A Collaboration in Product Service System for Telecom Networks
An “Orange and Ericsson case” study

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Avni Desai & Maria Widgren
Abstract

The purpose of the research is to study the “Orange and Ericsson case” while developing the method Actors and System Map. The interaction between actors within Ericsson’s Device Connection Platform is investigated in order to identify improvement opportunities in the interaction between the provider and the customer. To answer the purpose the following research questions was formulated:

RQ1) What type of actors may be involved in a telecom related IPSO?

RQ2) How can the connections between actors in the telecom related IPSO be illustrated?

RQ3) How can the Actors and System Map method be refined?

In order to answer the research questions different methodologies were used for the analysing process. The research started with a widespread literature study to collect knowledge related to the area of Product Service System (PSS) and methodologies for identifying how actors interact with one another. Studying different mapping methods the conclusion was made that Actors and System Map was most suitable for this study.

In the methodology background the previous selected method, Actors and System Map from an Integrated Product Service Offering (IPSO) perspective, was examined in order to be able to refine and improve the mapping method. Actors Map provides a visual and clear overview of the actors involved while a System Map shows the information flows and activities between the actors.

To understand the interaction between the two companies, the definition of IPSO and the importance of value-based selling for a service offering are described in the theory background. Also, different ways of looking at a business model within the telecommunication industry is presented.

Obtaining information regarding making an Actors Map and a System Map an improved mapping method was refined. The adaption of the method was divided into eight steps. The refined Actors Maps of the DCP shows the actors involved, how they are connected and their main assignments from each respondent’s point of view at Ericsson. The refined System Map shows what kind of information is transferred between the actors within the companies and between Orange and Ericsson. Both maps delivered as a decision basis will help identification of non-value giving links and non-optimal distances in the information flow for both companies.
Nomenclature

**Actor**
An actor can be an individual, a group, a function or a department. (Lindahl, et al., 2014a)

**PSS**
Mont (2002) defines Product Service System (PSS) as a system of products, services, supporting networks, and infrastructure that is designed to be competitive, satisfies customer needs, and has a lower environmental impact than traditional business models. Another definition of PSS according to (Tukker & Tischner, 2006) is “a mix of tangible products and intangible services designed and combined so that they are jointly capable of fulfilling final customer needs”.

**IPSO**
An Integrated Product Service Offering (IPSO) provides services throughout the whole life cycle of the product and is an integrated offering that instead of selling physical products provides functions, service and performance. (Sundin, et al., 2006)

**Ericsson’s DCP**
The Ericsson Device Connection Platform (DCP) is a cloud service that enables operators to offer connectivity management to enterprise customers.

**M2M**
Ericsson’s DCP is designed to allow operators to address machine-to-machine connectivity opportunities.

**Actors Map**
Provides a visual and clear overview of actors to support the identification of relevant actors and their involvement and requirements that could be important to consider when developing an IPSO. (Lindahl, et al., 2014a)

**System Map**
In contrast to an Actors Map a System Map is visualized in a more detailed way. The System Map visualizes the types of interaction of products, services and information, as well as the activities available to obtain interactions. (Lindahl, et al., 2014a)

**BSS**
A Business Support System (BSS) are the components that a telecommunication service provider uses to run its business operations towards customers.
**OSS** - Operations Support System (OSS) is the computer systems used by telecommunication service providers to manage their telephone networks.

**M-commerce ecosystem** - Include a large number and a wide variety of stakeholders from several industries, each with different business goals.

**GMA** - Global M2M Association (GMA) is a service cooperation agreement among leaders in the M2M sector with the main focus of delivering best-in-class, enhanced and seamless M2M services globally to customers.

**OEM** - Original equipment manufacturer is a company whose products are used as components in another company’s product. The OEM generally works closely with the company that sells the finished product.

**Sub Parties** - The customers of Orange.

**Operators** - The customers of Ericsson where Orange is one of them.

**MCC-SIM** - Mobile country code SIM to uniquely identify a mobile phone operator.
# Table of Contents

1 INTRODUCTION .............................................................................................................. 1
   1.1 BACKGROUND ............................................................................................................. 1
   1.2 PROBLEM DEFINITION .............................................................................................. 1
   1.3 PURPOSE ...................................................................................................................... 2
   1.4 RESEARCH QUESTIONS .............................................................................................. 2
   1.5 DELIMITATIONS ......................................................................................................... 3
   1.6 THESIS OUTLINE ....................................................................................................... 3

2 METHODOLOGY .............................................................................................................. 5
   2.1 RESEARCH STRATEGY ................................................................................................. 5
   2.2 LITERATURE STUDY .................................................................................................... 6
   2.3 MAPPING METHODS ................................................................................................. 6
   2.4 INTERVIEW TECHNIQUES ........................................................................................... 7
   2.5 INTERVIEW PROCESS ................................................................................................. 9
   2.6 SELECTION OF RESPONDENTS ............................................................................... 10
   2.7 INTERVIEW QUESTIONS FOR ANSWERING RESEARCH QUESTIONS ................... 11

3 THE “ORANGE AND ERICSSON CASE” ........................................................................ 13
   3.1 ORANGE ..................................................................................................................... 13
   3.2 ERICSSON .................................................................................................................. 13
   3.3 ERICSSON’S DEVICE CONNECTION PLATFORM ...................................................... 14
   3.4 THE COLLABORATION BETWEEN ORANGE AND ERICSSON ................................. 15

4 THEORETICAL FRAMEWORK ..................................................................................... 17
   4.1 THE ACTORS AND SYSTEM MAP METHODOLOGY ................................................. 17
      4.1.1 Actors Map ............................................................................................................. 17
      4.1.2 System Map ........................................................................................................... 18
   4.2 INTEGRATED PRODUCT SERVICE OFFERINGS ....................................................... 19
   4.3 VALUE-BASED SELLING ........................................................................................... 20
   4.4 BUSINESS MODEL ..................................................................................................... 21
   4.5 DEVELOPING VALUE BASED BUSINESS MODEL ................................................... 21

5 APPLYING THE ACTORS AND SYSTEM MAP TO THE “ORANGE AND ERICSSON
   CASE” ............................................................................................................................ 23
   5.1 ACTORS MAP OF ERICSSON’S DEVICE CONNECTION PLATFORM ...................... 23
      5.1.1 Actor’s at Ericsson ................................................................................................. 24
      5.1.2 Actors at Orange .................................................................................................. 28
   5.2 ANALYSIS OF THE ACTORS MAP ............................................................................. 28
## List of Figures

Figure 1: The "four stage framework" by Kindström & Kowalkowski (2012) ........................................ 5
Figure 2: Process overview (based on Brinkmann & Kvale 2015) .................................................... 9
Figure 3: Ericsson’s Device Connection Platform (Ericsson, 2015) ................................................... 15
Figure 4: Example of an Actors Map from a practical experience of two companies. (Lindahl, et al., 2014a) .......................................................... 17
Figure 5: Example of a System Map from a practical experience of two companies. (Lindahl, et al., 2014a) ................................................................. 19
Figure 6: The Actors Map illustrates the participating actors and their connections within Ericsson’s Device Connection Platform .................................................. 24
Figure 7: The System Map illustrates what kind of information is transferred between actors within Ericsson’s Device Connection Platform........................................................................ 30
Figure 8: The System Map showing that Second Line is both connected to Third Line and to Incident Management .................................................................................. 34
Figure 9: The perspective of respondent B ........................................................................... 63
Figure 10: The perspective of respondent D ........................................................................... 64
Figure 11: The perspective of respondent E ........................................................................... 65

List of Tables

Table 1: Respondent within Orange and Ericsson .................................................................. 11
Table 2: Research Question Matrix ....................................................................................... 12
Table 3: Research Question Matrix based on the improved interview questions .................. 39
Table 4: Search terms during literature study ......................................................................... 59
1 Introduction

In this chapter an explanation of the current situation is presented, followed by of the problem definition and the purpose of the study. Thereafter three research questions to answer the purpose are presented and motivated followed by the delimitation of the study.

1.1 Background

In the last decade the market has changed from being simple and stable to being more complex and dynamic (Neu & Brown, 2005). The increasing competition at the market sets higher demand on building relationships with the customer and fulfilling their needs in a better way (Sundin, et al., 2009).

As a result of this companies have started to offer services throughout the whole life cycle of the product or the service as a source of competitive advantage. Incorporating additional services to what is provided has both financial benefits and lowers the environmental impacts associated with the product’s life cycle (Lingegård, et al., 2010).

To survive the competitive market many telecom operators has gone from being product providers to providing integration of services where tangible products and intangible services are combined in an integrated system (Elfving, et al., 2015). When a telecom operator purchases a service they usually buy equipment from their supplier and run them themselves. This means they need to have more responsibility in service operation and the equipment may remain in the ownership of the buyer (Lindahl, et al., 2014b).

Services are intangible and therefore more complex when it comes to measuring the quality of the final outcome. This set higher demand on companies to deliver services which not only satisfies the customer demand but also their experience. The complexity also makes it more difficult for the customer to make demands on the service that is going to be delivered. (Åhlström, 2004)

1.2 Problem definition

Orange is a large and fast-growing company that has extensive experience in the telecom market. It is important to them to constantly deliver high quality products and functions to their customers. According to Lindahl, et al. (2014a) number of companies strives towards selling Product Service System (PSS) though to the increased competition and new customer requirement. Orange provides their customers with a PSS including mobile phones and an M2M-system. The M2M-system is a cloud service partly delivered by Ericsson, which is a Device Connection Platform (DCP). The service enables Orange to offer connectivity management to enterprise customers.

The customer requirements and the increased competition makes it is advantageously for companies to identify the role of the inbound actors. Implications and possibilities for improvement of the service
provided by Ericsson are difficult for Orange to establish since it involves many actors that are difficult to recognise. For the service to be able to evolve and improve, the actors from both the provider and the customer side must have access to important information, must know how information is transferred and who will be in use of the information they possess.

1.3 Purpose

The main objective of the master thesis is to analyse how actors from both the provider and the customer are interacting in an Integrated Product Service Offering (IPSO). An investigation of involved actors and how these actors receive and transfer information between each other are also included. This is done in order to enhance the knowledge for the two companies of how interactions between actors can be improved.

The secondary objective is to refine the Actors and System Map method and to evaluate how the method can be used for describing actors and processes between a provider and a customer within an IPSO.

This will be done by studying the “Orange and Ericsson case” described in Chapter 3 below. The aim is to deliver a map with Ericsson’s view of the interactions between actors. This combined with the thesis Scenarios of Collaboration in a PSS for Telecom Networks by Azevedo (2015) that describes Orange’s view of the interaction between actors will result as a decision basis for both companies. The result will enable Orange to influence what Ericsson delivers and at the same time enable Ericsson to enhance their ability to provide customer value.

1.4 Research Questions

To answer the purpose, three Research Questions (RQs) have been formulated. In order to fulfil the purpose and answering the Research Questions the “Ericsson and Orange case” will be studied and the main focus will be to map the actors involved.

RQ1) What type of actors may be involved in a telecom related IPSO?

RQ1 aims to identify Ericsson’s view of relevant actors within the service, their main assignments and how they are connected. Furthermore, investigate what different functions, departments, individuals or groups that are involved. The required information will be important prerequisite to create an Actors Map and a System Map from the perspective of IPSO.

RQ2) How can the connections between actors in the telecom related IPSO be illustrated?

RQ2 aims to create an Actors Map and a System Map from the perspective of an IPSO, combined with the information gained from RQ1. The purpose of creating an Actors Map and a
System Map is to investigate how Ericsson comprehends the collaboration by illustrating the connections and the information flows between different actors.

RQ3) **How can the Actors and System Map method be refined?**

The Actors Map and the System Map will be refined while studying the “Orange and Ericsson case”. Improvements will be detected when answering RQ1 and RQ2 where the connections and the information flows are investigated between different actors.

**1.5 Delimitations**

The main focus with the study will be to identify and evaluate the interaction of information flows and activities between actors within Ericsson’s Device Connection Platform. The study will therefore not include how non-value giving links and non-optimal distances can be improved. The Device Connection Platform will not be further studied in detail and improvements within the DCP will not be investigated.

The sub parties of Orange are not investigated in detail instead they are shown as one actor in the Actors’ Map and the System Map. Because of this no sub parties of Orange are interviewed or investigated further.

**1.6 Thesis outline**

*Introduction* An introduction of the study’s problem definition, purpose, delimitations and a presentation of the research questions that the study aims to answer.

*Methodology* Presentation and motivation of selected methods for the research process.

*The “Orange and Ericsson case”* Descriptions of the companies Orange and Ericsson and the collaboration between them. Also a shorter description of the Device Connection Platform that Ericsson provides.

*Theoretical Framework* Present relevant theories related to the subject of the study.

*Refinement of the Actors Map and the System Map Methodology* A presentation of the refinement of the mapping method Actors and System Map. Also an evaluation of the applied methodology throughout the study is presented.

*Applying the Mapping Method to the “Orange and Ericsson case”* Presentation of the identified relevant actors within the DCP, received from interviews with employees at Ericsson. Presentation of the result of the Actors and System Map including the relevant actors involvement and their assignments, the interactions and the information flows between them.
Analysis of Providing and Buying Service A summary of Orange’s perspective as a customer and of Ericsson’s perspective as a provider of the service.

Analysis of Improvement Opportunities A summary of improvement opportunities for the collaboration with the perspective of both Orange and Ericsson.

