech markets is to create a *Word-of-Mouth* effect when implementing price strategies.[269]

---

[266] Mohr, Sengupta and Slater (2001) P. 262
[267] Mason and Staude (2008)
[268] Ibid
[269] Mason and Staude (2008)

Before this master thesis continues to discuss the method of *price bundling* it is important to highlight the fallbacks when adjusting pricing strategies, for example decreasing prices or even giving away products for free. Customers who have obtained a product for free get used to the fact that something is free. When a company later starts to add fees, it can be hard to get the customers to pay for something when he or she is used getting the service for free.[270]

Price Bundling
Price Bundling is the method used when selling two or more separate components in a package. This package should be sold at discount making it attractive for the customer to purchase. *Price Bundling* creates customer value through the discount. An example is Microsoft Office, which is comprised of different programs, such as Microsoft Word, Microsoft Power Point, Microsoft Excel and Microsoft Outlook. It is harder for the customer to estimate the manufacturers cost for distributing the product when they are bundled.[271]

There exist two types of price bundling, the *pure* one and the *mixed* one. *Pure* price bundling is when a company only sells their product in a bundle at a fixed price and not separately. M*ixed* price bundling is when the products are sold separately or in a bundle, for example Microsoft Office.[272]

The reader of the master thesis has now gotten familiar with topics concerning the parameter *price* within high – tech markets. The master thesis will continue to discuss the parameter *promotion.*

6.3.4   Promoting within High – Tech markets

According to *Mason* and *Staude* promotion can encourage a firm's changing behaviour, but used as a stand-alone method its effects are limited. When the market is confused aggressive promotional strategies can help an alert marketer to acquire additional market share. The high cost of advertising can also act as *barriers of entry* within high-tech markets. Thereby can aggressive promotion create brand loyalty and decrease competition.

This master thesis will continue to discuss *six different* types of promotion strategies, which can be used when marketing a high – technological product to customer starting with *comparative marketing.*

Comparative marketing
Comparative marketing is when a company compares themselves to other firms highlighting their advantages. If the marketer chooses to use *comparative marketing* within confused markets, a company can "steel" market share from competitors. If a company chooses to apply *comparative marketing* the marketing campaigns ought to be of a shocking and controversial character in order to maximum the effect.

---

[270] Mohr, Sengupta and Slater (2001) P.303
[271] Stremersch and Tellis (2002)
[272] Mohr, Sengupta and Slater (2001) P. 307

Promotion through personal selling

Within high – tech markets *personal selling* can calm the confused customer down and thereby encouraging the customer's loyalty to the specific firm. Meanwhile can the sales force act as a feedback channel back to the company in order to analyse and map the demands from the customers. When using a sales force, it should be decentralized and empowered.[273]

Brand Awareness in high – tech markets

In high – tech industries *brand awareness* can play an important role. Engineers and technical personnel often neglect the role of brand awareness. When customer face fear, uncertainty and doubt (FUD - factor) a brand name can make the customer feel safer. They can easier make the purchase decision when they face a brand they recognize. It is therefore very important for high-tech companies to invest in their *brand equity.*[274]

CoBranding

The master thesis has earlier discussed the importance of alliances and partnership when marketing to high – technological markets. The strategy called *Cobranding* is based on the thought of synergies: When two companies' brands are used together, their brands can become stronger than the brands are if they would stand alone. An example is *Intel,* which has marketed their brand as a component within different products and thereby achieved brand awareness.[275]

Viral Marketing and Buzz Marketing

Within high-tech markets it is important for the company to make their product offers as compelling as possible. By doing this the customers can voluntarily pass the marketing message around, thereby creating a *Word-of-Month* effect. This type of marketing is referred to as *Viral Marketing.* Email is the primary tool used by companies.[276]

A substitute to *viral marketing* is the type of marketing called *Buzz marketing. Buzz marketing* is based on the idea of taking advantage of the *word-of-month communication* in order to create excitement and interest in a company's product. Marketers in high-tech environments often try to reach "trendsetters" in specific areas. These "trendsetter" will then promote the product to their environment. The company thereby hopes to reach a broader target group with the help of the *word-of-month* effect.[277]

Mobile advertising

During the last years a new type of area for advertisement has grown, namely *mobile advertisement.* Through using *mobile advertisement* companies are able to target a specific message to the right type of customer. Individuals carry their mobile phones

---

[273] Mohr, Sengupta and Slater (2001) P. 314

[274] Ibid

[275] Ibid

[276] Ibid

[277] Mohr, Sengupta and Slater (2001) P. 324

with them almost all the time. The theory states that this method is particularly useful when targeting a younger audience.[278]

6.4   Summary - Theoretical framework for the marketing of the Connected Home

Step *one* in the theoretical framework is related to the internal considerations that a high-tech company ought to consider when generating their marketing strategy. We believe that the issues presented here are important to take into consideration if a successful marketing strategy is to be generated. The reason for that is according to us that marketing is not just something that is presented to the customer. We believe that it has to start at the bottom of the company and has to be addressed in many different levels. One example could be that the R&D and marketing department ought to have a deep integration, if a successful marketing strategy is to be accomplished.

In step *two* the cohort theory is presented. We believe that this theory is necessary to take into consideration when marketing products in the 21 century. Further we believe that the cohort theory is helpful when segmenting a market and thereby understand the underlying values that drives purchasing decisions. Another result of the theoretical studies is the attention, which we believe has to paid towards the purchasing process of the customer. Our final notation when it comes to understanding of the customer is that it is important to understand that there exist different types of customers. When combining these theories we believe that it is possible to find the most interesting target groups for the Connected Home.

We believe that the marketing mix for a high-tech company must be different from a more classical marketing mix. In step *three* we have present the unique marketing mix that, according to us, a high-tech company acting in the Connected Home industry could follow in order to generate a profitable mix. The different stages are once again summarized beneath in figure 22.
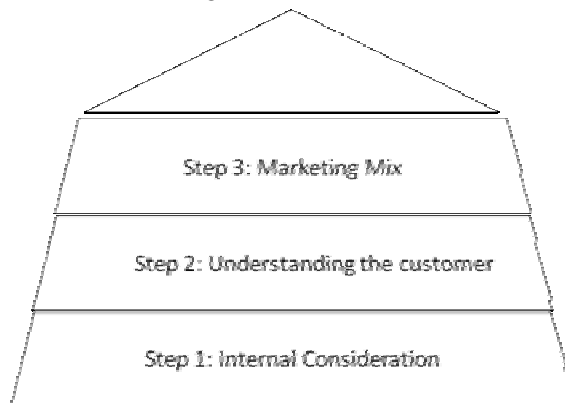

Figure 22 - The theoretical framework for marketing of the Connected Home

The next chapter will complement this theoretical framework with empirical findings. The theoretical and empirical finding will then be used in chapter *eight* to generate our marketing model for the Connected Home.

---

[278] Mohr, Sengupta and Slater (2001) P. 324

7 **Empirical studies of the Connected Home**

This chapter will present the empirical findings that have been gathered through interviews. It will be divided into two parts. The first part will describe customer needs. The second part is an interview with the French telecommunication operator Orange who has successfully deployed the Connected Home concept in France.
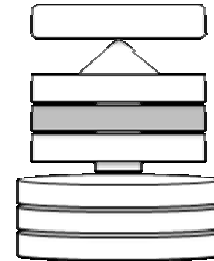
7.1 Customer needs

This section is divided into two parts. The first part will cover customer needs and will be written from a general point of view. These empirical findings have been obtained from people within the Connected Home industry. The second section has been generated from customer interviews.

7.1.1 General findings

To get a broad picture upon customer needs interviews have been conducted from three different perspectives. We started by interviewing Consumer Electronics (CE) sales channels to get their point of view upon customers' need. Thereafter we interviewed Telia Driving Spirits, a sales force dedicated to sell the Connected Home. The last interview was done with an industry expert within the Connected Home industry in Sweden.

No united target group within the industry

While conducting the interviews we have been able to identify a diverting picture regarding the customer target group for the Connected Home. The industry has not a united picture about whom they are selling towards. Some are saying that it is families in the suburb that are the primary targeted group. On the other hand there are sales personnel that are indicating that single living women are the ones easiest to sell to.[279] A third group points out the teenagers and men in their thirties as the most acceptable and important target group for the Connected Home.[280]

An increasing demand for the Connected Home, but no articulated needs

The demand for network connectivity is increasing among customers. There is starting to become a demand for devices that are functional within a home network. Networking hard drives is the product that is the most popular. The customers are starting to express needs for interoperability but they do not yet know how to articulate their needs since the product is too new to them. They are having trouble visualizing the concept of the Connected home. Due to this reason the sales personal

---

[279] Interviews Industry expert, 2009-04-17
[280] Interview Telia Driving Spirits, 2009-03-25

often find themselves in an advisory role explaining the needs towards the customer.[281]

Customers fear technology and needs to be educated

Customers are afraid and need to be educated within the new technology. The recognition of the Connected Home is not widely spread among the customers. A strong brand name can sometimes help to bridge this fear and generate a purchase. Customers feel safe when choosing the market leading brand.[282]

Key drivers for the Connected Home

A key sales argument for the *connected home* is wireless capabilities. The customers are so into wireless that they sometimes even forget that most of the time they still are going to need a cable to get the electricity to their devices.[283] Safety and simplicity are further drivers for the Connected Home, especially appreciated by single living women. The desire to share digital content inside and outside the household is also an identified key driver. A further notation is the fact that the Connected Home is an exciting and new thing that delivers an updated feeling to the user, this factor has a great impact on the user. The design factor is also important to take into considerations.[284]

Customers acknowledge advice from others

During the interviews it has been clearly notified that many customers put great acknowledgement in to the advices that their friends, colleagues and family gives to them.[285] A distinct notification is that many teenagers are quite updated when it comes to technology. For that reason they obtain an advising role to their parents when a technological purchase decision is to be made. In many cases it is the teenagers that are the ones demanding the technological update and thereby awaken their parent's interest. The parents want to feel up-to-date and are easily convinced by their children.[286] Customers in general tend to be interested and listen carefully when a sales personnel explains the Connected Home. The sales personnel need to use a basic technical level when they explain the fundamentals of the Connected Home for the customer, so that they do not to lose the customers interest.[287]

Magazines and reviews are important information sources

Customers that are more interested in technology tend to obtain much of their information from magazines and reviews. Especially men who are interested in technology often obtain some knowledge regarding the technology before contacting a CE sales channel.[288]

---

[281] Interviews Consumer Electronics sales channels, 2009-03-22
[282] Interview Industry expert, 2009-04-17
[283] Interviews Consumer Electronics sales channels, 2009-03-22
[284] Interview Industry expert, 2009-04-17
[285] Interviews Telia Driving Spirits, 2009-03-25
[286] Interviews Consumer Electronics sales channels, 2009-03-22
[287] Interview Telia Driving Spirits, 2009-03-25
[288] Interviews Consumer Electronics sales channels, 2009-03-22

Men in their 30ths show great interest for the Connected Home

During the interviews with CE sales channels men in their 30ths were identified as an interesting target group. They often come into the store wanting the latest technology and purchase it, even if they perhaps do not afford it at the moment. The more complex the product is, the more interesting they find it. These men want to feel up-to-date with the latest technology. They often act as if they know what they are talking about, even if they only have a very moderate knowledge about the technology. These customers are also affected by what their friends want or possess.[289]

No full acceptance for standards amongst customers

Customers have not yet embraced the plug-and-play concept. There is not a full acceptance for the standard and customer doubt the functionality and are afraid that they have to do some configurations themselves.[290]

Too many products

The Connected Home concept is often marketed with too many products. This causes two important implications. Firstly it scares and makes the customer confused in a technical way, they cannot see how they can handle all the devices. Secondly it raises the question about the investment needed to purchase the Connected Home marketed.[291]

The buying customer is often satisfied

The customers that have bought parts of the Connected Home can quite often return and ask for more complementary products. This is all depending on if they were able to easily set up the first investment.[292]

Transparency in the pricing

Through the conducted interview we have identified that customer find it annoying with small fee. These fees are often related to different subscription solutions that companies set up. Customers have indicated that they prefer a flat rate and are also willing to pay extra for an all including offer. They are tired of continues small fees that are being put on their bill, which they didn't expect.[293] Transparency is another important demand from the customer's point of view. Through the increase of price comparing web pages the customers are starting to demand more transparency and want to easily understand their subscriptions.[294]

Price bundling is efficient

Pricing strategy is an essential factor for the Connected Home. Within the telecommunication industry pricing strategies are of essences. Customers are used to fast decreasing prices. If the Connected Home is going to be a mass-market concept

---

[289] Interviews Consumer Electronics sales channels, 2009-03-22
[290] Interviews Telia Driving spirits, 2009-03-25
[291] Ibid
[292] Ibid
[293] Interviews Consumer Electronics sales channels, 2009-03-22
[294] Ibid

the price has to be appealing to everyone. Price bundling is an efficient way to spread the Connected Home concept. Customers are often open-minded toward price bundling. It is an efficient way to spread new products and create recognition amongst customers. On the other hand it can create problems when the bundling needs to be separated for various reasons. [295]

The connected home is not spread around CE stores

The *Connected Home* concept is not that spread within consumer electronic sales channels. Interviews have shown that the CE sales personnel do not fully understand the difference regarding for example DLNA, UPnP and Wi-Fi. The sales personal tended to mix up the different standards. Further the interviews have identified a very limited supply of DLNA device in the consumer electronic stores.

Customers many times prefer to buy in stores

It has been proven during the interviews that the customer appreciates to buy their Connected Home in stores. It gives them a chance to identify more with the Connected Home and visualize the possibilities. The face-to-face interaction has also been notified as a positive aspect when trying to sell the Connected Home. It helps the customer to fill in the gaps obtained from advertising offers. When customers have problems with their Connected Home they prefer to go to a store rather than sitting in a telephone queue.[296]

Blurry marketing message

The *connected home* can be generated in a number of different ways. This can cause the marketing message to be blurry which then leads to unclearly stated customer values.[297]

CE manufacturers enjoy being associated with telecommunication operators

The CE manufacturer finds it attractive that telecommunication operators are selling their products. The reactions have been that for the first time their products are put into a bigger context. This is generated when the products are presented with concrete application and features of the telecommunication operator, rather than just as a product in shelves at a CE sales channel.[298]

The mobile phone is important for the Connected Home

The customer expresses wishes of integrate the mobile more in the home. They cannot explain exactly how, but there are great expectations on how they can use the mobile. The CE sales personal thinks these expectations are derived from the fact that the mobile is a natural part in the customers' digital living.[299]

---

[295] Interview Industry expert, 2009-04-17
[296] Interviews Telia Driving Spirits, 2009-03-25
[297] Interview Industry expert, 2009-04-17
[298] Ibid
[299] Interviews Consumer Electronics sales channels, 2009-03-22

Direct commercial create awareness

Direct commercial has proven to be an effective way to create awareness among customers.[300]

7.1.2 Customer Interviews

Ten qualitative customer interviews have been conducted. The findings from these ten interviews have been clustered into four different anecdotes. This is done by putting the findings into a bigger context and thereby create a story around them. This procedure is called storytelling. The reason for choosing storytelling is so that the reader more easily can digest the huge amount of data generate by the interviews. To cover the broadest spectrum possible interviews have been conducted throughout different ages and gender.

