Mika Hyötyläinen

Towards "Service Factory"

- Managing the Complexity of ICT Services

AALTO-YLIOPISTON KAUPPAKORKEAKOULU AALTO UNIVERSITY SCHOOL OF ECONOMICS

A-369

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AALTO UNIVERSITY SCHOOL OF ECONOMICS

ACTA UNIVERSITATIS OECONOMICAE HELSINGIENSIS

A-369

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ISSN 1237-556X ISBN 978-952-60-1033-5

E-version: ISBN 978-952-60-1035-9

Aalto University School of Economics -Aalto Print 2010

Abstract

Background & Focus: This study deals with the design of complex business-to-business ICT services. The importance of business services based on information and communication technology (ICT) has been increasing dramatically since the commercialization of internet and mobile technologies. The successful operation of companies in almost all industries is becoming highly dependent on their ability to harness the breakthroughs in ERP (enterprise resource planning) systems, SCM (supply chain management) systems, and CRM (customer relationship management) systems; all these systems are either based on ICT technologies or utilize them extensively.

The increase in the importance of ICT services involves several challenges, however. Increasing customer demand, the accelerating pace of technological change, changes in competencies and more customized client expectations have all forced ICT service providers to adopt to an increasing number of technologies, methods, tools, processes and conventions at an accelerating pace. This has led to an increase in the complexity of ICT services, creating challenges in service design and development, marketing, implementation, and management. When the complexity cannot be managed, it will lead to increasing production costs and systems failures. Increasing costs and decreasing service quality will ultimately result in customer dissatisfaction and defection.

Goals: This study argues that service design is a critical phase in addressing the described complexity because the design influences service production, implementation, and customer perceptions and satisfaction. Therefore the goal of this study is to construct and validate a framework and toolset for b2b ICT service design to decrease the complexity of these services and thereby decrease their costs and improve their quality.

The provisioning of ICT services itself is a complex, highly social process generally involving the co-operation of several organizational units and their personnel. The information needed in this production chain is typically embedded in processes and generally not documented. This wide organizational reach together with the tacit nature of the information creates challenges when designing ICT services. Existing service management literature provides help in individual tools such as "industrialization", "service blueprinting", "tangibilization", "service scripting", or modelling in general that have been used in the service design process as well as the design process itself. However, current service management literature falls short in providing an overall service model or explaining the

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practical applications of the different models or challenges associated in using them in the context of b2b ICT services.

Methodology: This constructive case study combines existing research from the service management area, strengthens them with knowledge management and social networking models and theories. By means of a literature study and material of eleven different projects in four different case studies, spanning five years and consisting of 326 meetings altogether, a service factory model is constructed and validated to reduce the complexity of b2b ICT services. The model is dived into three different parts: 1) the principles of the service factory approach, 2) the service factory framework and 3) the implementation of the service factory framework. One should note that the technical part of the model – the framework with its tools and process descriptions – is "just" another model. If the overall philosophy associated with the service design approach or the challenges associated with its practical implementation are not properly understood, it will end up being another development project that never delivered. On the other hand, if management realizes the importance of the cultural and implementation issues, they can make significant improvements

Contribution: The service factory model and its evaluation make significant contributions to the service management, knowledge management and social networking theories. From a managerial perspective, the service factory model provides insights into understanding the transition from a product oriented company to a service oriented company and about the implementation of Service Factory Philosophy in a corporate environment.

Keywords: service design, service management, ICT services, service factory, action research

Acknowledgements

In January 2001 I started new duties as a "methodology expert" in TeliaSonera. The title sounded sophisticated, but nobody really knew what exactly it meant in practice – including me. But soon my boss, Timo Auer, explained to me what needed to be done and what was my role in it – I was to design and develop professional services. At that time professional service design and development was a new thing both in academic and in business terms. However, Timo convinced me – the novice with one full year of working experience – that this would turn up to be an area that would be quite important in the future. Now thinking about that moment later on, he was indeed right. The role of service business has risen in importance during the past decade – and so has service design and development.

Quite soon it became clear that this would be the area that would become also the focus of my dissertation for two leading reasons, 1) the area had importance both from an academic and a business perspective, and 2) I would have access to the information of many design and development projects. I talked with my professor, Kristian Möller, about the idea, and he was interested too – even though I was the invisible man of the Marketing department (at that time nobody knew anything about me, including my professor). The deeper I got into the area, the more convinced I and my professor became that this would be an important area for some years to come –my dissertation would focus around the 11 service design and development projects that I was able to perceive as an action researcher.

This ten-year-long journey has given me quite a lot. First, it has taught me much about persistence. There have been times when the dissertation has been the last thing in my mind, but nevertheless I have tried to keep on going and ensuring that it is progressing – slowly but surely. Here I also owe some thanks to Prof. Kristian Möller, because he has been truly subtle in reminding me about the thesis every once a while. Thanks, Kristian. Second, in addition to me becoming quite an expert in the field of service management, I have also developed an ability to conceptualize almost anything. Especially during the last years at work, I have began to notice how this dissertation work has given me an ability to tackle every problem with the same kind of a rigour – find the evidence, interpret them, make the synthesis, test it if you can, adjust accordingly and go on as planned. This ability alone is more than worth this ten-year-long project.

There are many directions into which I should send credits. I would like to start with the inquisition. The feedback and advice that I received from Dr. Raimo Hyötyläinen and Prof. Tore Strandvik encouraged and helped me a great deal. I would also like to thank my employer – TeliaSonera – for this great opportunity to first have this kind of an access to this kind of material. And also that I was able to publish the kind of evidence in this dissertation that normally falls into the "top secret" file. The Foundation of Economic Education and the Research and the Training Foundation of TeliaSonera Finland Oyj for gave me financial support that made it possible for me to concentrate on this study along with my work. Also Mikko Oinonen deserves credits for the quick and professional proofing services I received. Thank you all.

I would also like to thank all those people who have doubted me in any way. You have no idea how much energy I have been able to build just to prove you wrong. Second, I would like to thank all of my closest friends, who have supported me in times when I really have needed their support. Thank you from the bottom of my heart. Third, I would also like to thank all my bosses who have given me enough latitude to push this dissertation forward along with my work. Thank you, Timo Auer, Pekka Nurmiranta, Juha Salin, Juha Sutinen, Gunnar Flinta, and Hanna Viita.

Finally I would like to give my greatest thanks to my soul mate, Ulla-Mari Matilainen, you make my soul glow during dark times. You have given me a kind of love I did not know existed before you. For that I will always be grateful to you.

Helsinki, July 2010 Mika Hyötyläinen

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1 Introduction

This study deals with the design of complex business-to-business ICT services. In this study it is argued that several trends have led to an increasing complexity of ICT services. This increase in complexity shows in increasing production costs as well as a decreasing service quality of ICT services. Furthermore, it is argued that the central aspect in order to control and manage the service complexity is to take it into account already in the service design and development phase. The goal is to study how complex business-to-business ICT services could be properly designed and developed to reduce the complexity, and thereby improve their quality and cost-efficiency.

1.1 Characteristics and Role of ICT Services

The importance of business services based on information and communication technology (ICT) has been increasing dramatically since the commercialization of internet and mobile technologies. The successful operation of companies in almost all industries is becoming highly dependent on their ability to harness the breakthroughs in ERP (enterprise resource planning) systems, SCM (supply chain management) systems, and CRM (customer relationship management) systems; all these systems are either based on ICT technologies or utilize them extensively. Because of this ICT services play a strategic role in the business processes of many companies. For example, the exceptional growth and cost reduction in airline services could not have been achieved without comprehensive application of ICT services (Buhalis, 2004). This observation is reflected in the steady <u>increase of demand</u> for ICT services (IDC, 2003a; IDC, 2003b; IDC, 2003c; Meta Data 2003; 2006, Ovum, 2007a; Ovum, 2007b).

The demand for ICT services is expected to increase among all sizes of companies across industries. When serving customers of many different sizes (ranging from small companies to large corporations), in many different industries (health care, airline, banking etc.) with many different types of services (ranging from compact email applications to large corporate network outsourcing) ICT service providers have had to use many different technologies to be able to serve these different kinds of customer needs. These different technologies are further managed by different tools and methods with different conventions and processes. This has resulted in high complexity among ICT services.

Increasing demand together with the <u>accelerating pace of technological change</u> (Oliva and Kallenberg, 2003) has forced ICT service providers to adopt and invest in many different technologies

to avoid possible lock-out effects (Yoffie, 1997). When the industry development has not yet reached the point where certain technologies are chosen as industry standards, many technologies compete against each other. At that time, ICT service providers are forced to invest in many technologies to ensure that when standards are formed those technologies do belong in their portfolio. Technological discontinuities are very common in the quickly developing ICT industry (Bower and Christensen, 1995).

Although advancements in technology have enabled many dramatic changes in many industries, ICT services are not just mere technical IT-systems – they can be seen as integral systems consisting of many different but interconnected parts. In addition to the core technologies, also intangible service elements, people and processes can be seen as a part of an ICT-service (Heeks, 2002). Consequently, ICT-service is then further influenced by different political, organizational, legal and economical factors in the internal and external environment. As many current ICT services providers have a long history in product business, their capabilities and competencies are very much in technology. They are not necessarily equipped for the different challenges in ICT service business (Rao and Klein, 1994; Oliva and Kallenberg, 2003; Frei, 2008; Uchihira et al, 2008). ICT service providers have not got the marketing competencies needed to deal with the service aspects of their business.

In the transition from IT product businesses into ICT service businesses, companies need to develop <u>a new set of capabilities and competencies</u> (Davies, 2004; Ojasalo, 2009b). Before the benefits of a technologically complex ICT-product can be realized by customers in their organization, this core ICT-product/system needs to be properly offered, designed, delivered and implemented in a project-like fashion to the customer. When the ICT system is implemented, it needs to be managed by the ICT service provider during the entire lifecycle of the ICT system. This service business requires capabilities and competencies that the ICT service provider's organization does not necessarily have but needs to develop (Davies and Brady, 2000). As the ICT services providers are still lacking these competencies that are needed in the service business, they often have not properly designed their services (Gummesson, 1994). This has resulted in service elements that are produced in many different kinds of ways and processes with many different kinds of methods and conventions.

At the same time as the demand for ICT services is increasing, the pace of technological change is accelerating and new competencies are needed by the ICT service providers. In addition, due to the strategic character of ICT services, <u>customer expectations are becoming more and more challenging</u> – reliability is already taken for granted and customization is needed in order to differentiate from competitors (Johnson and Ettlie, 2001; Sharma and Loh, 2009). ICT services play an important part of supporting a company's process and business and in increasingly more cases creating an competitive advantage (Buhalis, 2004). Customers wish that the ICT services they buy are trouble-free – that they really do not have to worry about anything. At the same time customers expect that the ICT services are fitted to their special needs (Davies, Brady and Hobday, 2006). Increasing needs for customization (Davies, Brady and Hobday, 2006) have further increased diversity in the production environment. As a result, many different hardware, software and middleware technologies together with different tools, methods and processes characterize many ICT service providers' operations today.

1.2 Complexity and Design of ICT Services

Oxford dictionary defines the word "complex" as "consisting of many different and connected parts". Increasing customer demand among companies of all sizes, the accelerating pace of technological change, changes in competencies and more refined customer expectations have all forced ICT service providers to adopt to an increasing number of technologies, methods, tools, processes and conventions. By following the aforementioned definition of complexity it can be argued that ICT services have become increasingly complex. This logic is shown in the figure 1.



Figure 1 Sources of increasing complexity of ICT services.

The significant increase in the complexity of ICT services (Kallinikos, 2005; Davies, Brady and Hobday, 2006; Oliva and Kallenberg, 2003) is creating many challenges for all stages of the service lifecycle – service design and development, marketing, implementation, and management. Development

becomes more difficult, as the variety of different software technologies concerning the actual service increases. Marketing and selling become more challenging, as the customers' requirements become more and more unique. Solution design and implementation become increasingly difficult as each customer has unique needs for tailoring. Service management is increasingly challenging as the variety of elements in the ICT service increases in the production environment. If a service provider cannot manage this complexity it will face two kinds of fundamental challenges: 1) increasing production costs and 2) systems failures and poor quality (Davies, Brady and Hobday, 2006; Kaltabani et al, 1999, Raajpoot, Javed and Koh, 2008). Increasing production costs and decreasing service quality will ultimately result in serious problems in customers' business processes and ultimately in customer dissatisfaction (Chapman and Hyland, 2004) and defection. On the other hand, if ICT service providers are able to decrease this complexity, they can turn it into a real competitive advantage.

Generally in any ICT projects a clear majority of the needed time and effort (as well as the probability of success) is decided upon already in the design phase (Artto, 1994) – the same analogy applies when addressing the described complexity of ICT services. In this study it is argued that the service design and development is a critical aspect in addressing the described complexity because the design ultimately influences service development, marketing, implementation, production, and in the end customer perceptions and satisfaction (Bullinger, Fähnrich and Meiren, 2003; Hyötyläinen and Möller, 2007). In a case of new ICT-services the service design can be influenced already at the drawing board, when designing ICT-services. With existing ICT-services the service design can be influenced when developing these ICT-services further. According to ITIL (IT Information Library) terminology, the service development aspect is always present in service design (OGC, 2007), so from this point onwards service development will not necessarily be separately mentioned in the context of service design.

The provisioning of ICT services itself is a complex, highly social, process generally involving seamless co-operation of several organisational units and their personnel (Arnoud, 2007). Typical units include product management, product development, sales support, support systems etc. The information needed in this production chain is typically embedded in processes and generally not documented. It is usually only stored in the minds of people and is highly context-dependent (Paton and McLaughlin, 2008). When designing and developing ICT services, the information has to be gathered from many different individuals who have differing backgrounds and ambitions, across many organizational

boundaries with differing and some times even contradicting roles and goals. This 1) <u>wide</u> organizational reach (many different people from many parts of the organization) together with the 2) tacit nature (embedded in processes, stored in minds of people, and highly context depended) of the information creates some challenges when designing ICT services.

In order to successfully carry out the ICT service design and development phase of the life-cycle three aspects need to be addressed. In its core, ICT service design and development is a process with a certain goal and output. The process follows certain phases during which certain tasks are performed. During the process different methods and tools are used and applied. This forms the core of ICT service design and development. So the key aspect of ICT service design is: <u>1) what is the process used and what are the methods and tools applied in ICT service design and development?</u> However, the application and usage of the process, tools and methods is not so straightforward. As described earlier, 1) many people from various parts of the organization take part in that design process and 2) the information that is needed in applying the different tools and methods is mainly stored only in the minds of these people and is highly context-dependent. This leads to two additional aspects: <u>II) how to access the tacit information that these people have</u>. Complexity and these key aspects of service design are summarized in figure 2.



Figure 2 Complexity, its effects and the aspects of service design.

1.3 Gaps in Service Design Research and Positioning of the Study

In the previous chapter three aspects were identified that need to addressed and understood in to order to successfully design and develop ICT service and thereby manage the increasing complexity.

- I. what is the process used and which are methods and tools applied in ICT service design and development,
- II. how to manage and motivate the people taking part in the design and development process,
- III. how to get a hold of the tacit information that these people have

As the role of services in general has risen in importance along with the increase of their share of GDP (Gross Domestic Product) (Larsen, Tonge and Lewis, 2007; Liu and Wang, 2008; Ojasalo, 2009b), research interests towards service design and development have increased too. As a result, Service Dominant Logic has begun to examine what exactly happens in the service provider – customer

interface. Although Service Dominant Logic examines quite thoroughly the value creation logic between the service provider and the customer – or in the co-creation instead of production together with the service provider and the customer (Vargo, Maglio and Akaka, 2008; Ballanthyne and Varey, 2007) – and brings new perspectives to the phenomena, it does not concentrate that much on service design in the sense of conceptualization. Later in this study the ideas of Service Dominant Logic and how they reflect to this study are discussed in more detail, but more generally service design in the context of this study is viewed more as a conceptualization challenge than value creation challenge.

There is some service management literature that has focused on service design as a conceptualization challenge. Some of these studies have focused on different tools - such as "industrialization" (Levitt, 1972, 1976; Quinn and Paquette, 1990; Quinn et al., 1990), "service blueprinting" (Shostack, 1984, 1987), "tangibilization" (Levitt, 1981), "service scripting" (Solomon et al., 1985), or modeling in general (Bullinger et al., 2003) that have been used in the design process. Others have focused on the design process itself (Scheuing and Johnson, 1989, Vaattovaara, 1999; Kaitovaara and Hyötyläinen, 2003; Bullinger, Fähnrich and Meiren 2003, Kaitovaara, 2004). However, considering that the design process together with tools and methods forms the most fundamental aspect of ICT service design, it can be said that the existing service management literature is not adequate. The process models vary a lot in terms of their depth and degree of detail and their practical applications are somewhat insufficient. Moreover, each of the different tools and methods has its own, unique perspectives but no attempts have been made in order to integrate them. The tools and methods too lack evidence of practical applications. Three shortcomings can be found in the existing service management literature. Within the existing service management research, very little has been done to i) merge the different methods, ii) describe the design process in detail or iii) present their practical applications – at least in the context of b2b ICT services.

As explained earlier, the wide organizational reach of ICT service production means that there are many different roles when designing the services – each responsible for a particular function necessary to produce the particular service. This network of people that is needed in the design and development extends many organizational borders and is not easily managed (Bullinger, Fähnrich and Meiren 2003). Service design and development requires demanding orchestration of this people network (Mager and Evenson, 2008 Pinhanez, 2009). The heads of different functions may have overlapping or contradictory goals and therefore their justification, for any project that requires their resources, is

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needed. This role of people is currently not sufficiently emphasised (Ng, Maull and Yip, 2009). Existing service management literature – in the context of service design – examines this human aspect or social network aspect only superficially. Often it is merely stated that services are very person related and that the organizational reach is wide. Because the management and motivation of the people involved in the service design process are some of the critical aspects in terms of success, it can be said that existing literature comes short in this regard – little research has been made to iv) study a set of key persons involved in the design and development process either on a theoretical or practical level.

As discussed earlier, the information needed in producing ICT services is mainly embedded in processes, only stored in minds of people, not documented, and highly context-dependent. This poses severe challenges on the design of ICT services. The persons have to be found that possess the right information, the information has to be codified, justified, applied and then sold and trained to other parts of the organization. By selling is meant that the people have to be convinced of the new information and that they have to sense that it will somehow make their lives easier. Existing service management literature has dealt with the tacit nature of the information in service design on a quite superficial level. It has been merely noticed that the information is in fact tacit and it therefore poses some challenges. Considering that the information aspect forms the third critical aspect in service design, the existing literature falls short also in this regard – little research has been conducted to v) examine the process of knowledge creation and transfer in service design either on a theoretical or practical level.

To be able to properly address the three different aspects of service design and thereby design ICT-services in a way that reduces the complexity of the services, five different research gaps described above can be detected:

- i) merging of different methods and tools,
- ii) detailed level description of the design process,
- iii) practical application of the process as well as methods and tools
- iv) number of key persons involved in the design and development process, and
- v) knowledge creation and transfer in the service design process

Existing research in the area of service management provides a solid ground to further study the service design process as well as the tools and methods. Therefore, the first three research gaps (the merging of different methods and tools (i), detailed level description of the design process (ii) and practical application of the process as well as methods and tools (iii)) will be addressed through service management literature. Addressing the two remaining research gaps (social composition of the process (iv) and knowledge creation and transfer (v)) proves to be somewhat more problematic. Existing service management literature provides very little assistance in addressing these gaps and definitely falls short in this area. In order to properly address the two latter research gaps, service management literature needs to be strengthened with models and theories from other areas.

Considering the fourth research gap of social composition of the service design process, social networking literature provides some useful models and principles that could be used and applied to address this research gap. From this perspective, the service management literature will be reinforced with social networking literature. As knowledge management literature provides very good and solid models and frameworks dealing with organizational learning, knowledge creation and transfer, the fifth and final research gap of knowledge creation and transfer will be addressed through it. So from this perspective the service management literature.

The theoretical positioning of this study will be done based on the available models and theories from service management, social networking and knowledge management literature as discussed ahead. The service management literature forms the core theoretical basis and it will be further strengthened with social networking and knowledge management models and theories. This positioning is shown in the figure 3.



Figure 3 Theoretical positioning of the thesis.

In addressing the identified research gaps, by combining existing research from the service management area, strengthening it with practical applications and further fortifying it with knowledge

management and social networking models and theories, this study is to make a significant contribution to the service design research.

1.4 Objectives and Research Strategy

1.4.1 Objectives of the Study

Several trends have led to an increasing complexity of ICT services. This complexity has created significant challenges for ICT service providers in forms of increased lifecycle costs as well as decreased quality. The best way to address the described complexity is to take it into account already in the service design and development phase. However, the existing literature falls somewhat short in the ICT service design area. In fact, five research gaps were identified as described earlier. The perceived research gaps will be addressed by constructing and validating a holistic framework and toolsets for b2b ICT service design. Thus the main research objective of this thesis is:

To construct and validate a framework and toolset for b2b ICT service design to decrease the complexity of these services and thereby decrease their costs and improve their quality.

The logic between the trends, complexity, research gaps and objectives is further elaborated in the following figure 4.



Figure 4 Logic between the trends, complexity, research gaps and objectives.

Beginning from the left side of the figure, there are four important market trends that are currently shaping the ICT industry. These trends have lead to increasing lifecycle costs as well as the decreased quality of ICT services. The single most focal reason behind this is the increased complexity. In order to decrease the lifecycle costs and improve service quality, the complexity of ICT services needs to be properly managed. The best way to do this is take it into account already in the service design and development phase. Existing research proves to have some gaps that need to be addressed, based on which the objectives of the research have been formulated.

The main research objective of "constructing and validating a framework and toolset for b2b ICT service design" is further divided into three sub-objectives:

- 1) to construct, & validate an ICT service design process model and identify individual phases in it which can be used to decrease complexity of b2b ICT services,
- 2) to research, identify and integrate suitable methods and tools into a model that can be used in that process, and
- 3) to examine and model the application of the process and methods from knowledge management and social networking perspectives in order to identify the most critical phases.

This is also shown in figure 5.



Figure 5 Research Objectives.

1.4.2 Research Strategy of the Study

As discussed in the previous chapter the main objective of this study is to develop, build and test a model and toolset that can be used to manage the increasing complexity of ICT services. According to Kasanen et al (1993) the constructive research approach refers to real life problem solving through constructing different models, diagrams, organizations etc. Considering the nature of the research objective, the constructive research approach is well suited for the purpose of ICT service design model building. The information concerning ICT service design and development is highly context dependent, which means that no general, organized or conceptualized information is available, but that everything is more or less done on a case by case basis. In order to fully understand the information, the researcher needs to properly understand each particular context and on the other hand study enough different kinds of contexts in order to make generalizations. The information also has a wide organizational reach, and is stored only in the minds of people, which means that many people from all over the organization need to be involved in order to get the whole picture. And to make things even more challenging these people often have quite contradicting goals, so getting the tacit information from them is by no means easy.

Action research (AR) refers to such qualitative research where the researcher participates actively in organisational problem solving or change programs (Torbert, 1999). Holmlid and Evenson (2008) defined Service Design being "human-centered and participatory by nature". To be able to properly study this kind of phenomena, action research is chosen as research strategy because of two important reasons. First, the nature of information involved in service design and development as described above. And second, action research allows a full membership role. During the research period (2001 - 2007) the ICT industry was experiencing fierce competition. Everyone was aggressively trying to capture market shares and win over the biggest customers. Every service provider had their own differentiating factors that they based their marketing message on. Only by being a member of the organization could sensitive information in a highly competitive industry be made available. The idea of an outsider examining the whole production chain from development to sales to delivery to implementation to management in a detailed level would have been impossible.