Conclusions Answering the study’s purpose as well as recommendations for future work and studies.
2 Methodology

This chapter presents appropriate mapping method that are suitable for the study and the method that was selected. The chapter also describes the process of interviewing, which includes deciding a suitable interview technique, creating interview questions for answering the research questions and the selection of respondents for the conducted interviews.

2.1 Research Strategy

To strategically plan the study Kindström & Kowalkowski (2012) a “four stage framework” was used as a basis. Kindström & Kowalkowski (2012) propose a service development process that is adapted to companies and to discuss its implications for companies with a traditional focus on product development and product sales. As shown in Figure 1 the framework contains four stages a company has to go through and not be satisfied before completing each stage (Kindström & Kowalkowski, 2012). The framework is circular and contains the stages Market sensing, Development, Sales and Delivery. According to Kindström & Kowalkowski (2012) Market sensing is about making a thorough scanning of the customers, competitors and also the internal organisation before suggesting ideas in the development stage. The development stage includes idea generation, pilot studies and concept development they further describe. The third stage includes selling the service and in the fourth the developed or improved service Kindström & Kowalkowski (2012) point out. However, the last two stages were excludes since the aim of the study does not include selling or delivery an improved or developed service.

![Figure 1: The “four stage framework” by Kindström & Kowalkowski (2012)]

Market sensing and Development, the two remaining stages in the method were the two stages suitable for the study but with some modifications to fit the research’s prerequisites and delimitations. As for the stage marketing sensing the modifications were made to focus on research within Ericsson and
Orange regarding participation in the Device Connection Platform. This in order to answer RQ1: What type of actors may be involved in a telecom related IPSO? and RQ2: How can the connections between actors in the telecom related IPSO be illustrated? The stage of development was adjusted as a refinement to answer RQ3: How can the Actors and System Map method be refined?

2.2 Literature Study

The research started with a literature study, which helped to refine the research questions and the aim of the thesis. The purpose of the literature study was to collect knowledge related to the area of Product Service System (PSS) and to establish a suitable methodology for identifying the actors’ interactions with one another. By using online databases and visiting Linköping University (LiU) Library and Linköping City Library, research articles and books were collected. In order to find necessary information on methods, not only scientific articles were used tough to the limitations of IPSO and PSS sources. Therefore online databases, reports, lectures, articles as well as research papers and books were used. The literature study was conducted through studies of several research areas to create a holistic view. Reference lists in research articles and keywords mentioned in papers were used to get a more holistic research of important aspects of areas suitable for the study. The used search terms during the literature study are presented in Appendix A: Literature search terms.

2.3 Mapping methods

In order to get knowledge of the current situation of Ericsson’s DCP the authors needed a mapping method to elucidate the actors involved. By creating a map of all actors included in a system and the relations between them helps, according to Tan (2010), to get an overview of how the actors are organised in order to provide the service. Further Tan (2010) describes mapping of actors as a method that enable designers to better recognise the motivations and incitements of the actors and understand their requirements. However there are several mapping methods that exist that are more or less suitable for the study, for example Customer Value Chain Analysis (CVCA), Activity Modelling Cycle (AMC) and system organization map. The desire of the method was that it would be easy for users to understand and use, that they held high level of visualization which increase the possibility of easy communication and finally that they includes actors within the service, information and activities. With the focus on getting an overall perspective, without too many details, money and costs is not relevant to included (Lindahl, et al., 2014a). By finding the right type of mapping method, they could be of use to find opportunities to include actors not considered in the current system and also establish and maintain relations (Tan, 2010).

After studied mapping methods like; Customer Value Chain Analysis (CVCA), Activity Modelling Cycle (AMC) and system organization map, the conclusions were that neither of them lived up to what considered as necessary and sufficient for the method needed. For instance the CVCA is according to Ishii (2001) a method to understand customer needs and values but focus mostly of the definition of a
product, particularly a new product, and not a service. Matzen & McAlone (2009) describes the AMC method as the customer’s activities in relation to the technology of the company, which partly would have been what was looked for in the mapping method for the study but missing the role of the provider, which is of relevance. System organisation map is described by Tan (2010) as a model that helps identifying how value is generated through service provision in the whole network. This would have been of use but does not cover the relations between the actors and how they are organised.

After studied the different mapping methods the conclusion was made that the Actors and System Map method was the closest of fulfilling the goals required. As a large number of actors are involved in Ericsson’s DCP, an Actor and System Map methodology is according to Lindahl, et al. (2014a) suitable since it provide a visual and clear overview of these actors. The method Actors and System Map is advantageously used when describing and mapping an IPSO and thereby suitable for this study. Further Lindahl, et al. (2014a) describe the purpose of the mapping method as a support to the identification of relevant actors, their involvement and their requirements but also a help to identify non-optimal distances between actors. The method is also suitable for the study since the result is going to be delivered as a decision basis for both companies including the aspects that Lindahl, et al. (2014a) points out. Also the fact that the method can be modified regarding the level of details that is appropriate for the study and its delimitations makes the method suitable.

2.4 Interview techniques
Based on the research questions different data collection methods were used to gather relevant information. Cohen, et al. (2007) describes interviewing, as a useful method to generate rich data and the structure of the interview questions can be highly structured, semi-structured or open ended. The method that has been used for data collection for the study is a semi-structured interview. Lindahl, (2014c) claims the researchers and the respondent’s familiarity and knowledge about the topic determine the structure of the interview questions. Important aspects to consider when interviewing is to maintain a relaxed manner, ask clear questions, note-taking, appropriate use of sub queries, establish trust and keep track of the responses (Cohen, et al., 2007).

During the interviews the mapping method Actors Map will be used and since the respondents possess limited background knowledge about Actors Map semi-structured interviews are suitable according to Lindahl (2014c). By using this method in the study attendant questions can be asked for clarification.

Characteristic of semi-structured interviews are that the researcher uses a list of questions that are asked in a particular order and need to be covered during the interview Cohen, et al. (2007) explains. In contrast to a structured interview a greater depth of information is provided in a semi-structured interview since it is more flexible. Observing personal perspectives of the respondent such as feelings, assumptions, beliefs, wishes and problems follows these types of interviews he further describes. Also,
according to Cohen, et al. (2007) a semi-structured interview is open and new ideas are allowed to bring up to be discussed during the interview, which is also why it is suitable for the study.

According to Bernard (1988) semi-structured interviews are suitable when someone is being interviewed only once. An open-ended interview is therefore secluded because of the risk of losing direction or responses may be irrelevant for the study. Sturges & Hanrahan (2004) divide different ways of interviewing in face-to-face, by telephone, through webcam or by email. In this study, videoconferences, e-mails and face-to-face interviews were used to gather information from the both companies.

The first and the second research question aim to investigate actors that are involved in the service and the collaboration between them. This is an interactive method where the respondent has to visualize their thoughts by drawing. Therefore mostly face-to-face interviews and webcam interviews were used when answering the first and the second research question. More specific sub queries that occurred after compilation of the interviews were asked in interviews conducted via telephone and email.

Cohen, et al. (2007) points out it is easier for the author in a telephone interview to take notes without distracting the respondent. Telephone interviewing also allows the interviewer access to those respondents who are hard to reach. Cohen, et al. (2007) also describes this type of interviews are shorter and more focused on the subject but can easily become mechanical or cold. Sturges & Hanrahan (2004) points out the disadvantage with obtaining data from a telephone interview which are the difficulties of knowing someone’s personal perspective by hearing the tone of someone voice.

Also email interviews were excluded and only used for supplemental queries after a face-to-face interview or a videoconference. Meho (2006) claims email interviews don’t allow asking additional questions based on the responses and social signs are more difficult to detect. Therefore this type of interview sometimes results in receiving less information than via telephone, webcam or face-to-face interviews. On the other hand Cohen, et al. (2007) points out they are more time effective and uncomplicated. Meho (2006) summarizes the advantages with email interviewing which are the elimination of calling and traveling expenses, the time required for transcribing and also the elimination of the need to schedule appointments.

Interviews that were conducted via videoconference were used in this study when interviewing respondents at distance. This type of interviews has become more common at companies since they save employers time and money. Also, a videoconference interview can be recorded without distracting the respondent as long as the respondents approves.
2.5 Interview process

Brinkmann & Kvale (2015) say “A well planned interview is a successful interview”. They also point out seven stages to plan the entire process of interviewing before starting, see Figure 2: Process overview (based on Brinkmann & Kvale 2015)

![Diagram showing the stages of the interview process: Thematising, Designing, Interviewing, Transcribing, Analysing, Verifying, and Reporting.](image)

The first stage of the interviewing process compiled by Brinkmann & Kvale (2015) is to thematise the interview, which means describing the concept of the topic and clarifying the purpose of the study. The theme and the design of the interview in this study were based on the research questions. The second stage is to plan the design of the research and to obtain relevant theoretical knowledge in regards of the subject (Brinkmann & Kvale, 2015). To obtain theoretical knowledge regarding the subject information of the service was examined from Ericsson’s website. Also, background information of how to help the respondent to perform an Actors Map and a System Map was obtained. When the execution is planned and prepared decisions of who is going to be interviewed are made. Babbie (2015) explains a technique used to select respondents called the snowball sampling technique. Instead of deciding in advance who is going to be interviewed, the researcher selects respondents gradually by asking the first respondent to suggest who to interview next and then let the second respondent suggest the third respondent and so forth (Babbie, 2015). To ensure that relevant respondent were selected that would provide the data useful for the study the snowball sampling technique was used. The third stage describes the importance of following a guide when executing an interview (Brinkmann & Kvale, 2015). In this study the method Research Question Matrix was used as guidance when formulating the interview questions. The fourth step regards clarification of how interviews should be analysed before they are conducted (Brinkmann & Kvale, 2015). Babbie (2015) concludes whenever the interview contains open-ended or semi-structured questions no attempt should be made to summarize the data before analysing it,
instead the interviewer should record those answers exactly as given. The interviews for this study were therefore prepared for analysis, which included recording the interview and transcribing it.

The fifth stage depends on the type of interview, purpose and topic of the study Brinkmann & Kvale (2015) state. Further they describe that based on this an appropriate method of analysis should be decided in advance. In the analysis process McCracken (1988) discusses the collected information must come together in one overall analysis. Further on he concludes the gained information should be converted from the particular to general information. The information and the data from different interviews should connect to each other when analysing. The data can be examined in different ways, in this study the participants are asked the same questions, in order to be able to compare the answers’ of the respondents’. Brinkmann & Kvale (2015) describes the sixth stage is to determine the generalizability, reliability and validity of the information gained from the interviews. Validity means whether the truth of the statements can be investigated, reliability refers to find out how consistent the results are and generalizability means how the information agree with other research and other interview answers (Brinkmann & Kvale, 2015). To determine the generalizability, reliability and validity of the information gained more than one respondent were interviewed and the result was compared with one another combined with the theoretical knowledge obtained from the service (Brinkmann & Kvale, 2015).

2.6 Selection of Respondents

It was of importance to include respondents from Ericsson and Orange to get a holistic picture of Ericsson’s DCP which they provide to, among others, Orange. Furthermore the choice was made to include more respondents from Ericsson since they are the provider of the service. The initial interviews generated not only information concerning the research topic, the respondents themselves suggested other potential respondents within Ericsson’s DCP that could be of interest for the study. This feedback indicates that they understood what information that was needed for the study. The interviews were conducted during the spring of 2015. The respondents and their working positions at Ericsson and Orange are presented below in Table 1.
2.7 Interview Questions for answering Research Questions

To make sure not losing direction during the interviewing process a Research Question Matrix is of good use according to Bloomberg Dale & Volp (2012). This method includes usage of a list of questions and topics that needs to be covered during the interview, which for this study can be found in Appendix B: Interview Questions. Bloomberg Dale & Volp (2012) also describes that it is essential to make sure the interview questions are designed in a way that they satisfy and answer all research questions.

To achieve this first step after forming the interview questions was to use a Research Question Matrix where the research questions were listed on the horizontal axis and the interview questions on the vertical axis, see Table 2: Research Question Matrix below. “X” indicates a large contribution and “x” indicates a smaller contribution to the research question (Lindahl, 2014c).

After ensuring the interview questions covers all the research questions they were divided in different headlines, see Appendix B: Interview Questions. The interview starts with the headline Respondent Experience that allows the interviewee to give a description of their work connected to the service and some background information about themselves. The next headline containing the Actors Map the respondent will start drawing the map by answering questions of included actors, how they are connected and what type of information that is transferred between the actors. Improvement opportunities are questioned regarding complications and improvements that the respondents see in the existing information flow or in the exiting activities. This section will help analysing the final Actors Map from different point of views and emphasize potential improvements. By asking the respondent of their reflections after making the Actors Map information of how to analyse the chosen method is obtained. For example difficulties in the method that can be improved when developing the methods can be noticed. The final questions are to ensure that nothing is missed out regarding the questions that

<table>
<thead>
<tr>
<th>Respondent</th>
<th>Working Position</th>
<th>Interview Duration (min)</th>
<th>Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ericsson</td>
<td>A</td>
<td>68</td>
<td>Face to Face</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>69</td>
<td>Face to Face</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>31</td>
<td>Video conference</td>
</tr>
<tr>
<td></td>
<td>D</td>
<td>46</td>
<td>Video conference</td>
</tr>
<tr>
<td></td>
<td>E</td>
<td>24</td>
<td>Video conference</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>28</td>
<td>Video conference</td>
</tr>
<tr>
<td>Orange</td>
<td>H</td>
<td>18</td>
<td>Face to Face</td>
</tr>
<tr>
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<td>I</td>
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<td>J</td>
<td>63</td>
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<td></td>
<td>K</td>
<td>52</td>
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</tr>
<tr>
<td></td>
<td>L</td>
<td>16</td>
<td>Video conference</td>
</tr>
</tbody>
</table>

**Table 1: Respondent within Orange and Ericsson**
has been asked. The last question is asked to make sure we can get back to the respondent if there would be any obscurity when analysing the interview.