The Router-woman in her 50ths

"I am in the telecommunication store today because I need a router. I have had one before but the old one does not work anymore since I moved to a new apartment and apparently this apartment has a fiber connection and the old one had ADSL and then I need to buy a new router for the fiber connection. The reason why I got a router in the first place was because my sixteen-year-old daughter told me that we needed one. She is constantly on the Internet doing various things and demands to be able to move around while chatting with her friends and downloading music and movies. My daughter is also stating that we need a new TV so that she can enjoy her movies. I also have a need to be able to move around with my laptop in the apartment. The wireless environment is also an appealing factor. I do not like the cables in my house, because they absorb dust and are not visual appealing."

"In my profession as a teacher in the year 2009 a lot of my work assignments is being administrated trough Internet. My Internet habits are not that advanced, I do some mailing and banking errands and apart from work related things, I am not a big fan of sitting on the Internet."

"When I want to know something about home networking and the mystery of it, I always turn to my daughter and in some cases to the telecommunication store for information. When I evaluating what to buy I solely listens to others. I have very little beliefs in my own ability to find the right product out there in the jungle. I feel anxious about coming home with this router; I have no idea about how to set it up. There is always something wrong with the wireless network and I would rather use the cable but the benefits of being wireless are worth the trouble. I would easily pay extra for a trouble free wireless connection. The speed is not that important to me but it is for my daughter. In many ways I agree with my daughter when she expresses that a multiple Internet connection is as a must in the modern family."

"I always go to a store when I want to buy high-tech products. I barely buy anything over the Internet due to the limitations of the purchase support. Every time I buy a high-tech product I am loaded with questions that I want to get answered by a sales

---

[300] Interviews Telia Driving spirits, 2009-03-25

person. If I were to buy over Internet and something would go wrong I feel that there is no one that I can turn to.”

“If the router or high-tech product that I bought would not function properly I would turn to the store where I bought it, I thinks that the store should take responsibility for the products that they sell. I hate to be sent around to different customer services and that is why I always go with the most recognized brand that stands for quality. I do not really care about a few extra SEK.

I have never heard about a company that guarantees functionality for a home network but I find it interesting though.”[301]

Home networker within his 30ths

“The main reason for me to have a home network is because I want to be able to move around with my laptops. I also want to be able to let my friends that visit me, take part in my home network. I have a modem-router solution for my home network. To this network I have apart from my two laptops (my own and my girl friends) connected a NAS (Network Attached Storage). The NAS is very convenient for me because I consume a lot of digital media for example movies, music and games. I also want my friends to easy get access to my digital content whenever they are visiting.”

“I am a very frequent Internet user. If I am looking for any information, what so ever, I would turn to the Internet. Since I work a little within the telecommunication industry I do not need any help with setting up my home network.”

“Whenever I buy products for my home network I do this mainly through Internet.”[302]

“I am often capable of solving my home networking problems myself. But if I would have any problems, my first reaction would be to turn to the Internet for help. I would probably browse on a forum or a blog for answers.”

The nineteen-year-old teenager living with his/her parents and siblings

“I am in control of all the purchasing decisions regarding home networking in my family. My parents pay for the most of the gadgets, but they do not have a clue what to do when some things does not work. We have five computers in my family and all of these are frequently and simultaneously used, very often in different locations. We could not cope without the wireless connection. My friends come over to my place on a regular basis to play computer games. They bring their own computers and then we play all night long.”

“When I want to purchase something new to the home network I always check with my friends and search the Internet for information. I do not find a home network infrastructure particularly hard to understand. I crash and burn a few times, but in the end I always get it to work.”

---

[301] Interview, Customer, 2009-03-30
[302] Ibid

"My parents always go for the safe choice in a purchasing decision. Because of that reason we always buy our things in a well recognized store. They feel that the Internet is lacking on support and transparency. "

"If I would have any problems with the home network I would turn to the telecommunication operator, after doing a diagnostic myself of course."

The up-to-date 25-year-old student
"I would not say that I have a network at home, well I do of course have a Internet connection, a wired one. I would like to get a wireless but I could not be bothered to pay over six hundred SEK for a router. When we have party's we always connect the computer to the stereo so that we make all our digital music available"

"I always turn to my friends when I want to know something about home networking. I am not a computer geek but I often get the home network things to work. Most of the things I buy are plug and play, which I by the way think that it always should be like when it comes to home network gadgets. Of course there are those times when the plug and play does not work properly and I fail to configure. This is very frustrating."

"I could easily see myself spending more money on home networking product when I get a job. I have a need of feeling up-to-date. I would love to integrate my mobile more in the Connected Home, and I would definitely buy a mobile broadband so that I could get Internet wherever I am."

"Consumer electronics store is the place, where I would go if I where to buy any home networking products. I think they have the broadest segment and the best prices."

"If I could not get my home network to function, I would turn to the telecommunication operator for help, after consulting some of my friends first."[303]

7.2   Interview with industry expert at Orange

To get a more specific understanding about how telecommunication operators could act towards the upcoming demand regarding the Connected Home an interview with Orange was conducted. Orange has successfully deployed their Connected Home concept Live in France. The interview was focused on the core in the Live concept, namely Livebox. Livebox is the Residential Gateway, introduced in chapter three, in the Live concept of Orange. One further reason for choosing Orange is that they are known as an innovative marketer[304].

Introduction to Livebox[305]
The Livebox was introduced on the French market in 2004. By 2008 Orange had 7.8 million subscriptions. The features of Livebox are very similar to Telia Smart Start

---

[303] Interview, Customer, 2009-03-30
[304] www.pcanywhere.com, 2009-02-20
[305] www.orange.com, 2009-03-22

that will be presented in chapter *nine* and used in the application of the marketing model. It is also a wireless router, which has VoIP and IPTV possibilities and is compatible with different game consoles. It is similar to Telia Smart Start in the way that you cannot buy a Livebox, you have to subscribe and lease it.

Possibilities with the Livebox[306]
According to the interview with Orange the greatest benefits of the Livebox are the possibilities to offer customer an all-in-one box. This is generated through *Triple Play*. When Livebox was introduced there was an all-in-one subscription plan distributed with a flat rate. This subscription plan is still valid even if the customers now days can chose many options and services, which then create an additional fee. These additional services are for example expanding of the basic IPTV offer and unlimited calls through VoIP.

Main drivers of the Livebox[307]
The main drivers for introducing Livebox were the *ability to bundle many services* into one device, especially IPTV and VoIP. The key success factors of Livebox have been the smart price bundling. It has been a simple offer for the customer to understand. Because of the simplicity Orange has been able to bridge the complexity surrounding a technical complex product.

The focus of Orange and Livebox[308]
There has been a clear objective from Orange to provide fully functional services and products. They put great effort into securing the functionality of the services before they release them to customers. A thorough marketing analysis is always performed were a distinct target group is determined, the customer value is specified and also how the presentation towards the customer should be done is included. There is also a technical analysis carried out, which aims to determine the implication on the Livebox.

Introduction to Livebox Lab[309]
A little extra attention will now be directed towards Livebox Lab. This is a joint venture between Orange and third parties, where smart ideas can be generated and then applied within the Livebox concept. The Livebox Lab is a product and services development accelerator. It opens the door of Orange's home network in the image of Livebox services.

The duration of the projects within Livebox Labs take from three to six months.

The Livebox Lab welcomes ideas from partner companies and offers them a privileged working environment thanks to France Telecom tools and expertise, both technical (connections to service platforms, API, radio) and marketing (business plans).

---

[306] Interview, Vasilis Frederikos, 2009-03-20
[307] Interview, Vasilis Frederikos, 2009-03-20
[308] www.orange.com, 2009-03-22
[309] www.liveboxlab.com, 2009-02-25

The way to establish business models like this is similar to the trend in the mobile industry. Apple has had one for long called *Apstore* and in the same way Samsung, Nokia and SonyEricsson are starting theirs too.[310]

---

[310] www.svd.se, 2009-03-15

8 Analysis and generation of Marketing Model for the Connected Home

This analysis will combine the theoretical findings in chapter six with the empirical findings in chapter seven. By doing this we will create a general marketing model suitable for the Connected Home. This marketing model will be comprised out of the three stages revealed in the theoretical framework in chapter six. Before we start creating our model for marketing the Connected Home we will shortly discuss the situation of the Connected Home from a marketing perspective as of today.
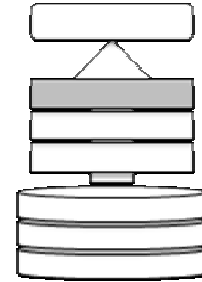
Chapter *three* to *five* have introduced the foundation for understanding the Connected Home. Ericsson Consumer Labs and HGI are seeing the same pattern, namely that the market is moving towards a wireless, flexible but yet simple, content sharing environment. For the Connected Home to function in a flawless way, every part of the Connected Home (Access, Device and Service) must interact. The margin of error is therefore extremely thin. If not all parts of the Connected Home*, which all have distinct defined characteristics, interoperate, there is little chance of a successful customer experience. According to the interviews the customers are seeing the Connected Home as a complex concept. The recognition amongst customers is nearly absent and interviews show that the knowledge about the products and possibilities scare the customer in general more than it makes them interested.

The Internet usage is increasing as well as the speed of the connection. The time spend connected to the Internet is also increasing which indicates that the consumers are finding it more and more valuable to be connected. Computer and Internet usage is just as usual as watching TV in the modern family. The stock of digital content and digital devices are also increasing substantially.

Summarizing these empirical findings we believe that the Connected Home is in progress and that it is crucial to take an advantageous position before it takes off. All the components (*Access*, *Device* and *Service*) are in place but the recognition amongst customers is still very low.

This analysis will generate a marketing model for the Connected Home as of today, but before starting we want to analyse the pre-requisites for the marketing model, with the above revealed characteristics in mind.

8.1 Pre-requisites for understanding the marketing model

Pre-requisite: The concept Connected Home is in the *Chasm*

After performing interviews and combining these with theories related to the *Chasm*, we believe that the concept of the Connected Home is in an early stage of market

acceptance. The recognition of the Connected Home is not widely spread among customers as of today. The users of the Connected Home that exist have more or less solely obtained the Connected Home concept by themselves, through being part of the *innovators* or *early adopters* customer category.

We therefore want to conclude that the Connected Home could be in the Chasm. We believe *innovators* and *early adopters* of the Connected Home have accepted the concept. They have the knowledge and the interest to establish their own Connected Home with the help of the horde of actors offering the necessary components: *access, device* and *services*.

Today we believe that the *early majority* also referred to as *pragmatics,* have, according to empirical findings, difficulties identifying their need for a Connected Home. These interviews show that a majority of the customers do not yet recognize a need or know that a solution for a Connected Home exists. We believe that actors within the Connected Home have satisfied the need of the *innovators* and the *early adopters* but not yet been able to attract the *early majority.* The situation of the Connected Home is visualized in the illustration beneath.
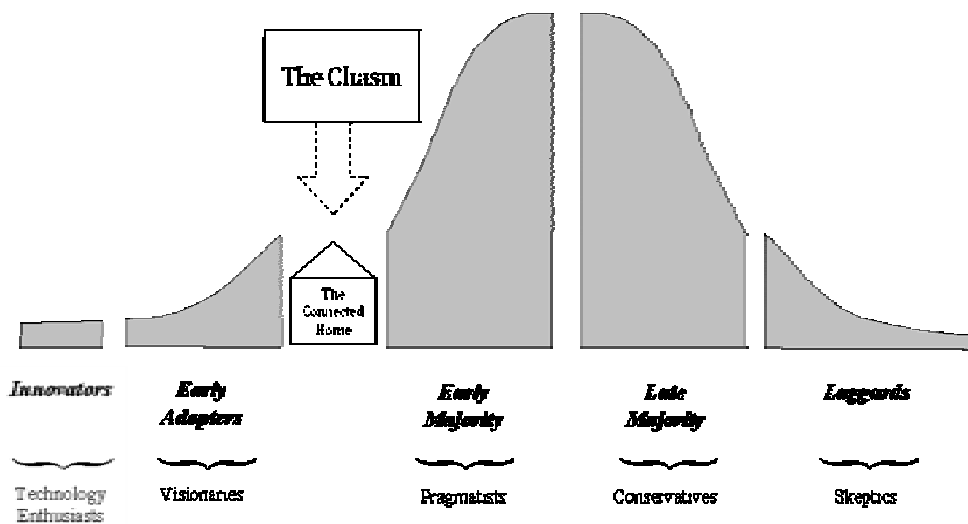
Figure 23 - The Connected Home in the Chasm

With this pre-requisite in mind we want introduce our marketing model suitable for marketing the Connected Home through the Chasm. This will be done according to the following structure. Starting with *step 1*.
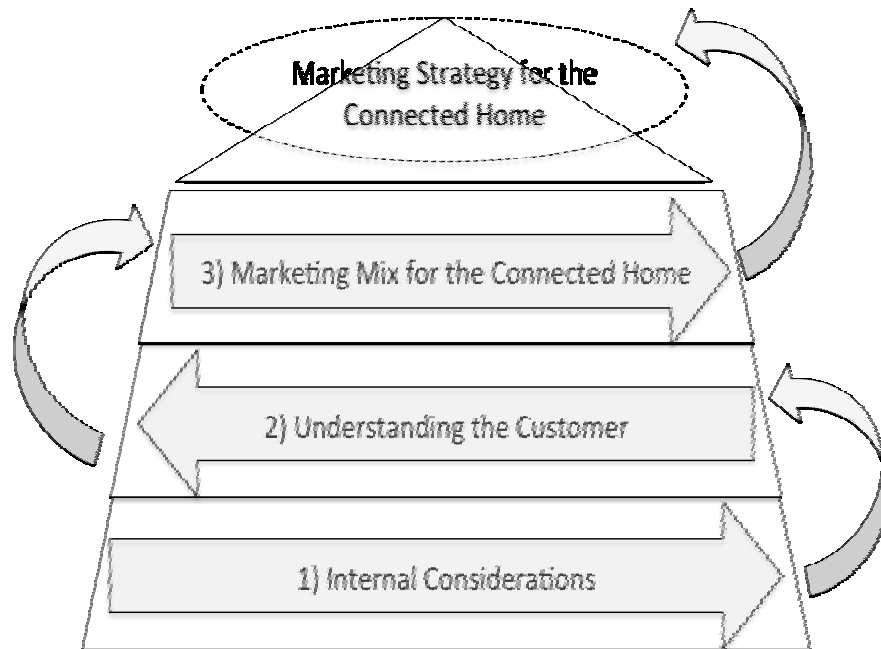
Figure 24 - Marketing Model for Connected Home

8.2   Internal Consideration

This part of the analysis will discuss three suggestions related to the internal consideration of a company when marketing the Connected Home. Since we believe that the Connected Home concept is in the Chasm these suggestion have been adjusted to solve the problem of bridging the Chasm. These will then be summarized and added to the model for marketing the Connected Home.
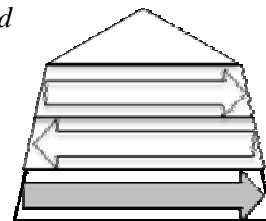
In chapter *six* the reader is introduced to the statement that successful marketing starts at the bottom of a company and is not just something that occurs towards the customer. For a company to be successful with marketing they must understand their market and their customers. We believe that the right *internal consideration* will help actors within the *Connected Home* to make their process for understanding their customers and their market more efficient.