Considering the nature of the information involved in ICT service design, a real-life subject was seen to provide the necessary data. Yin (1984) argues that case study is a suitable method for studying complex organisational processes in their real life context. As ICT service design as a phenomenon was relatively young and complex at the beginning of the research process, it was anticipated that no single snapshot in time would provide adequate information and understanding of the phenomena in order to meet the research objectives. A multiple embedded case-study was seen to provide good longitudinal data to observe the development of the design of ICT services phenomenon over adequate period of time.

The objectives of this study, set two prerequisites for selection of the case company: 1) there had to be the possibility to act as a full member of the organization and thus to get access to the relevant

information and 2) there needed to be long term vision for service design in order to ensure good enough longitudinal data. TeliaSonera fulfilled both of these preconditions.

At the beginning of the research process the case company TeliaSonera was facing – retrospectively looking – somewhat primitive challenges in the area of ICT services. A systematic research process together with open-minded practical applications gave input to planning and strategy work and enabled the company to evolve as an ICT service provider as understanding of the ICT service business increased. The understanding of the phenomena of ICT service design has evolved quite a bit during the six year long research period. This is true both from a research point of view as well as from a company's business point of view. As initial questions were answered, new challenges were identified and new questions arose. The same applied to the company's operations in the ICT service area, as new methods and conventions were taken into use, new problem areas were identified and further developed. This development is illustrated in the following table 1.

	Main business focus	Business Challenge	Research focus
	product	managing services	design process
	product	managing services	challenges in the design process
ime	product and service	cost & resource efficiency	tools and methods
+- ↓	service	standardized quality	service factory

Table 1 Development of business and research challenges.

In 2001 (at the beginning of the research process) the case company was pretty much in a traditional product business. However, as the complexity of the ICT products increased, the need for certain professional services also increased among customers. This brought a new kind of a business challenge – how to develop, sell and manage services in a company that is in a product business. Existing research at this point showed a gap concerning the design and development process. As research concerning the design and development process was done, it showed more gaps concerning the social and knowledge aspects of that process.

When gradually understanding and knowledge was developed to solve these business challenges, the focus turned on cost and resource efficiency challenges. Although the company had learned to manage services in a professional was (as it previously did products), it was not able to do

that very efficiently in terms of costs or resources. In current literature of the time a gap was identified concerning different tools and methods and their application.

Again, when new methods and tools for designing and developing services were constructed, the company was able to improve its costs and resource efficiency. As the ICT market itself evolved, competition was seemingly becoming more intense and fierce. This forced companies also to concentrate more on quality issues – a new business challenge was identified. From a research point of view this offered a great opportunity to construct and validate a holistic framework, a model for designing and developing ICT services. To study how this kind of a new approach can be implemented in practice.

The case company has begun to transform itself from a product oriented company into a service oriented company, focusing on service business. Although the journey is not finished (if it ever will be), the process is in a good motion. As the company evolved and the business focus changed, the business challenges changed and evolved too.

To be able to study properly this kind of an evolution, an action research oriented multiple case study with a constructive approach is chosen as the research strategy. The constructive approach enables the model building and brings a high level of relevance to the study, action research provides the needed methods to acquire the data and the multiple embedded case-study can be seen to provide good longitudinal data to observe the development of the design of ICT services phenomenon.

1.5 Outline of the Study

This thesis is divided into nine chapters. The structure and outline of the study is illustrated in the figure 6.



Figure 6 Outline and structure of the study.

After this introduction chapter, the second chapter examines the b2b ICT services field. The purpose of the chapter is to identify the most important trends and characteristics of ICT service business available for this research. Chapter 3 reviews existing, relating literature from the point of view of service marketing and management, knowledge management and social networks. The purpose of this chapter is to discover what existing tools, methods, models and frameworks could be used in the design and development of complex b2b ICT services. Chapter 4 deals with research methods and processes and also presents the case company and case design. In this chapter the case company and the real life cases are described in order to explain why the particular research methods are chosen and why this study is structured in this particular way. Chapters 5 - 7 examine three of the four real-life cases in TeliaSonera in more detail and presents the most important findings. The purpose of these chapters is to outline and present the actual research findings that have been made in the case studies. These cases

form the basis of the final framework. In chapter 8 the final framework is then constructed and validated and also applied in the fourth remaining case. This chapter focuses on presenting the final framework and assembling all the pieces together into one holistic model. Finally in chapter 9 conclusions and managerial implications are drawn upon. In this final chapter the study and the most important conclusions are reviewed. Also the most important managerial and theoretical implications are presented.

2 ICT Industry and Services

2.1 Defining ICT in the b2b Context

Information and Communication Technologies, or ICT, has been a "hot topic" both among researchers and companies for some while now. Nearly everyone is building high expectations towards ICT, showing how ICT is growing, how the industry is booming, and how everyone is benefiting. Yet, the content of the ICT concept has usually been left unexplained. From a marketing point of view ICT has been used in the following meanings: 1) marketing channel, 2) communication media, 3) marketing technique, and 4) tool for relationship marketing (Jimenez-Zarco, 2006). On the other hand from a business point of view ICT has been used to mean 1) social constructions, 2) information providers, 3) technologies, or 4) business processes or systems (Jimenez-Zarco, 2006). The first refers to all the different participants that are needed to provide ICT services, e.g. device manufacturers, network and access providers, content providers, service providers, etc. The second is used to refer to ICT as companies that utilize communication technologies, e.g. the internet, to offer and distribute information to people and/or companies. The third one is used merely to refer to ICT as an array of different technologies that companies operating in ICT business are utilizing. The last one is used to refer to ICT as different applications, software and systems that are needed to provide ICT services.

Unless differently indicated in the context of this study, ICT is used to refer to *different B2B* (*business-to-business*) systems. These systems further compose of elements such as different software, hardware and telecommunications as well as information management techniques (Brady et al., 2002; Porter and Millar, 1985; Jimenez-Zarco, 2006). This means that the systems are not just stand-alone software, but that there are many interconnected software, hardware and telecommunications elements, which are operated using a variety of different techniques.

A company can either buy a particular ICT system (as a product) and manage it by itself or buy the ICT system as a service. A B2B ICT service provider is referred to *as a company that is producing B2B ICT services to other companies*. When a company is buying a B2B ICT system as a service then the software, hardware and telecommunications and information management techniques are complemented with tasks and activities that are needed to be performed during the systems' delivery, implementation and/or management. These tasks and activities can be referred to as service elements. Following from this, B2B ICT service is defined *as composing of system and service elements*. These system and service elements are further explained in the following chapter 2.2. The product vs. service aspect is discussed in more detail in chapter 3.1.

2.2 B2B ICT Services

The more strategic the business processes are and the more core business processes are involved, the more services are actually combinations of interrelated equipment and service packages involving several technological and software solutions (April, 2003). These software solutions and packages include systems like ERP (Enterprise Resource Planning), CRM (Customer Relationship Management) or SCM (Supply Chain Management). When a company is buying a CRM system as a service, for example, they are really buying database, hardware, a CRM-application, reporting application (system elements), system design, system hosting, and system management (service elements) and so on. These kinds of systems can hardly ever be bought as a collection of standalone products. Instead they are bought as services as a single vendor or multivendor delivery. Even in the case of multivendor deliveries, one of the vendors usually takes the prime contractor's role, and carries the overall responsibility of the delivery.

B2B ICT services can be divided into many categories. United Nations (2004) uses eight different categories in their classification:

- o ICT technical consulting expert opinions on technical matters related to the use of ICT.
- ICT design and development services the design and development of ICT solutions such as custom applications, networks and computer systems.
- Hosting and ICT infrastructure provisioning services access to ICT infrastructure (hardware, software and networks) enabling the hosting of applications and the processing of information, for example billing or help-desk.
- ICT infrastructure and network management services the management and monitoring of a client's ICT infrastructure, for example creating data backups.
- *ICT technical support services technical expertise to solve ICT related problems.*
- Information and document transformation technical expertise and equipment to transform information from one format or medium to another.
- Internet access and backbone services the connection to, and carriage of traffic on, the Internet.
- Published software software developed for wide distribution and produced for multiple sale or licensing.

As seen from the list, ICT services are not just technology (Kakabadse et al, 2005). When discussing ERP, SCM or CRM systems – like mentioned earlier – the delivery can actually cover the whole list of ICT services, from consulting and design to infrastructure management and software licenses. Lehtinen (1983) used a more theoretical perspective towards services, when she divided services in general into core services and peripheral services. Following Lehtinen's (1983) idea, a more holistic, component picture of, for example of an ERP system and its associated ICT service elements, can be constructed with a three layer model: ICT system, core ICT services and complementary ICT services. This is illustrated in the figure 7.



Figure 7 Holistic view of an ICT service and its different layers.

The ICT system provides the technical functionality for which the customer has a need. This can be for example a need to convert a sales order into a mail message and send it to the recipient, or to convert the sales order into another format. If the customer were to take care of everything else by themselves, the ICT system could also be referred to as an ICT product. That is why it is added to Lehtinen's (1983) original model that was only examining the service perspective. Core ICT service elements are those tasks and activities that need to be performed in order to provide the technical functionality to the customer as a service. Complementary ICT service elements in turn are tasks and activities that should be performed in order for the customer to get the full benefits from the technical functionality, but are sometimes left undone due to budget, resource or cost reasons. In fact, many times these tasks and activities are indeed neglected or done more or less left-handed. In other words the service can be taken into use without the complementary ICT service elements, but the full benefits may not be gained. This study concentrates on the total ICT service that is offered to the customer. That is, the whole package, the turn-key solution, with all its elements that are shown in the picture 7. In regard to the categorization of United Nations (2004), the core service elements include Information and document transformation, hosting and ICT infrastructure provisioning services and ICT infrastructure and network management services. Consequently the complementary ICT services include ICT technical consultation, ICT design and development and ICT technical support. Finally ICT system elements include internet access and backbone services as well as published software.

2.3 B2B ICT Services as an Industry

As discussed in the introduction chapter, there are four important trends that are currently shaping the ICT industry: 1) increasing demand for ICT services, 2) accelerating pace of technological change, 3) more diverse customer expectations, and 4) change in service provider competencies. Each of these trends will be now discussed in more detail.

Increasing demand for ICT services

The demand of ICT services has been increasing steadily (IDC, 2003a; IDC, 2003b; IDC, 2003c; Meta Data 2003; IDC, 2008, Ovum, 2007a; Ovum, 2007b;) and is also forecasted to do so in the future. The estimated annual growth for ICT services is around 5% in western countries. The increase in demand has been particularly strong in the demand of services, not products (Inklamaar et al, 2005). The bigger the ICT infrastructure, the more companies are generally using outsourcing. Today some companies can outsource even their whole ICT infrastructure to ICT service providers (Kakabadse et al, 2005).

In Europe, the top ten ICT service providers are expected to grow between 5-15% annually (note that these estimates were made prior to the 2009 recession). Surprisingly, the demand is also rising in developing countries (Pipe, 2004). Of course the demand is not as high in developing countries as it is in western countries. The main reasons are quite natural: developing countries are lacking the basic infrastructure and the level of education is not as high (Vicente and Lopez, 2006). But nevertheless, the demand for ICT services is expected to increase globally in virtually all markets in all countries.

As an increasing number of companies will be trying to capture the benefits enabled by ICT services, it will not be just about the volume, but also about the variety. As different sizes of companies

from different industries serving different kinds of customer needs begin to utilize ICT services, the heterogeneity of demand will also have significant effects on ICT service providers. In practice it means that if a company were previously to have served only large corporate customers, for example, and would now expand also to smaller-sized customers, they would most probably need to acquire new technology for the smaller customers, because merely downscaling large systems seldom provides cost-efficient systems.

Accelerating Phase of Technological Change

Although companies have offered IT products for quite some time, the ICT service industry, in which companies are providing IT products as complete turn-key solutions, as services to other companies, is still relatively young. As all young high-tech markets, also the ICT industry experiences the same challenges that characterize early stages of an industry's lifecycle. According to Moore's (1993) categorization of business ecosystems, B2B ICT service industry is just about to move from the "Birth" stage to the "Expansion" stage. According to Moore (1993, 1996) a lack of technological standards and competing business concepts characterize this phase. At this phase the industry development has not yet reached the point where certain technologies are chosen as industry standards, and many technologies compete against each other.

Technological discontinuities are not rare in the quickly developing ICT market (Bower and Christensen, 1995). In fact, these discontinuities can be so dramatic that they end up redefining the rules of the competition (Leinonen, 2009). If ICT service providers were only to invest in some particular technology, there would be a danger that that particular technology would never make it as an industry standard. In this kind of market situation, the ICT provider could be locked-out from these other technologies. Increasing demand together with the accelerating pace of technological change (Oliva and Kallenberg, 2003) has forced ICT service providers to adopt and invest in many different technologies to avoid possible lock-out effects (Yoffie, 1997).

Having a wide technology portfolio does not only mean that there are high initial investment costs for the services providers. It means also that when ICT service providers have systems of multiple technologies, they also need to develop and manage competencies for these technologies in service design, delivery and production. This means more people, more training, more support and ultimately higher operational costs also.

More Diverse Customer Expectations

The strategic character of ICT services has also made customer expectations more demanding. Reliability is taken for granted and customization is needed to differentiate from competitors (Johnson and Ettlie, 2001; Gabrielsson et al, 2006). Local Area Network (LAN) management service is a good example. Every employee takes for granted that they have access to their emails and network files whenever they need to do so, every company's CIO (Chief Information Officer) takes for granted that their outsourced network has zero downtime. ICT service providers have a hard time differentiating themselves, because all provide the same basic technical LAN service. If they want to differentiate, they need to customize some components of their service (for example customer specific reporting, nonstandard delivery times etc).

ICT services play an important part of supporting a firm's process and business and increasingly often creates the competitive advantage itself (Buhalis, 2004). The banking industry is a good example. When the first banks began to offer internet services, they were able to significantly cut their cost structure. The same happened in the travel agency industry, where it had even more dramatic effects on the whole model of how customers were served. Customers require that the ICT services they buy are trouble-free – that they really do not have to worry about anything. At the same time they expect that the ICT services are fitted to their special needs (Davies, Brady and Hobday, 2006). These increasing needs for customization have further increased the diversity, especially in a production environment. Although in the development phase the small customizations and different kinds of configurations may not cause that much extra work, someone needs to document those changes, someone needs to manage those changes and someone needs to specially run tests for those changes every time the standard system is altered. As a result, today many different hardware, software and middleware technologies together with different tools, methods and processes characterize many ICT service providers' operations.

Change in Service Provider Competencies

Many current ICT services providers have a long history in the product business. Their competencies rely very much on the information and technology parts of Information Systems. However, as described earlier, service provisioning relies very much on processes and people, not so much on mere technology. The knowledge needed in the successful provisioning of ICT services is very

much embedded in processes and stored in the minds of people. Companies that want to master also the service aspect need to develop a new set of competencies (Frei, 2008; Ojasalo, 2009b). This shift in competencies is shown in figure 8.



Figure 8 Shift in competencies with ICT service providers.

The more one deals with the IT system, the more one is in need of technical competencies (arrow 2). And respectively, the more there are service elements involved, the more marketing competencies are required in designing, implementing and managing ICT services (arrow 3). In product business, customer experiences were much based on superior technological execution (arrow 1), while in service business the customer experience is very much based on superior social interaction (arrow 4). There is an increasing need for ICT service providers to develop and train marketing-based competencies, but that is sometimes not enough. If people have done the same technologically oriented tasks for the past ten years, it is sometimes possible that they do not want to or simply are not capable of learning new marketing-oriented skills. In these cases the service providers need to buy these competencies elsewhere.

2.4 Organizational Aspects in Adopting ICT Services

ICT services have widespread sociological effects in companies. As communication networks allow information to be shared more efficiently, old traditional ways are quickly abandoned. As different electronic media replaces face-to-face communication, it will eventually change the way people act in the workplace. ICT services affect the way people are working (Jimenez-Zarco et al, 2006;
Ritchie and Brindley, 2005; Hoogervorst et al, 2002) and eventually the organizational culture as such (Kakabadse et al, 2005).

The implementation of ICT services usually takes a lot of time (Falk, 2005) and as with all new things, this generally leads to much change resistance (Kakabadse et al, 2005). The ability of the top management to commit is one of the most important things to overcome the change resistance (Kakabadse et al, 2005). If people detect hesitation among the management, they will behave accordingly, no matter what the formal message would be. People are also more likely to adopt particular ICT services if their benefits can be shown (Peansupap and Derek, 2006). A clear message of the benefits to all workers should be communicated to ensure smoother adoption. If the implementation of ICT services is poorly planned and designed, the indirect costs that will occur can be even four times the direct investment costs (Love et al, 2006).

To avoid poor adoption and sizable indirect costs, investments to people are necessary (Ritchie and Brindley, 2005; Kaiser, 2005; Bugamelli and Pagano, 2004). Although the communication of the top management's commitment and the manifestation of direct benefits are a necessity, also investments to training are required (Falk, 2004; Ritchie and Brindley, 2005). If people do not know about the possibilities that the new service can provide or are not equipped to use it, the benefits gained will remain at a low level. In some industries this is a very long and costly process, if the base level of computer literacy is low.

Often, these so-called soft issues form a major obstacle for the adoption of new ICT services (Ritchie and Brindley, 2005). If the implementation and follow-up are not properly planned and designed, not only extensive indirect costs occur (Love et al, 2006), but the ICT services will never be adequately adopted by the organization and therefore their full advantages will never be used. It will end up being just another failed IT-project that will make the implementation of future projects ever more difficult.

2.5 Economical Effects of ICT Services

ICT services can have very wide effects on companies' operations. ICT services can be utilized in market-oriented dimensions of products or services, as well as a manufacturing processes, working practices, and management practices (Ritchie and Brindley, 2005). In the manufacturing industry, ICT services make firms' operations more effective by decreasing time and/or distance between production and consumption (Soete, 2001). In service industry, firms benefit from ICT services (Metka et al, 2006) because they both facilitate new service innovations, by enabling new ways of client-provider coproduction (Gago, Rubalcaba, 2007), and also make services more tradable for clients (Soete, 2001).

There are many studies that verify the economic gains that companies using ICT services can get (Bowonder et al, 2005; Buhalis, 2004) by making their operations more effective (Falk, 2005), increasing productivity (Cette et al, 2005; Bakhshi and Larsen, 2005; OECD, 2003) or enabling their growth (OECD, 2004; Ark and Piatkowski, 2004). Nevertheless, it should be further emphasized that ICT services only offer opportunities, not guarantees, for these economic gains (Heeks, 2002). For example, if companies do not pay adequate attention to the organizational aspects mentioned earlier, the opportunities will never be realized.

The increasing demand for ICT services has more wide-ranging effects from an economic view point than one would first realize. When firms are investing on the core ICT service (figure 8), they will be compelled to also invest quite heavily on the complementary services (figure 8). Sometimes the investments on the complementary services can be quite significant compared to those on the core service (Kaiser, 2005) – even greater. This has generated many businesses around the core ICT services providers. For example, there are a lot of companies that have specialized in the different applications that are built on top of SCM, CRM or ERP systems or provide consultative expert services in designing, delivering, implementing and managing the systems.

Many governments and communities have acknowledged the direct economic effects of more widespread use of ICT services. As with any young industry also the ICT service industry enjoys network effects (Soete, 2001; Vicente and Lopez, 2006). The more there are new successful services, the more lucrative is the industry for new entrepreneurs and businesses. That is why also governments and various communities have initiated serious actions to promote both the supply and demand of ICT services (Kaiser, 2005; Tijdens and Steijn, 2005; McLean, 2005; Falk, 2005; OECD, 2004) to ensure the development of ICT industry.

2.6 Providing ICT-Services in Practise

The provisioning of ICT services is not an easy or straightforward process. It requires many people from various parts of the organization to work together (Arnould, 2008). Many of the challenges that exist in ICT design and development are very much due to this wide organizational reach as well as

the nature of the information that is involved in the provisioning process (Orman, 2008). That is why this chapter concentrates on examining the provisioning process, so that the reader would get an appropriate picture of the nature of the process. In the description and discussion of the practice of providing complex b2b ICT services the experience gained in the case company TeliaSonera is utilized. Because the case company TeliaSonera has undergone a series of several organizational changes during the research period (2001 – 2007), it would be meaningless to separate each of the different structures that were in use at a particular point of time. Instead, the different functions that are needed in providing ICT-services are illustrated here. This is practical because those functions have been the same during the research period. For example during some of the sub-cases, Project Management and Consulting functions were both in the same unit, and in some other sub-cases Product Management and Product Development were in the same unit. Nevertheless, the different functions are illustrated in figure 9.



Figure 9 Organization structure and information flows in ICT-service provisioning.

As can be seen from the figure 9, nine different main functions are needed in the provisioning of ICT services. The relative sizes of the boxes indicate the sizes of those functions in terms of personnel.

Although not the most accurate way to compare them, the size of the fields gives some indication of their resourcing. Arrows illustrate the primary information flows between the different functions. The roles and responsibilities of the different functions are described in more detail below.

- *Sales:* When a need arises, the customer contacts sales or the customer's request is conveyed to the sales department. The sales department will initiate the discussions with the customer to see whether the customer need can be fulfilled with the company's service portfolio. The sales department can also be proactive in the sense that they contact the customer in order to present some new services or to see whether the customer has some needs that they wish to discuss. The sales organization has a long history of an account management type of operating model. Therefore they own the customer relationship.
- *Pre-Sales:* When sales see that the company's service portfolio can fulfil the customer's need, they usually contact pre-sales to participate in the negotiations to provide a deeper knowledge of the company's services. Pre-Sales' primary responsibility is to support Sales in the negotiations with the customer and make the possible offer. Due to the long history of account-management sales organizations, pre-sales is a separate entity from the sales organization. Pre-Sales is also responsible for acting as an interface towards Consulting, Solution Design, Project Management and Product Management, if more detailed service information is needed in order to make a final offer to the customer.
- *Consulting:* If the customer is not fully aware of their needs, they are complex, or cover a wide service portfolio, some preliminary assessments or analyses can be performed by consulting organization. Consulting can also perform process or business planning and design related activities during the possible implementation of services to the customer. Consulting is responsible for assisting Pre-Sales and for possible implementation-phase activities.
- *Solution Design:* When the customer accepts the offer, Solution Design is responsible for designing the solution to be provided to the customer from a technical point of view. In cases in which the solution to be offered to the customer is relatively complex or covers a wide range of services, Solution Design is needed to analyse the customer's environment

and make some preliminary design of the solution, so that correct work assessments can be made for the offer.

- *Project Management:* Project management takes overall responsibility of service implementation in customer cases in which their effort is needed. Project Management can be involved already in the offer phase if the solution to be offered to the customer is relatively complex or covers a wide range of services.
- *Product Management:* Product management is responsible for the lifecycle management of service portfolio. From a service provisioning point of view, the most important task in the lifecycle management is service design. Product Management usually has the best and deepest overall picture of a particular service. When the most detailed information is needed in making the offer, designing the service, implementing it, or handling some problem situations, product management is contacted by sales people. Product Management also acts as an interface towards Product Development, Production and Support Systems.
- *Product Development:* Product Development is responsible for developing the ICT service according to the service design set by Product Management. Also in customer cases in which customization is needed Product Development participates in the order, design an implementation phases.
- *Production:* Production is responsible for transferring the service into a production environment after the service development has been completed by the Product Development and manage it during its entire lifecycle. Production is also responsible for making the necessary configurations in customer deliveries and, if deeper customization is needed, to make sure that the proposed customer solution can be managed by the production.
- *Support Systems:* Support Systems produce certain core service elements that are provided to the customer. These include elements like billing and pricing. Support Systems also handle the management of some other support systems that are needed in the lifecycle management of the services such as finance and CRM-systems.