**Table 2: Research Question Matrix**

<table>
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<td><strong>Respondents Experience</strong></td>
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<td>x</td>
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<td><strong>Reflections</strong></td>
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<td>IQ8d</td>
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<td><strong>Final Questions</strong></td>
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<td>IQ9</td>
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3 The “Orange and Ericsson case”

This chapter includes a shorter background presentation of the telecom operators Orange and Ericsson. Also, Orange’s and Ericsson’s current service offerings are presented as well as Ericsson’s Device Connection Platform purchased by Orange.

3.1 Orange
Orange has been the company’s main brand for mobile, landline, internet and Internet Protocol Television (IPTV) services since 2006. Orange was acquired by France Télécom in 2000 and was rebranded as Orange in July 2013 (Orange, 2013).

Orange, formally France Télécom, is a French multinational telecommunications corporation with head office in Paris (Orange, 2015a). They provide Information Technology and telecom solutions for small businesses, enterprises and multinational companies in France but also internationally (Bloomberg L.P, 2015) They are one of the world’s leading telecommunications operators and are present in 30 countries with a total customer base of more than 240 million (Orange, 2015a).

Orange Business Service is providing telecommunication services to multinational companies and is one of the world leaders with presence in 220 countries and territories (Orange, 2015b). They help companies change for the better by helping them collaborate more effectively, operate more efficiently and engage better with their customers. This includes connecting their people, sites and machines securely and reliably.

Orange supports M2M system where devices can exchange data more automatically in real time. The services they provide for their customers include tracking, geo-location, process automation, remote control, e-payment and telemetry (Orange, 2015b). Beside service offerings Orange provides tablets and smartphones, which include remote access, control and security for their customers’ mobile devices.

3.2 Ericsson
Lars Magnus Ericsson founded Ericsson in 1876 and the headquartered is based in Stockholm, Sweden (Kay, 2014) Ericsson has been in the telecom market for 138 years and they have three areas of products and expertise that they provide for their customers that are network, services and support solutions (Ericsson, 2015b).

With “A society is only as strong as its connections” in mind, Ericsson provides communication networks for telecom operators and other industries (Ericsson, 2015b). They also want to contribute to sustainable growth societies around the world with their energy-efficient network and solutions by making telecommunications accessible and affordable for everyone (Ericsson, 2015b).
In the service area Ericsson combine local capabilities with global expertise, meaning that they base their competence and delivery resources close to their customers. Most of their customers are operators but they also work with e.g. TV and media, public safety and utilities (Ericsson, 2015b). Ericsson ensures they make the most of global learning and knowledge-sharing by moving their competence all over the world including global processes, methods and tools.

Ericsson’s Business Unit Support Solution develops and delivers software-based solutions for business support system (BSS) and operations support system (OSS), TV and media solutions as well as solutions and services for the emerging m-commerce ecosystem. Ericsson (2015b) ambition in the area of m-commerce industry is to accelerate access and interconnection between the m-commerce ecosystem and the existing financial world.

Ericsson has gone from being a product provider to a PSS provider since their products no longer satisfy their customer requirements. Initially Ericsson was an original equipment manufacturer (OEM) and they sold their own telephone equipment. The change of customer requirements forced the company to expand their product range and provide integration of services such as business consulting, system integration and managed services. Today the sales from Ericsson’s service and solutions business stand for 50 percent of their total sales (Ericsson, 2014).

3.3 Ericsson’s Device Connection Platform

People are nowadays constantly connected to other people through smart phones, tablets and laptops or to machines and devices. The networks, which are becoming more complex, often include products from several suppliers. Because of economic benefits Ericsson is becoming more service driven and strives for long term services partnerships with companies (Ericsson, 2014).

The Ericsson Device Connection Platform is one of the provided services Ericsson offers other telecom companies. It is a cloud service designed to allow operators to address machine to machine (M2M) connectivity opportunities (Ericsson, 2015a). M2M usually refers to a system where a device wirelessly sends data to a backend system where it can be collected and viewed (Gohring, 2011). One example described by Gohring (2011) of a common M2M system is a water meter in a home that regularly and automatically sends data back to the water company for billing and monitoring purposes. Ericsson (2015a) describes their DCP as a way for telecom operators to focus on their enterprise customers rather than on complex technology. Ericsson (2015a) claims that the new business model reduces time to market when companies with an M2M platform can access information more quickly and accurately and also integrate more easily into existing systems. The automations of business processes also enable a higher operational efficiency and keep the overall costs down. Figure 3 below shows Ericsson’s Device Connection Platform and its included services.

The platform offering comprises (Ericsson, 2015a):
Basic functionality delivered as a service (DCP aaS) from our production sites including hardware, software and the right to use licenses.
- Service portals and APIs for operators and enterprises for managing business related processes.
- Initial setup towards Ericsson Device Connection Platform.
- Solution analysis providing advice to the operator based on its environment.
- Training package for the operator

Figure 3: Ericsson’s Device Connection Platform (Ericsson, 2015)

3.4 The Collaboration Between Orange and Ericsson

Ericsson (2013) announced 2013-09-19 a partnership between Orange Business Services in order to serve the growing global M2M market and to respond to multi-domestic needs. Orange’s customers enables to deploy, manage and scale M2M connected devices and applications to respond to multi-domestic needs by Ericsson’s DCP (Ericsson, 2013).

M2M Magazine (2013) writes Orange chose Ericsson’s DCP delivered as a service to enrich their existing M2M products and solutions to support their customers and the international customers in particular. Ericsson’s DCP enables Orange Business Services’ customers to benefit from state-of-the-art functionalities to deploy and scale and operate millions of M2M connections (M2M Magazine, 2013). Customers can also from a service portal access self-service functionality. From the service portal they can also manage and control their SIM base, support management and access statistics (Ericsson, 2013).
The agreement between Orange and Ericsson is a step forward in Orange’s ambition to capitalize on existing assets and to drive market leadership in M2M together with the Global M2M Association (GMA). Thierry Bonhomme, CEO, Orange Business Services, is satisfied with the future collaboration:

“Orange Business Services has been investing in the Internet of Things for many years with the ambition to be a key player in the global M2M market. We continue to enrich our M2M portfolio to provide market-leading services to international companies. This agreement with Ericsson is another step in our global approach to M2M offers and in building an ecosystem of selected partners to the benefit of our customers.” (Ericsson, 2013)
4 Theoretical framework

This chapter provides different methods and theories needed for discussions of the aim and the research questions of this study. The theoretical framework introduces and describes the theory essential to comprehend the approach when studying Ericsson’s Device Connection Platform.

4.1 The Actors and System Map Methodology

Below the methodology of the mapping method used in the study is presented. An Actors Map provides an overall perspective, while a System Map provides a more detailed perspective, of the actors involved in the IPSO.

4.1.1 Actors Map

The aim of an Actors Map from an IPSO perspective is to provide a visual and clear overview of the actors involved Lindahl, et al. (2014) states. Actors can be an individual, a group, a function or a department and they can for example be; service technicians, users of the offering, sales staff, expendables providers, transportation staff, and the product planning and product development departments they further describe. According to Lindahl, et al. (2014) a large number of actors are normally involved when providing an IPSO, which is why an Actors Map helps organize the actors, as can be seen in Figure 4.

Figure 4: Example of an Actors Map from a practical experience of two companies. (Lindahl, et al., 2014a)
Lindahl, et al. (2014) claims the purpose of this mapping method is to maintain the identification of relevant actors and how their involvement and requirements appears. Those considerations are important when developing an IPSO. An Actors Map can also help identify non-optimal distances between actors, for example the distance between the actors responsible for IPSO requirement management and the main actor with most important requirements Lindahl, et al. (2014) states. However, the risk when creating an Actors Map is that important requirements can get lost, filtered or changed along the way (Lindahl, et al., 2014a). An Actors Map with the perspective of IPSO can also support the IPSO management, e.g. by identifying non-value giving links in the chain of actors involved that can be omitted Lindahl, et al. (2014) concludes.

The actors’ resolution level is normally quite detailed in order to be useful but it depends on the situation, for example different departments or functions/people involved in the IPSO provided Lindahl, et al. (2014) explains. They further describe the risk of not making the Actors Map detailed enough important actors and interactions can get neglected and not visible in a more aggregated untransparent overview. An Actors Map can also include actors that traditionally would be considered not to be involved in an IPSO e.g. NGOs and legislative functions that might influence the IPSO Lindahl, et al. (2014) state. A color-coding of boxes can be used in order to separate the different actors involved, e.g. actors related to the customer and actors related to the provider, when illustrating them in the map (Lindahl, et al., 2014a).

According to Lindahl, et al. (2014) the information in an Actors Map is normally divided into two types, 1st and 2nd level information. The 1st information level is directly related to the IPSO and the ability to provide it and the 2nd level information is indirectly related to the IPSO. An example of the 2nd level information is how to provide the IPSO process and future IPSOs Lindahl, et al. (2014) explains.

When creating an Actors Map from an IPSO perspective the first task is to identify relevant actors Lindahl, et al. (2014) state. By asking actors within the IPSO of their view of how the IPSO is provided many actors can be identified they further describe. Different actors have different point of views, which can be avoided by performing a workshop in order to verify the Actors Map (Lindahl, et al., 2014a).

4.1.2 System Map
What distinguishes a System Map from an Actors Map is that it visualizes in a more detailed way the activities available to obtain interactions as well as the different types of interactions of product, service and information, see figure 5 (Lindahl, et al., 2014a). Activities in the System Map is spelled out and illustrated by boxes. An activity characterizes with the condition in which things are happening or being done and it includes for example support systems, methods, processes and tools Lindahl, et al. (2014) explain. Lindahl, et al. (2014) further describe a System Map created from an IPSO perspective is
not just showing, for example an interaction of information between two actors, but also what type of information is visible, spelled out and illustrated by boxes.

Figure 5: Example of a System Map from a practical experience of two companies. (Lindahl, et al., 2014a)

A System Map can illustrate different life cycle phases of the IPSO and imply different activities and focuses (Lindahl, et al., 2014a). This is why a System Map is useful when communicating and developing an IPSO Lindahl, et al. (2014) concludes.

4.2 Integrated Product Service Offerings

When offering Integrated Product Service Offering, according to Matsumoto, et al. (2011) all phases in the life cycle is considered in order to optimize the offering. Further they describe the importance when selling products, companies constantly need to update their products or sell new models in order to survive market competition. Another way of continuously receiving revenue is according to Lingegård, et al. (2010) to provide services throughout the whole life cycle of the product. Lingegård, et al. (2010) also claims by developing the product the company will design products for sustainability and implement the best technique at once.

The Integrated Product Service Offering (IPSO) business model is also called Product Service System (PSS) (Tukker, 2004). There are several benefits with a PSS business model. Mont (2002) claims PSS have a lower environmental impact than traditional business models. Another benefit according to Tukker (2004) offering services customer needs are fulfilled in a better way and allows the customer to concentrate on their core activities. Furthermore, a unique and a long-term relationship can be built with customers. A PSS model also allows the company to improve their competitive position in the market by innovating faster (Tukker, 2004).
Mont (2002) defines PSS as a system that consist of “a marketable set of products and services capable of jointly fulfilling a user’s need. The product/service ratio in this set can vary, either in terms of function fulfilment or economic value”. Tukker (2004) points out there are three main categories of PSS; product-oriented, use oriented or result oriented. The first category is mainly based on sales of products with some value added services. In the second category the product is still central but the business model is not geared towards selling products. Tukker (2004) clarifies that tangible product stays in the provider’s ownership and is provided via modified distribution and payment systems, such as sharing, pooling, and leasing. In the last category, result oriente d service, the customer and the provider agree on a result. Tukker (2004) summarizes the product is replaced by the service needed to achieve the result.

4.3 Value-Based Selling

The value can be increased by offering benefits beyond the product or by offering the product at a cheaper price (Lilien & Grewal, 2012). They further describe that different customers wants different kind of value and therefore, the first step is to segment customers based on their value requirements.

DeVincentis and Rackham (1999) present what to consider when providing customized value to the buyer. According to them there are three types of customers’. The intrinsic value customers that think value starts and ends with the product. They know how to use the product and do not need additional help from the provider. The extrinsic value customers are interested in how the product is used. They think suppliers are valuable if they understand and take time to develop requirements the customers have. According to Tece (2010) customers’ do not just want products, they want solutions to their perceived needs. The strategic value customers on the other hand want much more than advice from their provider (DeVincentis & Rackham, 1999). They want a partnership where both part collaborates and develop the product purchased by the customer.