8.2.1   Alliances and relationships

Suggestion

Actors within the Connected Home ought to focus on building alliances and relationships in order to adapt to the *value network* of the Connected Home introduced in chapter *four* as a foundation for understanding this marketing model.

Analysis

The foundation of this marketing model has introduced the reader to the components creating the Connected Home. The reader is now familiar with the horde of combinations available for creating a Connected Home. Through building alliances and partnerships actors could be seen in several different areas of the Connected Home. The actors could take advantage of their partner's abilities to adjust to the Connected Home. A *word-of-mouth* effect could thereby be achieved. Through *vertical* and *horizontal* partnerships actors could be able to decrease the *fear*, *uncertainty* and *doubt* factor and more easily cross the Chasm.

In chapter *three* of the foundation of the marketing model *standard organization* were introduced. These are examples of how actors try to handle the dynamics.

Chapter *four* of this master thesis has introduced the reader to the dynamics of the Connected Home environment. We believe that the Connected Home can be characterized as a value network. It is crucial to know when and how to enter a market and to be clear about your competitors, customer needs and market size. Actors within the Connected Home therefore must constantly be aware of the rapid change of business environment. The authors strongly believe that the Connected Home will be a very complex value network. This is based on the integrated analysis from chapter *four*. We believe that the concept of the Connected Home will continue to involve different actors, all trying to attract the customers. This could very well be confusing for the customer and we believe that the way to succeed is to simplify the environment for the customer. The simplification can be made in a numerous ways.

One example that the authors strongly believe in is alliances and partnerships that can guarantee *interoperability* and *ease-of-use* for the customer. The standard organizations introduced in chapter *three* are examples of coping with the *interoperability* and *ease-of-use* demand. This kind of marketing is referred to as *relationship marketing* and has been introduced in the theoretical framework of the model in chapter *six*.

The number of member in standardization organizations like DLNA and HGI are currently increasing. Similar to the increasing number of actors choosing to join organizations the trends introduced in chapter *five* indicate that potential *Connected Home* user also increase in number. We believe that these to findings together enhance the future possibilities for the Connected Home.

According to industry experts within the Connected Home, there is no doubt that the technology industries are dedicated to further enhance the possibilities for the

Connected Home through investing in the development of products and services related to the Connected Home. The customers are coming to experience more and more *usability* according to the theories of value networks and *Metcalf's Law*. We believe that the identified trends towards a more "connected home" will enhance the value for the customer at a high pace. When more and more consumers are implementing the Connected Home, a *word-of-mouth* effect is also to be expected.

We believe that horizontal marketing campaigns together with other actors within the Connected Home industry can lead to unique advantages. Actors could thereby achieve *first mover comparative advantages*. If specific actors are seen cooperating with other brands the FUD – factor among the *early majority* will decrease and the Connected Home concept will easier be accepted. If the industry can show a united front towards the customer the FUD-factor is demolished.

Apart from *horizontal relationship marketing* we believe that Connected Home actors could focus on *vertical partnerships* as well. Through our interview with the French telecommunication operator Orange we have grasped the idea of their "Livebox Lab concept". This has been a way for Orange to integrate with their customers. We believe that Connected Home actors could start a similar concept as "Livebox Lab concept" and thereby integrate more with their customers. Connected Home component providers could come closer to the users and thereby easier pick up new trends and needs. The trend of starting online-based stores, where applications and content are produced together with others (e.g. customer and small software companies) is present in many industries today. The interviews with Orange indicate that this could be a successful path to pursue.

8.2.2 Increase R&D and marketing interaction

Suggestion

By using *creative destruction* and *unlearning* actors within the Connected Home can increase their R&D and marketing *interaction* and more effectively adjust to the *dynamics* of the Connected Home environment.

Analysis

The second step within *internal considerations* of the marketing model is to *increase R&D and marketing interaction*.

This statement will discuss how actors within the Connected Home value network can make their process for adapting to the dynamics more efficient. The dynamics were introduced in the integrated analysis in chapter *four*.

In chapter *six* we introduce two problems, which actors within the Connected Home could face. These problems are named *core rigidness* and *innovators dilemma*. Since the Connected Home is described as a dynamic value network, we believe it is important for the actors to bridged these problems by creating an effective interaction between the R&D and marketing department. This could enable the actors to adapt to the dynamics of the Connected Home environment. We also believe this is necessary since the Connected Home is comprised of a horde of different components. These

have been introduced in chapter *three* as part the foundation of the marketing model. In order for the marketing department to grasp the different components within the Connected Home we believe that a continuous dialogue between R&D and marketing is necessary.

In chapter *six* we have introduced *four* steps, which are useful when integrating R&D and marketing. We want to add these *four* steps to our marketing model:

(1) Match the nature of the integration
(2) Examine and overcome core rigidness
(3) Use formal and informal interactions
(4) Enhance opportunities for communication

Theories also conclude that actors must consider geographical separation of the R&D and marketing department, since geographical separation reduces the efficiency when communicating. As the dynamic environment surrounding the Connected Home demands flexibility we believe actors have to adjust quickly when customizing their marketing strategies and therefore evaluate their geographical separations.

Two general solutions for bridging the *core rigidness* and *innovators dilemma* are *creative destruction* and *unlearning*. We believe that actors within a dynamic and complex environments as the Connected Home could make use of these methods when adjusting to the pre-requisites. The actors of the Connected Home could also make use of these techniques when trying to bridge the Chasm.

8.2.3   Make use of expenditure marketing

Suggestion
Introduce *expenditure marketing* in order to handle the dynamics of the market and understand the customers' needs.

Analysis
When marketing the Connected Home it is important to handle the *dynamics* of the market. The *integrated analysis* in chapter *four* underlines the dynamics within the *Connected Home* and we believe that *expenditure marketing* is a useful tool for handling these. Generally market knowledge is a valuable tool for the technical personal among the actors of the *Connected Home* when evaluating possibilities.

We want to conclude that marketers of the Connected Home could make use of *expenditure marketing* and thereby enhance the Connected Home concept. Using market information when developing new components for the Connected Home will also help the actors to increase their product quality of their specific Connected Home concept.

Expenditure marketing could generate a better understanding of the general needs and demands from a customer point of view. Actors could use this information for the clarification of a *Connected Home* customer's specific response to a certain need. In

order to be successful within the dynamic value network of the *Connected Home* the actors have to gather and evaluate every small marketing decision.

Understanding your customers is an important part of the process for crossing the *Chasm*. This will be discussed in the next part, but we believe that *expenditure marketing* could create the right pre-requisites for achieving this.

8.2.4   Summary of stage 1: Internal Consideration

This part of the analysis will summarize the *first* stage within our model creation. We believe that there exist *three* important steps for a complete implementation of this *first* stage. The Connected Home is according to us a value network situated in the Chasm. Thereby we believe that the first step should be to put great effort into building strategically relationships and alliances. When acting in this high-tech environment we believe that the second step should be to actively work towards closely integrating the R&D and marketing department. We believe that it is hard to bridge the Chasm and create the right marketing strategies without the right market information. Therefore the last step is to continuously gather market information by using expenditure marketing.

By following these steps, summarized in the figure 25 below, we believe that the company have the right internal processes and is ready to move on to the next stage in the marketing model.
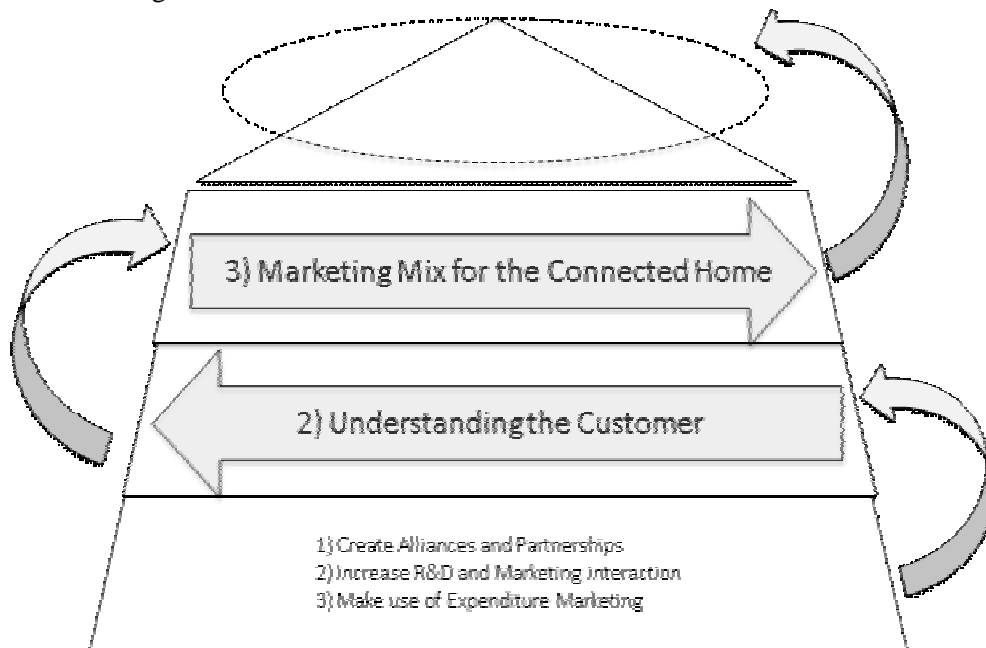

Figure 25 - Stage 1: Marketing Model for the Connected Home

8.3   Understanding Customers

This part of the analysis will introduce different methods for understanding the customers of the Connected Home. High-tech marketing theories will be combined with cohort segmentation theories. After reading this part the reader should be familiar with the two first step within our marketing model.
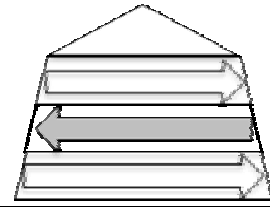
8.3.1   Identification of suitable target groups for the Connected Home

Suggestion

Identify suitable target groups for the Connected Home.

Analysis

We believe that the first step when trying to understand the customer is to identify suitable target groups. Therefore we have chosen this as the first step, within the understanding customer stage, when creating our marketing model.

The key findings from the conducted interviews have acted as the foundation when identifying the target groups and have been introduced in chapter *seven.* When marketing a product it is vital to know whom you are marketing towards. To add a further dimension to the target groups' values and needs the interview findings will be complemented with the *cohort theory*.

We believe we have found *three* different target groups suitable for the Connected Home concept.

- The up-to-date man
- The persuading teenager
- The simplicity-searching woman

These three target groups belong to the early majority which is the next phase for the Connected Home. The master thesis will introduce them and define which *Swedish cohort* they belong to. This will be done through taking the *five* cohort-factors into consideration.

8.3.1.1   Target group one: The up-to-date man

Definition: This target group is comprised out of men in the ages from 30 to 40, who want to be up-to-date, The target group has a moderate technological knowledge regarding the Connected Home components. They believe that they acquire the up-to-date image through having the newest technology and are therefore ready to spend the amount necessary.

8.3.1.1.1   First segmentation

According to empirical findings presented in chapter *seven* men in the ages between 30 and 40 find it attractive to possess the latest technology within consumer electronics. The Connected Home can therefore be a part of their home network

solution. When there exists an interest for the latest consumer electronics products we believe that an interest for the *Connected Home* will not be farfetched. According to empirical findings this target group often wants to purchase the newest technology in order to maintain a status and image of being an independent up-to-date member of the society.

When marketing towards this target group it is important to target the ones not building their home network by themselves. Customer interviews have identified one group of people who have a high level of knowledge within home networking and therefore solve the *Connected Home* need by themselves. The marketing should target those who want to be among the most up-to-date, but can't install the technology themselves. Empirical findings show that, when this target group visits the consumer electronic store or are confronted with a home networking solution they try to act as if they are comfortable discussing technological terms. Meanwhile they often do not understand the complete scope.

8.3.1.1.2 Complementary cohort segmentation

This target group can be allocated to the *Fragmented Networker Cohort. Multi-tasking*, *globalization* and *independence* are factors that influence this cohort.

Lifestage
We believe that this target group can be at several different lifestages. They can be single men in the suburb living in a house or they can be married fathers with children living in an apartment in the city. We believe that the important thing to keep in mind when marketing the *Connected Home* to this target group is the up-to-date factor. They are all searching for the up-to-date feeling but for some reason they are not technological up-to-date. They want simple solutions that deliver an up-to-date feeling.

Physiographic
We have not been able to identify any substantial importance to this factor when marketing the *Connected Home* to this target group.

Emotional/Affinity Effects
Members of this group can worry about their reputation and appearance and do not want to be classified as an "analogue" man. They are ready to invest in the necessary equipment in order to stay young and technological up-to-date. We believe that there exists a competition amongst friends within this group about whom the most updated and informed person is.

Socioeconomics
We believe that one characteristic of this target group is the willingness to spend money on new technology in order to achieve the right status. Often this target group is willing to invest in technological updates within their home. We also believe that some of the members of this target group, even if they don't have enough money, prioritize their appearance and still invest in new technology in order to obtain the right status.