Although information is flowing between the different functions, the borders are many times quite rigid. Each function has its own responsibility in the total chain. Each function is equipped with knowledge needed only in the confines of its own defined responsibilities. This means that different functions are not so keen on extending their responsibilities beyond that which is agreed on. To further clarify the process of providing ICT services, two practical examples of alternative kinds of customer cases are given here. The first example describes a relatively easy customer delivery. The second example describes a bit more complex service than on average of a slightly more challenging customer delivery. The examples are based on two TeliaSonera services. The first, easy example is based on Sonera Cstream service and the second, more challenging example is based on Sonera LAN Care service.

Easy Customer Delivery

Sales contacts a customer about a new service. The service is a multi-channel messaging service that enables companies to send messages through voice, sms, mail or fax to multiple recipients. Sales asks the customer whether they would like to know more about the service. The customer shows interest towards the service, and a date is set for presenting the service. Sales contacts Pre-Sales and asks for support concerning the service demonstration. Pre-Sales in turn contacts Product Management and informs them about the customer and verifies that the alleged need can really be satisfied with the new service. Product Management sends updated service presentation to Pre-Sales.

In the presentation, Pre-Sales demonstrates the service and the customer is immediately interested in the service. The customer asks several questions about the service and its features. Pre-Sales is able to answer a majority of them, and agrees to provide answers to the rest after the presentation. The following day, Pre-Sales contacts Product Management again and presents the questions. Product Management says that they need to check a couple of things with Production, but feel that the questions should not present any problems. After a couple of days, Product Management informs Product Management that the service is able to fulfil the requested functions. Product Management informs Pre-Sales and they in turn inform Sales. Sales contacts the customer and provides the answers to the rest of the questions. Customer tells that they need to think about it for a week or so.

After a couple of weeks, Sales contacts the customer and the customer asks for an offer. Sales contacts Pre-Sales and an offer for the customer is drawn up. The customer accepts the offer and Sales

feeds the order into the system. Production receives the order and creates a so-called customer environment. Needed configurations are made and the service is installed for the customer. Production sends needed information to the customer and the customer can begin to use the service. The service is pretty simple, so the customer is able to use the service following the instructions.

After a couple of weeks, the customer contacts Service Desk about a problem that they have encountered. Service-Desk is not able to solve it, so they send the incident report to Production. Production is familiar with the problem, and informs the customer about the reason. Because the problem was caused by a faulty system input from the customer, no fixes need to be made to the customer installation. Occasional contacts continue during the whole lifecycle, but no major problems occur. After five years, the customer feels that they do not need the service anymore, so they contact Service-Desk and terminate the contract. Service-Desk informs Sales and Production about the termination and the customer installation is uninstalled after the termination period.

More Complex Customer Delivery

Sales meets a key customer on a regular basis. During a particular meeting, the customer complains about the quality of their current local area network (LAN). The network has always been managed by their internal IT-department, but currently there is only one person that has adequate knowledge of the current network architecture and its daily operation. Sales recognizes the need and tells the customer that TeliaSonera has a LAN service which could suit the customer's need. The customer is not sure about the attitudes that the IT-department would have on outsourcing their LAN, but nevertheless they think that it could be useful to arrange a meeting with the needed participants at least to get some more detailed information about the service.

After the meeting, Sales briefs Pre-Sales about the customer and asks who should be involved in the upcoming meeting. Pre-Sales asks some background information questions to which Sales is not able to provide answers, but will ask from the customer. The customer provides some technical background information of their LAN, and Sales delivers that to Pre-Sales. After some examination, Pre-Sales comes to the conclusion that Solution Design, Consulting and Product Management should attend the meeting in addition to Sales and Pre-Sales. Sales asks for suitable dates from the customer for the meeting. Since five people from customer's side will also attend the meeting, the first suitable date is set one month from now. One internal meeting is set before the customer meeting to get everyone informed about the customer and their need.

Sales, Pre-Sales, Solution Design, Consulting and Product Management all attend the meeting with the customer. Pre-Sales introduces the LAN service to the customer. The customer has a lot of questions. Depending on the area Solution Design, Consulting or Product Management provides answers to the presented questions. The customer's IT-department is a bit worried, because the person that is currently managing their LAN is one of their key personnel and they are afraid that they would lose her, if their LAN were outsourced. Altogether the meeting goes well. Mainly the customer seems to be relieved because enough knowledge was around the table to answer to the questions and worries presented by them.

A couple of weeks pass by and Sales decides to contact the customer. The customer informs sales that they are interested, but they are worried about the person currently responsible about their LAN and that they would need to see quite detailed figures before even continuing conversations. Sales informs Pre-Sales about the customer feedback. Pre-Sales suggests that they together with Solution Design, Consulting and Product Management should have a meeting to decide how to respond to the customer. The meeting is scheduled for the following week.

In the internal meeting different alternatives are pondered upon. Solution Design reminds that a pre-study of the current network architecture has to be made before any binding price estimates can be made. Consulting adds that because of certain old equipment that the customer has, also some consulting work needs to done in the possible implementation phase. On the other hand, Sales reminds that the deal would be quite big if realized and adds that the pre-study should be given for free to the customer, because they are not willing to continue the conversations before receiving some more detailed calculations. Product Management and Solution Design both suggest that the pre-study could be given for free under the terms that it will be billed later on, if the deal is made. Everybody agrees that in this case, when the size of the deal is significant enough, a LAN pre-study can be given for free to the customer.

Sales contacts the customer and informs them that in order to be able to provide more detailed calculations and estimations, a LAN pre-study has to be conducted, but it will be given for free and charged later, if the customer decides to buy the service. The customer tells that the proposal sounds

reasonable, but that the real question is whether the person who manages their LAN at the moment can be moved to TeliaSonera in the context of the possible deal. Sales has no prior knowledge of this kind of an arrangement, so they promise to get back to the customer.

Sales contacts Product Management about the human resource issue and Product Management further contacts Production about it. Production is a bit sceptical, but promises to check the issues. The issues will further be handled in the next executive management meeting. In there, it is decided that because the business calculations seem profitable and since the customer is one of the key customers, the person could be moved to Production, if the deal is made. Sales immediately contacts the customer and gives a green light to the customer concerning the issue.

The customer agrees to the pre-study but reminds that there cannot be any signs of possible outsourcing, but that this will be just a standard inventory procedure. The LAN pre-study is conducted jointly by Solution Design and Consulting. After the pre-study is conducted, Sales, Pre-Sales, Consulting, Product Management, and Production have a couple of internal meetings where the results are discussed. No major issues arise during the pre-study, but then again the pre-study was conducted on a rather superficial level at this point. Solution Design gives its estimate on the migration of the customer's environment into TeliaSonera's production. Sales, Pre-Sales and Product Management agree to make the offer to the customer together.

The offer is sent to the customer and Sales contacts the customer a couple of weeks later. The customer wants to get a 5% discount of the price. The discount is within the limits of their latitude, so the discount is given to the customer. The first meeting concerning the migration project is agreed to be scheduled within a couple of weeks. The exact date will be arranged between the experts involved. The customer reminds that no contacts are allowed before they inform the person involved in the transfer process. This takes time slightly longer than expected, so the first project meeting is postponed a couple of weeks.

In the first project meeting, practical things concerning a more detailed pre-study are agreed on. During the pre-study it is discovered that there is some equipment that was not in the asset management registers that was used as a basis for the initial inventory. Therefore, this equipment was not recorded as a part of the inventory process. The bad news are that the equipment was just recently purchased, but from a different vendor than all the other equipment – from a vendor whose equipment Production people do not have any prior competencies with. After some evaluations it is analysed that this equipment needs to be replaced with similar equipment from a different vendor. The costs for this will increase the migration costs about 20% from what was initially estimated. Although this mistake in the calculations was mainly due to faulty information received from the customer, the customer is not willing to pay the costs in total, because, they argue, the absence of this equipment from the asset register should have been detected by Solution Design people during the initial inventory process. The issue is discussed between TeliaSonera and the customer for a couple of weeks after which they agree that the customer will pay only half of the additional migration costs. Because of the transfer of the customer's LAN expert, some information is somewhat hard to get, so the migration takes a couple of weeks more time than originally planned.

When the LAN service is taken into use by the customer, everything goes rather smoothly. But just after a couple of weeks some problems arise with one application used by the finance people in the customer's organization. The customer contacts TeliaSonera Service Desk about the problem. Service Desk is not familiar with the problem so they transfer the incident to the 2nd level support which is in Production. After a couple of days' investigation the former LAN expert notices that the financial-application that she knows the accountants use, is not listed in the firewall rules. This application will be added to the firewall rules and Service Desk informs the customer about the changes. After this, apart from some occasional contacts to the service desk, everything functions properly.

After a couple months from the implementation, the customer's employees start to complain about the LAN's rather poor performance. The customer's IT-department contacts Service Desk about the issue. After some investigation, it turns out that the customer has been informed about the increasing traffic, but the email has got lost either in TeliaSonera's or in the customer's organization. Nevertheless, more capacity is available if two routers are upgraded. This would increase the monthly fee by 5%. The customer accepts this and Production goes on and changes the equipment.

Again, after the upgrade only standard contacts, involving some configuration information of the workstations, are received from the customer in the service desk. After one year from the implementation, the customer wants to extend the LAN service to provide extranet connections to their LAN to a number of their employees. This means some changes to the LAN configuration and also some xDSL equipment purchases and installations to the employees' homes. Since the number of the

connected locations was only about 20 this was dealt as operative work in Production, and no separate project was needed.

After half a year from the implementation of the extranet extension, the number of computer viruses and malwares (malicious program) seems to increase rapidly. At the same time, TeliaSonera's monitoring detects significant regression in the performance metrics of the LAN. The analysis reveals that several computers in the LAN are infected by malwares that originate from employees' home computers. A more detailed analysis performed among the employees further reveals that virus protection in their home computers is either non-existent or totally inadequate. The customer decides that they will include virus protection of these home terminals to the deal, because the extranet usage in general was very intense and it was perceived as being very useful by the employees. After the computer viruses and malwares are removed from the computers connected to the LAN, the performance of the LAN comes back to normal. The customer still continues the use of the LAN service today.

Observations of the Examples

Although this later example was much more complex than the first one, it was not even close to being a difficult one. In the most difficult cases the customer solution could for example comprise of four different kinds of services that rely on each other with hundreds of end users in a customer environment in multiple geographical locations. The sales cycle for this kind of solution would be around 4-9 months with a 6-12 month migration and implementation project. The complexity and the possible challenges quite rapidly increase in a non-linear fashion as the number of different components (end-users, services, locations etc) increase. This is especially reflected after the implementation has taken place – in the operation or management phase of the solution.

A couple of things were similar in both cases. First of all, the information that was needed in the provisioning was embedded in the processes of the different functions and ultimately embodied in the different people. The offer was a result of joint work performed by several units. Estimates needed in the offer were the result of the pre-study process. The resolution of the network overload problem was a result of the context-dependent knowledge that the LAN expert had acquired over time. Many systems are needed to provide information and many systems are needed to detect errors and problems in the provisioning of ICT services. Still the final analysis is always conducted by people and in some cases

the solution can only be found if the person has gained enough tacit information about the service and with that information is able to deduce the root cause.

Second, even in the simple customer case, many organization units with clearly defined responsibilities were needed to provide the service to the customer. ICT-services have become technologically so complex systems that the competence needed to provide them can only be handled by a group of people, each concentrating on a particular field of expertise. This has made seamless co-operation of all the different functions in which these people are working an absolute prerequisite for successful service provisioning.

2.7 Implications – Challenges for ICT Service Providers

ICT services are often mistakenly thought of as mere applications or simple technologies. Heeks (2002) had quite a holistic view on ICT. He saw ICT as an integral system that consists of Information, Technology, Information System, and Environment. When the environmental drivers and inhibitors, as well as challenges associated with information systems from a service and organizational perspective are viewed through Heeks' (2002) outline, the following figure 10 of the ICT phenomena can be presented to help explain the challenges associated with ICT service provisioning.



Figure 10 Phenomena of ICT.

ICT services themselves have evolved and developed to be interconnected systems that play an increasingly important, crucial and strategic role in customers' and society's everyday life. The economic gains – reduced costs and new sources of revenue – together with the incentives provided by governments, are making companies very interested in creating plans and strategies to deploy ICT services. This has been shown as a steady increase in demand as well as in a growing number of new businesses. But the adoption of ICT services is not a straightforward or simple process in an organization. There needs to be real management commitment and individuals need to be trained in the new services and sufficient support given to them during their use. All this requires careful planning, communication and enough investments to people to secure a smoother implementation and use of new ICT services. Although this sounds trivial, these aspects are usually neglected. This will usually result in ICT projects where the full benefits are never gained. This on the other hand makes buyers act increasingly hesitantly, and they will act carefully when buying new ICT services.

Successful provisioning of ICT services is not a simple task. The increasing demand of ICT services, the accelerating pace of technological change, more diverse customer expectations, and the change in service provider competencies have all increased the variety of different methods, tools, processes, competencies, hardware, software, application, etc, that ICT service providers need to run and manage. Sometimes the initial investments for example in new hardware and software may not be huge, but that is usually just the development phase. New hardware and software need to be upgraded, documented, backed-up and so. All the new elements, whether processes, competencies or pieces of software, need to be maintained throughout their whole lifecycle. This wide portfolio of different technologies in all stages of the ICT service lifecycle that ICT service providers need to manage has manifested itself as an increasing complexity of ICT services (Kallinikos, 2005; Gabrielsson et al, 2006).

Complexity as such is not necessarily a bad thing, but it will become a major thing if it is left unmanaged. If ICT service providers fail to manage the complexity, it will lead only to more complexity. When services and/or the processes and methods for producing them are not properly designed, they will evolve organically (OCG, 2007). In practice this means that every person involved in service provisioning will have their own way of doing things based on their own background and knowledge. The larger the ICT service provider is, the more apart the different people involved in the provisioning will be organizationally. When the services and/or processes and methods evolve organically, without proper control mechanisms, there will be as many end results as there are processes and services. This increase of complexity is not only producing inefficiency, but it has led to two major challenges that ICT service providers are currently facing: 1) increasing production costs as well as 2) decreasing service quality (OGC, 2007). The production costs have risen because the production environments have become so complex that new control systems need to be acquired and new nonstandard processes need to be established all the time in order to manage the ICT environment . As much of the work is still depending on human supervision, human errors will inevitably occur, resulting in service defects and service breaks. These two aspects are not minor obstacles, but major, fundamental aspects that ICT service providers need to resolve. Even minor service defects can have devastating effects on customer loyalty.

The production of ICT services itself is a complex, highly social, process generally involving seamless co-operation of several organizational units and their personnel. Typical units include product management, product development, sales support, support systems etc. The information needed in this production chain is typically embedded in processes and certainly not documented. It is usually stored only in minds of people, and varies greatly depending on the particular context where it is applied. This overall provisioning process is not easy to manage. Since the production of customized ICT services is very human intensive, companies cannot continue to increase their supply to meet the increasing demand with the current concept that is to meet every customer expectation by customizing the ICT service. So, in order to move from Moore's (1993) "Birth" phase to the "Expansion" phase, companies have to develop new operational systems to handle the increasing complexity and more demanding customer expectations with increasing demand.

Generally in any ICT projects the probability of success is decided upon already in the design phase (Artto, 1994). In this phase, the project usually defines the goals, the time frame and the resources for the project. The more time and effort is spent in this phase, the greater the probability that the schedule is realistic, the goals support the business and the resources are adequate and secured. Unfortunately, however, this is the phase that is neglected the most. Many times ICT projects are established more or less in an ad-hoc manner and in a very tight time-frame. This usually means that the risks of the project are not identified or the counter measures prove to be inadequate. The schedule is unrealistic and not enough resources are secured. And very often the restrictions posed by the existing environment in terms of hardware, software, support processes, support systems, etc, are not adequately examined. This same analogy of the importance of the design phase is applicable when addressing the described complexity of ICT services. In this study it is argued that service design and development is a critical aspect in addressing the described complexity because the design influences service development, marketing, implementation production, and customer perceptions and satisfaction (Bullinger, Fähnrich and Meiren, 2003; Hyötyläinen and Möller, 2007). This view is also shared in ITIL principles (OGC, 2007). Service design is defined by ITIL as "gathering service needs and mapping them to requirements for integrated services, and creating the design specifications for the service assets needed to provide services" (OCG, 2007). From this definition, two important aspects of service design is a specification that defines how different assets, e.g. people or systems, are to be used in the provision of the service.

In order to address the increased production costs and decreased quality, ICT service providers need to develop new tools, new methods and new approaches on how to design and develop services in a way that is different from their standard product development, but that is able to address the increasing complexity phenomenon.

3 Theoretical Background

In this study it is argued that service design is a critical aspect in reducing the complexity of ICT services. Service design in companies, or more accurately the lack of proper service design in companies, is still very much evident today (Hollins and Shinkins, 2006; Larsen, Tonge and Lewis, 2007). As discussed earlier, many current ICT service providers have a long history in product business. To properly understand the implications for service design, when moving from product business to service business, differences between products and services are examined. Different service design processes will be examined to see how they could be applied in the case of ICT services. Also, different service management tools and methods will be examined to see how they could be applied in the design process of ICT services. Finally, as discussed in chapter 2.6, the provisioning of ICT services is a very knowledge and human intensive process, so knowledge management and social networking perspectives are examined to see how they could explain and be of help in the ICT service design process.

In this chapter three, the existing literature is examined and discussed to see what has been done in the area of service design and development thus far. The remainder of this chapter (chapter 3) will concentrate on five specific areas that are crucial from a service design perspective for ICT service providers: 1) differences between products and services, 2) the process of designing ICT services, 3) ICT service design methods and tools, 4) the knowledge management perspective of designing ICT services, and finally 5) the social networking perspective of designing ICT services.

3.1 Services vs. Products

3.1.1 Characteristics of Services

In this section some different views on categorizing services are presented. Also, the most important characteristics that differentiate services from products are discussed. The research done by Brown at al. (1994) proved to be very helpful when considering the key studies to be included. When examining services, the purpose is to identify those kinds of characteristics that may have an effect on designing services.

Judd (1964) defined services as market transactions where the object of the exchange is not a physical commodity. He further divided services into three different categories: 1) rented-goods

services, 2) owned-goods services and 3) non-goods services. Judd's central idea of services was that the ownership of a physical commodity would not be transferred when purchasing a service. ICT services have elements that belong to all of the three categories. The system elements of an ICT service can be seen to be rented-goods services. In a way a customer rents the system elements from an ICT service provider. The customer has an access to the goods (the system elements), but does not own them - when the service contract is terminated, the system elements remain in the ICT service providers possession. The core service elements as well as the complementary system elements of an ICT service can be either owned-goods services or non-goods services. A process analysis is an example of the latter, as no physical goods are involved. On the other hand installation (core service element) of a LAN service can be an example of an owned-goods service, if the customer gets the ownership of the LAN equipment. Although the reasoning behind Judd's (1964) article may not be so great today, it identified some of the most fundamental aspects of services at that time.

Zeithaml et al. (1988) had a quite similar view on services as Judd (1964) as they stated that services are performances rather that objects. They further characterized services that they cannot be counted, measured, inventoried, tested or verified beforehand.

Rathmell (1966) continued Judd's approach when he made a distinction between products and services by defining goods as objects and services as deeds or efforts. Rathmell's (1966) further contribution was the identification that products and services form a continuum where products are at one end and services on the other, and that there is no clear line between them. As at that time, in 1966, the usual debate was over whether or not a particular "thing" is a product or a service or how the two could be separated from each another, this identification of the continuum approach with no clear line between products and services was quite a breakthrough, and it is still very much valid today in designing ICT services.

Shostack (1977) further continued the continuum approach. She argued that the very essence of services is their intangibility, and that services form a continuum where the tangible features are dominant in one end and intangible features at the other. Shostack (1977) also presented a molecular model where service was perceived as a molecule in which one kind of atoms portrayed the intangible elements and other kind of atoms the tangible elements. She further noted that that the same service can be perceived differently by different customers in terms of tangibility dominant vs. intangibility dominant. According to Levitt, (1981) one of the most important outcomes of this intangibility is that

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the customers usually do not know what they are getting until the service is actually delivered. Levitt further argued that this intangibility is one of the most profound characteristics of services and that it should be controlled by service providers in order to make their services easier and more unambiguous to the customer.

When ICT services are inappropriately designed, they reside very much on the service end on the continuum. And as Shostack (1977) pointed out this degree of intangibility can be perceived differently by different customers. If an ICT service is not properly designed, the different elements (system elements, core service elements and complementary service elements) are seen as extremely intangible by the customers because the phase of mapping customer needs into defined features has not been done properly. The more expensive or more critical the ICT services involved, the bigger an issue intangibility can be. If the ICT service is very critical to the customer (such as an ERP system) or if there is a significant price tag on it (e.g. in ICT strategy planning), it is very important to the customer that they know exactly what they are buying. To make a point, if all that were to be presented in a strategy planning would be the name, price tag and an oral presentation by a consultant, customers would most probably be quite hesitant to pay tens of thousands of euros for a service. Even if the customer were to buy an inappropriately defined service, there would be severe challenges in the service delivery as there would most probably be different opinions about what was included and with what kind of conditions (Chuang, 2007). This would be perceived as poor service quality by the customer as expectations would not be met (Parasuranam et al., 1985).

Also Thomas paid (1978) attention to the fact that services are more abstract than products and that makes them hard to communicate to others. He handled the intangibility-tangibility dimension by dividing services into two categories: those that are equipment based and those that are people based. In the case of ICT services the system elements are those that are the most equipment based and also the most tangible. Whereas the complementary service elements are those that are the most people based and the most intangible. From this perspective it could be argued that in the case of ICT services, the further we are moving from the systems elements towards complementary service elements the more there will be challenges associated with intangibility.

Chase (1978) handled this same tangibility-intangibility dimension (equipment vs. people based) by categorizing services according to the extent of customer contact in the creation of a service. Moving from high contact towards low contact he developed four categories: 1) pure services (e.g. restaurants),

2) mixed services, 3) quasi-manufacturing, and 4) manufacturing (e.g. chemical plants). Chase (1978) also concluded that the services that have a high customer contact are more difficult to control and rationalize. Although only the first two categories apply to ICT services, the point of control and rationalization is very valid. As the system dependency decreases and human dependency increases, when moving from system elements towards complementary service elements, so does the intangibility. Again, if this intangibility is not properly controlled, customers will have difficulties in evaluating what they are buying, and after delivery to assess whether or not the service is what was indeed agreed on.

Lovelock (1984) took a somewhat different approach in categorizing services. He did that according to five different questions: 1) what is the nature of the service act, 2) what type of relationship does the service organization have with its customers, 3) how much room there is for customization and judgement on the part of the service provider, 4) What is the nature of supply and demand for the service, and 5) how is the service delivered. After examining these characteristics of services Lovelock (1984) concluded that products and services actually face similar kinds of challenges. This conclusion is logical in terms of the continuum approach, and is very important in terms of designing services. As the research done in the service industry is much younger than in the product industry, the former could benefit greatly from different tools and methods that have been developed in product industry.