Depending on the type of customer DeVincentis and Rackham (1999) also present three different sales strategies to accomplish fulfilling the customers’ expectations. Transaction selling focuses on reducing the cost and making the selling process easy and trouble free. They are less interested in the total life cycle costs that the provider may offer (Cespedes, et al., 2013). They also think minimal product knowledge is required on the sales side and there is no attempt to form a long-term relationship. DeVincentis and Rackham (1999) therefore claim this strategy fits the instinct value customer. Consultative selling offers more than just a product and fits the extrinsic value buyer. The strategy is more complex and includes collaboration between both customer and the provider. To help and understand the problem and issues of the customer the seller must first develop an understanding of the customer’s business and needs. Relationship buyers as Cespedes, et al. (2013) would call it have a longer time horizon. The entire organization is involved and makes larger investment to contribute to the customer’s success and meet their needs (Cespedes, et al., 2013). Enterprise selling focuses on long-
term contractual relationships and DeVincentis and Rackham (1999) therefore think this strategy fits strategic value customers.

To have a successful relationship DeVincentis and Rackham (1999) point out the two partners need an intimate cooperation to work together to create value for the customers. Value is created between a customer and a provider by redesigning the boundary between them, which usually is a wall of indifference (DeVincentis & Rackham, 1999). To clarify they explain that the two companies are separate and the wall does not matter as long as the provider delivers on time and that the customer pays on time.

According to DeVincentis and Rackham (1999) as well as Sakao (2013) the way two partners create value when developing a PSS can include inefficiencies and uncertainties. For example provider’s rate of production does not match the customer’s requirements, which lead the supplier to either overproducing, which leads to excess inventory, or there is an underproduction (DeVincentis & Rackham, 1999).

4.4 Business model
According to Osterwalder and Pigneura (2009) business model describe the rationale of how an organization creates, delivers, and captures value. While Bensoussa and Fleisher (2007) describe it as a variety from “an organization’s core logic for creating value” to “a story that explains how an enterprise works”. Further on Bensoussa and Fleisher (2007) brings to surface that the researchers view the business model as the missing link between strategy and the business process. While other consider how the pieces of the business fit together even though these approaches usually missing the critical aspects of strategy, which considers competition. The definition of business model is according to Alan Afuah, as follows (Bensoussa & Fleisher, 2007):

“A business model is the set of which activities a firm performs, how it performs them, and when it performs them, as it uses its resources to perform activities, given its industry to create superior customer value and put itself in a position to appropriate that value”.

However, according to Bensoussa & Fleisher (2007) there is no existent consensus of what a business model and its components are. Every business’s purpose is to satisfy a customer’s need they further describe. This can only be done by looking from the point of view of both the customer and the market for example at the business from outside (Bensoussa & Fleisher, 2007).

4.5 Developing Value Based Business Model
When transferring to IPSO Elfving, et al. (2015) claims the main challenge is to find and define a new position in the value chain. Another challenging consequence of the change is to specify new Key Performance Indicators (KIPs) in the business strategy model based on business values and use.
According to Söderström (2004) there are several phases to consider within a transition process from a product to an integrated product-service solution. In the telecommunication industry Elfving, et al. (2015) explains the traditional business models were grounded on ownership-based value propositions. Furthermore they describe customers are no longer operators and do not demand functions and features but services and results instead. Therefore the current business model is no longer appropriate for the purpose according to Elfving, et al. (2015).

Elfving et al. (2015) also claims that there is a need for a parallel business model that complements the current one. They describe that this will enable identifying integration points between product developments, service development and eliminate separated organizational business units. Separate profit and loss responsibilities, different organizational cultures or separated information system are some examples. Söderström (2004) points out an essential part to consider during a transition to functional sales are not to base the business model on the sales price, where the total manufacturing cost is calculated. Instead Söderström (2004) claims that the business model should be on a customer value-based price or Life Cycle Costs. Further on he describes functional sales as the provider maintaining the ownership and responsibility of the product throughout the whole lifecycle. The ownership does not only change the business model but also involves risk-taking since business areas are used to sell products rather than relationships (Söderström, 2004).
5 Applying the Actors and System Map to the “Orange and Ericsson case”

The refined method Actors and System Map is applied on “Orange and Ericsson Case”. In this chapter Ericsson’s perspective on the Actors Map followed by a description of the actors’ main assignments are presented. The System Map shows what kind of information is transferred between the actors within the companies and between the companies. After applying the mapping method to the case they are analysed in order to get a more realistic result.

5.1 Actors Map of Ericsson’s Device Connection Platform

The Actors Maps of the service show different perspectives of the actors involved, how they are connected and their main assignments from both Ericsson’s and each respondent’s point of view. To obtain information of what actors that are involved in the service employees at Ericsson was interviewed. The Actors Maps from Ericsson’s point of view will support the identification of the included actors and their assignments within the DCP.

When Ericsson provide the service Device Connection Platform for Orange it is important for them to know what Orange expect but also for them to explain what they expect from Orange as a customer.

Once we have a project conference meeting, where the customer is included, we will have discussions in terms of describing the service offering of the DCP. Then we also describe what we need from the operator for us to be able to set up the platform. (Interviewee D)

Presented below is the Actors Map followed by a description of the actors’ main assignments that were mentioned in the interviews with employees at Ericsson, see figure 6. The respondents for these interviews are the respondents B to F and their profession and the duration of the interviews are presented in table 1.

The Actors Map illustrates the participating actors and their connections. Each actor plays a part in the Device Connection Platform and is of importance for Ericsson to be able to provide it. Also, Ericsson’s perspective of the actors within Orange is included in the Actors Map. In some cases the description of each actor is similar from different respondents and in other cases it differs. Those actors that are mentioned as a group of several actors are encircled in different colours.
Figure 6: The Actors Map illustrates the participating actors and their connections within Ericsson’s Device Connection Platform

5.1.1 Actor’s at Ericsson

Product Development: According to interviewee E this actor is in charge of defining and evaluating product requirements.

Operator: Orange is an operator, which means they are Ericsson’s customers. They are not an actual customer but a reseller of the DCP says interviewee B.

Sales & Marketing: The Sales department is responsible for signing agreement with mobile operators interviewee E explains. E also states that their second task is to make sure the market is aware of the capability of the service.

DCP Sales Support: The actor supports Orange in the sales process towards the sub party. According to interviewee B this actor is also responsible for not revealing information regarding agreements between customers and Ericsson.
Research and Development (R&D): When Ericsson has decided what is going to be refined they send an order with work tasks to R&D interviewee B says. Interviewee C says that R&D is in charge of implementing demands from their customers. According to Interviewee E and C R&D is also in charge of the actual development work on the service or a function. Depending on the issue, if a new design feature or an improved a feature is required actions will be taken by R&D and the product management to fix the incident Interviewee D explains. He also point out that in some cases R&D propose new features or a new service to the customers and the operators to see if they are interested.

System Service: According to interviewee E System Service is in charge of managing Ericsson’s site or asset, and the service behind these assets.

Operations: Interviewee D describes this actor is supporting the Operator where interviewee B adds, by implementing new releases and changes. Interviewee D also describes Operations as a group of people where the Service Delivery Manager and DevOps are included.

Development and Operations (DevOps): This actor implements new releases and changes in the network Interviewee B defines. According to both interviewee B and F DevOps is in corporation with Change Management.

Product Line: Interviewee C describes this actor as where Ericsson develops the offering and sells it. Interviewee E clarifies this by defining the actors included in the Product Line; Sales and Marketing and also Product Development.

Accounts: According to interviewee E every Operator has their own account team that are responsible for the revenue generated by their Operator. They are all working directly for the DCP.

Key Account Manager (KAM): This actor is responsible of Customer Unit. KAM is the actor signing the commercial agreement with the customer and therefor have a relationship with Orange. KAM is not a part of Sales since this actor doesn’t have enough knowledge of the complexity of the DCP interviewee B states. Interviewee F also states that this actor is involved during the whole project.

Service Desk: Interviewee C, D and F states that Service Desk has the main communication with the customer in turns of having new service requests or requests of improvement. Interviewee D adds, they also take care of incidents or standard operations like new features for example invoices, billing and reports from the customer. Interviewee F states that Service Desk includes a Fulfilment Team and a System Integration Team.

System Integration Team (SI-team): Interviewee F and D states that this actor is responsible of the implementations and the configurations of the license. Interviewee D describes that they are also responsible for the implementations and configurations regarding the customer on the platform in order for them to be on board and be able to use the DCP service.
Customer Operation Manager (COM): According to interviewee B this actor is responsible of the NOC’s delivery.

Network Operation Centre (NOC): According to interviewee C Ericsson’s Network Operation Centre is responsible for commissioning the platform the company is selling to Orange. Interviewee B defines this actor as an organisation containing the actors; First Line, Second Line, Third Line, Problem Management, Change Management and Incident Management.

Incident Management: If something goes wrong or if serious problems occurs this actor is responsible for it, interviewee B and F states. Interviewee F also describes the Incident Management as the actor responsible of addressing high difficult incidents to the specialists and experts it may concerns.

First Line: According to interviewee B the First Line answers all customers when they call regarding any incident or problem. Interviewee B and D states they have general knowledge and are the first in line of trying to help the customers. B also claims the First Line is in charge of deciding if the incidents that are classified as “high” or “critical” and in that case generates a problem ticket if it’s a reoccurring problem. Interviewee D describes them as a part of the Assurance Team.

Second Line: Interviewee B describes Second Line as the actor taking over after First Line. There are several second lines though they are specialised in different functions for example billing systems or mobile network. Interviewee D describes them as a part of the Assurance Team.

Third Line: Interviewee B continues describing Third Line as the actor taking over after Second Line. The Third Line consists of further specialists and experts who refined what the problem concerns. Those problems can be so complicated that the code needs to be changed and no one except Third Line is allowed to change it.

Operations Manager for DCP: Interviewee B describes this actor as the manager of Operations. This actor is the manager of different functions, which are managed by the OAMs.

Operations Assurance Manager (OAM): The ones that help the Service Delivery Manager are called Operation Assurance Managers. Under every OAM there is an SDM interviewee B states. They are for example responsible for all the European customers.

Assurance Team: If something goes wrong or need to be fixed the customer contact the Assurance Team both interviewee B and C says. Interviewee F explains that Assurance Team contains the actors’ First Line and Second Line.

Fulfilment: This actor configures the platform to make it available and useful for Orange and the Sub Parties’ interviewee C points out. According to Interviewee B standard changes are made here, it could for example be changes in the network. B also says that they add customers to the database.
Product Management: According to interviewee B this actor controls all investments that are made to bring forward new features for the launch of the DCP before commissioning. Interviewee D further describes that they analyse the customers' requests to see if they are in line with Ericsson’s business model and also if other customers are interested in the proposed request. Based on this the Product Management team will take a decision to make the implementation in the platform or not.

Problem Management: If the same problem occurs, Ericsson has a system where all the problems that reoccur generate a problem ticket, interviewee B says. The Problem Manager is responsible of those problem tickets and of making sure the problems get fixed.

Service Delivery Manager (SDM): At Ericsson there is one Service Delivery Manager for each customer interviewee F and B states. According to interviewee D they are the primary speaker to the customer and handles the customer’s business requirements such as new requests, standard requests, improvements or new features. Interviewee B defines Service Delivery manager as the front person towards the customer who is responsible for taking care of compliments if the service doesn’t fulfil their requirements according to the agreement.

Customer Unit: Interviewee D describes this actor as a local team working close to the customer, preferably in the same country. They discuss the sales with the customers.

Change Management: Interviewee B describes this actor as a function that is responsible of keeping track of all changes that’s being made. They make sure to follow the regulations and report what changes Ericsson is going to perform, how they will do it, when they will do it and also what they will do if something goes wrong.

Release Management: According to interviewee D this actor will start the deployment in the production, in the DCP, for new features and functionalities. Release Management develops the solution and thereafter explains the service to the customer. They will be ready once the feature is deployed and be ready to support their service.

Engineering Function: This actor looks at the capacity of the service interviewee B says. Capacity Management which is a part of the Engineering function analyses if the number of Ericsson’s customer increases. In that case they have to expand the capacity of the service to function for a larger number of customers B exemplifies. Interviewee C adds they are also responsible to connect Orange’s network to our platform.

Solutions Architects: According to interviewee F there are two Solutions Architects, one that is responsible of the IT-part and the other one covers the network part of the platform, core network and supporting systems. The Solution Architects are also responsible for delivering the solution design and support during the integration with Orange’s networks.
Engagement Practice: According to interviewee E this actor is a local expert supporting Sales. It is a kind of pre sales E clarifies.

5.1.2 Actors at Orange

Purchaser: The purchaser at Orange writes a commercial agreement with Key Account Manager interviewee B states.

Sub Party: These actors are customers of Orange interviewee F says. The Sub Parties are not Ericsson’s partners.

Sales: Interviewee C defines this actor as responsible for selling the service to the Sub Parties.

Engineering Function: According to interviewee C this actor makes sure to connect Orange’s network to Ericsson’s platform.

Network Operation: If the service is not working as it should the Sub Parties contact Network Operation interviewee C and F says, and if something is wrong with the platform Orange will contact Ericsson.

Product Development and Marketing: Interviewee C states this actor is responsible for the Sub Parties such as Volvo, Apple or Hp that wants to connect their devices to the service.

Local sales team: Orange has a Local Sales Team, which includes Service Delivery Manager and Sales interviewee B states. Interviewee B further describe when Ericsson develop a product the Sales at Orange is responsible for handing it over to the local operations while Service Delivery Manager takes care of the Sub Parties after the delivery.