Cohort Values and suitable marketing

This cohort's value is status and independent. The marketer should focus on these values. We also believe that a message of exclusivity could be successful here. This cohort is not afraid of technology but the marketing message still needs to clearly state the benefits that it delivers. We believe that this is important so that the customer easily can inform his friends of the successful purchase that he made and the benefits that it has given him.

8.3.1.2 Target group two: The persuading teenager

Definition: Teenagers living at home, who make the technological decisions in their family and are able to *persuade* their parents into a purchase decision.

8.3.1.2.1 First segmentation

During all the conducted interviews this target group has been identified. Within a family the teenagers are often involved in the decision-making concerning which type of technology to invest in. The parents have the resources needed to purchase, but the teenagers often act as decision maker. The teenagers living at home often are the ones with the greatest interest in technology and the greatest need for it. Teenagers are used having a wireless network at home and are not able to cope without one. Teenagers living at home do not fear new technologies; instead they are interested and we believe they embrace new trends. Their parents on the other hand often suffer from the FUD-factor. This makes it important to deliver a simple marketing message so that the *persuading teenager* clearly can state the benefits to its parents. Empirical findings have identified the target group the *persuading* teenager to be consisting of both girls and boys.

8.3.1.2.2 Complementary cohort segmentation

An allocation to a specific Swedish cohort is not possible since this group has not yet come to the age where they generate their life lasting values. But since the interviews have clearly indicated that this target group will have an important effect on the evolvement of the *Connected Home* we strongly believe that it is important to address this target group. When applying the cohort theory we believe that this target group have similar characteristics as the *Fragmented Networkers Cohort.* We want to underline the fact that the *Fragmented Networks Cohort* has an age defined as born in 1974 and onwards. This could implicate that the *persuading teenager* still can be a part of this cohort since it has no ending interval. Because of this the discussion below will be influence by the *Fragmented Networker Cohort.*

Lifestage

The teenagers are living at home and are too young to re-experience a lifestage. They are currently on the move and want to have the latest available technology in order to be able to interact through the growing amount of online communities. They are the ones in the family that are the most up-to-date with the latest technology and we believe that they have a more natural way to approach new technologies. Teenagers are used to the information overflow facing them on a daily basis. They have grown up during the rise of Internet. We believe that this target group see it is an obvious

thing to be able to be connected all the time. They find it natural to interact with friend in a digital manner and they want to do this in as many ways as possible.

Physiographic
When marketing towards this target group we do not think that this factor is of great importance. They are still young and have not suffered from any physiographical handicap yet.

Emotional/Affinity Effects
Teenagers in this group worry about their appearance. In this case it means that they want to have the latest technology at home, in order to show off when friends come visiting.

Socioeconomics
This target group is dependent on their parents when making a purchase decision relating to their home network infrastructure. They try to persuade their parents into making the most suitable home network investment as they see it. Interviews clearly conclude that the *persuading* teenagers are able to convince their parents into making the purchases regarding home networking.

Cohort Values and suitable marketing
According to cohort values the *Fragmented Network cohort* embraces many different types of marketing. Internet and mobile marketing are two known solutions for effectively reaching out to this cohort. The marketer should focus on embedding messages that could be used by the *persuading* teenager to convince his/her parents regarding a purchase. It could for example contain a solution for specific problems or needs. The *persuading teenager* is more independent than their parents were, when they were teenagers. They have a strong belief in themselves for fixing problems. Marketing messages related to these issues can be useful when trying to reach out to this target group.

8.3.1.3 Target group three: The simplicity-searching woman

Definition: Women in their 30ths to 50ths longing for ease-of-use, security and functionality.

8.3.1.3.1 First segmentation

The interviews with potential *Connected Home* customers clearly indicate that this is an interesting target group for the *Connected Home*. They have expressed several issues that could be solved by the *Connected Home*. The need for mobility is clearly concluded and even if they are not frequent Internet users they do not want to be tied up to a specific location when using their computer. *Simplicity* is another need that the *Connected Home* successful can respond to with the increased support function. The different standardizations within the *Connected Home* can act as guarantees for a prosperous user experiences. The design factor is also an important issue that the *Connected Home* can deliver upon, e.g. no cables and fewer devices in the home. These women often have low beliefs in themselves concerning their technical ability

110

and they put great acknowledgement into the possible support services. They want someone else to handle their problems and are willing to pay for it.

8.3.1.3.2 Complementary cohort segmentation

This target group is part of the *Lost innocence* cohort and therefore avoids the FUD-factor in every purchase decision and is instead longing for ease-of-use and security.

Lifestage

We believe that these women are in a lifestage where they try to avoid unnecessary problems. We also believe that they try extra hard avoiding problems related to areas where they feel unsafe, in this case the technological area. They therefore value ease-of-use and functionality substantially more.

Physiographic

This group is interested in wireless connectivity within their home, especially due to the fact that the amount of cables is reduced. We believe that they associated cables with extra effort when cleaning their apartment or house, due to the fact that cables absorb dust.

Emotional/Affinity Effects

This target group often suffers from the *fear, uncertainty and doubt* factor when purchasing new technology. In these cases they often turn to friends or relatives to feel safer when making the purchasing decision. They often purchase what others have in the order to feel safer with their decision. They most recognized brand is the one that they will choose. These women are long-term customers and they hardly ever change unless they are very unsatisfied.

Socioeconomics

This target group has the money and are also willing to pay extra in order to increase the ease–of–use and reduce the FUD-factor.

Cohort Values and suitable marketing

When making purchase decisions, this cohort emphasis a high degree of security and safety. Therefore this target group is attracted to *strong brand names, product guarantees* and *customer services*.

The reader should now be familiar with the *three* identified target groups for the *Connected Home.* These *three* target groups will be used within our marketing model for the *Connected Home.* According to the theoretical framework introduced in chapter *six* a pre-requisite for successful marketing is to have a united view of the target groups. This will therefore be the next step within our marketing model.

8.3.2 The need to have united target groups

Suggestion

Define and communicate a united view of the target groups.

Analysis

Actors within the *Connected Home* concept need to have a united picture of their target groups suitable for their position in the value network. These target groups have to be identified and communicated within the specific organizations.

Empirical findings have identified four different target groups among the interviewees. We believe that this indicates that there is no united picture of the target group for the *Connected Home.*

According to high-tech marketing theories in chapter *six* the first step when creating the right *corporate strategy* is to create a united picture of the target groups. When a united view upon the target groups is missing the chance of actually hitting the right customers will decrease.

Our marketing model therefore suggest that the *Connected Home* actors must focus on communicating their target group throughout their whole organization in order to obtain an effective marketing strategy. The actors could make use of our *three* identified target groups since we believe that they all are of interest for a *Connected Home* actor.

The analysis has now identified *three* target groups and highlighted the importance of communicating these throughout the whole organization. This will be added to our marketing model for the *Connected Home.* In the pre-requisite of this analysis we have mentioned that we believe that the *Connected Home* is in the *Chasm.* We have identified the target groups with this in mind and therefore believe that these *three* target groups represent the *early majority* of the *Connected Home* users. Actors within the *Connected Home* should target these groups in order to cross the *Chasm.*

When this has been done we believe that the actors should focus on identifying the *purchase process* of each of these target groups.

8.3.3 Identifying the Purchasing Process for the identified target groups

Suggestion

Identify the purchase process of identified target groups

Analysis

In chapter *six* the theoretical purchase process of customers is introduced. We aim to make use of this theoretical introduction within this part. An analysis of the purchasing process for the identified target groups will in this part be conducted. This will be done since we want to add this understanding to our marketing model. But first of all the *five* steps within the purchase process will be visualized in figure 26.
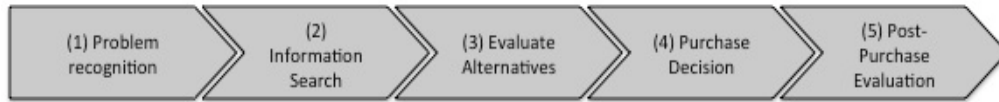
Figure 26 - Purchasing Process

8.3.3.1 Problem recognition

A customer can recognizes a problem related to the need of a *Connected Home* either *externally* or *internally*. Interviews show that the *external* problem recognition often is created through a *word-of-mouth effect* from the environment surrounding the customer. The potential customer often hears or sees a friend, who has invested in the newest technology and obtains an interest in the *Connected Home concept.* We believe that the customer interviews exemplify that there is put great acknowledgement to what friends, colleagues, children and relatives say when they are evaluating high-tech products.

Empirical findings show that the *persuading teenager*, who is more familiar with technological products, often introduces parents to new needs. The *persuading teenagers* therefore often have an advising role to their parents. The *word-of-mouth* effect is true for all three of our identified target groups. Another type of *external* problem recognition is according to interviews achieved through direct commercial. The most successful type of commercial is according to us the commercial received together with the invoice.

According to empirical findings the *up-to-date man* recognize his problem when facing friends who have invested in the newest technology or when they see the technology in real life.

Internal problem recognition occurs when the customer needs to update their technological product due to for example a new *to-home access* or if their existing *device* at home has crashed. Empirical findings show that *persuading teenagers* can influence *simplicity-searching women*, who thereby can realize that they are in the need of e.g. wireless Internet. According to empirical findings many customers express needs for interoperability, but they are not yet able to articulate these needs.

8.3.3.2 Information Search

People tend to turn to friends or family members, who have more experience with technological products than they do, when they need information. We believe the *simplicity-searching women* tend to rely on others when searching for information. This makes the need for spreading knowledge about *Connected Home* even greater. *Simplicity-searching women* visit stores for further information search. Through visiting stores they are able to experience the product in real life, which decrease their fear for purchasing a technological product.

Empirical findings show that more technological experienced customers tend to turn to the Internet when searching for information. These potential customers also tend to obtain information from reviews and articles within industry magazines. This is especially the case for the *persuading teenager* and the *up-to-date man*.

We believe that our interviews show that the target groups are quite unaware of *Connected Home* as a solution for home networking. Therefore a marketing effort could be vital within the (1) *problem recognition* step or during the (2) *information search* of the purchasing process.

8.3.3.3 Evaluate Alternatives

Relative advantage
In this analysis we earlier mentioned that *up-to-date men* compete with each other in order to have the latest technology. In these cases it is important for the marketer to communicate the relative advantage of the product being marketed. We believe that this relative advantage can lead to a purchase decision.

The relative advantage that is evaluated by *simplicity-searching women* is the ease-of-use, strong brand names and support. *Persuading teenagers* tend to evaluate the relative advantage most compelling to their parents.

Compatibility
According to empirical findings presented in chapter *seven* customers are interested in *plug and play* when evaluating technological gadgets. The compatibility is important for all *three* of our identified target groups.

Complexity
Persuading teenagers do not tend to find home networking particular hard to understand and we therefore believe that they have the ability to evaluate alternatives quite quickly. *Simplicity-searching women* have a lot of questions when evaluating technological products. They seldom evaluate their alternatives over the Internet. According to interviews and the characteristics of the *Lost Innocence* cohort, *simplicity-searching women* often buy the most *recognize brand*.

The *up-to-date man* is attracted to the complexity, because they believe that complex products are equal with being up-to-date. They therefore strive after having complex products in their homes.

Trialability
The possibility to try the product is especially important for the *simplicity-searching women*. Our interviews show that these women face the FUD – factor. If they are able to try the product, for examples in stores, their FUD – factor is decreased.

As *persuading teenagers* are up-to-date with technology they are interested in testing if the product can do the things they have heard it is able to do. If they are able to try the product in a store their process of evaluation will be very short.

We believe that *up-to-date men* do not need to try the product as much as the other two target groups. They are often convinced by an appealing design or function.

Ability to communicate products benefits

114

When analyzing the interviews creating the *simplicity-searching women* profile we believe that this target group often has problems understanding a high-tech product such as the *Connected Home*. It is therefore even more important for the marketer to increase the ability to communicate the benefits.

When analyzing our interviews we believe that *up-to-date men*, who try to achieve an up-to-date status through investing in the latest technology, don't always have to understand the benefits of the product. This group is willing to invest even if they don't understand, as long their status is improved by the investment.

Persuading teenagers on the other hand are often up-to-date with the benefits of each product. They are especially up-to-date with the products, because they know they have to convince their parents to invest. The only way they will be able to do this will be through communicating the benefits in their parent's language.

Observability

In the customer interviews it is clear that many customers prefer to buy via stores, because they feel more certain to do the right choice and then feel more secure when visiting a store. We believe their willingness to buy also will increase if they feel safe and thereby the chance of a purchase is more likely.

8.3.3.4 Purchase Decision

Scope of offering

During our conducted interviews *persuading teenagers* conclude that their parents always go for the safest alternative, when making a purchasing decision. We believe that these *persuading teenagers* have the ability to affect their parents purchasing decision. *Simplicity-searching women* strive after purchasing the safest alternative. We believe that the scope of offering most appealing to the *simplicity searching women* should include as much safety products and services as possible.

Price

Simplicity-searching women and *up-to-date men* are willing to pay more than *persuading teenagers*. *Persuading teenagers* are depending on their parent's approval. Since the *persuading teenagers* are the ones recognizing the need they have to convince their parents. An argument important for the *persuading teenagers* is the price on the investment.

Simplicity-searching women have themselves recognized a need for stability within their technological solutions and are therefore willing to invest in order to minimize their risk for failure.

Up-to-date men are ready to invest even if they barely afford it. Interviews show that an extra monthly subscription fee affects the customer in a negative way.

Terms of payment and delivery

Empirical findings show that the *simplicity-searching women* are much safer going to a store and meeting a sales person when making the purchase decision. If they would

purchase their product over the Internet they do not know where to turn if something would go wrong.

Up-to-date men are flexible when discussing the terms of payment and delivery.

Persuading teenagers' flexibility depends on their parents demand upon payment and delivery.

8.3.3.5 Post Purchase – Evaluation

Interviews show that the customers evaluate through the success of installation. They are very quick to judge and the first impression lasts. Actors within the *Connected Home* could therefore focus on meeting these expectations. We therefore believe that the support should be satisfying. If something would be wrong with the technological product purchased, *simplicity-searching women* would prefer to turn to a store for help. This emphasizes the need to increase the competence for the *Connected Home* in stores distributing the Connected Home components.

If a *persuading teenager* would experiences any problem with their home network solution they would try to solve the problem themselves. If they do not have enough knowledge solving the problem, they would turn to their telecommunication operator. This argument emphasizes the importance of the support.