Parasuraman et al. (1985) and Zeithaml et al. (1985) identified three different characteristics of services: 1) intangibility, 2) heterogeneity and 3) inseparability. Grönroos (1990) identifies four basic elements that characterize services: 1) intangibility, 2) services compose of activities rather than things, 3) consumption and production of services takes place simultaneously, and 4) customer participates in the production process. This line of thought is followed by Rushton and Carson (1990a, 1990b), as they define the following four characteristics characterizing services: 1) intangibility, 2) diversity, 3) perishable nature, and 4) inseparability of production and consumption. Heterogeneity and diversity both refer to high variance in production processes among different service providers. In other words, when two service providers are delivering the same service, there can be significant differences in the outcomes perceived by the customer. In fact, there can be differences even in the outputs of one service provider on different days. Inseparability in turn is the same aspect as the simultaneous consumption and production of services. Perishable nature means that services cannot normally be stored in any way. Some exceptions are e.g. flight tickets. In a way the tickets are stored, but they cease to exist at the moment the airplane takes off.

As already pointed out, intangibility is an important aspect in the case of ICT services. The same applies to heterogeneity. In order for ICT service providers to meet customer expectations today, they really need to control the heterogeneity of their services. In fact, Shostack (1987) addressed the rootcause for this as she took a very process oriented approach in characterizing services. She stated that services are not things and that in the process manifest the fundamental nature of services. Shostack (1987) further argued that the process should first be described as steps and sequences and by the complexity and divergence of those steps and sequences. Shostack (1987) defined process complexity as the number and intricacy of the steps required to perform the process. Divergence was defined as the degree of freedom allowed or inherent in a process step or sequence. Even in ICT services that have the best service designs, heterogeneity is very much apparent. The major source for the heterogeneity of ICT services is the degree of freedom that the people participating in the provisioning have when they are performing their tasks. In other words, usually the service design does not define precisely enough the particular process the person is expected to follow, and thus gives too much freedom to the individuals. It should also be noted that this heterogeneity is not only a result of activities performed by the service provider. The more involvement is required from the customer's side in the co-creation, the more heterogeneity can actually - mutually - be inflicted (Kannan and Proenca, 2010). The difference with the heterogeneity inflicted by a customer is that it can be even harder to control than the heterogeneity inflicted by the service provider (Cipolla and Manzini, 2009). Altogether, poorly designed service processes will have a great negative impact on customer loyalty (Caceres and Paparoidamis, 2005).

More recently, also the information intensity of services has been addressed (Orman, 2008a). It is the very nature of services that makes them more information intense than products (Sheth, Verma and Gomadam, 2006). For example, as services are often delivered in a very timely manner and consumed immediately, certain customer specific information is always needed (Orman, 2008b). In addition, the more specialist kind of service in question, the more tacit information is needed by the actual performer. In other words, information that the performer has in order to perform the particular activity. This tacit information aspect is also one that makes services harder to describe (Orman, 2008b) and therefore also harder to buy (Lindberg and Nordin, 2008) than products.

3.1.2 Professional Services

Professional services form a distinct subset of services. Wittreich (1966) referred to professional services as a range of advisory services, whereas Gummesson (1978) defines management consultants, technical engineers, architects, accountants and advertising professionals all as providers of professional services. Depending on the source, the list normally gets only longer. Bloom (1984), for example, includes also dentists and doctors in this list. Ford (1990), on the other hand, identifies professional services by their type. According to him, all services that relate to the fields of finance, accounting, advertising, management, technology, architecture, law, and healthcare are professional services.

Although these categorizations show some of the early thoughts that these researchers had about professional services, it is quite hard to apply them to the context of ICT services today. Later research has concentrated more on the characteristics of professional services in particular. For example, Lovelock (1983) argued that professional services are so called knowledge professions, where extensive training is required to develop the needed skills and judgment. Bloom (1984) made an important observation, when he notified that usually professional services lack attributes that a buyer can competently evaluate before (or even after) making a purchase decision. Sipilä (1996) continues along the same kind of line as he states that creativity and knowledge are the key differentiating aspects from other services.

From Lovelock's (1983) and Sipilä's (1996) definitions, two important aspects of professional service can be identified; professional services require a certain amount of special skills as well as creativity from the performer. Following this definition, ICT services fit the definition very well. The creativity aspect is accentuated the further from the system elements one is moving towards the complementary service elements. In core service elements, individual creativity is often replaced by different knowledge bases or other systems. For example, every person in Service Desk does not need to know solutions to all the incidents customers have, but instead they resort to knowledge bases where solutions to identified problems are stored. But in business analysis, the problems are usually so context dependent that solutions cannot be replicated in a straightforward manner. Of course also in business analysis knowledge bases offer a great deal of help, but the applicability and final analysis are a result of an individual's creativity.

Halinen (1997) continues describing professional service by adding also intangibility, people intensity, interactivity, customization, and ambiguity as the list of characteristics of professional services. Boström (1995) pointed out that professional services in particular are more or less produced and consumed simultaneously. This is actually true for all services, but this simultaneous production and consumption is maybe the more evident the more human intensive a service is. Similar kinds of definitions have been offered by Brown and Swartz (1989), for example.

From an ICT service provider's point of view the interactivity perspective is very relevant. In product business this is not so important, but in service business it can even be a deal breaker. If the customer does not feel comfortable with the person performing the service, the perceived quality of the total customer experience can be very low, no matter what the actual output would be. For example, if the person performing a business analysis (complementary service element) were to act in a very arrogant way, the perceived quality of the service would be very different compared to a situation where the person performing the business analysis would act in a very pleasant way. This means that for ICT service providers it is no longer enough that a person is a top expert in the field, but she or he also needs to be socially talented, to have good interpersonal skills. Due to this, not all top technical experts are ideal consultants in practice, because they lack the skills needed.

Davies et al. (2006) discussed how many of the present ICT service providers have transformed themselves towards providers of integrated solutions instead of products. They divided the core service elements and complementary service elements into four different categories: systems integration, operational services, business consultancy and vendor financing. Vendor financing is not dealt here because – although it is an important service – it is not part of the total functionality of the ICT service. It can be seen as more of a service that may be provided to the customers, in order to help them buy the actual ICT service. According to Davies et al. (2006) *operational services* are those that are performed when maintaining, managing the solution. These can be for example, server monitoring, data backups and training. *Systems integration* includes those services that are needed in combining the different system elements into a turn-key solution to the customer. These can be for example, solution design, project management, and solution implementation. *Business consulting* services are those that are the furthest from ICT system elements. These can be for example, business analysis, strategy consulting, business planning etc. Although business consulting services are the most independent in regard to the ICT system itself, they are part of the total ICT service.

Business consulting services have some special characteristics that differentiate them from operational services and systems integration. The identification of the characteristics is very important to ICT service providers in order for them to deliver high overall quality. The concept of consulting in general is open to various interpretations (Reinilä, 1995). A very broad definition is made by Lipiäinen (2000). He suggests that consulting is characterized as "a total commitment to develop the customers business". Turner (1982) suggests that the single most important thing in consulting is a well defined hierarchy of goals. He emphasizes that those goals should be a result of active co-operation between the consultant and the customer. Turner (1982) further adds that the goals should be agreed on by both parties. Bebko (2000) discusses the same issues under the term managing customer expectations. Similar conclusions are backed by Kesner and Fowler (1997). In their study they examined a case where the goals were set in isolation from the customer with disastrous implications. Moreover, Kesner and Fowler (1997) argued that the consultants and customer had very differing understandings of the goals. The focus on active co-operation and mutual goal setting implies that in addition to particular expertise (Sipilä, 1996) of the customer's business, consulting work requires an exceptional level of social skills (Cope, 2000; Agahi, 2002).

The central aspect that is visible in all of the above definitions of business consulting is the very deep relationship that the consultant and the customer have with each other. Although interactivity is present in all professional services, business consulting services take this aspect to the next level. When the customer is revealing their most kept secrets, it is only possible, if complete trust is formed between the consultant and them. As discussed earlier, the human aspect increases as one is moving from the ICT system elements towards core service elements and complementary service elements, and it has a huge impact on quality perceived by the customer (Kang and James, 2004). The same applies when one is moving from operational services to systems integration and to business consulting. ICT service providers need to bear this aspect of interpersonal skills in mind, when recruiting people into the different tasks.

3.1.3 Service Continuum

As stated services and products are generally seen to form a continuum that has products at the one end and services at the other (Rathmell, 1966; Shostack, 1977), and they have no clear line between them (Lovelock, 1984). Services comprise of more intangible elements, and are intangible dominant,

whereas products comprise of more tangible elements, being tangible dominant (Shostack, 1977; Chase, 1978; Thomas, 1978; Levitt 1981). From an ICT service provider's point of view, the most important characteristics of ICT services include:

- Intangibility
- Interactivity / human intensity
- Heterogeneity
- Skills and creativity dependency

The degrees of these characteristics vary depending on whether we are dealing with ICT system elements, core service elements or complementary service elements, and respectively whether we are dealing with operational services, systems integration or business consulting. Intangibility is increasing as one is moving away from the ICT system elements, as does the interactivity and human intensity as well as the need for special skills and creativity. Intangibility is an important aspect for ICT service providers, because it has a great impact on the customer's decision of whether or not to buy and also the quality perceived by the customer (Shostack, 1977; OCG, 2007). Intangibility also makes services quite hard to be measured or tested (Zeithaml et al.,1988), which are both important aspects when trying to improve the quality of services. Heterogeneity is mostly dependent on the quality of service designing in terms of production processes definitions. As customers today are very demanding concerning the quality of ICT services (Johnson and Ettlie, 2001; Gabrielsson et al, 2006), ICT service providers need to control this heterogeneity in a better way.

Interactivity and human intensity as well as special skills and creativity are also important aspects, because they differ so greatly in service business compared to the product business. ICT service providers need to take this into account in recruitments and also in designing services. The more a particular service is human intensive and requires creativity, the less it can be rationalized and predefined. This should not be taken as an excuse not to design human intensive services properly, but just to bear in mind that the design will be different whether we are talking about operational services or business consulting services. By summarizing the conclusions drawn in section 3.1 the ICT service is presented as a service continuum in the following figure 11.



Figure 11 ICT services as a service continuum.

The elements of an ICT service are divided into three categories (ICT system elements, core service elements and complementary service elements) from a component point of view and into four categories (ICT system, operational services, systems integration, and business consulting) from a marketing point of view. The categories match each other quite well, with the exception that systems integration has both core service elements as well as complementary service elements. Usually ICT services are designed so that especially the core service elements and complementary service elements, which are based on the skills of persons, are highly intangible. This poses many challenges for ICT service providers. The same applies to heterogeneity. When one is moving from systems elements towards complementary service elements the need for skills and creativity is increasing. The more a successful execution of the elements is based on skills and creativity instead of predefined methods, tools and processes, the greater the variance in the tasks and the corresponding outputs.

3.2 Service Design Process

If ICT services are not properly designed they will be expensive to run, prone to failures, scarce resources will be wasted and the services will not meet the customer requirements (OCG, 2007). ICT services are increasingly complex, and so has become their design processes (Bullinger et al., 2003). Scheuing and Johnson (1989) argue that service industry – by their definition – lacked a decent, systematic model for designing new services. They introduced a 15-step process model for developing

new services that was based on earlier work by Donnelly et al. (1985), Johnson et al. (1986) and Bowers (1986). The model illustrates the different sequences as well as the most essential internal and external influence interfaces. Their model is illustrated in the figure 12.



Figure 12 Normative model of new service development, Scheuing and Johnson (1989, p. 30).

Scheuing and Johnson's (1989) process starts with "Formulation of new service objectives and strategy". In this phase goals, objectives, marketing plans etc., for the new service should derived in co-operation with several participants from the firm's overall strategy. In the next phase, "Idea generation",

external parties such as suppliers, competitors and customers should be followed and interviewed to get inspirations and to take into account possible constrains for the new service. In the "Idea screening" phase most prominent ideas for further development should be recognized and more unsound ideas abandoned. "Concept development" expands the surviving ideas into more detailed descriptions answering to questions such as: why, to whom, how etc. The purpose of "Concept testing" is to see in test conditions whether or not the concept meets customer requirements. The "Business analysis" phase studies the proposed concept from a business case point of view and tries to examine the financial implications. In "Project authorization" the new service development is either approved or rejected by top management. "Service design and testing" produces the service itself, or more accurately operational details of the service, and tests them. In "Process and System Design and Testing" the delivery of the service is designed and then also tested from a process and system point of view. The next phase, "Marketing program design and testing", covers the design of the marketing activities and then testing them among the employees to ensure that everyone is aware of the new campaign (covers also "Personnel training"). "Service testing and pilot run" is the last test made, to ensure smooth operation, before "Test marketing" and "Full-scale launch". After the launch in the "Post-launch review" the results of the process are reviewed and the success is evaluated.

The process model developed by Scheuing and Johnson (1989) is quite extensive in terms of the number of different steps pictured, although the process is not described in much detail. Nevertheless, the extensiveness is easily understood because the model has not been applied in practice. It is a model built from a theoretical background. If the model had been tested in practice, they would have most probably noticed that it is far too heavy to execute. The model is, as said, extensive, but in real-life difficult and costly to follow.

Also Vaattovaara (1999) developed a process model in his research. He focused on transforming existing professional services into products in a systems engineering company. Vaattovaara (1999) defined the general transformation of services into service products as "the transformation of services as products creates clearly defined service objects with a priori defined features and implementation processes". The main phases of Vaattovaara's (1999) process model are 1) product screening, 2) product analysis and concept construction, 3) development of service package, and 4) development of service implementation processes. In the first phase, a set of services are selected that are chosen to be developed into "service products". Next, these selected services are analyzed and based on customer

needs and market analysis a service product concept is built. In the third phase, the concept is built based on five different service modules. These modules are, as defined by Vaattovaara (1999), the service essence (key contents of the service from the customer's point-of-view), enabling services (necessary modules in production of the service essence), facilitating services (help the customer in the service implementation), administrative services (used for management of the service contents; e.g. billing), and augmenting services (optional services that enhance the total value of service essence to the customer). In the last phase, the processes needed to deliver and implement the service are developed.

Vaattovaara's (1999) model is relatively compact, which makes it practical. As the customers' role in services is more intense and deeper than in products, this should also be visible in service development (Bowen and Youngdahl (1998; Alam and Perry, 2002). This is also the weak point in Vaattovaara's model – it does not address the role of employee and customer participation in the design process. But more importantly, his model can be said to have a wrong starting point: "to transform existing services into products". As discussed before, services and products form a continuum with no clear line between them. It is true that one can make services more tangible, but that does not change the fact that they are still what they are – services. Services move in the continuum towards the tangible domain, but they still remain as services. If services are mistakenly handled as products, the special characteristics that are always present in service business will not be properly taken into account, which will lead to serious challenges in delivery, implementation and management of the services.

Later Alam and Perry (2002) developed a model for new service development that consisted of ten stages. The phases of their process were 1) strategic planning, 2) idea generation, 3) idea screening, 4) business analysis, 5) formation of a cross-functional team, 6) service design and process/system design, 7) personnel training, 8) service testing and pilot run, 9) test marketing, and 10) commercialization. Their model was actually very similar to that of Scheuing and Johnson's (1989), with the exception of the formation of a cross-functional team. In this phase, top management is involved and members are gathered from the different functions that are participating in the service production. Although this model is slightly more compact than the model of Scheuing and Johnson (1989), it too lacks the role of employee and customer participation in the design process.

Recently, increasing research interests towards service design process have been shown. But in all fairness, all of them are more or less something in between the most comprehensive model of Scheuing and Johnson (1989) and the most compact model of Vaattovaara (1999). Same goes to the

service development model developed by Paloheimo et al. (2004). Although they emphasized the iterative nature of service development, this same observation was already made by Shostack and Kingman-Brundage (1991). Both of the models (Shostack and Kingman-Brundage 1991; Paloheimo et al. 2004) are shown in the figure 13.



Figure 13 Spiral new service development models [(a) Shostack and Kingman-Brundage 1991; (b) Paloheimo et al. 2004].

The model developed by Shostack and Kingman-Brundage (1991) seems slightly complex at the first glance, but is in fact relatively simple. Iterations appear in the design and audit phases. Shostack and Kingman-Brundage (1991) emphasized the importance of the service design phase and that the design should be the result of several iterations. The idea of this feedback loop is also visible in the audit phase. Paloheimo et al. (2004) also developed a model that emphasized the iterative nature of service design. In their model iterations happen during the whole process – except of course the selection phase.

Smith and Fischbacher (2002) described new service development as a political bargaining process. Although their case study was from health care, their observation is not so dependent on the industry, but more on the service provisioning process. According to their argumentation, service provisioning is a very human intensive process that requires seamless co-operation from multiple functions in an organization. The bigger the organization, the more evident it is that the functions have – at least to some extent – differing objectives. That is why Smith and Fischbacher (2002) consider new service development being more of a bargaining process, where it is of utmost importance to get

everyone involved in producing the new service and to orchestrate the co-operation between these different functions and the people working in them. The challenge of orchestrating the co-operation of different functions was also pointed out by Ballantyne et al. (1995). From this perspective, the iterative nature of service design proposed by Shostack and Kingman-Brundage (1991) and applied in the model by Paloheimo et al. (2004) is a very important aspect. Everyone involved in the service provisioning has to have a say concerning the service design. Otherwise, friction will appear in service delivery, implementation and management, which will lead to poor service quality perceived by customers.

Although the technical service design process developed by Aurich et al. (2006) is actually a bit of a mixture of Vaattovaara's (1999) and Alam and Perry's (2002) models, the model is worth mentioning here. Their model consists of demand identification, feasibility analysis, concept development, service modeling, realization planning, and service testing. The model differs from the other models, because it is described in a very detailed, strict and concise manner. Their study is based not so much on earlier work in the area of service management, but more on the design of technical product systems and product lifecycle management. Although their study does not offer anything new from a service design process point of view, it shows how the strict discipline of a product design process can also be followed in service design process.

There are two key challenges with service design process models. The first one is that each of them is probably the best for designing specific services in a specific context. Different issues should be emphasized when one is dealing with services that cost from 100 to 1000 euros and when one is dealing with services that are in the range of 2000 – 100 000 euros. The same applies if services are provided by a company consisting of ten people or by one consisting of 1000 people. What is important in services costing 50 000 euros and provided by an organization of 500 people is also important in services costing 500 euros and provided by an organization of 15 people. But different aspects should be emphasized in service design. For example, business analysis is one of the most important phases in both cases, but it is much more crucial and should be taken to a very detailed level in case of services that cost 50 000 euros. Also, designing how to implement the service is very important but should be emphasized even more when there are ten different functions and 200 people involved than in a case where there are three people involved.

The second aspect refers to the number of different phases in the process. There is an evident tradeoff between being theoretically accurate and being efficient in practice. If the model is theoretically

very detailed, it is very costly and time taking to apply it in practice. And the other way around, if the model is very practical it may not be so theoretically accurate. It is a good thing that there are theoretical reference models (e.g. Scheuing and Johnson, 1989), but it should be emphasized that a model as extensive as this one is very costly to be fully applied into practice. As long as one is discussing it on a theoretical level, no one can argue that some phases are irrelevant or unimportant, but as soon as one is actually doing the work in practice, one can notice that there is never enough time, information or resources to develop services with such rigour. On the other hand, the weak point of the most practical models (e.g. Vaattovaara, 1999) is that in some other cases, in some other environments, there are issues that need to be taken into account, but the model offers no help in doing it.

3.3 Methods and Tools for Service Design

3.3.1 Industrialization of Services

Levitt (1972) argued that there is no such thing as service industry. Instead, there are only industries whose service components are more or less those of other industries. He saw the humanistic emphasis as a profound weakness of the services discussion. In his opinion, services should be "industrialized" by applying techniques from manufacturing. Levitt (1972) suggested that industrialization should be done by focusing more on the activities that are required in producing the service - and how they could be re-engineered - than on the performer of those activities. Although Levitt opened up the discussion for improving the efficiency of service production, his metaphors of "fear of God" or the "whip of the foreman" describe his approach quite well. But again, at that time his view of treating humans as machines and "tuning" them accordingly, may have been more applicable than today. Today – especially among the knowledge workers in the ICT service industry – this kind of approach would produce quite disastrous results.

Levitt later argued that (1976) in the case of human-intensive activities, hard, soft and hybrid technologies should be used to systematically industrialize services. Hard technology means replacing human activities with technology-based processes (as in ATM and internet banking services), soft technology refers to rationalizing and specializing the human activities involved in services, as well as repacking or modularizing them (as in the modularized service and maintenance packages offered by the ICT providers, e.g. corporate telephone services), and hybrid is a combination of hard and soft technologies. Levitt mainly applied the principles of the limited discretionary action of personnel,

division of labour (soft technologies), substitution of people with technology (hard technology), and service standardization (hybrid technology) in his industrialization efforts.

Although there were important development aspects already in the 1970's, the division of labour and substituting people with technology are quite relevant issues today. The division of labour has been part of everyday business among ICT providers for quite some time as the organizations have grown in size. The different tasks in a provisioning process are divided between different functions, each concentrating on their particular area of expertise (service desk, project management, business analysis etc.) Substituting people with technology is also quite evident in self-services. Travel agencies are probably one of the most common examples used in explaining how many of the tasks performed by travel agency personnel (such as airline ticket reservation or hotel booking) are today handled by customers themselves with the help of ICT services. The same applies to ICT services themselves. Many orders can be made by customers themselves through the internet, many reports can be viewed from databases through the internet, and many incidents can be recorded into the systems through the internet.

Levitt (1972, 1976) used the limited discretionary action of personnel as a soft technology to improve the efficiency of service provisioning. Although primarily used to improve efficiency, the limited discretionary action of personnel also improves the quality of services. Its purpose is to define the tasks and the way to execute them so precisely that it leaves no discretion to the performer. In practice the limited discretionary action of personnel is one kind of standardization. Levitt (1972, 1976) used McDonalds and their manual as an example. The manual dictates where exactly the french-fry boiler should be, the tools to be used to ration and weigh french fries in a manner that every portion has exactly the same amount of French fries and that no intelligence or thinking is required from the performer. Levitt (1972, 1976) argued that if the performer has too much discretion, it will inevitably lead to variations in the output and to inefficiency in the process. Variation will occur because everyone thinks slightly differently and has a different background and knowledge about the issue. Inefficiency will most probably occur because everyone needs to think about the issue instead of just executing it.

Also Johnston (1994) and Bowen & Youngdahl (1998) argued that service management has a lot to learn from operations management in manufacturing in general. The importance of standardization in particular has also been acknowledged by Sawhney et al (2004), Davies (2004) and Davies et al. (2006). According to them, standardization is a major prerequisite in order to produce quality services efficiently.

Originally service industrialization was a philosophy, a framework and an approach towards designing services. However, today – and especially in the context of ICT services – the strict application of industrialization as an approach is not possible. People participating in the provisioning of ICT services can not be treated as machines, they cannot be fine-tuned in a same strict manner. What can be done is to use industrialization as a tool in service design. Some techniques are useful in service design, but the starting point of fine tuning humans as machines is no longer applicable.

3.3.2 Tangibilization of Services

Levitt (1981) discussed the role of tangibility in the processes of winning new service customers and retaining existing ones. He points out that in order to make prospective customers confident and comfortable about intangibles that cannot be pre-tested, organizations should go beyond the literal promises of specifications, advertisements, and labels to provide reassurance. Intangible promises have to be 'tangibilized' in their presentation; making intangible tangible should be done as a matter of routine on a systematic basis (Levitt, 1981). Reddy et al. (1993) and Buttle (1993) have applied Levitt's ideas of tangibilization in the service mix and in relation to the corporate image. According to them, in order to remain competitive a service firm must tangibilize or concretize its services. Buttle (1993) provides helpful examples of how hotels have tangibilized their service offering by developing different kinds of printed material (e.g. floor plans, area maps, meeting room set-ups), property tours, photographic material of the property, newsletters, conference books, videos, etc, for both businesses and customers.