5.2 Analysis of the Actors Map

The results from the interviews were examined to detect all actors involved in the DCP. Each respondent’s answer where first examined one by one. This is done in order to first sort out all the mentioned actors and to get a good view of the knowledge of each respondent. The respondents sometimes had different points of view and also different level of knowledge about the participating actors. This made it sometimes confusing when combining the answers from the interviews. Some respondents had a wide knowledge regarding participating actors while they couldn’t describe each of every actor’s activities or responsibilities as much. Other respondents did not have the wide knowledge of all actors included but could describe the ones they knew further and more detailed. As (Lindahl, et al., 2014a) also described in their result the respondents opinions and views differed. This resulted in work of balancing the different descriptions of the actors and find similar descriptions. In some cases the respondents where describing an actor the same way but calling those different names. For example were Network Operations and Network Operation Centre mentioned with different names but got put together as Network Operation Centre (NOC) since they were described the same by the respondents. Also the actor Service Desk and Service Team has been put together as Service Desk since
the activity of the actors and the connections to other actors where described similarly. This was made
to prevent confusion, as different actors would have the same purpose.

An assumption was also made that First Assurance and First Line have the same responsibilities since
they were described as the first to contact for the customer if any problems occurred. Both of them were
also described as an inclusion in Assurance Team. However this may affect the result regarding the
actors or the numbers of existing actors. It could have been the case that a respondent didn’t know too
much about the actor they described and therefore some actors ended up similarly described even if
they may have different responsibilities.

After the Actors Map was compiled an overview of all the actors and all the connections were gained.
Within Ericsson Service Delivery Manager, R&D, Operations, Sales & Marketing and Assurance Team
have a larger number of connections compared to other actors. By analysing which actor has most
connections the importance of the actor can be determined. The number of connections can also signify
if it’s a big actor with several people included with different tasks.

Another identified difficulty that Lindahl, et al. (2014a) also points out is that in many cases the
connections between actors are quite long within Ericsson. This could indicate that an individual, a
group, a function or a department that have relevant information and the individual, group, function
or department that are in use of the information are far from each other and important information get
lost along the way.

To prevent an incorrect result the respondents have been contacted again for additional questions
regarding the actors where the information was ambiguous. Another aspect of what could have
impacted the result is that Ericsson has a lot of customers and the respondents where therefor not
directly in contact with Orange. This resulted in many examples of generalisations regarding their
customers and examples containing other customers than Orange. This is probably due to that Orange
is a relatively new customer of Ericsson, which makes it easier for the respondents to refer to a
customer that they have worked with for a longer time. When the respondents described the
customers, assumptions have been made in the study that the information regarding those customers
can be directly applied as information about Orange since the questions are based on Orange as a their
customer. As Lindahl, et al. (2014a) describe many more can be considered as customers within an
IPSO so the concept of “the customer” can sometimes be misleading as for the example that for this
study the sub parties are customers of the service as well.

5.3 System Map of Ericsson’s Device Connection Platform
The aim of a System Map is to provide a visual overview of what type and what kind of information is
transferred between the actors within Ericsson and between Orange and Ericsson. The System Map
from Ericsson’s point of view will support the identification of actors and that the information flow
between then is not lost, being filtered or changed along the way. A System Map can also help identifying of non-value giving links in the information flow between actors. To obtain information about the interaction and the information transferred between actors in the service employees at Ericsson was interviewed.

Below in figure 7 the System Map of the DCP is presented. In order to facilitate what each connection and information flow implies all connections are numbered and each number is presented with an explanation below the map. As for the Actors Map the actors including other actors are encircled in different colours in the System Map. Some of the actors are connected to the encircled actor while others are connected to the actors within the encircled actor. There are two types of information flows, 1th and 2nd. 1th information flows are presented with red lines between different actors and describe main information flows regarding a specific DCP offering. 2nd information flows are presented with blue lines between different actors to describe main information flows aimed for developing future potential offerings. This in order to present the connections and information flows within and between both Ericsson and Orange more visibly.

Figure 7: The System Map illustrates what kind of information is transferred between actors within Ericsson’s Device Connection Platform
1. Interviewee D describes this connection as the Sales & Marketing contacting Orange to chair them or make them understand the DCP from a business perspective. Sales & Marketing explains the advantages of the DCP and what reductions it will make. Based on the current services, or the offerings of the DCP, Orange has the opportunity for having requests, new requirement or features. Between those actors the agreement gets signed interviewee E explains.

2. Interviewee D describes new standards and requirements like opportunities for Ericsson. Those requirements usually come from the customer to have a different functions or services or improvements of the existing service.
   a) The SDM will raise the non-standard requests, new requirements from the customer that will imply a new solution to be designed and implemented in the platform, to Product Management.
   b) Sales & Marketing will then raise these requests to Product Management.

3. When Product Management have taken new decisions they will send an order or an assignment to R&D interviewee B explains.

4. R&D has close communication with Release Management according to interviewee D.

5. Ericsson also have some cases where R&D and Release Management propose new features and new services, thereafter the new service is initiated from the DCP and offered to Orange. This due to see if the customers are interested in this new service interviewee D explains.
   a) From R&D to Orange. It is also common that the customers that have had contact with R&D a few times sometimes go straight to R&D with problems or new feature requirements interviewee B says
   b) From Release Management to Orange.

6. R&D gets a sheet from Operations interviewee E states.

7. R&D gets requirements from System Service interviewee E says.

8. New improvements, new features and new services are offered to all customers onboard with the DCP. Release Management have the main responsibility to inform the Service Delivery Managers that are signed with each customer interviewee D states.

9. Release Management will trigger different actors from Ericsson’s side and as they develop the solution they will handover and explain it to Operations. So that Operations will be ready once the feature is deployed to support their service interviewee D states.

10. Interviewee D describes; once the implementation is done Ericsson will have their Assurance Team perform tests before the handover to the customers. That’s the first step of going commercial of the service interviewee D says. In order to be able to perform the tests Assurance Team is connected to System Integration Team.

11. Interviewee D also explains once the project is near prosecution Ericsson will involve the System Integration Team, the team that makes the implementations and configurations for the customer. They are directly connected to Product Management interviewee D further describes.

12. Service Desk collaborate with Assurance Team regarding the requests from the customers says both interviewee D and F.

13. a) Assurance Team raise these requests to the Service Delivery Manager together with Service Desk interviewee D says.
   b) Service Desk raise these requests to the Service Delivery Manager together with Assurance Team interviewee D says.

14. Interviewee D describes that depending on the issue, if it’s required for a new improvement, a new design feature or improving a feature Assurance Team will trigger R&D and Product Management based on the
actions that will have to be taken to repair the incident.

a) From Assurance Team to R&D.

b) From Assurance Team to Product Management.

15. During the initial phase before going commercial, Ericsson have one actor for each project, the Service Delivery Manager, that is the primary speaker to Orange interviewee D states. After the deal have closed the SDM is the main speaker with the customer with escalations for business requirements etc. Any new requests, new improvements or new features that the customers may have, they will raise this to the SDM interviewee B and D say.

16. Interviewee D states that the Service Delivery Manager will inform Sales & Marketing of the new requests, which they will analyse.

17. Interviewee E states that Product Development gets requirements from Sales & Marketing.

18. Sales & Marketing interact and gets support from Engagement practice says interviewee E.


20. There is a direct engagement between Account and Operations when it comes to customer support. This to make sure things work, as they should at all operation sites interviewee E describe.

21. Interviewee B and F describe that Orange’s Network Operations contact Ericsson’s Assurance Team if any problem occurs. In some other cases it’s our Assurance Team that contact Orange’s Network Operations interviewee F states.

22. If the customer has some issues or problems they will first contact First Line interviewee B explains.

23. Both interviewee B and F state that if the First Line is having problems solving the customer issues they will forward them to Second Line.

24. If Second Line is not able to solve the problems they will forward it to the specialists that have refined most of the service, which is the Third Line interviewee B states.

25. First Line in NOC decides if it’s a reoccurred problem and needs to generate a problem ticket, if so they forward it to Problem management.

26. Interviewee F says that information gets transferred from Second Line to the Incident Management if they are not able to solve the problem.

27. The function Incident Management contacts Third Line for high difficult incidents to figure out where the issue is coming from interviewee F states.

28. After that R&D has refined the feature it has to be operated which is why they will send it to Development & Operations. They will make the changes in the network and implement the changes interviewee B states.

29. Interviewee B says that Development & Operations collaborate with Change Management regarding the implementations in the network.

30. When Development & Operations has installed the deployment for the service they will send it to Operations interviewee B states.

31. Interviewee B describes the Service Delivery Manager as the front person. Operation Assurance Manager is the manager of the SDM and therefore helps them when they face complications.

32. Interviewee B describes that Key Account Manager at Ericsson have relations with the Purchaser at Orange.

33. The Operation Manager is the manager of the Operation Assurance Manager interviewee B states.

34. Operation Manager send an assignment, a Working Level Agreement (WLA), to the Network Operation Centre interviewee B explains. A WLA contains the budget for the project, number of people included and what is expected from them.
35. The Customer Unit within Ericsson is included in the end of execution of the service. They work close to Orange and are also located close them. Customer Unit will discuss the sales with the customer once Ericsson go commercial with the DCP service interviewee D explains.

36. Interviewee B says that Key Account Manager has the responsibility of Customer Unit.

37. Capacity Management in the Engineering Function uses the nodes to get measurement data dependent on the numbers of customers using the service. Engineering function receives forecast-information from the customers.

38. The Solution Architects are responsible of delivering the solution design and to support Orange during integration interviewee F states.

39. Interviewee B says that there is an information flow coming from Orange to Fulfilment.

40. If the Orange is not satisfied they will contact Customer Operation Manager that has the main responsibility of the NOC interviewee B states.

41. DCP Sales Support helps Orange during the selling process of the service to the sub parties’ interviewee B states.

42. Service Desk has the main communication with Orange in turns of them having standard requests such as new service requests, incidents or new features for example invoices, billing or reports interviewee D and F state. Orange put potential requests at Service Desk interviewee F concludes.

43. Interviewee C describes that Orange have a Sales department that sells the service to the Sub Parties.

44. Orange has an Engineering Function that will make sure to connect Orange’s network to Ericsson’s network by which is linked to Fulfilment at Ericsson interviewee C says.

45. Interviewee C states Network Operations is the one the Sub Parties contact if something does not work. If any of the Sub Parties have an incident they go directly to Orange’s Network Operations interviewee F also says.

46. Sales & Marketing at Ericsson sells the DCP and collaborates with the Local Sales within Orange interviewee B states.

5.4 Analysis of the System Map

Some of the Actors Maps made by the respondents at the interviews were ambiguous and difficult to determine what they had written. In those cases more weight was put on the connections the respondents had been describing. However the maps were of big help as an additional support to the descriptions and to clear out confusions caused by imprecise information. Many of the respondents defined the same actors but in some cases the description of the connections and the information flows to other actors differed.

Engineering Function contains the actor Capacity Manager and are combined as one actor. The same goes for Operation that contains the actor Operation Manager. This due to the specific responsibilities of the Capacity Manager and the Operation Manager couldn’t be distinguished.

Second Line is connected to both Third Line and to Incident Management. The result of this could in fact be more connections in the Actors Map than it is in exiting system. To analyse the credibility of the connections the distance in number of connections from the respondent to the mentioned actor can be
counted. Interviewee F states that Second Line will forward information to Incident Management who sends it to Third Line whilst they have addressed the high difficult incident, which can be seen in figure 8. Interviewee B on the other hand states that Second Line will send the problems they cannot solve directly to Third Line, see figure 8. The respondent that is fewer connections away might be more aware of the actors they are closest to. Counting the connections on the other hand does not have to indicate how far away the actors are from each other. If it’s a big actor such as Orange or R&D there are almost certainly more connections within these actors.

Figure 8: The System Map showing that Second Line is both connected to Third Line and to Incident Management.

However, respondent F is connected to only one other actor, which signifies it’s a smaller actor with fewer assignments. Respondent B is connected to Service Delivery Manager, which is one of the central actors connected to and exchanging information with several other actors. Respondent B might therefore have a better overview of the actors and the activities which would therefore indicate a higher credibility of respondents B’s Actors Map.

If the actor is a department or contains a group of people it can implicate more connections within this actor contrary to what the map shows. Those actors that are connected to only one other actor in the
Actors Map probably have more connections, such as Product Development, Engagement Practice, Solution Architects, Fulfilment, COM and DCP Sales Support. Among these the three last mentioned actors are three connections away from the respondents that are mentioning them. The reason why Fulfilment, COM and DCP Sales Support only have one connection could be the respondent is too many connections away from the mentioned actor and therefore have a poorer overview.

The result of the various connections is clearly affected by each respondent’s answers. The fact that the entire research is based on interviews and different respondents views on various connections, limits the critical questioning of the credibility. For further studies could further interviews be conducted where both new respondents would study the obtained maps as well as reconnect with former respondents to study the maps.

Interviewee B described that certain information is not taking the formal way, or at least not the why it is intended to. An example of this is when the customer earlier been in contact with R&D they feel more comfortable to contact them directly regarding requests for enhancements or new features. This could be problematic when several steps are skipped in the information flow and other affected and actors that should be involved get to hear about it much later on.

The final result of the System Map differs a lot from each respondent’s map which was drawn during the interview. This indicates that mapping out the actors and their connections is a good way to visualise how the interactions and the information flows within a company and between two companies actually looks like, in comparison to what each employee seems to think it appears. Examples of the differences between the respondent’s map and the final result of the System Map including all respondents’ answers can be seen in Appendix C: Comparison between System Maps.