A problem, which we can see from the interviews, is that almost no one knows about *Connected Home* concept. This notation can be confirmed by looking at the answers from the empirical findings in chapter seven regarding the *understanding of the customer*. Since we earlier emphasized the importance of word-of-mouth we believe it could be essential for the actors within the *Connected Home* to change their marketing procedures.

We have now identified *three* target groups, emphasized the importance of one united view upon them and mapped the *three target* groups *purchase process*. We are now ready to complement our marketing model with the *second* stage: *understanding the customer*.

8.3.4 Summary of stage 2: Understanding Customer

When a company is trying to understand their customers we believe that the *first* step should be to determine how their customers actually are. This is done by looking at what the company is offering and then interviewing the customers. Due to the fact that the Connected Home is in the Chasm calls for the need to trying to find the customers belonging to the segment the early majority. The three target groups that we found are summarized in the figure below. When a company have found their target groups the next step is to communicate these target groups to the entire company. This is important so that the company are gathered towards united view upon their customers. The purchasing process set the pre-requisites for the marketing mix. Therefore the *third* step must be to thoroughly create an understand of the purchasing process. The figure 27 on the next page summarizes our marketing model after conducting stage number *one* and *two*.
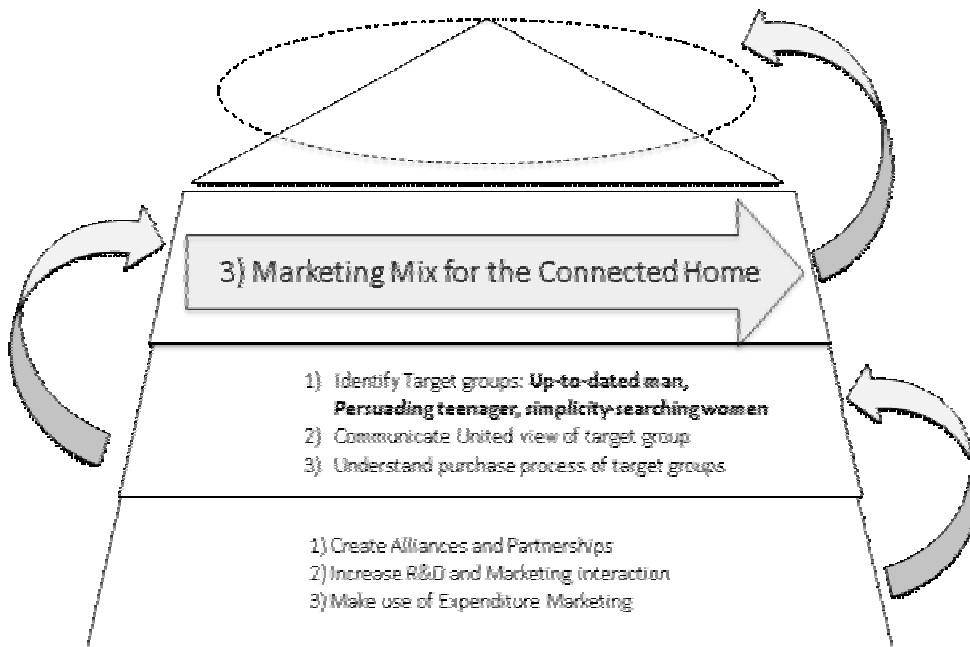

Figure 5 - Stage 1 + 2: Marketing Model for the *Connected Home*

8.4 Marketing Mix

Within this part of the analysis we will introduce the reader to Marketing strategies, which should be used to take advantage of the pre-requisites for successful marketing introduced in stage one and two. We will introduce one general suggestion and one suggestion from each components within the marketing mix.
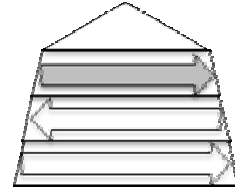
8.4.1 Customize marketing strategies towards the *early majority*

Suggestion
Customize marketing strategy towards the early majority comprised out of the *three* identified target groups.

Analysis
As the pre-requisite of this model construction concludes we believe that the *Connected Home* is in the *Chasm.* Actors within the *Connected Home* therefore have to customize their marketing strategies towards the suggested target groups. According to the theoretical background introduced in chapter *six* this should be done by focusing on marketing the *Connected Home as* one "whole product" towards the *early majority.*

Theory states that marketing towards *early adopters* and *early majority* differs. In chapter *three* the master thesis has introduced a range of *devices* and *services* that are available within the *Connected Home*. We believe that these components are too many for the *early majority* to grasp and therefore only confuse them. When they are confused the FUD – factor for adapting the *Connected Home* is created. Actors within the *Connected Home* must therefore understand that they are facing the *phenomena* called the Chasm and understand the differences in marketing towards *early adopters* and *early majority.*

Generally we believe a first step for actors within the *Connected Home* segment is a new marketing strategy. This strategy could focus on fewer services and products within *Connected Home*.

When actors customize their *Connected Home* solution this could be done towards the *three* identified target according to us comprising the *early majority* of the *Connected Home*. Today the *Connected Home* is comprised out of several components.

We understand the complexity of marketing the Connected Home as one product; since the "one" product could include several products. We believe that one solution for this problem is to customize the "way" the marketer believes that the different target groups will acquire the Connected Home. The *up-to-date man* could for example chose *wireless* IPTV before *video surveillance*. The *persuading teenager* could for example value the *video on demand* service more than the *online storage* service. We only raise these two thoughts to exemplify the way the different target groups *could* prioritize their process of acquiring the Connected Home. When we

suggest that the marketer should customize their marketing strategies one solution could be to define a "road map" revealing which "way" the specific target group will acquire the whole concept of the Connected Home and thereafter customize the marketing strategy according to this "road map".

When customizing the marketing strategy marketers could focus on educating the *early majority* within the Connected Home, since they tend to feel confused and unfamiliar before embracing a new technology. Through education we believe actors will achieve *external* need recognition among the *early majority*. The *early majority* has to be exposed to the need in order to recognize the problem and since they cannot see the solution themselves someone else have to tell them about it. Advertising is the most common way to solve this issue. Our empirical findings in chapter *seven* support this suggestion.

We have now introduced the reader to our *suggestion* of customizing the marketing strategy to appeal to the *early majority*. We believe that the marketer should have the mindset of educating the target groups when formulating the specific strategy. This will help the Connected Home concept to cross the Chasm.

8.4.2   Make use of price bundling

Suggestion
Make use of price bundling when customizing your marketing strategy.

Analysis
In chapter *six* the theories behind the marketing strategy of price bundling were introduced. Empirical findings show that this is an effective way to create awareness and to spread the concept of the *Connected Home*. Empirical findings also conclude that many small extra fees for the *Connected Home* scare the customer.

We believe that marketers should make use of the marketing strategy called *price bundling*. When applying this strategy it is important to understand the problem created when bundling prices. Theories state that when a customer is used obtaining something for free, for example within a price bundle, the customers often can have difficulties paying for something they are used to obtain for free. This statement has also been empirically confirmed in chapter *seven*.

Even if there are drawbacks with *price bundling* we believe it is a good way for distributing the *Connected Home* to the early majority and we therefore add the price bundling strategy to our marketing model.

8.4.3   Broaden sales channels

Suggestion
Connected Home industry actors could broaden their sales channels.

Analysis
Theories state that when choosing the place to market within high-tech markets it is important to choose the right distribution for the creation of brand identity.

Partnerships with distributors are a useful way to create a brand identity; to be associated with the right partners can enhance the desired effect of the marketing. Empirical findings in chapter *seven* show that potential *Connected Home* customers appreciate purchasing *Connected Home* components in stores. Customers value the personal selling and the ability to observe the product in real life before making the purchase decision. Further the empirical study indicates that customers tend to turn to store when facing a problem with their product.

According to the pre-requisite of the marketing model, we believe that the *Connected Home* has been accepted by the *innovators* and by the *early adopters,* but not by the *early majority*. We believe that a way for the *Connected Home* industry to cross the *Chasm* is to broaden their own sales channels as well as include external distributors to be able to catch the *early majority*. In chapter *six* the effect if a company chooses to market their product through external distributors is visualized. By doing this the *Connected Home* actors will be able to correspond to the customers demand for *observability, personal selling* and *increase support.*

In chapter *six* theories related to bonus reward-system also have been introduced. We believe that these could be implemented in the new sales channels in order to create the right incitement.

8.4.4 Simplify the marketing message

Suggestion
Clarify the marketing message to decrease intangibility and inseparability of the Connected Home.

Analysis
In chapter *seven* empirical findings conclude that the concept of the *Connected Home* today could feel complex and is difficult to grasp. Often the marketing message is perceived as blurry and thereby the customer has problems to grasp the value.

In chapter *six* theories related to problems with high–tech services were introduced. We want to highlight the problems of *intangibility* and *inseparability*. These characteristics of service on high–tech markets must be taken into consideration when creating the marketing message.

We believe that these characteristics must be addressed more actively since the dynamics of the *Connected Home* are increasing. We believe that *Connected Home* actors could reduce the *intangibility* and *inseparability* by simplifying the marketing message for the *Connected Home*.

8.4.5 Make use of new promotion strategies

Suggestion
The marketer of the Connected Home should make use of following promotion strategies in order to attract new customer: *buzz marketing, cobranding, comparative marketing and mobile advertising.*

Analysis

If the marketer succeeds to place a Connected Home component in the home of the early majority a desired *word-of-mouth* effect could be created. This type of marketing is referred to as *buzz marketing* and is according to theory very efficient if successfully carried through. Empirical studies show that customers often turn and listen to friends and family when making the purchase decision.

As we mentioned in stage *one* of our marketing model we suggest that actors within the Connected Home should make use of *relationship marketing* through creating alliances and partnership both vertical and horizontal. We thereby suggest a type of high-tech promotion called *cobranding*. If the actors choose to use *cobranding,* they could become more visible to customer. The marketer would be able to put his *Connected Home* component into a bigger context. This could then enhance the possibility for the *early majority* to understand and accept Connected Home, since suddenly several brands stand behind the new concept.

Further actors within the *Connected Home* could generally make use *comparative marketing* attracting the *early majority*. They could communicate that they are as trustworthy as the other actors within the value network. *Brand awareness* is extremely important when marketing within high-tech markets and actors should take advantage of this calming the *early majority* down.

Empirical findings indicate the importance of including the mobile in the *Connected Home.* The *Connected Home* services available today have been introduced in chapter *three*. There is a very weak link towards the usage of the mobile among these services.

We conclude that the Connected Home actors could take advantage of the fact that *early majority* of the Connected Home concept has accepted the mobile as a natural part of their digital lifestyle, but not yet the Connected Home concept. The *early majority* according to interviews bring the mobile wherever they go and put great value into the use of it.

By integrate the mobile into the *Connected Home* concept we believe that *Connected Home* actors could open up a new way to present and communicate the benefits of the *Connected Home* in the minds of potential *Connected Home* customers. We also believe that the recognition and the awareness of *Connected Home* will increase substantially and thereby the willingness to purchase it.

8.4.6   Summary of stage 3: Marketing Mix

The final stage is to make use of the pre-requisites introduced in the first two stages. This is done by generating a marketing mix. But before starting with the marketing mix we strongly believe that a company must customize their marketing strategy towards the selected target groups belonging to the early majority. Since the Connected Home is in the Chasm we believe that this could be done by creating "one whole" product and an additional "road map" to each target group. The "road map" should address how the different target groups are acquiring the different components of the Connected Home. The strategy must also focus on educating the customer so that the FUD-factor is reduced. We have made one suggestion on each of the four parameters of the marketing mix. The suggestion on the parameter *price* is that the actors within the Connected Home should make use of price bundling. Interviews have showed that customers are open-minded toward price bundling. It has also been proved to be an efficient way to create recognition amongst customers. The Connected Home need to be more visualized to customer. Therefore we suggest that the actors should broaden their sales channels. The Connected Home is a complex product and we strongly believe that the marketing message needs to be simplified. Interviews have showed that the early majority does not understand the products. Finally we believe that a company must actively work with new promotion strategies. It is necessary to generate a word-of-mouth effect since the customers are putting great acknowledgement to advice from friends and family. We believe that this could be accomplished by e.g. cobranding, mobile advertising and comparative marketing.
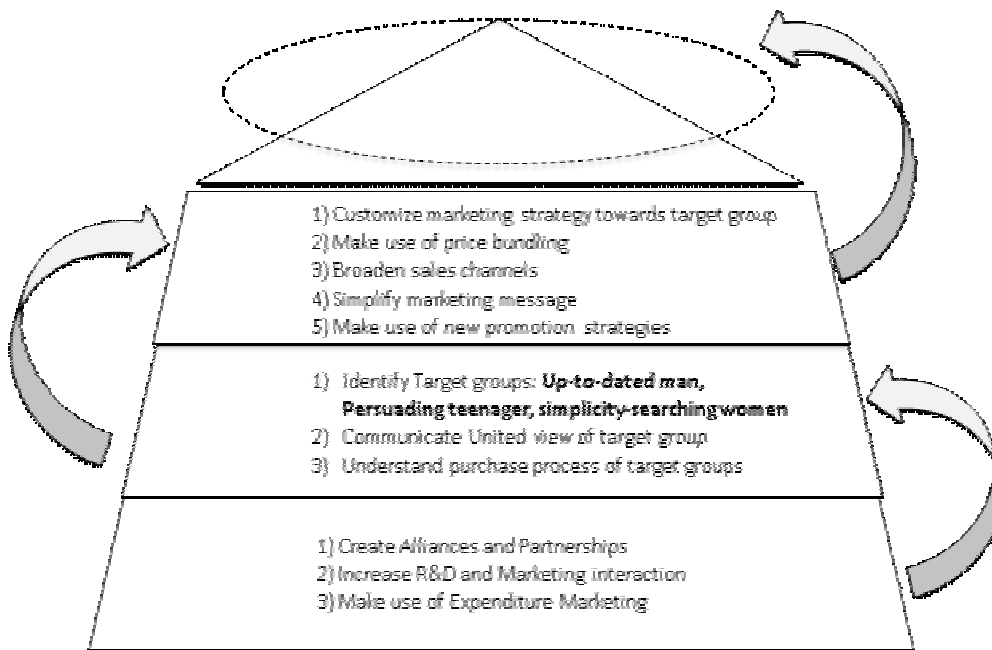
Figure 28 - Stage 1, 2, 3: Marketing Model for the Connected Home

8.5   Final construction of the marketing model

By combining theories and empirics we have been able to generate a marketing model for the Connected Home. We want to conclude that if a marketer follows each stage and thereby carries through the different steps a successful marketing strategy for the Connected Home will be created. In figure 29 below our complete marketing model is visualized.