In practice, tangibilization means giving something that is intangible a more tangible form, in other words making something more concrete. Let's take business analysis service as an example. In its most intangible form business analysis service would be sold to a customer by a salesman without any brochures, papers, etc, only through oral presentation. The service would be provided by a consultant performing the analysis with the aid of a pen and some paper and then reporting the results orally to the customer. Business analysis services can be made more tangible by developing sales slides, and a service description that can support the salesman in his sales efforts. Then the consultant would have ready-made slides of the workshop agenda and content together with a questionnaire that would be sent

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to the customer beforehand. The customer could then familiarize themselves with the issues that are going to be dealt in the workshop and find out needed background information for the workshop. Then after executing the workshop, the consultant would make a detailed report of the analysis and also present these findings to the customer.

In its essence, tangibilization is about defining different tasks and outputs – what is included and what is not, and also to put those on "paper", so that these tangibles can then be given to the customer. These tangibles present the concrete elements of the service that the customers get. Tangibilization is a very important effort that has a significant impact on service quality perceived by customers (Reddy et al., 1993; Buttle, 1993). Nonetheless, like all tools, also tangibilization has pitfalls that need to be kept in mind – especially excess documentation (Boiral, 2002). The final step of tangibilization is always documentation, which is really the core of tangibilization, turning verbal promises into something concrete. The purpose of tangibilization is to reduce the intangibility of a particular service to a sufficient degree. Sufficient in order to have unambiguous understanding of the content of the service and for it to be communicated to a customer in a convincing manner. A service does not need to be made any more tangible than that. When tangibilizing services, it is important to ensure that it will not lead to bureaucracy through excess documentation (Boiral, 2002). For a broader discussion on service tangibilization, see Sempels (2002).

3.3.3 Service Blueprinting

Shostack (1987) emphasized the process perspective of services and stated that the process manifests the fundamental nature of services. She suggested that the service process should be first described as steps and sequences and by the complexity and divergence of those steps and sequences. Shostack (1987) defined process complexity as the number and intricacy of the steps required in carrying out the process. Divergence was defined as the degrees of freedom allowed performing a process step or sequence. Based on the process perspective, Shostack (1982, 1984) presented a service development method called service blueprinting. She used a general practitioner's service as an example to explain her method. A service blueprint of this example is presented in the following figure 14.



Figure 14 Service blueprint of a general practitioner's service, Shostack (1987).

The process complexity of this example would be evaluated based on the number of different steps (e.g. take medical history, record symptoms, diagnosis) and how complicated the process is in general. Divergence is present in all tasks in which a sector is drawn after the performer in the figure (e.g. after the examination, tests, research and/or seeking advice, other treatment: there is a small sector shape after the circle). Shostack (1987) used this particular example as a highly complex and highly divergent service at that time. She defined service blueprinting to comprise of four steps. First, the service process should be identified and broken down into steps and sequences. Second, the potential failure points (where the performer is seen to have too much discretion) should be isolated. Third, a suitable timeframe for the service should be established. Fourth, the service should be analyzed to identify possible changes of unprofitable sequences or timeframes. Shostack (1987) argued further that service blueprinting could be used to re-engineer the service structure to gain strategic advantage.

Shostack's (1982, 1987) service blueprinting is actually a method similar to Levitt's (1976) ideas of the limited discretionary action of personnel. Although the core idea is the same, she did develop the idea into a real method. Furthermore, Shostack saw service blueprinting more as a method of structurally redesigning services to gain a real strategic advantage than as a tool to decrease variance

in outputs. As Baum (1990) was examining the applicability of service blueprinting as a method, he concluded that it is not as straightforward as one might think and not at all an easy effort. This same notion is applicable to the service provisioning processes of an ICT service provider today. Complexity should be reduced in processes where it is a problem. If there is a process description and it works well, there is no need for blueprinting. And as tangibilization, also service blueprinting should only be taken to a level where the service divergence is at an adequate level. Heterogeneity is an inherit characteristic of a service. It can be reduced but not eliminated. Any attempts to do so will just lead to an excess of documentation.

3.3.4 Role Scripting

The article by Solomon et al. (1985) is not generally recognized as a research presenting challenges that take place when a service provider meets a customer (the moment of truth), but it has some aspects that may help us in developing services. Solomon et al. (1985) took a sociological approach to service design as they presented a theoretical model based on the role theory. They focused on the service encounters between the service supplier and the customer that takes place when the service is produced / delivered. Solomon et al. (1985) defined that the service encounters are 1) dyadic, 2) human interactions and 3) role performances. The notion that is most beneficial for service design is that since service encounters are role performances, the service provider and the customer can be seen as actors. Since the actors can be seen as to participate in a play, a service script can be developed for them, Solomon et al. (1985). A service script could be developed for a business consultant performing a business analysis that contains a workshop part, for example. The script would then define the basic process of the workshop, a couple of basic situations between the consultant and the customer and some basic patterns that most probably occur, and then some instructions on how to act in those situations. Solomon et al. (1985) further argued that by developing these kinds of scripts, the "actors" could train for the situations beforehand and thus reduce variance and the chances of unexpected situations.

The intensity of customer encounters in ICT services varies somewhat depending on whether one is dealing with operational services, systems integration or business consulting services, the intensity being the lowest in operational services and the highest in business consulting. As discussed earlier, business consulting services in particular require an exceptionally deep relationship with the customer. This makes the customer encounters quite individual, i.e. very unique. If the uniqueness is a
result of the context dependency and customer specific knowledge then there is quite little room for replication. If the uniqueness is a result of unnecessarily having multiple ways of conducting consulting, then there is room for harmonizing the encounters or at least parts of them.

Role scripting is probably the most delicate method of designing services for two reasons. First, it should be applied only when it is seen that replication is valid for a larger group (more than five people) of professionals. It makes no sense for an individual consultant to make a role script just for him or herself, at least not from the consultants own point of view. From the company's point of view, it would be a good thing to capture the tacit information in case the consultant decides to leave the company or if a new consultant is hired. But as said, it can be a tricky thing to get the consultant to actually document the role script. Secondly, the purpose and idea of role scripts should be thoroughly understood. Their purpose is not to provide a prefixed pattern of how to behave but to offer tools for harmonization and tools for some of the most usual situations. As with real stage actors, manuscripts can offer the grounds for the play, but good actors will also need to improvise during the play. If this is forgotten, the use of role scripts will lead to bureaucratic and inflexible behavior.

The idea of different roles has actually kind of a two-way meaning in service design. On the one hand role scripts can be developed for persons engaging in customer interaction, and on the other hand the same role concept can be used when designing services. As described in chapter 2.6 (Providing ICT services in practice) provisioning of ICT services typically involves a lot of different roles, such as salesman, project manager and production expert, etc. During new service development, there may not be people responsible for those roles or there maybe too many persons responsible for them in order to use them in designing the service. In practice this means that at the time that the new service is being designed there may not be any persons named to be responsible of service delivery, for example. Or the responsibility of the service delivery has in principle been assigned to a certain group, but no one has been trained to do it in practice. Instead, in designing a particular service, different roles can be used and then a person responsible for a particular role looks at the service from that role's point of view. There can be, for example, the role of a salesman, which is then assigned to a person (he or she does not even need to be a salesperson). Then the task of that particular person is to think of issues from the point of view of sales, such as how the service can be sold to customers. The role concept in the context of service design has been discussed by Frings and Weisbecker (1999), Meiren (1999) Bullinger et al. (2003), for example.

3.4 Service Packaging

As discussed in chapter 2, ICT service providers are operating in a very challenging environment and dealing with increasingly complex ICT systems. The complexity is a result of several environmental factors jointly affecting ICT service provider operations. These environmental factors include: an increase in demand (including increased customer variety), the accelerating pace of technological change and lack of standards as well as increasing customer demands. The complexity is manifested in increasing number of different technologies, methods, tools, processes and conventions. In this study it is argued that industrialization is one of the best methods to address this complexity. Industrialization is used to apply principles of manufacturing as a basis of the service design. Principles refer to the guiding rules according to which the service should be designed. As described earlier, these can be soft (the rationalization or specialization of human activities), hard (replacing human activities by technologybased processes) or hybrid technologies (a combination of both).

In the context of ICT services, industrialization should be applied to minimize idiosyncratic, one-time performances, reduce the number of different technologies, methods, tools, processes and conventions and to make things as reusable as possible. This in mind modularization from manufacturing should be used as the guiding principle for building ICT services based on a common modular architecture, so that idiosyncratic, one-time performances would be minimized and modules could be reused by different ICT services as much as possible.

The service business differs from the product business. In order to be competitive in the service business, new competencies need to be developed by ICT service providers. ICT services have four distinct characteristics that make them challenging to market, deliver, implement and manage. These characteristics are: intangibility, interactivity / human intensity, heterogeneity, and skills and creativity dependency. In order for ICT service providers to produce high-quality services and to be able to operate them efficiently, they need to reduce the intangibility and heterogeneity of their services. But the further one is moving from ICT systems along the service continuum towards business consulting, the more human intensive and skill and creativity dependent the services are. This makes the task quite challenging.

In order to reduce the undesirable effects of intangibility, interactivity / human intensity, heterogeneity, and skills and creativity dependency these characteristics need to be addressed already in

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the service design phase. When designing ICT services, ICT service providers have to handle two aspects: The design process itself and the tools and methods used during that process. In this study, the combined toolbox with a defined process, together with the tools, will be referred as "service packaging". As discussed in chapter 3.2, there are many design processes that are each applicable in a given context. At this point the process is not handled on a detailed level, but instead referred to only as a design process. In the different phases of the design process different tools can be applied. The main four methods identified are I) industrialization (Levitt, 1972, 1976; Quinn and Paquette, 1990; Quinn et al., 1990), II) tangibilization (Levitt, 1981), III) service blueprinting (Shostack, 1984, 1987), and IV) service scripting (Solomon et al., 1985). The application of these different tools should be done in this particular order – from a holistic view into details. Starting from the very principles of modularization, going into defining and drawing the lines between the different tasks and activities, continuing by defining the processes within the particular tasks and activities, and ending with step by step personal role definitions. This is illustrated in the following figure 15.



Figure 15 Service packaging.

The key goals of service design should be to raise the degree of tangibility and at the same time reduce the degree of heterogeneity of the different elements, while taking into account the human intensity and the need for skills and creativity. After the basic principles have been defined (industrialization), the different service elements should be tangibilized by properly defining the contents of these elements. What is included in each particular element and what is not. By defining the different outputs the intangibility of the elements is reduced and the level of tangibility of the service is increased.

After the basic design is done and intangibility handled, the heterogeneity of the elements should be addressed. This can be done by applying service blueprinting. Service blueprinting can be used to map the different steps and phases of the provisioning process and to identify possible places for decreasing the performer's discretion. By systemizing these parts of the provisioning process the performer dependent variance of the elements can be reduced, making the services less heterogeneous. Finally role scripting can be used to harmonize some of the customer encounters during the provisioning process. By doing this the performer dependent variance of the elements can be decreased and again the level of heterogeneity of the service will be reduced.

In practice, the raised level of tangibility will show as better quality and more unambiguous and understandable services to customers as the service will have a greater changes of meeting customers' expectations (Palaima and Banytè, 2006). This makes it also easier to measure and test the services (Zeithaml et al., 1988). Nevertheless, it should be remembered that due to the increasing levels of interactivity, human intensity, special skills and creativity that are required in system integration and business consulting in particular, the level of tangibility will never (nor should it) be as high in business consulting as in operational services. The effect of proper service design on intangibility is shown in the figure 16 as increased tangibility indicated by the arrows.



Figure 16 Desired effect of applying industrialization, tangibilization and role scripting.

The degree in which the different methodologies are used depends on the position that a particular element inhabits in the continuum as well as on what is aimed at with the particular design

effort. For example, if the element is situated in the service domain end possessing many intangible characteristics, then maybe the emphasis should be on tangibilizing. If, on the other hand, the goal is to reduce the throughput time, then the emphasis should be more on service blueprinting. And again, if customers are complaining about poor customer orientation in encounters, then maybe service scripting could prove to be the most beneficial.

3.5 Service Dominant Logic

The service sector is one of the most growing industries in western societies. Today the majority of the workforce in western coutries is employed by the service sector and usually more than half of a nations' GDP comes from the service sector (Liu and Wang, 2007). As economic growth is accelerating and welfare societies are flourishing, consumption patterns are also changing – unfortunately to the wrong direction from a global perspective. Public pressure to cut down energy and raw-material consumption is evident in almost all developed countries. As – at least in theory – services can be provided without any energy or raw-material consumption, many see them as a part of the solution to control energy and raw-material consumption, but at the same time even accelerate economic growth (Cipolla and Manzini, 2009; Sakao and Shimomura, 2007). That is why services are also often associated with the idea of "indigenous economic growth" – the idea of creating sustainabe growth without the need for energy or raw materials, by creating new information, new knowledge.

As this role of services has risen in importance (Larsen, Tonge and Lewis, 2007; Paton and McLaughlin, 2008; Liu and Wang, 2007; Ojasalo, 2009a), also service sciences have received more popularity. Service Dominant Logic is one of the most recent advancements in the field of Service Management. According to SDL, the focus in the service provider - customer interface should be moved from the exchange of tangible or operand resources (Goods Dominant Logic) into the exchange of intangible or operant resources (Vargo and Lusch, 2004). Examples of these operant resources are the knowledge of the individual employees of an ICT service provider, the ICT service provider's organizational routines and culture, the ICT service provider's knowledge about competitors and market segments as well as their relationships with suppliers and customers (Hunt, 2004). Madhavaram and Hunt (2007) further divided these operant resources into a hierarchy of three types of operant resources, representing their potential value to a company: interconnected operant resources (IOR), composite operant resources (COR) and basic operant resources (BOR). According to Madhavaram and Hunt

(2007) BOR's are usually the easiest to copy, whereas IOR's represent to most potential source of competitive advantage.

Vargo and Lusch (2004) go on further and explain that actually SDL is not only about the interchange of intangible resources but more accurately about the co-creation between the service provider and the customer. Michel, Brown and Gallan (2007) emphasize this aspect, since it means that value is not readily in the output, but the value is co-created together with the customer. This further means that service providers can only offer value propositions, but it is ultimately the customer that gets to decide whether the service is of value in use or not – thus separating the concepts of value-in-exchange from value-in-use (Ballanthyne and Varey, 2007). In practice, this distinction means that those ICT service providers that are happy when the ICT solution is succesfully delivered to the customer are actually leaving the customer alone to make the decision whether the ICT service is actually of value or not.

As the customers have such a fundamental role in this value creation, Grönroos (2008) argued that it is the interaction in all forms between the service provider and the customer that represents the very idea of SDL. In ICT service design and development, prototyping is one of the most important forms of this kind of an interaction (Saco and Goncalves, 2008; Moller, Chaudhry and Jorgensen, 2008; Holmlid and Evenson, 2008). With different kinds of prototypes, the ICT service provider can test whether or not the customer actually values the aspects of the service in real use. The idea is to create this iterative cycle to develop services that really create value for the customers. Unfortunately prototyping is commonly used in that phase of the development when the service is ready – as a kind of a final test. If used more often and in an earlier phase, ICT service providers would often realize that those new technological features that they so highly appreciate do not actually create any value for the customer.

In order for companies to be able turn the SDL thinking into a real competitive advantage, the whole company needs buy this idea of how the customer is served (Lush, Vargo and O'Brien, 2006). This represents a major challenge for ICT service providers – as well as many other industries in the journey from a product business into a service business – are they ready to do that? Ojasalo (2009a) argued that the extent of how deeply customers can participate in the co-creation is greatly affected by the phase that the whole company is in the transition from a product company into a service company. Her study further concluded that it is not possible to design the customer's role as a co-creator in the

true spirit of SDL if the whole company has not undergone the transition all the way. Considering this, the extent to which the customer's role should be designed in ICT services is still quite small. This study will argue that ICT service providers are still in the very early stages of the transition from a product oriented company towards a service oriented company, and therefore the true spirit of SDL may not be the highest priority in ICT service design and development at this time. However, the research done in the field of SDL will be utilized when it focuses particularly on the ICT service design and development process as well as the practical tools and methods to be conceptualized the service. Implications of SDL on future research as well as managerial implications will be discussed in chapter nine.

3.6 Knowledge Management

The provisioning of ICT services itself is a complex, highly social process generally involving the co-operation of several organisational units and their personnel. Typical units include product management, product development, sales support, support systems etc. The information needed in this production chain is typically embedded in processes and only partly documented. It is usually only stored in the minds of people, and highly context dependent. This know-how, this intangible knowledge can either be seen simply as an asset or in a more complex way, as a combination of codified explicit and silent tacit knowledge or individual and social knowledge (Spender, 1996). Either way, this knowledge can be considered a critical resource in packaging ICT services to develop sustainable competitive advantage (Woo et al. 2004).

In order to benefit from knowledge, organizations must identify the existing knowledge residing in individual employees and try to codify and transfer it from them to the rest of the organization (Spender, 1996). In ICT service packaging two core knowledge processes can be distinguished in regard to knowledge management: knowledge creation and knowledge transfer (von Krogh et al. 2001). Knowledge creation will be examined through a justification process defined by von Krogh et al. (2000). Knowledge transfer will be examined from two perspectives: the knowledge conversion perspective developed by Nonaka and Takeuchi (1995) and the organizational learning framework perspective developed by Crossan et al (1999).

3.6.1 Dominant Logic and Knowledge Creation

Knowledge creation has been described as a process of sharing knowledge among individuals and also described as being highly dependent on the context it has been created for and from (Nonaka and Takeuchi, 1995). Therefore, all new knowledge is not always useful to a broad range of people. The knowledge has to be proven worthwhile to be adopted first by other individuals and finally by whole organization. Von Krogh and Roos (1996) call this a justification process, where the organization's dominant logic plays an important role as a filter on the way of approval.

Justification is a dynamic process, where the new knowledge is rejected, returned or appropriated. This is shown in figure 17. A rejection takes place when the knowledge is not perceived as useful or relevant, since it does not contribute to the existing knowledge base in any useful way. But if the new knowledge has some valuable features, instead of rejecting it, the knowledge gets returned for further elaboration. Finally, if the knowledge is appropriated as commonly acceptably knowledge, it becomes existing knowledge, which can be seen as 'justified true beliefs' (von Krogh et al. 2000).



Figure 17 Locus of justification in knowledge creation (von Krogh et al. 2000)

In figure 17, von Krogh indicates with the question mark that justification is a diversified mechanism that is described by a dominant logic. Dominant logic is the way in which managers conceptualize the business and make critical resource allocation decisions (Bettis and Prahalad, 1995). Bettis and Prahalad (1995) continue that dominant logic is also an information filter, a funnel, through

which the relevant information is incorporated to an organization's behavior. Adapted information from the funnel also slowly shapes the dominant logic to reflect the new learning. In addition to the organization's justification process single individuals may have their own justification process due to their unique set of experiences (Von Krogh and Roos, 1996).

As discussed earlier, many ICT service providers have not been operating in the service business very long. Many of them have a rather long history in the product business. This is reflected in the product business oriented logics of ICT service provider organizations. In practice the production and product logic causes many challenges. Many good service oriented ideas can be abandoned simply because they conflict with the product business logic. For example, product-based pricing can still be seen as being so superior that irrational discounts can be made of monthly fees, if up-front fees of equipment can be agreed on. On a more general level services can also be regarded as inferior to products. In practice this is often shown as free services given to the customers as a discount in order to get the product sales. In addition to these challenges inflicted due to the service origin, ICT service packaging also faces doubts because it enters into new and unknown areas. If the challenges associated with the justification and dominant logic are not recognized by the ICT service provider, serious problems will occur during the whole lifecycle of a particular ICT service.

3.6.2 Challenges in Codifying Tacit Knowledge to Explicit Form

Knowledge is generally divided to two basic types: explicit and tacit. Explicit knowledge refers to codified knowledge that is transmittable in a formal, systematic language and is easily transferred and stored by using information technology, for instance (see e.g. Nonaka, 1994, Woo et al., 2003). In the context of ICT services, this can consist of service descriptions, sales slides, brochures, process descriptions, etc. Tacit knowledge, on the other hand, is harder to formalize and communicate. In KM literature, the definition of tacit is generally based on Polanyi's theory of tacit knowledge (Stenmark, 2001). Tacit knowledge is installed in the human brain and can be seen as expertise, understanding, professional insight formed as a result of experience (Woo et al., 2003). In the context of ICT services this refers to the know-how that the individuals in the provisioning process have developed over the years. For example when (in chapter 2.6 Providing ICT services in practise) the LAN expert noticed that a financial application was missing from the firewall rules, the insight was based solely on the individual's tacit knowledge.

The codification of tacit knowledge to an explicit form is challenging. According to Boiral (2002) the challenge comes from associating tacit knowledge with intuition. Employees may not be fully aware of their own tacit knowledge and instead of solving complex problems entirely rationally, they rely on hunches, recognising patterns and drawing intuitive analogies, and parallels to other seemingly similar situations (Koskinen, 2000). For example, if the LAN expert would have been asked how she was able to notice the absence of the application, she would have most probably said that "I just knew". In ICT service packaging there are two other reasons that make the codification process challenging (Stenmark, 2001). Firstly, as employees are already able to act by the guidance of tacit knowledge they may lack the personal need to codification. And secondly, employees feel that codifying their own tacit knowledge may cause them to lose a valuable competitive advantage. Regardless of the challenges in codification, it is a necessary and important process in the packaging of ICT services, if the producers aim at the efficient provisioning of these services.

3.6.3 Four Modes of Knowledge Conversion

Nonaka and Takeuchi (1995) model (SECI model) the transformation of individual implicit knowledge into common external knowledge within an entity as a spiral process. According to Nonaka (1994), tacit knowledge and explicit knowledge are seen as mutually complementary entities that interact and form a process through which organisational knowledge is formed. Interactions in organization encourage its individual members to develop new knowledge through new experience, and this makes the model dynamic (Scharmer, 2000).

In the SECI model knowledge creation takes place through two interaction processes. First (1) is the continuous interaction of tacit and explicit knowledge, which is referred to as knowledge conversion. In this interaction, knowledge development comprises elements of both knowledge types and the key role is given to interaction of these types. The second (2) process concerns social interaction. Here the individual knowledge forms the crucial basis for knowledge development but the organization is an important mediator (von Krogh et al. 2001). These two interactions are combined in the SECI spiral, where conversing knowledge takes place in four modes (see figure 18). The four conversion processes between the two types of knowledge are, socialization, externalization, combination and internalization. (Nonaka and Takeuchi, 1995)



Figure 18 Four Modes of Knowledge Conversion. (Nonaka and Takeuchi, 1995)

According to Nonaka's (1994) definitions, the first (1) mode, socialization is a process of creating common tacit knowledge through shared experience and then learning through observation, imitation, and practice. Knowledge sharing is often done without ever producing explicit knowledge. In ICT service packaging this usually occurs when the content of the service is pondered upon in various work-shops. No explicit documentation is necessarily produced, but ideas about the service are discussed with people presenting different functions in the service provisioning process.

Nonaka continues that the second (2) mode, externalization, contains articulating tacit knowledge into explicit knowledge, often with the help of metaphors, analogies, and sketches. The second mode is challenging because of the difficulty in converting tacit knowledge into explicit form (Boiral, 2002). In ICT service packaging this occurs when ideas about the service are analysed and the content of the service is created, further tested, elaborated, and then the feedback is further used to develop the service, most importantly when all this is documented into an explicit form. In other words the new service is in a way implemented into the organization, and then the knowledge accumulated into it is validated and enhanced by the people and their knowledge in the provisioning process.