5.1 Concluding Discussion and Conclusion
During the interview it would be of convenience to ask about the size of the actor. If the respondent would consider the actor as an individual, a group, a function or a department it could have been useful during the analysis of the connections. The number of connections of an actor can imply that it is a big actor including others. This could have resulted in more encircled actors including other actors. It may also be the fact that the actor cannot be divided into smaller actors without going into details in a large extent. An actor with many connections is however an opportunity for improvement. The connections should be examined to determine whether these actors need reinforcement.

Another aspect that is important to consider is the credibility of the respondents’ answers especially when the information differ from another respondent. By counting the steps from the respondent and the described actor is a way to determine how reliable the information is compared to a respondent who is fewer connections away from the same actor described. This method is, however, not entirely reliable because it is impossible to know whether the number of connections within one actor could be
even more. Thereby it may even be more connections of a respondent that seem to be close to the actor described.

It is of importance for the information to go the formal way to not leave out any actors that are in need of the information. Even though information can get lost during the way if many connections between actors are involved, the shortest way is not always the best way. Fewer connections result in a good information exchange between actors who speak the same language regarding a specific topic but can also result in actors concerned not being informed. When information does not reach all actors who require it slows down the process. Many connections may, however, result in information loss on the way since the information needs to pass too many involved actors that may not be in need of the information themselves.

Some respondents had a wide knowledge regarding participating actors while they couldn’t describe each of every actor’s activities or responsibilities as much. Other respondents did not have the wide knowledge of all actors included but could describe the ones they knew further and more detailed. To involve different respondents with varied levels of knowledge benefit the research as a greater extensiveness of information is obtained.

It is important to be able to contact the respondents again in order to ask further questions or follow-up questions. Provided information may seem vague or after analysing the result additional information may be required regarding an actor, a connection or an information flow. If the respondent expressed that it is fine to come back with further questions this should be utilized to improve the quality of the research.

Since Orange is a relatively new customer of Ericsson it resulted in many examples of generalisations regarding their customers and examples containing other customers than Orange. This could have been avoided to a greater extent if the interview questions where addressed, or that the interviewers had been more persistent of examples regarding Orange. This would, however, been influencing the outcome in a negative sense, as the respondent would not have been able to response openly regarding the included actors and their connections within the service.
6 Refinements of the Actors and System Map Methodology

In this chapter interview techniques used for this study and the result of the steps in the process of interviewing are analysed and discussed in order to comprehend how they are suitable for the study. Since there are less information about how to create an Actors Map and a System Map a mapping method is refined while studying the “Orange and Ericsson case”.

6.1 Data Collection Procedure

The preparation activities of the data collections procedure included deciding what interview techniques to use, how to formulate the interview questions and the visual means of the refinement of the Actors and System map.

6.1.1 Preparation Activities

The questions in the interview were decided to be semi-structured, which was convenient when supplementary questions were asked to the respondents if something was unclear. The plan was to conduct both face-to-face interviews and interviews via videoconference. Due to long distances, time and expenses of travel costs four out of six interviews were conducted via videoconferences with employees at Ericsson. During face-to-face interviews it was easier to understand the expressed thoughts of the respondents while they were creating the Actors Map. If anything was unclear additional questions were asked and the respondent could easily explain what they meant by pointing at the Actors Map. More supplementary questions were asked during face-to-face interviews when the interviewer was able to see the Actors Map at the same time respondent was drawing it. For that reason, more information was gained from the face-to-face interviews even though the length of those interviews was approximately the same as the interviews via videoconference.

When forming the interview questions seven stages to plan the interview process was followed. The first stage is to clarify the purpose of the subject, which was done by creating research questions. In the second stage, to be sure relevant data is provided from the respondents, the method snowball sampling technique was used. In the third stage the Research Question Matrix according was used as guidance when formulating the interview questions, see table 2. Since the interview questionnaire was modified the matrix executed once more to ensure the interview questions still covers the research questions, the result can be seen in table 3.

During the interviews the respondents got to draw an Actors Map, to obtain information about connections between actors. With the result from the interview questions and the maps the respondents drew the information was compiled to create an Actors Map and a System Map. When the respondents drew the Actors Map they were asked to include all actors involved in Ericsson’s DCP and to draw the connection between them. The interview were recorded and converted into written text, the drawn maps were also copied. The obtained data about each respondent’s description of the actors and the
connections between them were compared. By examining if more than one respondent provides the same information, the generalizability, reliability and validity of the information was determined. The result of the stages in the interview process can be seen in chapter 6, where the actor’s and their main assignments are presented and in chapter 7 where information exchanges are presented.

6.1.2 Interview Techniques and Questionnaire
When conducting the interview certain questions caused confusion and there were questions not relevant for the outcome. Therefore, the structure of the interview and the questions were gradually refined after each conducted interview. Reformulations were made, irrelevant questions were removed and missing questions were added. Some questions were merged together since the respondent answered both questions at the same time. For the improved interview questions Appendix D: Improved Interview Questions. Since the interview was semi-structured supplementary questions could be asked. In those cases when the same supplementary questions were asked to different respondents were added in the interview questionnaire.

Using the Actors Map caused confusion among some of the respondents who possessed limited knowledge about the method. To make sure all the actors are included after making the Actors Map the interviewer should ask if there are actors involved in the service other than within Ericsson and Orange. This should be investigated in order to find other actors they are closely dependent too that should be interviewed.

To better understand the service a question about how Ericsson look at the benefits for Orange to invest in the service should be added. The same question should be included in Orange’s interview to be able to compare the both companies view on the benefits of the service. When the respondent explains improvement opportunities in the information flow a sub query should be asked why the mentioned improvements are not done today. It is a natural supplementary question and it is important to know if there are any restrictions in the information flow the researchers should be aware of. To get a more holistic view on the improvements of the offering the questionnaire should also contain a question about how the offer can be improved for the customer. The information gained from this question will be useful when analysing the result of the final maps.

Both Ericsson and Orange have been transforming, going from a product focused to a more service focused business. A question about why this transformation occurred in a product service system perspective and what the disadvantages and advantages are should be asked. Finally, if the respondent can recommend who to interview next it would make it easier to find respondents relevant for the study. The respondents have a larger network of people directly connected to the DCP.

Specific supplementary questions that occurred after compilation when summarizing the answers were going to be asked via both telephone and e-mail. However, the respondents were not contacted via telephone because of time differences between the interviewer and the respondent, which made it more
convenient to e-mail the respondent for additional questions. According to Cohen, et al. (2007) e-mails are more time effective and uncomplicated.

When the interview questions were improved another Research Question Matrix was performed to make sure the interview questions still covered the research questions. Table 3 shows the modified Research Question Matrix.

**Table 3: Research Question Matrix based on the improved interview questions**

<table>
<thead>
<tr>
<th>Improved Interview Questions</th>
<th>Research Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respondents Experience</td>
<td>RQ1</td>
</tr>
<tr>
<td>IQ1</td>
<td>x</td>
</tr>
<tr>
<td>IQ2</td>
<td>x</td>
</tr>
<tr>
<td>IQ3</td>
<td>x</td>
</tr>
<tr>
<td>IQ4</td>
<td>x</td>
</tr>
<tr>
<td>Actor’s map</td>
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<tr>
<td>IQ5</td>
<td>x</td>
</tr>
<tr>
<td>IQ6</td>
<td>x</td>
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<tr>
<td>IQ7</td>
<td>x</td>
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<td>x</td>
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<td>IQ9</td>
<td></td>
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<tr>
<td>IQ10</td>
<td>x</td>
</tr>
<tr>
<td>Improvement Opportunities</td>
<td></td>
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<tr>
<td>IQ11</td>
<td>x</td>
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<tr>
<td>IQ12</td>
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<tr>
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<td>IQ17b</td>
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<td>IQ20</td>
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</tr>
<tr>
<td>IQ21</td>
<td>x</td>
</tr>
</tbody>
</table>

6.1.3 **Visual Means of Refinement of Actors and System Map**

When the result of the mapping method was refined studies and thoroughly examinations of the conducted interviews were done. The adaption of the method was divided into eight steps. Step one to four describe how to construct an Actors Map and step five to eight describe how to construct a System Map.

1. Identify the actors
2. Describe the actors and their main assignments
3. Identify the connections between the actors
4. Plot out the actors and their connections
5. Give each connection a number
6) Describe the connections by defining the information transferred between the actors
7) Mark with colours what type of information is transferred between the actors
8) Attach the numbers and the colours to the map

The first step was made to recognize all actors mentioned by various respondents. Each respondent’s interview was worked through separately to find involved in the service. During this step eliminations were done since some actors appeared not to be of importance for the final result. The second step was made to describe the main assignments of the actors by finding similar information about each actor from different respondents’ answers. If more than one respondent described the same actor either with the exact same information or if they described the actor with different connections or activities, the information was merged into one actor in the result. As an Actors Map is composed of connections and information flows between various actors the third step was done to detect all the connections between those. Thoroughly studies were made of the interviews once again to detect the connections between the actors. During this step either a whiteboard or a big blank paper was used for the respondents to plot out the actors and draw the connections between them. This was done in order to ensure not any actors and connections were omitted. The result of step three helped to visualize a first draft of the Actors Map. In the fourth step the Actors Map is illustrated where all the actors and their connections were plotted out by using Visio Professional 2013. Those actors that included several other actors were encircled in different colours.

In step five each connection was given a number to make it more convenient for step six. The sixth step was made to describe the connections between all actors connected to the numbers. As the same as in step two this was done in order to find similarities about what main type of information is transferred between actors from different respondents answers. In step seven the type of information that is transferred between actors was determined and marked with different colours. In the interview the respondents were asked to use red lines for the information flows regarding a specific offering provided. Blue lines were used for information flows aimed for developing future potential offerings. The result of step seven was used for the result of the System Map. In step eight the software Visio Professional 2013 was used to illustrate the final System Map with all actors included, the connections between them, the type of information flow indicated with different colours and the numbers describing each connection.

6.2 Analysis of refinements of the Actors and System Map Methodology

This discussion includes reflections regarding preparation activities for the data collections procedure and the chosen interview techniques for the research. It also includes reflections of the refinement of the mapping method Actors and System Map.
6.2.1 Reflection of Preparation Activities
The method Actors Map and the System Map were refined in the course of the work when applied to the “Orange and Ericsson case”. There are many ways to conduct the method since the information about the methods are vague. For this case there is no correct way to construct an Actors Map and a System Map, therefore the interviews were semi-structured. As Lindahl, (2014c) points out, for the respondents who possessed limited background knowledge about Actors Map, semi-structured interviews are more suitable. There must always be a possibility to ask supplementary questions in a semi-structured interview since it’s impossible to foresee what questions are relevant to ask the respondents. A semi-structured interview is also more suitable for face-to-face interviews since it according to Cohen, et al. (2007) include observing and discussing personal perspectives of the respondents during the interview. However, during the videoconferences supplementary questions were more difficult to ask. Complications to understand specifically what actor and which connections the respondent was describing occurred since the Actors Map was not visible for the interviewer during the explanations.

Tan (2010) describes mapping methods as a way to get knowledge of the current situation of a service. In this case an Actors Map that includes the actors involved in Ericsson’s Device Connection Platform was used. However, the drawn maps differed significantly depending on the respondent. When the respondent drew the Actors Map the interviewer did not interpose regarding the way they chose to visualize it. Instead, if needed, additional questions were asked for more information about a specific actor. In some cases the respondent mentioned information not relevant for the result or information that is included in the delimitation of the study. In those cases the respondents were not interrupted because of the risk of losing important information.

Babbie (2015) points out the importance of preparing the interviews and the mapping method for analysis. This was done by recording the interviews and converting them into written text and taking photos of the maps created by the respondents in the fourth stage. McCracken (1988) claims during the analysing process the data from different interviews should connect to each other. The result from stage four was therefore very useful during stage five in the interview process when comparing each respondent’s description of the actors and the connections between them. Brinkmann & Kvale (2015) describes the sixth stage is done to determine the generalizability, reliability and validity of the information gained from the interviews. The comparison from stage five was used to distinguish if more than one respondent provides the same information, and thus the generalizability, reliability and validity of the information can be determined.

6.2.2 Reflection of Interview Techniques and Questionnaire
After comparing and summarizing the answers from the respondents one final Actors Map was made. The interview did not contain questions about the size of the mentioned actors, whether it was a group of people or an individual, since it did not seem relevant for the study at that moment. By asking this
question a more detailed map would have been created and ease the analysing part to identify non-value giving links between actors. If there are numerous connections to one actor more activities take place at this actor, but to be able to analyse if this is an overburden actor the size of the actor has to be acquainted.

In the Actors Map Orange is connected to several actors at Ericsson. Some of the actors are connected to Orange as a company while others are connected to actors within Orange. Which actors within Orange the respondents at Ericsson were referring to could have been questioned. A more detailed overview of what actors within Orange are connected to Ericsson’s actors would be provided. Also, by adding this question a clearer view of Ericsson’s perspective on the interaction with Orange would have been gained. On the contrary the reason why actors within Orange were not mentioned might be because of lack of knowledge.

During the videoconferences the questions that caused confusion were excluded or asked in a different way. Two of the questions are about marking with colours on the Actors Map depending on what type of information is transferred between actors. To explain this via videoconferences when the Actors Map is not constantly visual for the interviewer was difficult. The questions should therefore be asked in a different way depending on the respondent’s way of being comfortable with drawing an Actors Map and how they decide to picture it. In those cases where the respondent is not familiar with Actors Maps and find it difficult to draw them it would be more convenient to ask for details about what type of information is transferred instead of marking them with colours. After gaining knowledge about the connections and the information flows within the service it was more obvious whether it was 1st or 2nd information flow the respondent was explaining.