Figure 29 - Marketing Model for the Connected Home

Our marketing model have continuously been generate through the studying of different theories and the gathering of empirically data. It seems plausible that it will generate marketing guidelines for an actor within the Connected Home. To further evaluate the model we will during the next chapter apply it on a real product.

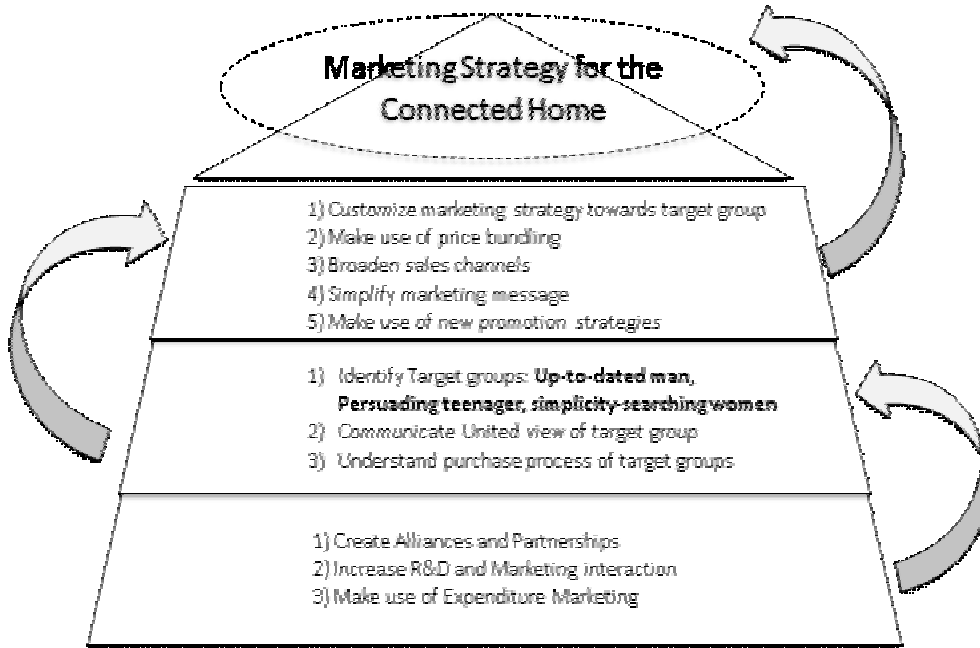# 9 Apply the Marketing Model on Telia Smart

This part will use our marketing model introduced in chapter eight. We are going to use TeliaSonera's Connected Home solution Telia Smart and thereby test if the model is useable on a Connected Home Solution. With the help of our marketing model we want to generate Marketing guidelines and a suitable target group for Telia Smart. The first part of this chapter will introduce the reader to the Telia Smart Concept, so that the reader understands what Telia Smart is about. There after we will go through our model step by step and generate marketing guidelines for Telia Smart.

9.1 Introduction to Telia Smart

This part of the chapter will describe how TeliaSonera in Sweden are trying to capture the rise of the *Connected Home* with their concept Telia *Smart*. This part will be divided into three sections in order to explain how a telecommunication operator can try to meet the rising of the *Connected Home*:

- *Telia Smart Start* – The basics for the *Connected Home*.
- *Telia Smart Complementary* – The products and services that TeliaSonera offer within the Telia Smart concept.
- *Telia Smart sales channels* – The sales channels for Telia Smart concept are presented.

9.1.1 Telia Smart Start

The product Telia *Smart Start* is comprised out of a *residential gateway* (RGW), a device that enables an easy home networking environment. The fundamentals of the RGW have been described in chapter *three*. Smart Start can be bought both separately as well as bundled with the Triple Play offer from TeliaSonera. When signing up for an eighteen months Triple Play subscription the customer has obtained Smart Start for twelve months. When buying Smart Start the customer also obtain a extended support service as well as better prices on some devices sold by TeliaSonera.[311]

9.1.2 Telia Smart Complementary

The *Telia Smart Complementary* are the products that TeliaSonera sell as possible solutions for the creation of the *Connected Home* for the customer. The products will here shortly be described, so that the reader will be familiar with how TeliaSonera tries to capture the rise of the *Connected Home*.

1. *Network Attached Storage (NAS)* – this is a networking hard drive that enables all the devices in the home network easily to get access to stored

---

[311] www.telia.se (2009-04-05)

digital content. An additional USB-disk can be connected and thereby increase the storage possibilities.

2. *Online Storage* – the customers can save their digital content on an external server over the Internet. The content can then be accessed through any Internet connected computer and it is also possible to process photos directly on the storage site.

3. *Photo frame* – this product is a digital photo frame that wireless can receive content and handles picture, audio and video. By sending an email or MMS to the photo frame the content can be updated from any location.

4. *Music bridge* – with this product the customer can both wired and wireless get access to the music stored in a computer or on a Networked Attached Storage (NAS). The content can then be played on the customer's stereo. Media bridges have been described in chapter *three*. The music bridge is also able to receive Internet radio channels.

5. *Internet radio* – this wireless Internet radio provides the customers with access to a large amount of radio channels over the Internet. It can also function as a music bridge and play music stored on a computer or on a Networked Attached Storage (NAS).

6. *Network camera* – up to four network cameras can be connected to the Smart home network. Telia offers a service called *Hemkoll*. This service is linked to the network cameras. Since the cameras have motion sensor features and can record unpredictable events it is possible keep the customer informed what happens over e-mail or SMS. The videos are stored on a secure server and can be reached by a computer or a mobile phone.

7. *Printing* – this printer features a wireless connectivity. Scanning and photo printing possibilities also characterize the printer. The printer is accessible for all users within the home network.

8. *Gaming* – This product is called Xbox 360 and provides the customer with online wireless gaming possibilities. Microsoft manufactures this unit.

9. *Wireless IPTV* – The product *Ruckus Mediaflex* generates the possibilities for wireless IPTV by replacing the cord between the gateway and the TV-box with two wireless transmitters/receivers.[312]

All products are thoroughly evaluated by the TeliaSonera Broad Band Services department before they are offered to the customer. The personnel on this department test the features and characteristics of the devices and services so that they are easy to use.

9.1.3   Telia Smart sales channels

There are three *Telia Smart sales channels*;

- *Customer services* – When customers are calling TeliaSonera and ask for different offers, TeliaSonera sales personnel are able to sell Telia *Smart*.
- *telia.se* – Customers on their own purchase product and services through Internet.

---

[312] www.telia.se (2009-04-05)

- *Telia stores* – The purchase is done in a Telia store. This is today mainly the case in the three main stores located in Stockholm, Gothenburg and Malmö.

The main sales focus is towards telia.se and customer service. There is little attention paid towards selling Smart in Telia stores. The stores have a clear mobile focus and the personal possess a moderate knowledge regarding Telia *Smart*. There is only in the flagship stores in Stockholm, Gothenburg and Malmö, where the concept of *Smart* is presented with any significance. In all other 90 stores the concept is not paid any particularly consideration. As of today Telia stores focus mainly towards mobile services and are also allocated under the mobility department of TeliaSonera.[313]

9.2   Telia Smart in the marketing model for the Connected Home

We have now come so far that we want to apply the marketing model of the *Connected Home* on TeliaSonera's implementation of the *Connected Home, Telia Smart.* This is illustrated in the figure 30 below.
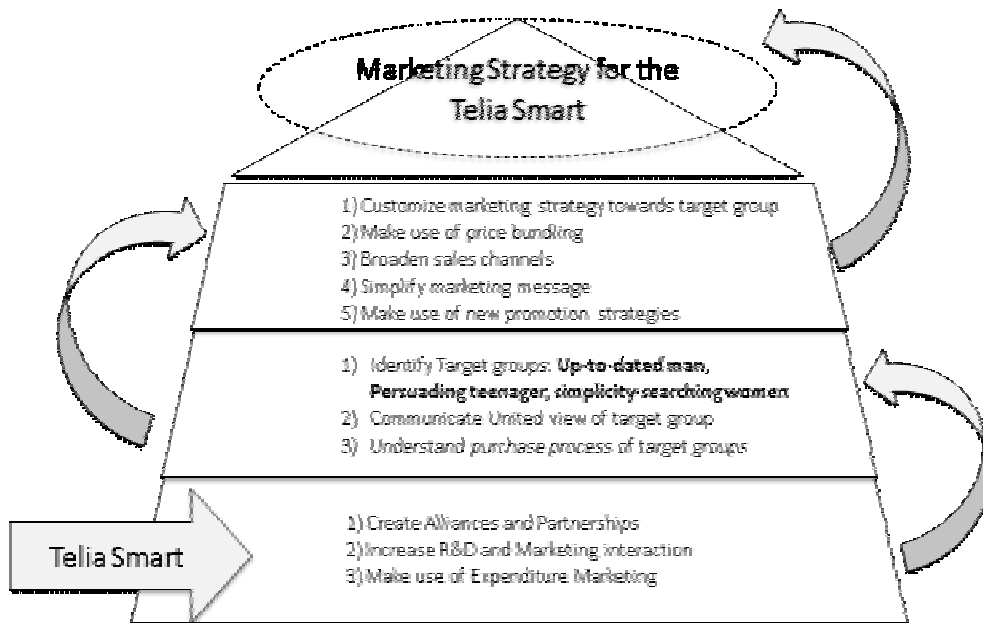
Figure 30 - Marketing Model used on Telia Smart

In the analysis in chapter *eight* we introduced the pre-requisite for the model, namely that the *Connected Home* as of today is stuck in the *Chasm.* We have chosen to continue with this statement and therefore introduce our thought that *Telia Smart* is TeliaSonera's attempt to bridge the *Chasm* for the *Connected Home* and obtain the acceptance of the *early majority.*

This chapter will now continue to apply the model on Telia Smart. This will be done step by step. The first stage Telia *Smart* has to go through are the *internal considerations.*

---

[313] www.telia.se, 2009-05-09

9.2.1   Internal Considerations

This chapter will exemplify how TeliaSonera can manage their internal consideration in order to market Telia Smart successfully. The figure to the right illustrates where we are in the application.
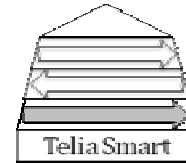
9.2.1.1   Alliances and Relationships

We suggest that TeliaSonera could take advantage of the *dynamics* in our marketing model. TeliaSonera should thereby establish alliances and partnership, both *horizontal* and *vertical*.

An alternative for TeliaSonera could be to try to establish partnerships within the telecommunication industry for developing and marketing the *Connected Home*. Another alternative for TeliaSonera could be to cooperate with *hardware* and *software* manufactures such as HP or Microsoft. TeliaSonera could thereby take advantage of HP and Microsoft's brand recognition. A third suggestion for TeliaSonera could be to actively integrate with the standard organizations.

Apart from *horizontal partnerships* we suggest that TeliaSonera make use of *vertical partnerships.* Actors within the *Connected Home* environment, which we think could be essential partners for TeliaSonera are consumer electronic sales channels. By doing this TeliaSonera would be able to put Telia Smart into a bigger context together with a horde of other components of the *Connected Home.* We also believe that TeliaSonera could be the first telecommunication operator in Sweden to offer a vertical partnership with their customers similar to the "Livebox Lab concept".

These recommendations would increase TeliaSonera's chance of bridging the Chasm with the help of Telia Smart.

9.2.1.2   Increase R&D and Marketing Interaction

TeliaSonera is a telecommunication operator, which has, apart from being an infrastructure provider, become both a distributor of content and a sales channel for consumer electronics.

This is according to our analysis a common trend among telecommunication operators within the *Connected Home.* The next step in our marketing model for TeliaSonera is to increase the R&D and marketing integration. We believe that TeliaSonera must consider if they have the problems *core rigidness* and *innovators dilemma* within their R&D and marketing department. Our marketing model has highlighted these two problems as obstacles for an effective R&D and Marketing Integration.

Our marketing model for the *Connected Home* suggests two solutions for the *core rigidness* and *innovators dilemma* problem.

TeliaSonera could make use of *creative destruction* in the case of Telia *Smart*. Through thinking creative and not being afraid of changing the marketing procedure as it is today, we believe that TeliaSonera could increase their chance of creating a new successful marketing approach. By challenging the traditional processes according to *unlearning* we believe that TeliaSonera will be more successful when trying to solve the new problems related to the ever changing environment of the Connected Home.

We believe that the high level of technical knowledge among employees within TeliaSonera causes the marketing message to be too difficult for the customer, especially the early majority, to understand. TeliaSonera need to simplify their marketing message.

We believe that the problem is that no one dares or has time to change their procedures. If TeliaSonera could combine all knowledge among their employees concerning the existing Telia *Smart* products, we believe they will have sufficient information to optimize their R&D and marketing integration and thereby Telia Smart.

With the product portfolio that Telia *Smart* is offering today the concept of the *Connected Home* is roughly covered, so TeliaSonera could therefore instead focus on improving the existing products and not on creating exiting new ones. Due to *core rigidness* and *innovators dilemma* we fear that TeliaSonera employees probably won't find this motivating, but we believe it is necessary in order to optimize Telia Smart.

According to our marketing model the geographical separation of R&D and marketing department must be taken into consideration, since geographical separation decreases the efficiency.

Our marketing model uses *four* steps when integrating R&D and marketing. We want to use these and apply them on Telia *Smart*.
   (1) The first step should be to *match the nature of the integration* between R&D and marketing. We could suggest that the purpose of integration is to improve the flexibility in order to handle the dynamic environment of Telia Smart.
   (2) According to the framework the next step would be to bridge the *core rigidness* between engineering and marketing. This could be done through explaining the importance of *unlearning* and *creative destruction* as we introduced above. A suggestion could be to allocate the responsibility of the R&D and marketing integration to one person in each department. This person could then be responsible for the communication between the different departments. TeliaSonera could attach an award system to this person, linked to the successful R&D and marketing coming from this person.
   (3) The chosen individuals could make use of both *informal* and *formal* interactions between the departments. We believe that a personal meeting with the purpose of an *informal interaction* could give better pre-requisites

for both departments for interacting and making use of *creative destruction* and *unlearning.*

(4) The last step for effective R&D and marketing integration is to enhance the opportunities for communication between the two departments. We believe that this can be done though introducing new routines between the departments in order to increase the frequency of the interactions.

This integration between marketing and R&D could create the cross-functional teams necessary for adapting to the dynamics of Telia Smarts environment.

9.2.1.3 Make use of Expenditure marketing

TeliaSonera has a big sales fleet both within their customer support division and in their physical Telia stores. This creates a solid foundation for a successful *expenditure marketing* approach, which will increase TeliaSonera's marketing orientation.