The third (3) mode, combination, is a process of assembling new and existing explicit knowledge into systemic knowledge, such as a set of specifications or guidebooks for a new service prototype. In ICT service packaging this occurs when the material of the new service is fine tuned and finalized. The final fourth (4) mode is internalisation, which means that in order to act on the formed information, individuals have to understand and internalise the codified knowledge of others. This

internalisation involves creating own personal tacit knowledge by combining one's own existing tacit knowledge with new explicit knowledge from others. However, this process is becoming more challenging because individuals have to deal with ever-larger amounts of information (Nonaka, 1994). In ICT service packaging this occurs when the service is trained to people, actually rolled out, and continuously produced by the organization. Here, the people in the provisioning chain are learning how to perform their particular tasks in the production of the new ICT service.

As discussed earlier, the provisioning of ICT services is very knowledge intensive, and most of the tacit knowledge is embedded in processes and ultimately in the minds of the people participating in the process. For ICT service providers designing new services or redesigning existing services, it is important to understand how knowledge is created and transferred in the organization. But it is equally important that they recognize that this is just a model that can be used to explain these two processes (creation and transfer). The model does not provide any value as such, but if properly applied it can be used to avoid some of challenges associated with knowledge management in ICT service design.

3.6.4 Organizational learning framework

Crossan et al (1999) formed a dynamic model for organizational learning. This so called 4I model building of collective knowledge is based on four related subprocesses intuiting, interpreting, integrating, and institutionalizing. These are postulated to occur on three levels: individual, group, and organization levels. Intuiting and interpreting occur on the individual level; interpreting and integrating happen on the group level; and integrating and institutionalizing take place on the organizational level (Crossan et al, 1999). The dynamic and layered aspects of the 4I model are shown in figure 19.



Figure 19 Organizational learning as a dynamic process (Crossan et al., 1999)

Crossan et al (1999) describe the four subprocesses as follows. Firstly (1), intuition is a uniquely individual process. At its most basic level, individual learning involves perceiving similarities and differences, patterns and possibilities. Experts may not be able to explain their actions, their actions are based on unconscious knowledge or skills – on intuition. In ICT service packaging this happens very early in the process. Basically this happens when service packaging is recognized as a solution to service provisioning challenges. These challenges can occur in any of the phases: sales, deliver, implementation, and/or management. The challenges can manifest themselves as difficulties in Sales' ability to communicate the benefits to the customer, or in implementing the service into the customer's environment, for example. When these kinds of challenges occur, some individuals may recognize that these are usually a result of poor service design and that service packaging could provide a solution to the identified problem. Secondly (2), interpreting is the explaining of an insight or idea to oneself and to others. This process goes from the preverbal to the verbal and requires the development of a common language. The process spans the individual and group levels, but it does not extend to the organizational level. In ICT service packaging this occurs when the individual, who has identified service packaging as a solution, explains his or her idea and reasoning to the rest of the project group that will be involved in the packaging process. Thirdly (3), integrating focuses on coherent, collective action. For coherence to evolve, shared understanding, the same language and/or joint actions are required for the integrating process, which initially is informal. If the process is coordinated and routinized, the learned actions or knowledge become institutionalized. Integrating takes place in service packaging when the actual service design is started and ultimately completed. In this phase the service design tools

(industrialization, tangibilization, service blueprinting, and service scripting) are applied and used. The service will be designed and appropriately tested so that the first version – "version 1.0" – is ready. The fourth process (4), institutionalizing, basically means that the organization is no more dependent on individuals' learning since their knowledge is embedded into the organization including systems, structures, procedures and strategy. So in other words, the service tasks are defined, actions specified and organizational mechanisms put in place to ensure that certain actions occur. When the service is packaged and ready and is then rolled-out into the organization's processes, the ICT service is institutionalized.

The 4I model describes organization learning as a process where the main stages are identified, interactions among the three levels of the organization are recognized, and the influence of the individuals on the dynamic creation of knowledge is described as the feedback and feedforward elements. This means that learning is a continuing process, where previous knowledge can either enhance or prevent further development. The model also provides explanations on the links between creation of knowledge and its adaptation into shared standards, deeds, acts and performance. (Stevens and Dimitriadis, 2004)

3.7 Knowledge Management Taxonomy for Service Packaging

The SECI model developed by Nonaka and Takeuchi (1995) explains the knowledge creation as the transformation process between its two main forms – tacit and explicit. Von Krogh and Roos (1996) explain how knowledge justification is an important phase during knowledge creation. Crossan et al's (1999) 4I model describes the knowledge transfer between different levels in an organization – individual, group and organization. The provisioning of ICT services is a complex, highly social process generally involving deep co-operation of several organisational units and their personnel. The information needed in this production chain is typically embedded in processes and only scarcely documented. It is usually only stored in the minds of people, and highly context dependent. In ICT service packaging, two core knowledge processes can be distinguished in regard to knowledge management: knowledge creation and knowledge transfer (von Krogh et al. 2001). By uniting the different dimensions of the SECI model (the knowledge creation process), knowledge justification (the phase in knowledge creation) and the 4I model (knowledge transfer) both of these two core knowledge processes of ICT service packaging can be covered. The new model is illustrated in figure 20.



Figure 20 Knowledge creation and transfer in ICT service packaging.

The model shown in figure 20 can be used as a basis when examining the ICT service packaging process from a knowledge management point of view. With the model, it is possible to examine in which of the different phases different knowledge creation steps occur and also in which of the different phases different types of knowledge transfer occur. This will help to identify some of the critical phases in the process.

3.8 Social Networks

The production of ICT services requires co-operation from many different individuals from many different organizational units. This wide organizational reach is manifested in the many different roles in packaging the ICT services – each responsible for a particular function necessary to produce the particular service. As this network of people that is needed in the packaging of ICT services extends many organizational borders, it is not so easily managed (Bullinger, Fähnrich and Meiren 2003). The heads of different functions may have overlapping or contradictory goals and therefore their justification, for any project that requires their resources, is needed.

Araujo and Easton (1996) classified different fields of network research into the following ten approaches: social networks, interorganization theory, actor-network theory, networks of innovators, network organizations, policy networks, networks in economic geography, comparative studies, entrepreneurship studies, and industrial networks (for details of the different approaches, see Araujo and Easton, 1996, pp. 68-71). They used six different dimensions characterizing each approach, which were: research goals, the nature of actors, nature of links, disciplinary background, methodological orientation, and orientation as structure/process. In addition they listed some exemplary works as well as cross references. (Araujo and Easton, 1996).

When considering this study, social networks as well as network organizations both gave a good match in terms of research goals, the nature of actors, nature of links, disciplinary background, methodological orientation, as well as orientation and structure / process. The biggest difference between the two was in research goals. The network organization approach uses network metaphors and methods to explain decentralized, non-hierarchical organizational forms, whereas the social network approach tries to uncover forms and patterns of social relationships (Araujo and Easton, 1996). As defined in chapter 1, the networking approach in this study is used to address the research gap of "social composition and its relations to an ICT service design and development process". This in mind, Social network was chosen as the valid approach to address this issue.

According to Wellman (1988) the social network analysis is a subtype of structural sociology. Social network analysis argue that the content of social relationships influence the behaviour of individuals and larger groups in organizations more than cultural norms or formal organization rules (Mizruchi, 1994). As explained earlier, people whose participation is needed in the ICT service packaging process may have very contradictory objectives, so the content of the social relationships may very well be the deciding factor in the decision making of where to put resources and with what kind of an emphasis. Moreno (1934) developed a graphical technique to represent social networks, where actors are depicted as points and relational ties between them as lines or arrows. In the ICT service packaging, these actors refer to the individuals in the projects and relational ties as information flows between them (Wasserman and Faust, 1994). These graphical representations are called sociograms (for a discussion of the development of sociograms see for example Scott (1991)). According to Mizruchi (1994), social networking literature examines these sociograms from three important perspectives: centrality and power, network subgroups and interorganizational relations.

Literature concentrating on centrality and power, analyses actors' positions in a network and the power or influence they have in the organization due to those particular positions. An actor enjoys a high level of network centrality when he or she is in a central position in a network of relationships that

has control over the access of information or resources (Ibarra, 1993). Social networking literature concentrating on network subgroups analyzes social networks to identify densely concentrated parts in networks where many actors are tied to one another (Burt, 1976, 1982). The most studied area in literature that concentrates on interorganizational relations, analyses "interlock networks" that are formed between different firms (Mizruchi, 1994). Mizruchi provides the board of directors as an example of these interlocks. As many boards of directors act in many different companies boards', they form interlocking networks that influence these firms "behaviour".

ICT service packaging is a process that involves participants from many different units around the organization. These units may often, as pointed out above, have overlapping or even contradictory goals. Skillful people are needed in many projects, and prioritization of their participation is not self evident. Because many ICT service providers have a history in a technologically oriented product business, service oriented projects are not always seen as being of top priority. This may hamper the commitment of the people in the ICT service packaging projects. From this perspective, an analysis of network centrality and power as well as a network subgroup analysis could improve the possibilities of success of ICT service packaging. If those people that are most influential and powerful were to be identified and convinced about the ICT service packaging, commitment in the projects could be improved. The same applies to network subgroups. If influential people in important subgroups can be recruited to the projects early on, they can act as valuable messengers to the rest of the organization. The role of interorganizational relation analysis instead seems somewhat irrelevant in the case of ICT service packaging. External members of a service packaging network are mainly individual customers. As the number of customers for even a midsize ICT service provider is measured in hundreds, the role of customers as a limiting input network for ICT service development feels far-fetched.

ICT service packaging is a process in which the project group – that is the social network – is evolving all the time. In analysing it, the emphasis should also be put on the evolution of that social network. That is, how the social network evolves as the ICT service packaging process progresses and what issues therefore need to be taken into special consideration.

4 Research Methods

Because the goal and characteristics of the study affect the research approach and methods chosen, they are briefly discussed here. This chapter is divided into five different subchapters. The first subchapter discusses the overall research design as well as the chosen research methods. The second subchapter focuses on the case company TeliaSonera and describes the background, environment, context and the circumstances in which this study has been conducted. The third subchapter outlines the research process and case design. The research process part describes the different stages of the study and the case design part explains the positioning and reasoning behind each of the cases. The fourth subchapter discusses the data collection and analysis methods that have been used in this study. In the fifth and final sub chapter, the reliability and validity of this study are discussed and argued.

4.1 Research Design and Methods

This study examines business-to-business ICT service production. It has been shown that the production of ICT services itself is a complex and highly social process generally involving seamless co-operation of several organizational units and their personnel. Typical units include product management, product development, sales support, support systems, etc. The information needed in this production chain is typically embedded in processes and generally not documented. It exists usually only in the minds of people and is highly depended on the particular context. Information needed to configure a LAN set-up can vary greatly depending on the usage of the particular segment, such as whether there are marketing people using the LAN compared to R&D people using the LAN. The differences in the configurations may exist only as tacit knowledge in the production unit.

Chapter 2 discussed how several factors, aspects and trends have little by little led to a situation where the services and/or processes and methods have evolved organically, without proper control mechanisms, and resulted in as many end results as there are processes and services. This has manifested as an increasing complexity of ICT service production. The indicated, significant increase in the complexity of ICT services (Kallinikos, 2005; Davies, Brady and Hobday, 2006; Oliva and Kallenberg, 2003) is creating many challenges throughout all stages of the service lifecycle – service development, marketing, implementation, and management.

As service providers have not been able to properly manage this complexity, it has led to increasing production costs, systems failures (Davies, Brady and Hobday, 2006) resulting in serious problems in customers' business processes and ultimately in customer dissatisfaction (Chapman and Hyland, 2004) and defection. On the other hand, those ICT service providers that are able to decrease this complexity can turn it into a real sustainable competitive advantage.

In this study it is argued that service design is a critical aspect in addressing the described complexity as design influences service development, marketing, implementation production, and customer perceptions and satisfaction (Bullinger, Fähnrich and Meiren, 2003; Hyötyläinen and Möller, 2007). The aim of the study is to decrease the complexity of b2b ICT services by constructing and validating a framework and toolset for designing and developing these services. This main research goal is further divided into three sub-objectives:

- 1. to construct & validate the ICT service design process model and identify individual phases in it which can be used to decrease the complexity of b2b ICT services,
- 2. to search, identify and integrate suitable methods and tools into a model that can be used in the process, and
- 3. to examine and model the application of the process and methods from the perspectives of knowledge management and social networking in order to identify the most critical phases.

The phenomenon of ICT service design is still rather new and therefore quite unstructured. Since there is not much existing research available on the three sub-objectives, the phenomenon needs to be approached step by step in order to get gradually deeper and deeper knowledge, while validating earlier observations made about the phenomenon. One way to do this is to build constructions that produce solutions to explicit problems (Kasanen, Lukka and Siitonen, 1993). This follows the principle of the hermeneutical spiral, which Kaitovaara (2004) describes as the link between the real-world and the world of research: the research observations and conclusions also have a clear impact on real life and vice versa, which creates a mutually beneficial cycle. When one challenge is identified and tackled, and the phenomenon is examined closer, the next challenge is expected to be revealed.

The nature and type of the research goals as well as the immaturity of the ICT service design phenomenon push for a constructive research approach. According to Kasanen et al (1993) the constructive research approach refers to real-life problem solving through constructions of different models, diagrams, organizations, etc. They further divide constructive research into six different phases:

- 1) finding a practically relevant problem that also has research potential,
- 2) obtaining a general and comprehensive understanding of the topic,
- 3) innovating, i.e., constructing a solution idea,
- 4) demonstrating that the theoretical solution works,
- 5) showing the theoretical connections and the research contribution of the solution concept, and
- 6) examining the scope of the applicability of the solution.

In this study the challenge of increasing complexity is approached following these principles of constructive research by developing, building and testing tools, methods, process models and frameworks for ICT service design and development in order to reduce and manage the complexity. These tools, methods, process models and frameworks are then further tested and the theories further developed.

A constructive approach presumes open access to the information of the focal phenomenon. With the highly competitive field of ICT service provisioning, it is not possible to get such richly detailed information outside the company, so the data needs to be gathered from inside the company. Action research (AR) refers to such qualitative research where the researcher participates actively in organizational problem solving or change programs (Torbert, 1999). The role of the researcher can further be divided into different categories depending on the depth of involvement. Roth et al (2003) distinguished five different roles of the action researcher: 1) complete observer, 2) observer-asparticipant, 3) participant-as-observer, 4) complete participant, and 5) membership role. The complete observer has the smallest effect on the phenomena under study as being a pure researcher, and correspondingly membership has the biggest effect as being a full organizational member. In order to get access to appropriate information, to get accepted by the organization and to gain knowledge deep enough to understand this complex process, the researcher acted in a membership role as an action researcher.

In AR theory is developed bivalently, theoretical understanding is sought of the object to be constructed or tested and of the change process associated with the process of constructing or testing (Checkland and Holwell, 1998; Stowell et al., 1997; Susman and Evered, 1978). In this sense the main difference between ordinary case study and AR is the interventionist action of the researcher. The bivalency, the hermeneutical spiral of AR also supports the constructive approach of this study.

As argued in chapter 1, there are serious research gaps in existing literature. In order to gain enough understanding of the phenomena for the purposes of this research, rich real life data needs to be gathered to enable the achievement of the stated objectives. Yin (1984) argues that case study is a suitable method for studying complex organizational processes in their real life context. It captures the many-sided view of a complex object to be studied in a specific context (Halinen and Törnroos, 2005; Easton, 2010; Eisenhadrt 1989; Stake 2005). Yin (2003) further adds that case study can be adopted when the research is seeking answers to questions like "how" and "why". Case study also supports analysis where explanations of the changes in specific contexts need to be understood (Pettigrew, 1997).

A case study research can be of a single case or a number of cases and consist of one or more units of analysis (Yin, 2003). As discussed earlier, the phenomenon of ICT service design needs to be approached in a step by step manner in order to establish the beneficial cycle, where the theory feeds practice and vice versa. In order to study this new, unstructured phenomenon and further validate the research findings, the phenomenon and its evolvement needs to be examined over time in different contexts. To address this, a multiple embedded case study design is selected (Yin, 2003; Pettigrew 1992). Multiple case design, also allows better utilization of the hermeneutical spiral – the testing and further theoretical development of the models constructed in earlier cases.

Considering the nature of information involved in packaging ICT services, the context dependency and wide organizational reach, action research oriented multiple embedded case study with constructive approach was seen to provide both in-depth conceptual understanding of the ICT services packaging process and relevant managerial implications and know-how (Baskerville, 1999; Baskerville and Wood-Harper, 1998; Klein and Myers, 1999). The action research oriented case study has been used by Sandberg (2003), for example, in studying consulting services and by Kaitovaara (2004) in studying the packaging of IT services.

4.2 Description of the Case Company

TeliaSonera was selected as the case company mainly for three important reasons 1) during the research period TeliaSonera was undergoing a major transition from product offering company into a

service offering company, 2) b2b ICT services have been in the strategy agenda the whole time and 3) the researcher has been a project manager or project owner and a full member in the organization for all the projects selected for the projects that form the empirical case object of this study and thus has had excellent access to the information. Based on the three aforementioned facts, it can be argued, that TeliaSonera is a highly suitable case company for studying the management of ICT services in the business-to-business context.

During the peak of the .com hype cycle in year 2000, the company began to expand its focus from traditional telecommunication products into more versatile ICT services. At his point the case company was still pretty much in a traditional product business. However, as the complexity of the ICT products increased, the need for certain professional services also increased among customers. This brought a new kind of a business challenge – how to develop, sell and manage services in a company that is in the product business.

When understanding and knowledge had been gradually developed to solve these business challenges, the focus turned on cost and resource efficiency challenges. Although the company had learned to manage services in a professional way (as it previously did with products), it was not able to do it very efficiently in terms of costs or resources. At this point there were first signs of price erosion in traditional telecommunication services and ICT services were seen a very important component to lockin customers and defend the existing core telecommunications portfolio.

Again, when new methods and tools for designing and developing service were constructed, the company was able to improve its costs and resource efficiency. As the ICT market itself evolved, competition was seemingly becoming more intense and fierce. This forced companies also to concentrate more on quality issues – a new business challenge was identified. During the seven year period under study ICT services became a fundamental part of the company's offering and really paved the way into a service business oriented company.

During the research process (which will be discussed in more detail in the following chapter) in years 2001 - 2007 the case company has experienced several organizational changes. In fact, four different organizations have been effective, Sonera Juxto Oy (Consulting Unit) during 2001 – 2002, TeliaSonera Oyj (Enterprise Networking Services) during 2004 – 2005 and TeliaSonera Oyj (Managed Services and then later Integrated Enterprise Services) during 2006 – 2007. The good news is that the

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business – that is the B2B ICT service business – has stayed the same during the research period. Later on when discussing the case company, it will be referred only as TeliaSonera during the entire research process. Some basic characteristics of the prevailing organizations are listed in table 2.

Year	Firm	Unit under study	Turnover	# Employees
2001	Sonera Juxto Oy	Consulting Unit	~1M€	~15
2001 – 2002	Sonera Juxto Oy	Product Management and Development	~50M€	~450
2004 – 2005	TeliaSonera Oyj	Enterprise Networking Services - Information Logistics Business Area	~14M€	~90
2006	TeliaSonera Oyj	Managed Services	~43M€	~400
2007	TeliaSonera Oyj	Integrated Enterprise Services	~150M€	~3800

Table 2 Organization details in the time of cases.

At the beginning of 2001 the unit under study was purely the Consulting Unit of Sonera Juxto oy. It consisted of some 15 people and had a turnover of roughly $1M \in$. From the late 2001 until 2002 the unit under study was Sonera Juxto Oy with around 450 employees and a turnover of roughly $50M \in$. From 2004 until 2005 the unit under study was the Information Logistics business area in Enterprise Networking Services of TeliaSonera Oy. The Information Logistics business area had a turnover of $14M \in$ and some 90 employees. From 2006 – 2007 two dfferent organization forms prevailed. First, the unit under study was the Managed Service Unit with a turnover of roughly $43M \in$ and 400 employees. Then during 2007 the organization was transformed into Integrated Enterprise Services of TeliaSonera. Integrated Enterprise Services has a turnover of about $150M \in$ employing some 3800 people. Although in the latest organizational change the unit belongs to the TeliaSonera Corporation, the geographical focus is still Finland in the context of this study.

TeliaSonera has quite a wide ICT offering. The offering covers everything from data and voice networks to workstation and server management all the way to horizontal application platforms. Examples of horizontal application platforms are Fieldwork service, which enables mobile usage of information (e.g. stock levels) in a company's SAP system, or Alerta service, which validates, transforms and reroutes alarm information from building alarm sensors (e.g. burglar sensor) to security firms (e.g. Securitas) systems. To use the categorization of Market Visio (2003c) TeliaSonera Finland offers four types of ICT services: 1) hardware and software support services, 2) consulting services, 3)

integration and implementation services in a relatively small scale, as well as 4) managed services, which form the core of offering. The last group forms the focus of this study and contains the following kind of services: "Fieldwork" (brings the information from SAP to mobile devices), "eCenter" (integrates companies' internal as well as external business and support systems with each other with formats such as EDI, xml, etc), "Cstream" (provides means for multichannel messaging, for example enables sending emails as faxes or SMSs), "Security services" (firewall services, anti-virus protections, encryptions etc), "Alerta" (burglar alarm systems, building automation, automatic metering systems etc.).

A TS service offering is targeted to the whole business-to-business segment from SMEs to large corporations. Customer relationships in this business area are generally long term in nature. The length of the contracts is usually a minimum of two years and they often comprise of several individual ICT services. As the relationship with the customer grows and develops in time, usually more complex and sophisticated services are adopted by the customer. This makes the customer generally more profitable to the service provider but also complicates the successful management of the service provisioning, maintenance, and upgrading.

4.3 Research Process and Case Design

4.3.1 Research Process of the Study

The research process started in March 2001 and ended in July 2007. It comprised of four different cases, each focusing on different kinds of challenges both from a theoretical as well as a business point of view. The case structure and its purpose are described in more detail in the following chapter 4.3.2. The timeline of the research process and the corresponding cases is pictured in figure 21.



Figure 21 Research process of the study.

As can be seen from figure 21, the cases are quite equally distributed within the six-year time period. The first one started in March 2001 and ended in the same year in May. The case is called "Prestudy Service" in this study. The second case, which is called "Consulting Services", was started in June 2001 and lasted until December 2002. The third case was started in January 2004 and lasted for one year, so it was finished in January 2005. This case is called "Services Architecture Redesign". The last case, case number IV, was started in June 2006 and completed in July 2007.

The research process itself was quite long, lasting over six years. During those six years knowledge of b2b ICT service design and development was increasing both inside and outside the case company. The theory was advancing – although slowly – but also the knowledge and awareness of service design inside the company. As one challenge was solved it was soon noticed that deeper knowledge resulted in new challenges. Thus all 11 projects – forming the four cases – are connected to one another and their basic goal was solving challenges and questions that the previous projects had brought to the surface.

4.3.2 Case Design of the Study

The four selected cases consisted altogether of 11 projects. Cases I and III included only one project each and then Case II five projects and Case IV had four projects. The individual projects were of variable lengths and they were all managed according to project management principles. This case structure is illustrated in detail in the following picture 22.



Figure 22 Case design of this study.

As can be seen from figure 22, Case I - service packaging process - consisted of one project called Prestudy service. The Prestudy service project concentrated on designing a new consulting service. This Prestudy service would be used in customer relationships in which the customer is not sure about the actual ICT solution, but is interested in knowing whether ICT services could be used to support their business processes. The aim of the Prestudy service is to examine the customers' present situation and identify the most challenging "pain" areas and then build a proposal, if it is seen that ICT services could benefit the customer. The main research interest in this Prestudy service project (Case I) was to develop a process model for designing and developing professional ICT services.