When the respondents for the interviews were selected different areas of the DCP were studied. This was done in order to get differences among the knowledge of the respondents. In each interview the respondents were asked for other potential respondents within Ericsson’s DCP that could be of interest for the study. Their suggestions indicated that they had understood the topic but at the same time a lot of trust in the respondents suggestions were taken. It would have been more convenient to create a first draft of an Actors Map after one or two interviews to make sure that respondents got included from at least all bigger departments.

6.2.3 Reflections of Visual Means of Refinement of Actors and System Map
Since there are limited previous research regarding the method Actors and System Map the research and the improvements are based on “Orange and Ericsson case”. The eight steps of how to perform the method intend to be applied to prospective studies of companies. However, the eight steps might need some adjustment when applied to other studies of companies since this study is based entirely on one specific case.
During the first step eliminations regarding the actors were done since some of them were not connected to any other actors. This resulted in additional work when important connections got lost since the eliminations were made in such an early state. The issue was detected in step four where studies of the connections were made. Some actors did not seem to be important but they did turn out to be important even if accurate information regarding them were missing. To avoid extra workload eliminations should not have been done until after the respondents got contacted again to confirm the importance, the activity and the connections of those actors.

When the method of Actors and System Map was refined it was noticeable that it’s essential to limit the work. In the “Orange and Ericsson case” study, both companies depend on other enterprises that could have been important to include in the maps. One of the delimitations for the thesis were however not to include any enterprise customers. This in order to focus on the two companies that are direct affected of the service and also to make the maps as detailed as possible. Nevertheless, for further studies the thoughts of the enterprise customers would be a valuable aspect to include.

The respondent’s reflections of creating an Actors Map were examined in order to be able to develop the method. Since most of the respondents had not done something similar before many of them thought it was difficult to remember all actors included in the DCP. Even though they recalled more actors during the interview they also defined it problematic because of the complexity of all actors included in a service. Although many respondents described constructing an Actors Map as difficult they also expressed it’s a good method to visualise different actors in a service since it is clearer what is efficient and what can be optimized. They also describe that it facilitates knowing which actor to contact or the priorities of a specific task.

Some of them also expressed the complexity of creating a detailed Actors Map. Meaning that it would take more effort than what would be gained from optimising the information flows. It is therefor of importance to think through the purpose of using the method and based on that delimit the work before starting the study.

6.3 Concluding Discussion and Conclusion

When an interview contains using a method the respondent is not familiar with semi-structured interviews are most suitable. More information is obtained via face-to-face interviews when the Actors Map is visible for both the respondent and the interviewer. Face-to-face interviews facilitate asking supplementary questions when something is unclear, also discussions and new ideas can easily be brought up during the interview.

Improving the interview questionnaire by reformulating, adding and removing irrelevant questions did not change the Actors Map or the System Map. On the other, a more adequate basis for analysing the maps was obtained, such as the reflections of the respondents and improvement opportunities.
Changing the interview questions made the questionnaire longer. The main focus in the interview is the method of drawing an Actors Map. The interview questionnaire should not be unnecessarily long because of the risk for focusing too much on other topics in the questionnaire rather than on the construction of the Actors Map. When changes are done in the questionnaire Research Question Matrix is an appropriate method to ensure the research questions are still covered by the modified interview questions.

Actors Map is a useful method to visualise different actors within a service and it is apparent what is efficient and what can be optimized. Since the interviews are semi-structured it is more convenient to let the respondent draw the Actors Map without being interrupted. The supplementary questions should be asked afterward depending on what is unclear. When selecting respondents it is important to interview people from different actors. Interviewing actors from different parts of the DCP with different assignments will result in a map with a broader level of data.

It is of importance to think through what result is expected from using the method Actors’ map and System Map. Creating the maps could take more effort than what could be gained from optimising the information flow. There are no limits how detailed the maps can be constructed, therefore delimitations should be made to ensure getting the result that is desired. When deciding what actors to include in the Actors Map it is important to include all the mentioned actors and do not eliminate any actors until in the end.
When providing and buying a service there are a lot of advantages. As DeVincenzi & Rackham (1999) describes the strategic value customer to want a partnership where both part collaborates and develop the service. By doing this it would increase the opportunity to jointly enter new markets and provide new customer experiences for the sub parties. Tukker (2004) describe it as a way that allows the companies to improve their competitive position in the market. Also it is of importance that everyone works towards the same goal and all included parties have to be successful also described by Tukker (2004). This will gain both Orange and Ericsson since the value is shared and they both should strive to get jointly more value. So one of the main advantages is that even if the provider and the customer need to share more, they will earn more at the same time. According to DeVincenzi & Rackham (1999) there are three types of customer and Orange would probably be the intrinsic value customer. This customer is described by DeVincenzi & Rackham (1999) as someone who just needs the provider to deliver the product and does not see that they would need additional help. Sakao (2013) points out the uncertainties when cooperating. According to Sakao (2013) companies often have their own logistics systems, different information systems or different organizational culture. Interviewees at Orange stated that from the technical perspective they are not used to not knowing how the technical part works since they have always provided everything for themselves. On one hand they do not have to operate it but on the other hand they feel uncomfortable not having a completely view of how the platform in fact works. Tukker (2004) describe this as a benefit for the customer since this allows them to concentrate on their core activities. Tukker (2004) also describe PSS as a good way of having a long-term relationship between two companies which makes it important for Ericsson as a provider to keep in mind Oranges feelings of discomfort not knowing much about the technical parts.

Matsumoto, et al. (2011) are bringing up the importance when selling products, companies constantly need to update their products or sell new models in order to survive market competition. Interviews at Ericsson brought up the importance of always keeping the customer happy when selling a service otherwise they will go to another service provider. They also brought up the difference in selling a product as a physical object and a service, saying that once you shipped off a physical product you cannot change anything. Comparatively with a service that can be modified even after it has been delivered to the customer. Ericsson has worked with the DCP for a long time and has a system to handle customer requests for enhancements and new features. This helps them to satisfy both their customers but also the sub parties and to stay updated on the market.

Interviewees at Ericsson brought up the importance of structuring the work and for the including parties to know how to compete on the market. According to Osterwalder and Pigneura (2009) business model describe the rationale of how an organisation creates, delivers, and captures value. Then out of the business strategy the company elaborate competitive advantages.
Ericsson also points out the competitive advantages by structure an internal logic within your firm by using mapping methods in order to satisfy customers. Bensoussa & Fleisher (2007) pointing out that this can only be done by looking from the point of view of both the customer and the market. By doing that and by marking and designing the organisation the company will reach their goals and stay competitive on the market.
8 Analysis of Improvement Opportunities

Ericsson and Orange have the common interest to deliver what they think is valuable for the sub parties. Therefore, there is plenty of room for improvement when it comes to strengthen the relationship between Ericsson and the customers of Orange, especially for bigger sub parties that are more important. Below the improvement opportunities received from the interviews at both companies and their perspective are presented.

8.1 Orange’s Perspective

The respondents at Orange were asked if they see any complications in the existing information flow between Orange and Ericsson and how Ericsson can improve the DCP for them as a customer.

According to interviewee J the problem is that it’s an on-going project and Orange has not defined who will be in charge of the interaction with Ericsson. People within orange are also resistant to new solutions and even though it is a new process they want to use the existing tools, the existing ways, etc. A new way to work has to be integrated when information starts coming from Ericsson’s DCP which is a new project respondent J explains.

Respondent K states that as well as Orange, Ericsson has a commercial interest. The main difficulty is that the DCP is not completely refined. One of the demands for Orange is the ability for them to use MCC-SIM. Orange work with GEMALTO, which is a third partner of the project and they are the provider of the SIM-cards. Orange doesn’t have the knowledge of the functionality in MCC respondent K explains and this is mainly because Ericsson is under the implementation of this functionality and therefore don’t have detailed information about it. The problem for Orange is to discuss future orders with GEMALTO since they don’t know what the project will cost in the end. According to respondent K the solution is to discuss with Ericsson what functions Orange is going to offer their customers. It would also facilitate for Orange to know Ericsson’s future roadmap and what they will be offering in the next months.

Ericsson could improve the DCP for Orange by exchanging more information with them and not only with Marketing, such as defining what they want but also technical aspects. Respondent K states that at present Orange doesn’t have a lot exchange with the people who are in charge of the development of the DCP. It is important for Orange to know Ericsson’s time frames and when the functionalities are available in the DCP in order to prepare to launch the project. Respondent K suggests both companies need to have much more regular meetings. It is very important to be synchronized respondent K concludes. Orange and Ericsson don’t have a close collaboration, however according to respondent K it is because there are a lot of discussions between other operators in the GMA alliance and it is not clear what they want in the organization.
According to respondent I, improvements can be done in the process when discussing new requests with Ericsson Product Line or with Ericsson France. Ericsson France is talking a lot with Product Line but respondent I thinks it is not really efficient. To make it more efficient Ericsson should have a better process when it comes to explaining what could be changed in the requests. When Orange sends a request to Ericsson and ask for feedback it takes around two or three weeks to get an answer, because at the moment there are no regulations. This makes it difficult for Orange to plan and not having a specific date makes it complicated. Respondent I think the process could be improved if it had at least some deadline.

Respondent I states there are complications in the information flow because of the maturity of the project. Sometimes the technical team at Orange is not aware of what kind of information is exchanged between Marketing at Orange and Ericsson. In some cases the topic has a technical impact which is not seen by Marketing, because they are focusing on their own part. To solve this respondent I explain Orange need to make Ericsson understand they need to be involved early in the process to be able to identify all the impacts.

Another complication in the information flow is during technical incidents and Ericsson’s way to handle it, respondent I states. Ericsson should improve their technical skills to be able to explain the reason for the technical incidents and provide Orange with feedback. According to respondent I the problems stop by itself without them knowing what actually happened. Respondent I think it is very important for Orange to understand the problem because they have their own platform and a lot of traffic from their customers. Therefore, if the problem has an impact on their platform the consequences will be huge if the platform stops working.

8.2 Ericsson’s Perspective
The respondents at Ericsson were asked if they see any complications in the existing information flow and how the information flow can be improved.

The department of R&D work very closely with Sales & Marketing to implement requests from their customers. The issue according to interviewee C is when the sub parties has a demand to develop a new feature or an improvement of a feature they contact Orange. Thereafter Orange contact the head of Sales in attempt to explain the desired requests from the sub parties. In the last step the Sales department retails the requests to Ericsson’s R&D. The problematic part of this according to respondents C is the risk for the requirements from the customers to get modified along the way while passing many actors. Another issue is that the requirements are either very concrete that R&D is confined to one particular way to implement it or the requirements are very obscure interviewee C says.

Improvement could be made if Ericsson had an insight into the relationship between Orange and Orange’s customers respondent C explains. In order to be able to develop the feature during the
development process R&D should get input from the sub parties. While developing the feature there should be a discussion between R&D and the sub parties regarding the requirements of the sub parties. This strategy would lead to a better feedback, a more efficient product development and also a customer that is more satisfied with the service respondent C says.

Another complication according to respondent C is that Ericsson has customers spread all over the world and their R&D departments are only located on a few places. The capability to have this kind of interaction between Ericsson’s R&D and the sub parties is needed despite time differences. Respondent C suggests keeping contact with the sub parties via videoconferences such as Skype or Lync. However, by having a close interaction trust issues will occur between Ericsson and Orange respondent C implies. Orange must trust and accept Ericsson’s R&D is talking directly to the sub parties. This would improve the interaction.

An issue according to respondent B is when Ericsson sell the service to their customers people at R&D are exposed and the customer keep using that contact person at R&D. Consequently, the information flow does not pass the formal way as it should, instead the customer will use the contact persons within R&D they have been in contact with at an earlier stage.

Another problem according to respondent B is differences in geographical locations of the actors. For example the NOC is located in Rumania, there are three R&D units in Karlskrona and the Operation Manager is in Finland. They all work for different organizational units, such as Business unit global service or Business unit cloud and IP. The organizational units are driven by different goals and have different visions, even the cultural goals and the way to reach them are different both respondent A and B claim. Since they all want to take over more responsibility and in that way grow as a unit they don’t consider what is best for Ericsson’s DCP. The units are not ready to share information and tasks with each other, which makes them compete with each other instead of considering what is best for the company as a whole.

One improvement opportunity for this kind of this issue would be to incorporate Ericsson M2M and separate it from the company Ericsson respondent B explains. Currently Ericsson M2M is included in several other corporations that have to collaborate with several other corporations. In many cases it’s a discussion regarding the budget. If Ericsson M2M would become a separate corporation all the organizational units would work strive towards the same goal respondent B states.

The fact that there are different organizations is also an issue respondent B explains. The manager of the organization give instructions saying how DCP should look like according to them, which makes suggestions from other departments not welcomed. This results in contraries demands from different organizations. A solution for this would be to make one entire organization instead of having different ones, which on the other hand would have been easier to do to from the start when the company was young respondent B says.
Respondent D points out there were some misalignments in the beginning with Orange as they were not sure who to contact and who to address their issues and their requirements. However, those problems have been solved. Orange knows which actors to contact for each phase of the project and currently there are no information flow problems between Orange and Ericsson respondent D states.