TeliaSonera are marketing their Telia *Smart* concept today. TeliaSonera should structure an information exchange between the sales personal and TeliaSonera management. We believe that this will generate important market information. The information could be used in the development of new Telia *Smart* concepts.

When introducing *expenditure marketing* within TeliaSonera, we believe the focus should be on two channels. Telia should make use of their customer support as well as their physical Telia stores. The stores are located all around Sweden in both larger and smaller cities, which gives TeliaSonera the opportunity to gather unique market information. TeliaSonera's sales personnel within these stores meet customers on a daily basis. We believe that these sales personnel have a horde of valuable information related to a successful marketing strategy for Telia *Smart.*

If TeliaSonera is successful keeping to our marketing model for their *Connected Home* solution Telia *Smart* and implement *expenditure marketing,* they will increase their chance of understanding the dynamic environment of Telia *Smart.* TeliaSonera will thereby be able to pick up needs and trends quicker and in that way continuously adjust Telia Smart to its environment.

Today TeliaSonera uses a program called Telia *Driving spirits.* We believe that this program can be seen as an embryo for a much larger investment in a *expenditure-marketing concept.*

The first stage of the application is now finished. The next stage for TeliaSonera would according to our model be to understand the customers for Telia Smart.

9.2.2 Understanding Customer

*In this part of the application we will continue to make use of our
 marketing model, which we generated in chapter eight. This model will
 discuss Telia Smart from three different perspectives: identification
of suitable target groups for Telia Smart, the need to have united
 target groups and the identification of the purchase process of the
three target groups.*
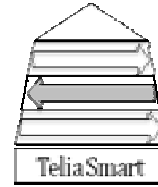
9.2.2.1 Identification of suitable target group for Telia Smart

The purpose for generating the marketing model in chapter *eight* has been to create a
general marketing model for the *Connected Home*. Since we have used both Swedish
industry experts as well as Swedish cohorts we believe that the model is useful on the
Swedish market. Our analysis in chapter eight shows that the *Connected Home* is in
the *Chasm.* During this application we have chosen to see Telia Smart as
TeliaSonera's implementation of the *Connected Home* concept and therefore continue
to conclude that Telia Smart is TeliaSonera's attempt to bridge the *Chasm.*

The target groups generated within our marketing model are parts of the early
majority of the Connected Home. We therefore have chosen to use the *three* target
groups as suitable target groups for Telia Smart, since it is TeliaSonera's attempt to
grasp the early majority within the Connected Home. The following table 11 will
therefore briefly summarize the suitable target groups for Telia Smart and the
marketing message appealing to them.

The up-to-date man	Persuading teenager	Simplicity-searching women
Definition: This group is comprised out of men who want to be technology up-to-date, but are not capable of solving the problem themselves.	**Definition:** Teenagers living at home, who make the technological decisions in their family and are able to *persuade* their parents into a purchase decision.	**Definition:** Women in their 30ths to 50ths longing for ease-of-use, security and functionality.
Marketing: This target group values status and independence. The marketer could also focus on exclusiveness and focus on the benefits Telia *Smart* delivers.	**Marketing:** This target group embraces many different types of marketing. The marketing message should give the teenager arguments for convincing their parents.	**Marketing:** This target group emphasizes high degree of safety and security. *Strong brand names, product guarantees* and *customer services* are appealing marketing messages.

Table 11 - Telia Smart's Target Group

9.2.2.2 The need to have united target groups

According to our marketing model TeliaSonera must define these target groups as
their target groups for their Telia *Smart* concept. Thereafter TeliaSonera has to spread
this information throughout the whole organization. In the first stage of our marketing

model we have introduced how TeliaSonera should make use of the integration between R&D and marketing. This integration should be used to communicate a united view upon the *three* suitable target groups, which our model has indentified.

The next step will apply our marketing model and summarize the identification of the purchase process for each of the *three* target groups.

### 9.2.2.3   Identify the purchase process of identified target groups

In the table 12 beneath we will introduce the purchase process of Telia *Smarts* target groups. They have been mapped with the help of our marketing model.

Purchase Process (Step 1-5)	The up-to-date man	Persuading teenager	Simplicity-Searching Women
(1) Problem recognition	Influenced by Word-of-mouth, direct commercial, recognize problem when they face technology in real-life	Influenced by Word-of-mouth, Introduces parents to their needs, direct commercial is effective	Influenced by Word-of-mouth, direct commercial, recognize problem when facing break-down or when they need to update their component
(2) Information search	Internet, industry magazines and reviews, Consumer electronic sales channels	Internet, industry magazines and reviews, consumer electronics sales channels	Rely on others when searching for information, visit stores for real-life experience and personal selling
(3) Evaluate Alternatives	Evaluates alternative compared to his environment, attracted to appealing design or function, want to observe	Evaluate alternatives most compelling towards parents, evaluate quickly, want to observe, parents value the safest alternative	Ease-of-use, strong brand names, support, a lot of questions, essential to be able to try product, want to observe, strive for the safest alternative
(4) Purchase Decision	Are willing to pay in order to feel up-to-date	Are depended upon their parent's willingness to pay	Are willing to pay for the best alternative, needs safe choice for payment and delivery
(5) Post-Purchase Evaluation	Evaluate from success of installation, solves problems by turning to friends	When facing problem, they solve them themselves, turns to telecommunication operator	Turns to the store when facing problem, evaluate from success of installation

Table 12 - Identification of purchase process for Telia Smart target groups

9.2.3   Marketing Mix for Telia Smart

The last stage within our marketing model is the marketing mix. In this chapter we will introduce a marketing mix suitable for Telia Smart as of today. The marketing mix suggestion will be combined out of five steps.
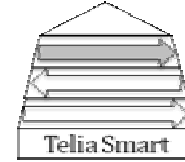
9.2.3.1   Customize marketing strategies towards the *early majority*

Today TeliaSonera markets Telia *Smart* as a wide range of products and services. This type of marketing could be appealing towards the *innovators* and *early adopters*.

We believe that the rest of the *innovators* and *early adopters* of the Connected Home already have created their own Connected Home solution by themselves. We think that TeliaSonera's problem until today has been that they have introduced the whole concept of their *Connected Home* at once. The absence of one "whole product" feeling scares the *early majority* to invest. If TeliaSonera now wants to cross the *Chasm* with the help of Telia *Smart*, we believe that they have to adjust their marketing strategy and focus their resources on specific target groups within the *early majority*. Thereby they have to customize Telia *Smart* to the identified target groups and try to market Telia Smart as one "whole product" concept.

Our marketing model introduces a way to handle the "one whole product" problematic. We suggest that TeliaSonera should create a "road map" revealing the way how each target group is going to acquire the whole concept of Telia *Smart*. The customization should thereafter be tailored according to this "road map".

The marketing model also suggests that TeliaSonera must educate their customer within Telia *Smart*. We believe that advertising could do this.

Since the *early majority* faces the FUD-factor they need to be calmed down through strategic marketing. In TeliaSonera's case, TeliaSonera could promote that they test every product's ease-of-use before distributing it. TeliaSonera could also take advantage of the fact that their brand *Telia* is positively associated with home network devices.

9.2.3.2   Make use of price bundling for Telia Smart

TeliaSonera has tried to introduce the Connected Home to the market through their product *Telia Smart*. When doing this TeliaSonera has been able to distribute a small amount through distributing start-up subscriptions for free. This has been done through *price bundling* packages together with Telia's *triple play* campaigns.

We think that TeliaSonera should continue to strategically use *price bundling* in order to distribute Telia *Smart*. By doing this TeliaSonera could prepare their customer base for more digital products and lowering the gap to the next step in the course towards the *Connected Home.* If TeliaSonera chooses to follow our marketing model TeliaSonera will be able to act as a one-stop-shop thereby generating potential new

types of revenue streams in the future. We believe that if TeliaSonera uses this strategy they could obtain a market hold among the *early majority* and make use of a potential *first mover advantage*. In TeliaSonera's case they could obtain a market hold with help of price bundling Telia *Smart*.

Our marketing model introduces a threat when distributing the Telia *Smart Start* for free. When TeliaSonera's customers suddenly are billed for using Telia *Smart* they could lose interest, since they have gotten used to that the service is for free. TeliaSonera has to communicate to the customer that they are able to try Telia Smart, not obtain it for free.

9.2.3.3 Broaden Sales Channels of Telia Smart

Our marketing model suggests that TeliaSonera should expand their offerings regarding Telia *Smart* in their stores around Sweden and thereby broaden their sales channels. *The early majority* value the possibility of touching and experience a product. According to the purchase process the chosen target groups feel more secure if they get the opportunity to observe Telia *Smart* before they make the purchase decisions. By enabling Telia stores to distribute Telia Smart more customers will be given the chance to experience TeliaSonera's implementation of the Connected Home live.

We believe that Telia could do this by placing a small prototype of a Telia *Smart* in the Telia stores. We also want to conclude that purchasing over the Internet is saturated for innovators and early majority. As the Connected Home is presented today we believe that Telia Smart is not reaching out to the early majority. TeliaSonera need to give the *early majority* the chance to experience Telia Smart in a new setting if the Chasm is to be bridged.

Through giving the customer the possibility to purchase Telia *Smart* in Telia stores we believe that TeliaSonera will make the decision process for the customer as simple as possible. When the *early majority* evaluate the Telia *Smart* product they do not want to feel stupid or uninformed. The *early majority* will have access to sales personnel. We believe that these sales personal ought to be educated within the Telia Smart concept.

Our marketing model suggests market based award system as a useful tools for creating the suitable market orientation. If TeliaSonera introduces reward systems based on Telia *Smart* sales in their store, the sales personal will get an incitement for selling Telia Smart. We believe that this both will increase the knowledge and the commitment within the sales personnel towards Telia Smart.

TeliaSonera could also cooperate with consumer electronics sales channels in order to increase their sales channels even more. If TeliaSonera would establish a partnership with a consumer electronic sales store, they could have the possibility to set up product demonstrations or show rooms in the stores of these partners. Telia *Smart* would then be placed into its real context. When a Telia *Smart* customer experiences their service, this is done on devices mainly sold within these consumer electronic

sales channels. We believe that this creates an *indirect* dependency from TeliaSonera's side towards consumer electronic sales channels. This aspect further implies that a partnership is a necessary activity when marketing Telia *Smart*.

By setting up Telia *Smart* in consumer electronic stores the recognition of what is possible will reach the customer and Telia *Smart's* benefits will be more tangible and easier to grasp. In chapter *four* this master thesis has introduced actors within the sales channel segment. Potential partners on the Swedish market could therefore be Elgiganten, Media Markt, Siba or ONOFF. TeliaSonera could also make use of the Internet when broaden their sales channels. Dustin and NetonNet are important Swedish actors within this segment.

Telia *Smart* will be put into a bigger context together with the horde of products available in consumer electronics stores. Apart from consumer electronic sales channels we believe that home product retailers such as IKEA[314] or ILVA[315] could be suitable for establishing a show room for Telia *Smart*.

9.2.3.4 Simplify marketing message

Our marketing model suggests that TeliaSonera should simplify their marketing message. The marketing model raises the problems of *intangibility* and *inseparability* when dealing with services on high – tech markets. If TeliaSonera is able to simplify the marketing message and instead focus on decreasing the feeling of *intangibility* and *inseparability* within their marketing we believe they will be successful.

TeliaSonera should thereby focus on their homepage telia.se since this is a dominating sales channel. The homepage should embrace the customer with simplicity and be adjusted to decrease the intangibility and inseparability feeling.

9.2.3.5 Make use of new promotion strategies

The marketing model in chapter eight introduces four promotion strategies useful when marketing the *Connected Home*. We will shortly discuss how they can be applied on Telia *Smart*.

Buzz marketing
TeliaSonera should try to create a word-of-mouth effect through using our marketing model. If this is successful they will be able to make use of *buzz marketing*. This could be accomplished through e.g. blogs, Internet communities and marketing events focusing on Telia Smart..

Cobranding
As our marketing model suggests in stage *one*, TeliaSonera ought to build alliances and partnerships. If TeliaSonera is successful doing this they should make use of *cobranding*. This means that they for example cooperate with Hewlett Packard and cobrand a wireless printer together with HP. TeliaSonera could also cobrand their

---

[314] www.ikea.com, 2009-04-10
[315] www.ilva.com, 2009-04-10

most popular device within Telia Smart, the NAS together with its manufacturer LaCie.

Comparative marketing

Since our marketing model concludes that *brand awareness* is vital when marketing *Connected Home* components we want to suggest that TeliaSonera should take advantage of their *brand awareness* by using comparative marketing. This could accomplished by comparing TeliaSonera's offerings towards other actors within the Connected Home.

Integrate mobile in Telia *Smart*

To create a successful integration between the Telia *Smart* concept and the mobile phone, we believe that the Telia *Smart* concept needs to be thoroughly integrated in the Telia stores. The mobility department within TeliaSonera currently controls the Telia stores. This causes the stores to have a focus towards selling mobile phones and subscriptions and not broadband components related to the Telia *Smart.*

Consumers are starting to ask for *interoperability* between their digital products. If TeliaSonera wants to be an important player within the *Connected Home* in Sweden we believe that the focus of the Telia stores need to be diverted towards the *Connected Home* concept. We believe that one way to create this shift in focus is to start up sales competitions exclusively dedicated towards the selling of Telia *Smart* products and services in Telia Stores.

10 Conclusions

The conclusions in this final chapter will be divided into three sections according to the purposes set up for the master thesis.

This master thesis has been guided by *three* purposes. These have been to:

(1) Create an Understanding of the Connected Home
(2) Construct a general marketing model that will generate marketing guidelines and target groups for the Connected Home
(3) Apply the marketing model on Telia Smart

When we stated the purposes of the master thesis, we strategically did this accordingly to the order found above. Purpose *one* has created the foundation for understanding what the Connected Home concept is all about. To be able to create a marketing model for the Connected Home this was necessary. Purpose *two* has been to construct the marketing model suitable for marketing the Connected Home concept with all its pre-requisites. Purpose *three* has aimed at testing our marketing model and see if it is useable. In order to do this we turned to TeliaSonera and applied the model on their implementation of the Connected Home Telia Smart.

10.1 Create an understanding of the Connected Home

The Connected Home is comprised out of many different components. There are several different industries acting on the same market. If a marketer should be able to generate successful marketing strategies we strongly believe that a deep understanding of the Connected Home is a pre-requisite. By dividing the Connected Home into three general components we believe that we have created a more structured picture of the concept. This three-part breakdown will make it easier for a marketer to grasp the Connected Home. The *first* component is access and creates the fundament for the Connected Home. Accesses enables a connectivity to and within a customer's home. The access can both be wired or wireless. The *second* component is devices and it uses the connectivity that the access providers. Interoperability between devices are a key factor to take into consideration when addressing the Connected Home. The *third* component that completes the Connected Home is services. The services are dependent on a functional access and interoperable devices in order achieve a full experience of the Connected Home.