The second Case II - issues in the service packaging process - consisted of five projects 1) CRM consulting service, 2) Multi Access Platform consulting service, 3) Mobile Care consulting service, 4) Mobile Logistics consulting service, and 5) Mobility consulting service. All of the five projects aimed at designing and developing a new consulting service for a particular ICT solution (CRM system, Multi Access Platform, Mobile Care, Mobile Logistics) except for the Mobility Consulting service. The main purpose of the consulting services in each case was to examine a customer's present situation from the particular ICT solutions point of view to ensure that the solution would benefit the customer and also that there would not be any clear "showstoppers" that would make the implementation of a particular solution impossible. Mobility Consulting service aimed at examining the customer present situation to identify possibilities for utilizing different mobile ICT services. From a research point of view, the main

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interest was to use the ICT service packaging process model developed and constructed in Case I and examine the different phases in it from a social networking and knowledge management point of view.

The third Case III – constructing a service factory – had only one project, service architecture redesign. The service architecture redesign project aimed at redefining four ICT services (eCenter, Fieldwork, Alerta and Cstream) into one single concept. The targeted concept was called Business Process Networking. The project examined these four services especially from an architectural point of view in order to decrease and remove overlapping technical functionalities. For example Cstream and Alerta services used two different technologies for outbound messaging, so the project examined how both of these services could use the same technology. The main research focus in this project was to concentrate on the four different service packaging methods (industrialization, tangibilization, service blueprinting, and service scripting) identified in the literature and examine their practical application.

The fourth and final Case IV – applying service factory philosophy – in turn consisted of four projects 1) key customer care, 2) technical key customer service, 3) solution design, and 4) quality management service. All of these projects dealt with a particular service or (key customer care service, technical key customer service, solution design service, and quality management service) at that point. Each of these projects concentrated on developing these service concepts – that in practice were nothing else than some existing tasks and activities – into commercialized professional services. From a research point of view, the main interest was in implementing a new holistic ICT design and development approach – the overall service factory framework and philosophy that was developed based on the earlier Cases I – III.

As mentioned, the research process lasted around six years. Each project produced answers to questions but also led to new questions. Thus the logic for selecting cases was highly influenced by previous cases. The logic for selecting these particular cases and their relation to the objectives of this study and different theories is presented in figure 23.



Figure 23 Logic between objectives, theories and cases.

Case I

As the complexity of the case company's product portfolio increased, the need for certain professional services also increased among customers. This brought a new kind of a business challenge – how to develop, sell and manage services in a company that is really in a product business. From a holistic ICT service point of view, these professional services refer to the complementary service elements (figure 7, chapter 2.2). When the management was discussing possibilities about how to help customers to know what kind of solutions would best fit the company, it became clear that a new service component to achieve this needed to be designed and developed.

However, this was all new for TeliaSonera – real service design and development had not been done before. As a result, a project was formed aiming at designing and developing a new pilot service, called "Prestudy service". When the challenges associated with the project were discussed, it soon became clear that the solution was to design and develop services in a similar manner as products are designed. This particular Prestudy Project provided an opportunity to test some methods from service management literature in practice and at the same time document that process. As a part of the overall objective of this study – constructing and validating a framework and toolset for decreasing the complexity of b2b ICT services – the research focus was to construct and develop a process to design and develop ICT services. That is, to plan what the practical steps and phases are in a process that needs to be done when one is designing and developing ICT services. And also in which order do those steps and phases need to be conducted.

Case II

The Prestudy Project broadened the company's knowledge about service business, but in reality that knowledge stayed very much within a small project group. Although the journey from a product oriented company towards a service oriented company was started, there was a long way to go. The main business challenges – how to develop, sell and manage services – were still very much the same although some understanding about the peculiarities of services was gained.

When the first project was finished and evaluated, it was discussed that it was not an easy project and that some things that seemed quite self-evident were surprisingly difficult to communicate and implement in the organization. Another conclusion was that the methods and tools used in the service design and development process needed more attention themselves. It became quite evident that some of the phases in the service packaging process were more critical than other, some of them even proving to be potential "showstoppers" – that is, any single step or a phase that could stop the whole project. Thinking about the next possible projects that would use the constructed process, it was decided that the critical issues needed to be solved and identified before concentrating more on the tools and methods.

As the process was discussed in more detail and the phases that seemed to be more difficult and crucial than others where further examined, two conclusions were made 1) difficulties emerged in phases that involved some kind of knowledge transformation, either from one form into another or then

from one person to another and 2) difficulties also emerged when new people were joining the project network. From these two conclusions it was deduced that both knowledge management and social networking theories could bring some understanding and concepts into the question of crucial phases.

These discussions and deductions produced another sub-objective – identifying critical issues in b2b ICT service packaging process. As it came into discussion that there will be five new consulting services – that is complementary service elements – that need to be packaged, an opportunity to tackle the second sub-objective became open. With the five projects the design and development process could also be tested with new services and then the projects could be examined from knowledge management and social networking perspectives to see whether they could shed some light into the question of the critical phases.

When the projects were finished and evaluated, the initial guesses could be confirmed, knowledge management and social networking indeed explained the reasons why some phases of the process were more critical than others.

Case III

The knowledge and understanding that was gained during the first two cases really built foundation for the journey towards a true service company. The case company now understood how services – or complementary service elements – can be designed, developed and managed. However, this understanding also allowed focusing on new issues and challenges. As the number of new products and services in the case company increased, the service management aspect became ever more important. Two challenges or points were identified 1) the service term should cover more than just the complementary service elements and 2) the cost and resource efficiency was not on a proper level.

Now that the questions concerning the critical issues in the b2b ICT service design and development process had been identified, it was time to concentrate on the last remaining sub-objective – what methods and tools could be used in the b2b ICT service design and development process. In the previous projects the methods and tools taken from service marketing and management theories were only applied to consulting services – the complementary ICT service elements. Considering the scope of b2b ICT services, it did not seem sufficient. The tools and methods needed to be applied to all the layers of a b2b ICT service – ICT application/system elements, core ICT service elements, and complementary

ICT service elements. The use of methods and tools needed also more careful elaboration and examination.

At the end of 2003 discussions started to emerge about a need to reduce the overlapping and complexity of Business Process Networking services. This presented another possibility to tackle the last remaining sub-objective of this research. As service packaging and its philosophy were discussed with the management, it was agreed that it could be used so solve the problem at hand. So, in January 2004 a project called Service Architecture Redesign was started with an aim to improve cost and resource efficiency by building a holistic Service Factory model to design and develop existing b2b ICT services. In this third case, methods from service management and marketing were used to build the model of a Service Factory. The project as such was very successful both from a theoretical as well as a practical point of view.

Case IV

The findings and learnings from the first three cases, from the seven service design and development projects, laid down the foundation for the journey from a product oriented company towards a service oriented company. The context in which the company operated in 2006 was very different from the context at the beginning of the research process in 2001. Knowledge and understanding of services and above all the right mindset for service business were starting to emerge among a larger group of people. The basic differences between products and services were identified and successful processes and tools were constructed to design and develop services. The main business challenges also evolved. As the service factory ideology gave answers to the resource and cost efficiency issues, the business management started also to think about quality issues.

From a research point of view another question was raised. How do the processes and tools apply in the company's present context? Based on the three first cases the overall framework was built. When it had been constructed, the key thing that needed to be done was to test it. This time the management identified four services – or service concepts – that were presently given for free to the customers but were still incurring heavy costs. There were also some quality and consistency issues present, because the services were designed, developed and produced in more or less an ad-hoc manner.

At this point the service factory and service packaging as such were recognized widely in the company, which presented yet another possibility to meet the overall research objective – to test and

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validate the constructed service factory framework. Thus, when the decision was made to package the four services, it was decided that they would form the last case for this research.

The following table 3 summarizes the five different dimensions of how the four cases differ from each other. It also shows how both the business and research focus have developed as knowledge and understanding have evolved. The five different dimensions are 1) main business focus, 2) main business challenge, 3) research focus, 4) new vs. old service, and 5) element focus.

Table 3 Research and business focus in the five different cases.

	Main business focus	Business Challenge	Research focus	New vs existing service	Element focus
Case I	product	managing services	design process	new	complementary services
Case II	product	managing services	challenges in the design process	new	complementary services
Case III	product and service	cost & resource efficiency	tools and methods	existing	system services and core services
Case IV	service	cost efficiency & standardized quality	Implementation of the service factory	existing	complementary services

The first dimension (main business focus) explains the main orientation of the case company, whether the focus is more on products or on services. The second dimension refers to the different business challenges that the projects have been established to solve. The third dimension does the same from a research perspective. The fourth dimension tells whether the case has been dealing with old or new services, and the final dimension indicates the "layers" of which an ICT service has been involved – system services, core services or complementary services.

4.4 Data Collection and Analysis

4.4.1 Data Sources

Yin (2003) lists six data sources that can be utilized to collect evidence in a case study. These data sources are documentation, archival records, interviews, direct observations, participant observation and physical artifacts. To improve the reliability of the study, multiple sources of data are utilized (Eskola and Suoranta, 2000; Yin, 2003). Participant observations and interviews form the two main data sources for this study. These data sources are further backed up by archival records as well as internal documentation. Three different types of archival records were mainly used: personal records,

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organizational records and different kind of lists. My own personal records covered mainly my calendar records during the research period. From my Outlook calendar I could easily follow all the research meetings and other occasions during the entire research period (2001 - 2007). Organizational records covered mainly budgets and operational plans focusing on the service production. With the exact personnel budget calculations at hand, it was rather easy to calculate business cases for the services to be designed and developed. In addition, also different kind of personnel lists and directories were used mainly to select people for the different research cases.

Internal documentation was also frequently used during the study. Different kinds of agendas and memos from the meetings, as well as written reports and email conversations were used to construct the different models in this study. Written reports proved also very useful in figuring out different personal conflicts between some people in the cases. At some points it seemed very irrational why some people were so much against some of the ideas. Then some reports and email conversations showed how those people had been constructing other competing models for quite a while and were just trying to defend their own views, and not so much disagreeing on other views.

The two primary data sources in this study were interviews and participant observations. Both the interviews as well as participant observations were conducted during 326 meetings that were held during the research period. These 326 meetings form the backbone for this research. These meetings are documented in Appendixes I – IV. The appendixes are numbered according to the cases, so that Appendix I outlines the interviews and participant observations during Case I, Appendix II outlines interviews and participant observations during Case II and so on. Those meetings where only two people (the researcher and one other person) were present are classified as interviews and those where more people were present are classified as participant observations. The number of people is not the main classification for interviews versus participant observation, but more of a result of the purpose of the meeting (whether interview or participant observation) and can thus be used as separators of the two different type of data source.

Following the six principles of constructive research approach and applying the five-step cyclical process of action research, the case studies needed to be organized into three different types of meetings: framework, project and review. Project meetings concentrated on constructing the actual tools, methods and models – in other words commercializing the individual services (Key Customer service, Technical Key Customer service, Quality Management, or Solution Design). Framework

meetings concentrate on discussing and validating the constructions made in the project meeting. I frequently used my colleagues very widely in the organization to check and validate the assumptions and interpretation that I had made concerning the overall framework for designing and developing ICT services, or parts of it (process, methods & tools, templates, or approach). Review meetings concentrated on getting feedback and acceptance for the design and development constructions – the design and development framework. Basically these review meetings were used to review and verify the draft research papers, theoretical assumptions, conclusions, implications and contributions I had made in each particular case study. These meetings were mostly one-to-one interviews and are classified as interviews. Framework and project meetings are in turn classified as participant observations.

The project meetings were mostly very hands-on type of meetings where the project manager had a strict agenda and everyone participated in a brainstorming fashion to the discussion and the project manager documented the developed constructions. Usually also some "homework" was given before the meetings to the participants. Most of the service documentation was created in these meetings. The framework meetings followed a somewhat different kind of structure. In these meetings the models were always pre-constructed to a certain point and the participants were then asked about their view on whether or not the assumptions and conclusions made were correct and then to discuss further and contribute to the models constructed. The model construction needed always to be taken to a certain level by the project manager before it could be discussed within a wider audience. The review meetings were prepared by the project manager and the most essential service design and project findings were then verified and discussed within a particular interest group. These meetings aimed at ensuring that the assumptions and deductions made were indeed correct and that the overall service design and development process could continue and the obstacles that appeared were removed by the management.

4.4.2 Action Research Structure

As discussed earlier according to Susman and Evered (1978), action research is a cyclical process consisting of five phases:

- (*i*) *diagnosing*, identifying or defining a problem;
- (*ii*) action planning, considering alternative courses of action for solving a problem;
- *(iii)* action taking, selecting a course of action;
- *(iv) evaluating,* studying the consequences of an action;
- (v) specifying learning, identifying general findings.

All the four cases followed this same kind of cyclical action research structure. The research projects in the case studies always started with the diagnosing phase, where someone in the management identified a challenge and someone started to dig deeper in to the issue and identified the root causes. This diagnosing phase was usually done by the management team. After the root causes had been identified, a group of people was put together to further define the problem and plan courses of action that needed to be taken. At this point it was seen that there existed mutual interests between the practical challenges and research potential. These took place in the framework meetings. Because the service business as such was a rather new phenomenon in the company, the result was to establish a project to handle the job. In other words there were not enough capabilities or knowledge in the line organization to carry out the task, but a virtual project team needed to be formed.

Because the researcher was a project manager or owner in all of the four cases, the action planning and action taking phases became easier and easier during the research period. The more projects were conducted, the easier it became to plan and construct the next project. Retrospectively, the action planning and action taking phases were successful mainly due to two reasons: The vice president responsible for the service design and development area had an academic background and first-hand experience of service packaging, and the project manager / owner also had an academic background. Especially in the first two cases, the issues and challenges were so new and so few practices were available that without an experimental, open-minded application of academic theories and models in practice, organizational learning would not have occurred in a way that allowed further development of the service design and development framework. This also made it possible to gather the needed theoretical understanding about the challenge at hand and innovatively develop new constructions.

With the vice president in charge of the area, the management team always chose the course of action proposed by the project team. The evaluation took place on two different levels. In the framework meetings, the constructions, the overall framework for designing and developing ICT

services (as well as the parts of it – process, methods & tools, templates, or approach), was discussed and developed. In the review meetings the overall project as well as the service design and development as an approach were discussed and feedback gathered. The review meetings formed a very important part of the overall learning process. Because the service design and development as a phenomenon was very new it faced a lot of change resistance. Therefore, it was very important to handle and discuss the challenges and possible obstacles that needed to be removed or taken care of in the following projects. Within the project core group it was agreed that all possible "second opinions" needed to heard and dealt with and passed on to the steering group.

Specifying learning took partly place after the project itself was closed and partly before the next one started in the following project's diagnosing phase. These took place in the framework as well as in the review meetings. The specifying learning phases were very important from the research point of view because they formed the continuum between the multiple cases – the next one took over where the previous one finished. The researcher had a significant role here, because he could ensure that all the learnings from the previous projects could be utilized in the next projects. This kind of an iterative nature of the research process is common in case studies (Eriksson and Kovalainen, 2006). The multiple case design also allowed the hermeneutical spiral to work and really show also benefits in practice.

4.4.3 Data Analysis

As described earlier the primary sources of information, the interviews and participant observations were categorized into project, framework and review meetings. The different kinds of roles of these meeting are illustrated in the following figure 24.


Figure 24 the logic between the interviews and participant observations (the different meetings).

The assumptions, deductions and final constructions that were developed in the project meetings were then validated and checked in the framework meetings. According to the received feedback, the constructions were modified and complemented. In order to follow Yin's (2003) principle of "fair treatment of the evidence" the theoretical contributions and conclusions made were also reviewed and verified by my colleagues and other project participants. Additions and alterations were then made accordingly. The resulting constructions were then further developed in the next project meetings. The iterative nature of this research was further enhanced by the multiple case design, which allowed testing the constructed models and their applicability. The way the interviews and participant observations are structured in the case studies really nurture the mutually beneficial cycle that is formed between the real-world and research world.

4.5 Evaluation of Reliability and Validity of the Study

The quality of any research design and approach can be evaluated using a certain logical test. In case study research, four tests are the most commonly used (Yin, 2003). These tests are construct validity, external validity, internal validity and reliability. The internal validity test is used only for causal (or explanatory) studies in which the research interest is to examine whether event A leads to event B. This research concentrates on constructing a framework and toolset for reducing the complexity of business-to-business ICT services. From this point of view, the research is not a pure

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causal study. However, the implications of the different processes, tools and methods that are a part of the framework are discussed on a general level. From this point of view, the internal validity is applicable to the present study. This internal validity was improved by addressing also rival explanations of these implications, as suggested by Yin (2003).

Construct validity refers to choosing correct operational measures for the concepts being studied. To meet the construct validity criteria the researcher must 1) select the specific types of changes that are to be studied, and 2) demonstrate that the specific measures of these do reflect the specific types of change that have been selected. In other words, after selecting the type of change to be explained the researcher must be able to demonstrate that the selected measures are the right ones concerning the type of change.

Yin (2003) refers to three tactics in case study research in establishing construct validity: 1) using multiple sources of evidence, 2) establishing a chain of evidence, and 3) having key informants review a draft case study report. In this study the data was collected from different kinds of meetings, (some of them more of interviews and others more of participant observations), documentation (some external and some internal) and archival records. The results and analysis of the projects and their underlying logic (chain of evidence) were widely discussed in several steering group meetings with the project people (key informants reviewing results). These actions can be seen to improve the construct validity criterion.

External validity tests to what extent the results of a particular case can be generalized. In other words whether the results can be applied beyond a particular case. To improve external validity a multiple case design with 11 sub-cases was selected. The framework that was constructed during the first three cases was further tested in the fourth case in a little bit different organizational environment than in which the framework was originally built.

Finally reliability tests to what extent the various operations during the research can be repeated with same results. In other words, if another researcher were later on to conduct all research operations (for example data collection) in the same way as has been described, he or she would end up with the same analysis and conclusions. To improve the reliability criterion, the research process was followed and evidence gathered through 326 meetings – 76 in Case I, 150 in Case II, 61 in Case III, and 39 in

Case IV (see Appendixes I – IV respectively). This provided quite rich data of the AR steps in each of the cases.

Action research has typically received a lot of criticism of its lack of rigour. Rigour refers mainly to how the research process is conducted. AR has thus been associated with a symptom of having more relevance but less rigour (Kaitovaara, 2004). When acting as a complete participant (Roth et al, 2003) in performing AR there is always the danger of being more of a practitioner than an academic when agendas conflict (Robert, 2003). On the other hand my role as a complete participant has allowed access to confidential data such as cost, pricing and customer data as well as future visions, business plans, and strategies. Furthermore, the participant role has positively influenced the co-operation with other people in the projects.

When participating in all of the 11 projects, composing the 11 sub-cases of the study, there must have been many situations in which my choices of being a practitioner vs. academic might have differed from someone else's. My choices when selecting informants for reviewing the case results and examining their underlying logic might very well differ from someone else's. When being a content expert as well as a project manager in a project, the analysis and interpretations that one makes differ from ones made by someone else, resulting in different outcomes for the projects.

Although the organization's forms and units were different during the research process, the subcases were all from same corporation. This corporation, like any other, has some cultural characteristics and operational characteristics that are unique. Since all the sub-cases were from the same corporation, it inevitably has effects on the generalizability of the results.

5 Service Design Case Studies – Case I: Service Packaging Process

The case studies of the service design projects are reported in four separate chapters, in this chapter five and then continued in the next chapters six, seven and eight. This division into four separate chapters is made to 1) help the reader to follow the case findings and 2) because the first three cases aim at constructing the different pieces of the service factory framework, and then the fourth case focuses on testing the framework as a whole and further developing it based on the results. In chapters 5 - 7, the first three cases are examined, discussed and the results presented. Based on the results from these three cases, the first version of the service architecture framework is constructed. Then the framework is tested and further developed in the final case four. The fourth case is examined, discussed and its results presented in the chapter eight.

Each case is reported in two parts. First, the case and its action research process are described and then in the following subchapter the case is analyzed and the results are reported and discussed. The second case differs a little bit from the rest of the cases, because its results are reported in three separate subchapters. The reporting structure of the case studies is shown in figure 25.



Figure 25 Reporting structure of the empirical case studies.

This chapter is divided into two subchapters describing the Case I. The first, 5.1, describes the case and the different phases of the action research (AR) process. In each Case (I, II, III and IV) the

description of the case and the action research process is divided into the same five research phases in addition to the overall description of the case: Case description, AR - Diagnosing, AR - Action planning, AR – Action taking, AR – Evaluating. Then in the second sub chapter, 5.2, the material of Case I is analyzed and reported in terms of ICT service design and development process and its individual phases and findings are specified. In Case II, the results are reported in three separate chapters (6.1, 6.2 and 6.3), the first one concentrating on the issues in the ICT service design and development process from a knowledge management perspective, the second from a social networking perspective and the third summarizing the results from both perspectives. Case IV divided into two subchapters in a same way as Case I and III – first one (8.1) concentrating on describing the case and the action research process and the second one (8.2) concentrating on the results: the new service architecture.

Defining the Process for Service Design and Development 5.1

5.1.1 Prestudy Service Case Description

As the complexity of the case company's product portfolio increased, the need for certain professional services also increased among customers. This brought a new kind of a business challenge - how to develop, sell and manage services in a company that was really in a product business. There was a small consulting service organization - consisting of some 15 people - but they had been operating only with internal clients and did not have much experience from the service business. In practice they conducted consulting studies only for other units inside TeliaSonera - not for external customers. As the management saw that there was a need for a consultative service that would help TeliaSonera's customers to choose the right kind of ICT services, the management decided that the consulting service organization would develop a sellable service for this.

As these organizational and environmental changes in the business context took place, changes for the consulting team were inevitable. Basically, the internal service offering of the organization was seen to need efficient development efforts. The management of the consulting business set three goals for the consulting unit: they were to achieve 1) greater efficiency, 2) better quality and 3) to capture the intellectual capital of individuals. To achieve the goals set by the management, it was decided that a project of service packaging should be established, and within the project, service packaging should be tested as a method and philosophy. In this project service packaging was used for the first time in the

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case company, so the project team was dealing with issues involved in service packaging for the first time in practice.

The consultative service to be packaged was named "Prestudy Service". The service itself would be a consulting service that was to be used to examine an SME company's business internally and externally to quickly identify the most evident development areas. So the purpose was not to build a full-scale business plan or strategy for the client company, but to distinguish with relatively small efforts the most obvious areas for ICT services enabled improvement.

The consulting unit had been conducting similar kind of activities with internal clients. They were normally carried out by two consultants. This kind of a task took normally around 1 to 2 months to deliver and about 7 mandays to execute. The process started with gathering some background information, which was followed by a workshop with the customer. After the workshop, all gathered information was analyzed, and a proposal was presented to customer. The 7 mandays consisted of two consultants doing some preparation work, conducting the workshop, drawing up analyses and conclusions and finally presenting the results. The delivery time is longer because it usually took some time to prepare the questionnaires to be sent to the customer, for the customer to gather the information and then to find a suitable date for everyone (usually around three to five persons) from the customer's organization. Some details are presented in the following table.

Service	Delivery time	Execution	Documentation	Resourcing
Internal				
Prestudy	1-2 months	5 mandays	Service description	2 consultants

Normally there were two consultants who carried out the service. One was always the lead consultant, while the other's contribution was smaller. The service description was the only existing document of the service.

The main research interest in this case was the service packaging process itself. Because service packaging was applied for the very first time, the process and its phases were not known beforehand. Thus the main research objective was to construct and define the service packaging process and its different phases during and after the Prestudy service project.