There have been issues in the information flow within Ericsson regarding what actors should be involved and how the information flow should be transferred between different departments respondent D says. In some cases the right actors for a specific assignment were not involved. To solve this problem respondent D suggests informing the actors involved in an earlier stage.

Respondent A thinks information from the customers to Ericsson is not enough, which is another problem area. When the customer has a problem they want get fixed more feedback can be gained from these trouble reports. When the customer explains they have a problem either in the software or in the hardware it gets fixed locally or it has to go back to the design to repair the software. The feedback doesn’t say in what way the customer would like it to be instead, which is a problem according to respondent A.

Respondent A also expresses another problem. The company is so busy looking at the next version and trying to get some of the features that are asked for. Usability and storability are really low on the list. When a customer says they would buy more from Ericsson if they had a specific feature Ericsson designs this feature. However, when the feature has been built in the service the customer doesn’t want to pay for it anymore. The problem is that these specific features get very high priority. To solve this Ericsson need to analyse if they are profiting from individual features or if they are making enough money of enough customers respondent A concludes.

According to respondent A PSS is something that has to be considered. Ericsson has done business with services and products in two completely different business units. They are separated business units with different profitability. When services and product were separated and reorganized it pushed the value of services up and Ericsson started to profit from services. The next step is to combine those. Ericsson has to start with one or two products just to see how it works and have a more system view and be more solution focused. Respondent A, think that would be a big step forward and the service DCP is a good example.

8.3 Concluding Discussion and Conclusions
Both Orange and Ericsson are mentioning issues in the collaboration that should be brought up and discussed between the companies. There is potential to solve some of the problems by being aware of what both companies see as problematic.

An issue according to Orange is the lack of information from Ericsson about what functions they will be offering in the next months. It is important for Orange to be able to discuss future orders with their
third parties and what functionalities will be available. However, Ericsson is still developing the DCP and don’t have detailed information about what features they will launch in the future.

Orange also mean there is a lack of information when they send a requirement to Ericsson and asks for feedback. Sometimes it takes around two or three weeks for Orange to get an answer, which makes it difficult for them to plan their work process. Ericsson in contrary think in order to be able to develop the feature R&D should get input from the sub parties. According to Ericsson Orange would be more satisfied if there could be a discussion between R&D and the sub parties while developing the required feature. On the other hand if the sub parties Ericsson exchange information with each other, Orange would feel even more excluded from the service and miss out on even more information. To be able to have this kind of interaction Orange must trust and accept Ericson’s R&D is talking directly to the sub parties.

An issue according Ericsson is when the sub parties has a demand to develop a new feature or an improvement of a feature they contact Orange. If the request goes the formal way it has to pass both Ericsson’s Sales department and R&D. The requirements from the customers to get modified along the way while passing many actors. The reason why it takes time for Orange to get feedback after sending a requirement to Ericsson could be because of the modified requirements which take time for R&D to understand if they get vague along the way before reaching them. If R&D considers changes need to be done to be able to implement the feature, this information has to go back to the sub parties and be approved before R&D can start developing the feature.

If Orange on the other hand contact R&D directly, in hope of getting faster feedback, there is according to Ericsson a risk several steps are skipped in the information flow and actors that are affected and should be involved get to hear about it much later.

Another issue in the information flow between the two companies is when a technical incident occurs. Orange claims Ericsson solves the problem without providing them with feedback and explaining the reason of the incident. Orange feels they should be involved in the solution of the problem in case it has an impact on their own platform. Since they have a lot of traffic from customers the consequences will be huge if the platform stops working. Ericsson claims on the other hand they want more feedback from their customers when a problem occurs. The feedback should contain in what way the customer would like it to be instead. It can therefore be legitimately concluded that both Orange and Ericsson want to improve the information exchange, especially during technical incidents.
9 Conclusions

The study aimed at answering three research questions which are described below. In the following sections each research question is answered by a description of the study’s conclusion.

9.1 Conclusions regarding the Research Questions

RQ1) What type of actors may be involved in a telecom related IPSO?

To obtain information regarding the involved actors in the Device Connection Platform, employees at Ericsson were interviewed. While studying the answers from the respondent’s interviews and the Actors Map that each respondent drew, all actors included in the DCP were emphasized. Also their main assignments were investigated by finding similarities in the respondents’ answers.

RQ2) How can the connections between actors in the telecom related IPSO be illustrated?

The Actors Map of the Device Connection Platform show different perspectives of the actors involved, how they are connected and their main assignments from Ericsson, but also from each respondent’s, point of view. Each actor plays a part in the Device Connection Platform and is of importance for Ericsson to be able to provide it. Also, Ericsson’s perspective on actors within Orange is included in the Actors Map and their perspective of the actors within Orange. Those actors that are mentioned as a group of several actors are encircled in different colours.

The System Map gives visual overview of what type and what kind of information that is transferred between actors within the companies and between the companies. In order to facilitate what each connection and information flow implies all connections are numbered and each number is presented with an explanation. There are two types of information flows, 1th and 2nd, which are illustrated with different colours. The 1th information flow describe specific current offerings within the DCP and 2nd information flow describe future potential offerings.

RQ3) How can the Actors and System Map method be refined?

The mapping method was refined during the “Orange and Ericsson case”. The adaption of the method was divided into eight steps. Step one to four describe the making of an Actors Map and step five to eight describe the making of a System Map. The first step aims to identify the actor’s involved in a service. The second step aims to describe the actors and their main assignments. The purpose of the third step is to identify the connections between the actors. The fourth step illustrates the Actors Map where all the actors and their connections are plotted out. In step five each connection is given a number, which in the sixth step is defined by describing the information transferred between the actors. In step seven the main type of information that is transferred between actors was determined and marked with different colours. Step eight aims to illustrate the System Map with all actors
included, the connections and information flows between them and the numbers that describe each connection.

9.2 Further research
Although the study shows a well-executed and detailed Actors and System Map, the enterprise customers would be beneficial to include. By including the customers of Orange an even more detailed Actors Map could be obtained and the thoughts of improvement of the Device Connection Platform may be different. To get a more realistic view on the Actors Map and the System Map further interviews could be made. Refinements of the created maps could be made by obtaining feedback from further interviews. Interviewing more respondents from different parts of the DCP with different assignments will result in a map with deeper level of data.

Some actors only have one connection in the Actors Map and in the System Map. Those actors could be further investigated to examine what other actors they are connected to. Alternatively, to avoid actors with only one connection boundaries that determine what actors to include could be set.

The result of the study shows Ericsson’s perspective of the collaboration while Azevedo (2015) shows Orange’s perspective on the collaboration. For further investigation of the collaboration the Actors Maps and the System Map from both companies should be compared and combined. This is done in order to be able to discover non-value giving links or non-optimal distances between the companies and between the actors within the companies.

The result of the refinement of the mapping method Actors and System Map are directly applied to the “Orange and Ericsson case” study. For further research and refinement of the method, other cases would preferably be studied.


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Appendix A: Literature search terms

The table below presents each research area of the literature study and the used search terms.

*Table 4: Search terms during literature study*

<table>
<thead>
<tr>
<th>Literature study</th>
<th>Search term</th>
</tr>
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</table>
| Interviews       | Interview methods  
|                  | Interview types  
|                  | Face-to-face interview  
|                  | Process of interviewing |
| Company Background | Ericsson  
|                    | Orange  
|                    | Strategic change  
|                    | Ericsson’s Device Connection Platform  
|                    | M2M |
| Methods          | Mapping methods  
|                  | IPSO methods  
|                  | PSS methods  
|                  | Actors Map  
|                  | System Map |
| Value            | Value based service  
|                  | Functional sales  
|                  | Value based selling  
|                  | Creating value for companies |
| Service Development | Integrated Product Service Offerings (IPSO)  
|                    | Product Service System (PSS)  
|                    | PSS design and planning  
|                    | PSS strategies  
|                    | PSS development process  
<p>|                    | Service sales-force |
| Business Model   | Telecommunication business models |</p>
<table>
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<th>Canvas business model</th>
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<tbody>
<tr>
<td>Business model for services</td>
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<tr>
<td>Business strategy</td>
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<tr>
<td>Strategies</td>
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<td>Organizational change</td>
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<td>Service KIPs</td>
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Appendix B: Interview Questions

Purpose of Master Thesis

When providing an integrated product service offering a large number of actors are involved. An actor can be an individual, a group, a function or a department. The aim of an Actors Map is to provide a visual and clear overview of these actors. The purpose of this map is to support the identification of relevant actors and their involvement and requirements that could be important to consider for the Device Connection Platform (DCP) provided by Ericsson. An Actors Map could also support the identification of non-optimal distances between actors. An Actors Map could also help identifying non-value giving links in the chain of actors that can be omitted.

Respondents Experience

1. For how long have you been working at Ericsson?
2. What are your main work tasks?
3. How is your work connected to the Ericsson’s DCP?

Actors Map

Based on Ericsson’s DCP and your perspective of Ericsson’s DCP:

4. Which main actors (functions/departments/persons) are involved? Please use this paper to plot out actors.
   a. What are their main assignments?
5. What main types of information are transferred between these actors?
   a. Use red lines between different actors to describe main information flows regarding a specific DCP offering (e.g. data about customer problems, service needs, and support). Indicate with arrows the flow direction.
   b. Use blue lines between different actors to describe main information flows aimed for developing future potential offerings (e.g. data about customer needs, and improvement potentials). Indicate with arrows the flow direction.

If needed, break down an actor into several actors and stop when appropriate.

Improvement Opportunities

6. Do you see any complications in existing information flows?
   a. Within Ericsson’s internal information flows?
   b. Between Ericsson and customers (Orange)?
7. How can the information flow be improved?

Reflections
8. What are your reflections after making this actor map?
    a. Was it easy or hard? Why?
    b. Have you done something similar before?
    c. Do you think this could support the identification of non-optimal distances between actors? Why?
    d. Do you think that an Actors Map could support identification of non-value giving links in the chain of actors? Why?

*Final Questions*

9. Is it anything you would like to add regarding previous questions?
10. Is it something you think we should have asked you?
11. Is it okay to come back to you if we have additional questions?
Appendix C: Comparison between System Maps

Below the differences between respondent B, D and E Actors Maps can be seen compared to the final result of the Actors Map including all respondents answers. In respondent B, D and E Actors Maps the mentioned connections are shown with thicker black lines.

Figure 9: The perspective of respondent B
Figure 10: The perspective of respondent D
Figure 11: The perspective of respondent E
Appendix D: Improved Interview Questions

Purpose of Master Thesis

The main objective of the master thesis is to analyse how actors from both a provider and a customer are interacting within a sale of a service. And in this case the provider is Ericsson and the customer is Orange. An investigation of involved actors and how these actors receive and transfer information between each other are also included. This is done in order to enhance the knowledge of how interactions and knowledge transfers between actors can be improved.

The secondary objective is to evaluate how the actor and system maps method can be used for describing actors and processes between a provider and a customer within a sale of a service.

Studying the “Orange and Ericsson” case will do this. The goal is to help Orange to influence what Ericsson delivers and for Ericsson to enhance their ability to provide customer value.

Description of the Method Actors Map

When providing an integrated product service offering a large number of actors are involved. An actor can be an individual, a group, a function or a department. The aim of an Actors Map is to provide a visual and clear overview of these actors. The purpose of this map is to support the identification of relevant actors and their involvement and requirements that could be important to consider for the Device Connection Platform (DCP) provided by Ericsson. An Actors Map could also support the identification of non-optimal distances between actors. An Actors Map could also help identifying non-value giving links in the chain of actors that can be omitted.

Respondents Experience

1. For how long have you been working at Ericsson?
2. What are your main work tasks?
3. How is your work connected to the Ericsson’s DCP?
4. What are the benefits for the customer, Orange, to invest in the DCP?

Actors Map

Based on Ericsson’s DCP and your perspective of Ericsson’s DCP:

5. Which main actors (functions/departments/individuals/groups) are involved? Please use this paper to plot out actors and draw the connection between them.
6. What are the main assignments of the actors that you have plotted out in the map?
7. What main types of information are transferred between these actors?
8. Use **red lines** between different actors to describe main information flows regarding a specific DCP offering (e.g. data about customer problems, service needs, and support). Indicate with arrows the flow direction.

9. Use **blue lines** between different actors to describe main information flows aimed for developing future potential offerings (e.g. data about customer needs, and improvement potentials). *Indicate with arrows the flow direction.*

10. Are there other actors that are involved/depending on the DCP? *Other than Orange and the actors within Ericsson.*

*If needed, break down an actor into several actors and stop when appropriate.*

**Improvement Opportunities**

11. Do you see any complications in existing information flows?
12. Within Ericsson’s internal information flows?
13. Between Ericsson and customers (Orange)?
14. How can the information flow be improved?
   a. Why isn’t this done today?
15. How can the offer be improved for the customer?

**Reflections**

16. From the perspective of different actors, what advantages and disadvantages do you see with service offering compared to product offerings? *By product we mean physical objects*
17. What are your reflections after making this actor map?
   a. Was it easy or hard? Why?
   b. Have you done something similar before?
18. Do you think an Actors Map could support the identification of non-optimal distances or support identification of non-value giving links between actors? Why?

**Final Questions**

19. Is it anything you would like to add or is there something you think that we should have asked you?
20. Is it okay to come back to you if we have additional questions?
21. Is there someone, connected to the DCP, you would recommend us to interview next?