We believe that only a technical understanding of the product the Connected Home through access, devices and services is not sufficient if marketing strategies are to be generated. According to us the marketer also needs to understand the business environment and the trends of the Connected Home in order to manage the marketing strategies. The business environment of the Connected Home could be explained by using the theory of value network. This generates two important implications, standardizations and relationships within the business environment are increasing. Further it creates a dynamic market where actors continuously are striving for new

136

profitable positions. As more actors enter the Connected Home environment the value for the customer increases. We believe that the trends in the Connected Home delivers a final important factor creating a complete thorough understanding. The trends are indicating a prosperous future for the Connected Home where both customers and suppliers are seeing interesting drivers. The customers are striving for freedom and flexibility and are shifting interest from mass media to me media.

10.2 Construct a general marketing model that will produce marketing guidelines and target groups for the Connected Home

We have created a three stage marketing model for the Connected Home. These three stages are:

1. Internal Considerations
2. Understanding the Customer
3. Marketing Mix.

Conclusion regarding these three stages will be addressed in the text below.

Empirical findings lead us to set up the pre-requisite for the model concluding that the Connected Home is in the Chasm. The early majority find it hard to understand the product and are showing disinterest. Innovators and early adopter on the other hand have in many cases already created their Connected Home.

Internal Considerations
Marketing is not something that just appears in front of the customer. The theoretical studies clearly indicate that successful marketing strategies start with internal consideration for a company. With this in mind we created a foundation concerning internal considerations that a company should address. The business environment and the complexity of the product were the two most important empirical finding influencing the output in this stage. The environment increases the importance of build relationships and alliances. The early majority does not understand the product and are showing disinterest. We believe that an increased R&D and marketing interaction could be a solution to this problem. When marketers and R&D personnel are working closer together the hit rate of the developed product will increase. Further expenditure marketing could increase the market intelligence of the company. It will generate updated market information that could be used in marketing decisions.

Understanding the Customer
Only by having thorough understandings of the customers the company will be able to chose the right target groups and create marketing strategies appealing to them. The pre-requisite of the Chasm lead us to search for target groups belonging to the early majority. We believe that a detailed customer segmentation have to be done in order for a marketer to be able to generate appealing marketing messages. Cohort segmentation delivers the necessary information that will act as the guideline when structuring the marketing. The chosen target groups also have to be communicated to the entire company creating a united view upon whom they are selling to. We believe that the final step when trying to understand the customers is to map their purchasing

process. This activity creates the pre-requisites for a marketing mix that will reach out to customers generating purchases.

Marketing Mix

If a company should be able to generate an appealing marketing mix we conclude that they must have a customized strategy towards the identified target groups. The strategy should include a roadmap describing how the target groups will acquire the Connected Home. When this is done they should focus on the marketing mix. Both empirics and theory have concluded that price bundling is an effective way to bridge the Chasm. By increasing the number of sales channels a company can make their implementation of the Connected Home more visualized for the customers. If a company focuses on simplifying their marketing message we believe that the FUD-factor amongst customer will decrease. Since this is a new and not well recognized product new advertising strategies will be successful and create a desired word-of-mouth effect.

Figure 31 - Marketing Model for the Connected Home of the Master thesis

10.3 Apply the marketing model on Telia Smart

Our conclusion is that TeliaSonera with their implementation of the Connected Home Telia Smart is trying to bridge the Chasm. We believe that this attempt will only be successful if necessary activities are being performed. As a first mover on a market it is crucial to carefully consider the deployed marketing strategies.

We believe that there exist possibilities for TeliaSonera to both build horizontal and vertical relationship and alliances with actors of the Connected Home industry. Since the Connected Home is a new arena for a telecommunication operator we believe that they should increase their R&D and marketing interaction. This will enhance

138

TeliaSonera's chance for creating appealing customer products. The dynamic market is hard to grasp. Expenditure marketing and a structured way of communicating market information between sales personal and management will increase their market orientation.

The three identified target groups (the up-to-date man, the persuading teenager and the simplicity-searching woman) are well suitable for Telia Smart. The up-to-date man finds it interested with the exiting new possibilities that it can give him. The persuading teenager has a natural interest regarding the Connected Home and can convince their parents to invest in the right components. The simplicity-searching woman finds it appealing with a trouble free and easy-to-use home networking solution.

Further we conclude that TeliaSonera could follow our suggested marketing mix as a way to reach out to the identified customer segments. Firstly TeliaSonera should customize the marketing for Telia Smart according to the identified target groups' marketing values and purchase processes. Secondly TeliaSonera ought to continue to use price bundling when distributing Telia Smart. Thirdly TeliaSonera could focus more on visualizing and selling Telia Smart in Telia stores or through external distributors. The marketing message describing Telia Smart must be simple for the new target groups to understand. Finally TeliaSonera could make use of new and innovative promotion strategies in order to adapt to high-tech marketing.

As a final and general conclusion we believe that the marketing model of this master thesis has for us been a useful way to generating marketing guidelines and target groups for Telia Smart. With some adjustments we hope that this model will be applicable in many other similar contexts.

11 References

11.1 Published sources

Biem, A; Caswell N (2008*), A value network model for strategic analysis*, IBM T. J. Watson Research Center

Dhir, A. (2001); Wireless Home Networks — DECT, Bluetooth, HomeRF, and Wireless LANs

Ericsson Consumer Labs (2008), *Telia consumer scope 2008 – Facts & figures rapport, Private Market Sweden*

Golden, P. N.; Gerald T. J. (1993), *Pioneer Advantage: Marketing Logic or Marketing Legend?*, Journal of Marketing Research

Halvorsen, K. (1992), *Samhällsvetenskaplig metod*, Studentlitteratur

Harris J. G., Burgman, R. J. (2005); *Chains, shops, and networks: the logic of organizational value*

Kock, N. (2004), *The three threats of action research: a discussion of methodological*

antidotes in the context of an information systems study, Decision Support Systems, Vol.37, No.2

Leyden-Li, M.; Pope, S. (2008*), Electronics: The Connected Home*

Li, F; Whalley, J (2002), *Deconstruction of the telecommunication industry from value chains to value networks,* Telecommunications Policy, No. 26

Lundahl, U., Skärvad. P-H. (1992), *Utredningsmetodik för samhällsvetare och ekonomer,* Studentlitteratur

Maltz, E.; Kohli, A. K. (1996), *Markt Intelligence Dissemination Across Functional Boundaries*, Journal of Marketing Research

Marks, R. B; Gifford, I. C.; O'Hara, B (2001), *Standards from IEEE 802 Unleash the*

Wireless Internet

Mason R. B; Staude, G. (2008) ; *Marketing in turbulent environments*

Meredith, G. E.; Schewe, C. D.; Karlovich, J. (2007), *Defining Markets, Defining Moments*

Mohr, J.; Sengupta, S.; Slater, S. (2001). *Marketing of High-Technology Products and Innovations,* Second Edition, Person Education, New Jersey

Moore, G. (1991), *Crossing the Chasm, Marketing and Selling Technology Products to Mainstream Customers*

Schewe C. D.; Carlson, B. (2003), *Age Matter, Segmenting Swedish Markets by Generational cohorts*, Lund Institute of Economic Research

Statistics Sweden (2008), *Use of computers and the Internet by private persons in 2008*

Stremersch, S. and Gerrard J. T. (2002), "Strategic Bundling of Products and Prices: A New Synthesis for Marketing," Journal of Marketing, 66 (1) (January), 55-72

Valcourt, S. A. (2007), *DSL from A to V and Back Again*

11.2 Electronic sources

Allegro, A UPnP / DLNA Overview, *www.allegro.com*, 2009-02-10

Apple, *www.apple.com*, 2009-02-26

Black Box, *www.blackbox.co.uk*, 2009-02-19

Bluetooth, How Stuff Works, *http://electronics.howstuffworks.com*, 2009-02-22

Broadband.info, *www.broadbandinfo.com*, 2009-03-01

Broadband Forum, *www.broadband-forum.org*, 2009-03-10

Cabot, *www.cabot.co.uk*, 2009-02-26

CDON, *www.cdon.se*, 2009-02-26

CEBIT, *www.cebit.de*, 2009-04-07

Compricer.se, *http://bredband.compricer.se*, 2009-02-20

Computer Sweden, *http://computersweden.idg.se*, 2009-02-22

Computerworld, *www.computerworld.com*, 2009-02-20

DECT Cordless Phones, *www.dectcordlessphones.co.uk*, 2009-02-22

Dell Storage, *http://thefutureofstorage.com*, 2009-05-09

Digital Living Network Alliance, *www.dlna.com*, 2009-02-23

DSL Reports, *www.dslreports.com*, 2009-02-19

Dustin, *www.dustin.se*, 2009-02-26

Elektronik Tidningen, *www.etn.se*, 2009-02-19

Ericsson, *www.ericsson.com*, 2009-03-02

Ericsson Telecommunication Report, *www.ericsson.com*, 2009-02-22

Facebook, *www.facebook.com*, 2009-02-26

Firewire, PC Hardware, *www.pchardware.co.uk*, 2009-02-22

Flickr, *www.flickr.com*, 2009-02-26

Google, *www.scholar.google.com*, 2009-02-27

Hardware Marketplace, *www.hardwaremarketplace.com*, 2009-03-13

Home Gateway Initiative, *www.homegatewayinitiative.org*, 2009-02-19

How Stuff Works, *http://computer.howstuffworks.com*, 2009-02-26

Ikea, *www.ikea.com*, 2009-04-10

Ilva, *www.ilva.com*, 2009-04-10

Livebox, *www.liveboxlab.com*, 2009-02-25

LaCie, *www.lacie.com*, 2009-05-28

MySpace, *www.myspace.com*, 2009-02-26

Netgear, *www.netgear.com*, 2009-02-20

NetonNet, *www.netonnet.se*, 2009-02-26

Orange, *www.orange.com*, 2009-03-22

OSGi Alliance, *www.osgi.org*, 2009-03-19

PC Anywhere, *www.pcanywhere.com*, 2009-02-20

PC MAG, *www.pcmag.com*, 2009-02-24

Philips, *www.philips.com,* 2009-05-27

Pricerunner, *www.pricerunner.se*, 2009-02-26

Prylportalen, *www.prylportalen.se*, 2009-02-17

Regeringskansliet, *www.regeringen.se*, 2009-02-28

Report Buyer, *www.reportbuyer.com*, 2009-05-28

Svenska Dagbladet, *www.svd.se*, 2009-02-25

School of Computing, Dublin City University, *www.computing.dcu.ie*, 2009-03-02

SF, *www.sfanytime.se*, 2009-02-26

142

Silicon Press, *www.silicon-press.com*, 2009-02-20

Sony, *www.sony.net*, 2009-02-22

Storegate, *www.storegate.se*, 2009-05-28

SuperSpeed USB 3.0, PC World, *www.pcworld.com*, 2009-02-22

Svenska Dagbladet, *www.svd.se*, 2009-03-15

Tech Target, *http://searchcio-midmarket.techtarget.com*, 2009-03-13

Telefon Teknisk Marknadsbeskrivning, PTS, *www.pts.se*, 2009-02-22

Telekomnyheterna, http://www.telekomnyheterna.se, 2009-05-28

Telenor, *www.telenor.se*, 2009-02-18

Telia, *www.telia.se*, 2009-05-09

TeliaSonera, *www.teliasonera.com*, 2009-05-07

TeliaSonera, *www.teliasonera.se*, 2009-04-13

The Institute of Electrical and Electronics Engineers, *www.ieee.org*, 2009-03-10

The Connected Home, *www.the-connected-home.co.uk*, 2009-02-19

The Fiber Optic Association, *www.thefoa.org*, 2009-02-18

This Is Cable, *www.thisiscable.com*, 2009-03-02

UPnP DLNA White Paper, Allegro, *www.allegrosoft.com*, 2009-02-23

UPnP Forum, *www.upnp.org*, 2009-02-17

YouTube, *www.youtube.com*, 2009-02-26

Z-Wave Alliance, *www.z-wave.com*, 2009-02-22

11.3 Oral sources

Axelsson, Lars. (2009-02-12), Manager of the Connected Home, Ericsson AB

Consumer Electronics sales channels. (2009-03-22), Sales Representative, Elgiganten

Consumer Electronics sales channels. (2009-03-22), Sales Representative, Expert

Consumer Electronics sales channels. (2009-03-22), Sales Representative, Media Markt

Consumer Electronics sales channels. (2009-03-22), Sales Representative, ONOFF

Consumer Electronics sales channels. (2009-03-22), Sales Representative, Siba

Customer 1. (2009-03-25), Telia Smart customer

Customer 2. (2009-03-25), Telia Triple Play customer

Customer 3. (2009-03-25), Telia Triple Play customer

Customer 4. (2009-03-25), Telia Store customer

Customer 5. (2009-03-30), Telia Store customer

Customer 6. (2009-03-30), Telia Store customer

Customer 7. (2009-03-30), Potential Connected Home customer

Customer 8. (2009-03-30), Potential Connected Home customer

Customer 9. (2009-03-30), Potential Connected Home customer

Customer 10. (2009-03-30), Potential Connected Home customer

Damgaard, Joachim. (2009-02-12), Head of Sales, Broadband Services Sweden, TeliaSonera

Frederikos, Vasilis. (2009-03-20), Research Engineer, Orange

Gustafsson, Per. (2009-02-25), Head of New Possibilities Concepts, TeliaSonera

Holmberg, Johan. (2009-02-18), Concept and Prototype Developer Digital Home, TeliaSonera

Körner, Ulf. (2009-02-24), Professor, Electrical and Information Technology, Lund Institute of Technology

Norén, Karna. (2009-02-24), Concept and Business Developer, New Possibilities Concepts, TeliaSonera

Moonga, Paul. (2009-02-12), Chief Executive Officer, Greenwich Consulting

Pettersson, Johan. (2009-03-10), Sales Manager, Sony Center

Telia Driving Spirits. (2009-03-25), Sales Representative Customer Service

Telia Driving Spirits. (2009-03-25), Sales Representative Telia Store Stockholm

Telia Driving Spirits. (2009-03-25), Sales Representative, Telia Store Kristianstad

Wadmark, Karin. (2009-04-17), Industry expert of the Connected Home