Multiple sources of evidence were used in data collection. The case material was collected during 76 meetings (see Appendix I) in which the author participated by being in charge of the Project. The meetings are divided into four different types according to their purpose: 1) framework, 2) project, 3) review, and 4) customer. In 22 framework meetings with the consulting business management and other stakeholders, the overall framework for packaging ICT services, or parts of it (process, methods & tools, templates, or approach) was discussed and developed. In 36 project meetings with managers and experts representing sales, product management, and business as well as technical development, the actual Prestudy service was commercialized. 12 review meetings with vice presidents and directors representing consulting, sales and production concentrated on getting feedback and acceptance for the Packaging framework. These meetings also discussed the project itself and the implications or learning that could be extracted from the project. Meetings were mostly one-to-one interviews. Finally in 6 customer meetings the commercialized Prestudy service was tested, piloted and delivered to customers. Although the project itself lasted from March to September 2001, these meetings took place during January 2001 – February 2002. All meetings were documented in memos containing information of the decisions, activities, and frameworks. This rich material base was further supported by Email logs.

5.1.2 AR – Diagnosing

As the ICT consulting service offering was examined, it was determined that in general the consulting services were quite hard to grasp outside the consulting organization. For example, the sales unit found the ICT consulting services quite hard to sell. They did not know what kind of ICT services the consulting organization provided and at what price. The consulting organization itself felt that the quality of the services should be improved in dealing with outside customers and that the service should be produced with a greater efficiency. The consulting management's concern was that the knowledge was too much bound to the individuals. In practice this meant that if a consultant were to leave the company, all knowledge would leave with him or her. Thus, three challenges were identified: 1) the services were not adequately defined, 2) the quality should be improved and 3) it should be ensured that the Prestudy service should be produced in a more standardized way resulting lesser variance in the output. As a result a project was established to tackle the three aforementioned challenges.

5.1.3 AR – Action planning

As the core group was thinking about various alternative actions, a common understanding was formed that there is need to design and develop a systematic process that would define the consulting services in a more concise way. In addition, the process should be based on proven methods to ensure better quality of the consulting service and to ensure the capture of knowledge in a way that it could be reused to the fullest extent.

The core project group identified three methods that could be used to tackle the goals set by the management – service tangibilization, service blueprinting and service scripting. With tangibilization, services could be defined more adequately, with service blueprinting and service scripting, the process to produce the service would be improved and, moreover, predefined and fixed, thus resulting in better quality in terms of predefined and harmonized output and lesser variance of that output.

5.1.4 AR – Action taking

Together with the management the core project group concluded that by using all these three methods the service itself would be properly documented and also standard documents would be developed to document the customer cases. This would ensure that the knowledge of the customer cases would also stay in the company, not just in the minds of the consultants.

As this was the first time that the project group was dealing with such an issue (the three challenges), it was decided that the process should be created as the three methods were applied to a real sample service – a test case. The project group selected Prestudy service together with the consulting management as a stepping stone. Prestudy service was a suitable test because it was relatively compact and focused as a service, and also general enough from a content point of view, so that the defined process could also be used on the other services. As a result, a service packaging project consisting in total of 12 people and lasting three months was established and outlined.

The Prestudy project itself progressed in an iterative manner. Since the purpose was to develop and outline a service packaging process that did not exist before, the Prestudy project progressed as that process was developed during the Prestudy project step by step. So in practice, the next step was not necessarily known beforehand, but was developed and formulated during the Prestudy project. The

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process that this Prestudy project followed is outlined in chapter 5.2, where the results of Case I are reported.

5.1.5 AR – Evaluating

As the project was finished, the results of the project were reviewed. The project produced a defined and systematic process that was labeled a "Service Packaging Process" and "Packaged" Prestudy service. The process was documented and defined as the project advanced and then further improved when it was evaluated by the consulting management. The packaged Prestudy service was well-defined, documented and easy-to-understand for both the customers and the employees of the case organization. The practical changes and developments are listed in table 5.

Table 5	Prestudy	service.	before and	after	packaging.
			Servie ente		parena ang

Service	Delivery time	Execution	Documentation	Resourcing
Prestudy (before)	1-2 months	5 mandays	Service description	2
Prestudy (after)	2-4 weeks	2,5 - 3 mandays	Service description (internal* + external), process description, offer, sales slides*, workshop material*, questionnaire, answer sheet, internal presentation	1

Documents marked with asterisk (*) can be found in the Appendix V.

As a part of the packaging process the Prestudy service was also tested in an authentic customer case, so some estimates of the delivery time and the time needed to execute can also be drawn. The time needed to deliver the service was halved as was the time needed to execute the service. The main practical differentiator was the documentation that can be seen as a pre-made tool. Before the Prestudy service was packaged, there was only one existing document, and after the packaging process there were 9 different documents for the service. The documentation made the service much more communicable to Sales as well as to the external customer. As the Prestudy service production process was defined and the tools developed, the quality of the service was also improved. The ready-made documentation also ensured that the consultants would report and document the customer cases in a fashion that enables the knowledge to be reused. To sum it up, all the three challenges or problems were solved during the project.

5.2 Results of Case I: Service Packaging Process Defined

Most of the results that are presented in chapter 5.2 were initially published by Kaitovaara and Hyötyläinen (2002). These initially published results are further elaborated and examined in more detail. Also the case material is based on additional meetings.

The main goal of this case study, was to reach the first objective of this research, to 1) construct & validate an ICT service design process – and to identify its individual phases – which can be used to decrease the complexity of b2b ICT services. The results of this case study are examined to reflect this objective. Thus, the key results are A) a validated ICT service design process and B) the identification and description of the individual phases. Parts of these results were initially published in a conference paper by Kaitovaara and Hyötyläinen (2003).

5.2.1 ICT service design process

The constructed ICT service design process model is divided into four different steps (prepare, design & develop, pilot, and implement) that can further be divided into 12 phases. The model covers only those activities that are performed after the project has been decided to be launched. So, the essential questions prior to the project's start, such as how the original idea is developed into a project or how the project manager is selected, are not explored. The design and development project is considered to end when the ICT consulting service is rolled-out. The four main steps that were identified in the Prestudy project are illustrated in the figure 26.

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Figure 26 Main steps in the design and development process (Kaitovaara and Hyötyläinen, 2002).

Before the idea has been formulated into the form of a project, the *prepare* step is needed for a well-defined ICT consulting services offering, and the project for this effort is started by setting up a core development team. In the *design* & *develop* step, the team defines the content and gathers information, which can also be used for marketing purposes. Hence, the ICT consulting service is

created and documented, and the implementation processes are defined. Based on the experiences and feedback in the evolutionary *pilot* step, the ICT consulting service is further articulated. In the *implement* step, internal activities will secure the fluent *roll-out* of the finalized ICT consulting service.

Based on the material form the Case I and the suggestions form Kaitovaara and Hyötyläinen (2002, 2003) these four main steps are further divided into 12 phases. The whole process is depicted in figure 27 below (adapted from Kaitovaara and Hyötyläinen, 2002).



Figure 27 ICT service design process.

The individual phases of this ICT service design process are described in more detail in the following chapter 5.2.2.

5.2.2 Different phases in the ICT service design process

The design and development of ICT services starts with the establishment of the core development team and it is considered to end when the ICT consulting service is rolled-out. The phases that lie on the same vertical level can be completed more or less simultaneously. Table 6 describes the phases more accurately (adapted from Kaitovaara and Hyötyläinen, 2002). Samples of the documentation can be found in the Appendix V. The phase with the samples is indicated with * in the table.

Table 6 Description of the phases in the design process of an ICT consulting service.

Phase	Description
Prepare Establishing the core development team	Before the actual ICT services packaging project can start, the core development team has to be established. This is most likely an activity for the project manager to do. The members of the core development team should represent all the necessary parties that are needed when offering the ICT consulting service after its roll-out. In this way, all necessary standpoints are taken into account.
Design & Develop Service specification definition	The core team sets target specifications, by reviewing issues such as market potential, customers and the business logic for the upcoming ICT service on consultation. This phase sets boundaries and aims at a common understanding of the goals among the project members.
Design & Develop Services and tasks information gathering	It is often possible that there are some preliminary ICT services and tasks to start with. Hence, related information and knowledge on the particular consultation is gathered around the organization by the core development team. Based on this, an overview is generated on what already exists and what has to be created. Also information concerning the particular business area should be gathered. This information will form the basis for the high level concept and specification.
Design & Develop Service content creation	The content, including such issues as the theories on the current consultation subject, methodological issues, pre-defined delivery and implementation processes, and a set of questions for the customer are collected, and - as needed - developed. The purpose of this phase is to define the overall methodological framework as well as the actual content.
Design & Develop * Documenting the content for all parties, including Marketing, sales, etc.	After the content and framework of the consultation product are specified and developed, the ideas are put on a paper. Also material for internal and external marketing and sales efforts are created e.g., easy-to-understand slides, brochures, and reports. This phase helps the knowledge transfer that has to be conducted in situations such as training the usage of the ICT consulting service or internal communication purposes.
Pilot Prototyping with an internal organization	ICT consulting service can be prototyped with an internal organization, in order to test and evaluate its usability. This phase has its effect on the content of the ICT consulting service and it acts as a general rehearsal for the external piloting phase. Its purpose is to make sure that no essential issues have been forgotten.
Pilot Piloting with an (external) customer	Piloting with external customer or customers gives valuable feedback of the ICT consulting service – such as the ICT consulting service delivery time and the content suitability for the customers - for the core development team based on the market perspective. This is a very essential phase, since thus far the team has been dealing with the development – just without any specific external view on the subject. This phase also has great motivational aspects in the form of confidence and trust.
Pilot Tuning the material for marketing, sales, etc.	The documentation is revised according to the feedback gathered from the internal organization and the customer. The material is also fine-tuned to pass the possible ICT service provider organization's brand demands so that it can be externally marketed.
Implement Selling the service to the first customers	Before selling to the internal organization, the product has to be sold to the first real customers. This will increase the credibility of the ICT consulting service, since it proves that it really responds to the market demand.
Implement Marketing the service for the internal organization	Changes in the organization's existing ICT services and tasks, especially those that are described as people-processing professional services with a high expertise ICT component, needs to be sold for the rest of the ICT service provider organization. This phase will increase awareness of the developed ICT consulting service and its delivery process.
Implement Finalizing and concretizing the material	When the product is being sold to the internal organization, there will emerge discussion and feedback that has to be incorporated to the final version, so that it will get the internal organization's approval. In this finalization and concretization phase the difficult service is transformed into as a concrete service as possible for the customer.
Implement Training the service for the internal organization	After the ICT consulting service is concretized, it has to be trained to the people that will be dealing with it. The purpose is to ensure that those people will have wide enough competence and expertise to carry out their part on its delivery process. In this training phase also all the documentation will be handed out.

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The final ICT consulting services were basically well-defined and easy-to-understand template packages to be communicated for both the targeted customers and the employees of the case organization. With a pricing model and a service description, customers know what is included in the particular ICT consulting service and what it costs. The pricing model is part of the service description document.

The actual document templates of the packaged ICT consulting service were divided into three different types – reflecting their depth – 1) framework, 2) process and 3) document. The framework (1) type covers service descriptions, various presentation slides, and price lists. This material mainly helps explaining and depicting the approach and context of the service product. The process (2) templates is used to describe the different phases of the process in process charts, the associated tasks and corresponding task descriptions - such as responsibilities, inputs, outputs, etc. The document (3) templates were divided according to the different phases. These templates included instructions and the actual questions. The overall number of documents in the template package was close to a dozen. Appendix V contains samples of the service description (internal), workshop material and sales slides.

In terms of the packaged ICT consulting service's implementation process the customers will first receive a certain amount of preliminary work that is related to the content of the forthcoming workshop. Subsequently, the consultants arrange a workshop for the customers within their premises, and the consultants create various notes based on the customers' responses to their questions. Afterwards, in a fixed delivery time, which is already informed to the customer during the sales phase, the consultants create with a certain methodology new documentation and slides. In the last meeting with the customers, the consultants arrange a presentation gathering in which they give the results of the consulting study and proposal for the future development efforts and projects. These outcomes were not supposed to be left on the shelf but for real use for the development projects to come. The preliminary works to the customers, the workshop with the related questions, the agendas of the workshop, and the presentation gathering, as well as the structure for the contributions are all a priori defined – as ready as it is possible for the future customer cases.

5.2.3 AR – Specifying learning

When the project was reviewed, two most important findings were identified. 1) From a service management theory perspective, a clear packaging process was defined and tested in a test case. This

packaging process model was outlined and broken down into four main steps and further down into more detailed 12 phases. Detailed descriptions of these 12 different phases were also provided. 2) From a practical point of view, packaging as an approach and philosophy was developed and tested and seen as the right solution to the challenges identified. It was also discussed that the packaging process model constructed in the project was to be used in similar cases later on.

6 Service Desing Case Studies – Case II: Critical Issues in the Service Packaging Process

6.1 Identifying critical issues in the Service Packaging Process

6.1.1 Case Description

The Prestudy project broadened the company's knowledge about the service business, but in reality that knowledge stayed within the small project group. Although the journey from a product oriented company towards a service oriented company was started, there was a long way to go. The main business challenges – how to develop, sell and manage services – were still very much the same although some understanding about the peculiarities of services was gained.

At the end of 2001, the case company (Sonera Juxto) was about to launch three ASP based (Application Service Provisioning) services into the market: Juxto CRM, Juxto Multi Access Platform, and Juxto Mobile Care. A fourth service – Sonera FleetWare – had already been in the market for some time. Application service provisioning means offering software products and systems as a service to customers. In practice, the service provider handles many operational tasks such as back-ups, end-user support, server monitoring, etc., tasks that would otherwise need to be performed by the customer themselves.

When these four services were built, it was identified that a lot of configuration and customization work needed to be done before the customer could start using the system. These configurations and customizations were further dependent on the particular customers business, processes and technical environment. Some processes and technical environments in particular could even prevent the implementation of the systems themselves. The management of the case company then decided that they should have also consulting services in their portfolio to identify potential show stoppers and, if none of them existed, gather the needed information for the configurations and customizations. In other words, the consulting services would aim at the successful planning and implementation of the ICT services (Juxto CRM, Juxto Multi Access Platform, Juxto Mobile Care, and Sonera FleetWare). The management further decided that these consulting services should be somehow fixed in terms of price and content so that these necessary "prestudies" would not become issues in the negotiations of the actual systems.

When dealing with consulting services that were to be developed from scratch the fixed price and content requirement posed some serious demands for the design of these services. As there were people in the management team who where familiar with the Prestudy service that was packaged earlier, it was decided that service packaging was to be applied also in this case. After some discussions with the management, it was decided that five projects should be established to produce five consulting services. CRM consulting service for the Juxto CRM, Multi Access Platform consulting service for Juxto Multi Access Platform, Mobile Care consulting service for Juxto Mobile Care, Mobile Logistics consulting service for Juxto FleetWare, and Mobility consulting service. The Mobility consulting service was a service that could be used when a company would like to get more out of their mobile solutions. Some details of the services are listed in the next table.

Table 7	Description	of the ICT	services.
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Service	Description
Juxto CRM	Juxto CRM was a full scale CRM system, based on Onyx technology. The service was provided in an ASP mode to the customer. The service had User Interfaces (UIs) for PCs as well as PDAs. So mobile workers, especially sales people, were able to use the system irrespective of the place.
Juxto Multi Access Platform	Juxto MAP was a mobility platform (delivered in ASP mode), based on Fenestrae technology. In practice, the platform could be used to mobilize - that is to provide a PDA or smartphone UI - any back-end system. With the system the customer was able to retrieve any information from their back-end system irrespective of the location.
Juxto Mobile Care	Juxto Mobile Care was a terminal management service that was delivered in an ASP mode to the customer. With the service, the customer could take back-ups from their mobile devices over the air, for example. The system also had normal device management features.
Sonera FleetWare	Sonera Fleetware is a mobile logistics platform delivered in the ASP mode. In practice, a customers bring their SAP system to their mobile fleet (trucks, forest machines, etc). All this is done in an end-to-end managed fashion, so that all traffic is guaranteed in and out of the mobile handset.
Any mobile service	Mobility consulting service was a service that could be used to further improve the use of a customer's mobile service. It could also be used to discover new areas and processes in the customer's business where they could utilize mobility.

The five projects in this case provided a good possibility for two things: 1) to test further and adjust the packaging process model for new professional services and 2) to find out what are the most important issues during the packaging process that have to be taken care of in order for it to succeed.

Thus the main research objectives were 1) to have a tested service packaging process model that could be used for new as well as existing professional services and 2) to find out what are the most important issues in the packaging process.

Multiple sources of evidence were used in data collection. The case material was collected during 150 meetings (see Appendix II) in which the author participated by being in charge of the Projects. The meetings are divided into four different types according to their purpose: 1) framework, 2) project, 3) review, and 4) customer. The project itself lasted from June 2001 to December 2002. The meetings took place during the same time. In altogether 33 framework meetings with the consulting business management, the Packaging process and philosophy were discussed. Project meetings focused mainly on the content of the project. Altogether 89 project meetings were held involving nine managers and experts representing sales, product management, and business as well as technical development. In seven customer meetings the services were piloted and tested with the customer. Finally 21 review meetings were held with vice presidents and directors representing consulting, sales and production to review current material and improve it. These meetings also discussed the project itself and the implications or learning that could be extracted from the project. All meetings were documented through memos containing information of the decisions, activities, and frameworks. This rich material base was further supported by Email logs.

Most of the results that are presented in chapter 6.2 were initially published by Hyötyläinen (2003) in conference proceedings. These initially published results are further elaborated and scrutinized.

6.1.2 AR – Diagnosing

As the services (Juxto CRM, Juxto Multi Access Platform, and Juxto Mobile Care) were being developed, it was soon discovered that the amount of configuration and customization that had to be made for each customer was more than an average customer could handle by themselves. This naturally created a challenge, because the customer could not use the service before those configurations and customizations were made. Same kinds of conclusions were also made from the already existing service – Juxto FleetWare.

The management saw that each of the four services needed a professional service consultancy component that would take care of the configuration and customization needed for the customer to start

using the ICT service. They also recognized that the professional service component could not become too heavy because then it could too easily become a showstopper for selling the actual ICT system. So, the problem was to develop a professional service that would take care of the configuration and customization of the ICT systems and that would be of fixed content and price.

6.1.3 AR – Action planning

As different options were considered, it became obvious that there were only two main alternatives. Either the professional service component would be developed by TeliaSonera and then later provided to the customers, or a partnership would be established with some consulting providers so that they would take care of the professional service part. Further, when developing the consulting service in-house, the question of how to comply with the fixed content and price requirements would have to be answered. Since some members of the management were the same people that were participating in the Prestudy project, they had a good understanding of what kind results could be achieved with service packaging.

6.1.4 AR – Action taking

The management decided that both options could be used. A light version for SME customers would be developed and provided by Sonera Juxto and pre-selected partners would be used to provide professional services for large size customers.

In the case of Sonera Juxto's own consulting services, it was decided by the management that the same process and methods that were applied in the earlier Prestudy case would also be used here. So as a result, five consecutive projects were established. Each of these consisted of 8-13 people. Altogether, the five projects lasted from June 2001 to December 2002.

6.1.5 AR – Evaluating

As the sub-projects were finished one by one, the results of them were reviewed. The project produced five packaged consulting products. The packaged consulting services were basically well-defined and easy-to-understand template packages to be communicated for both the targeted customers and the employees of the case organization. With the pricing model and the general description, the

customer knows what is included in the particular ICT consulting service and what it costs. Each of the consulting services had a fixed content as well as a fixed price.

When the sub-projects and their progress were evaluated and discussed together with the management, some adjustments were made to the packaging process model developed in the Prestudy project.

6.2 Results of Case II – Issues in Service Packaging Process from Knowledge Management Perspective

The results from a knowledge management perspective in this case II are reported in the following four sub chapters. The first examines ICT service packaging as a process of knowledge transfer, the second examines ICT service packaging as an organizational learning process, the third subchapter examines the ICT service packaging from a knowledge justification point of view, and finally the fourth examines ICT service packaging through the knowledge management taxonomy that was built and developed earlier in chapter 3.7. In addition, in the fifth subchapter, research learning is summarized from an action research point of view. Chapter 6.3 continues examining the results of this same Case II from a social networking perspective.

6.2.1 Service Packaging Process as a Knowledge Transfer

According to Nonaka (1994) knowledge transfer happens in two different forms – tacit and explicit. From these two different forms Nonaka and Takeuchi (1995) identify four main knowledge transitions in the SECI model: tacit-to-explicit, explicit-to-explicit, explicit-to-tacit, and tacit-to-tacit. Knowledge transfer in the ICT service packaging process can be examined through these four different transitions. When we take the transitions of t-to-e, e-to-e, e-to-t, and t-to-t and map the phases of the service packaging process of ICT consulting services according to them, we end up with the following table.

Table 8 Categorization of different phases of the ICT design and development process according to the SECI model.

Tacit-to-Tacit	Tacit-to-Explicit	Explicit-to-Explicit	Explicit-to-Tacit
Identifying packaging as a solution	Service specification definition	Tuning the material for marketing, sales etc.	Training the service for the internal organization
Establishing the core development team	Services and tasks information gathering	Finalizing and concretization of the material	Roll-out of the ICT consulting service
	Service content creation		
	Documenting the content for all parties, including marketing, sales etc.		
	Prototyping with internal organization		
	Piloting with (external) customer		
	Selling the service to first customers		
	Marketing the service for the internal organization		

According to Nonaka's and Takeuchi's (1995) definitions, the first (1) mode, socialization, is a process of creating common tacit knowledge through shared experience and then learning through observation, imitation, and practice. Knowledge sharing is often done without ever producing explicit knowledge. In the process of designing and developing ICT consulting services, this socialization happened when different alternatives were discussed to tackle the identified challenges and packaging was selected as a solution. The same socialization took place when the right people from different parts of the organization were selected, identified and brought together in various workshops, forming the core development team.

Nonaka and Takeuchi continue that the second (2) mode, externalization, contains articulating tacit knowledge into explicit knowledge, often with the help of metaphors, analogies, and sketches. The second mode is challenging because of the difficulty in converting tacit knowledge into an explicit form (Boiral, 2002). The majority of activities in the process of designing and developing ICT consulting services were about this. Externalization took place when the service was specified and its scope decided upon. This continued when different people were interviewed and information of the service and the tasks that were needed to produce it were gathered, content created, documented and finally prototyped within the internal organization.

Actually in services task and information gathering, service content creation and in documentation some combination occurred – when the project team dealt with tasks and information that had already been documented then, it was more a question of knowledge combination. In service

content creation, some of the tasks and information that were gathered, had already reached an explicit nature in the form of documentation, so it was more a question of turning that information into formal specifications. The same occurred in documenting the service to all parties, when other additional documentation was put together. However, since all the services to be designed and developed were new, the amount of existing material was very little and the documentation was more about turning tacit information into an explicit form than it was about just combining explicit information. Also, these three phases (information gathering, service content creation and documentation) are considered to be more about knowledge externalization.

The third (3) mode, combination, is a process of assembling new and existing explicit knowledge into systemic knowledge, such as a set of specifications or guidebooks for a new service prototype. A typical activity here might be to put a document into a shared database. When designing and developing the ICT consulting service, this involved two different tasks: the tuning of the material based on the feedback and the finalization and conretization of the material. The tuning process was not followed with finalization. Instead, they returned three times to the externalization phase. Actually the tuning of the material was a recurring activity that took place three times. Externalization continued in piloting, selling the service and marketing the service for the internal organization phases. One could argue that also these three phases (piloting, selling and marketing) are combinations, because they deal mainly with existing explicit material that is piloted, sold or marketed. However, from a design and development process point of view the purpose of these phases is to test the newly designed service – in other words to further gather and document tacit information from different people to either confirm or reject presumptions made about the ICT service. Then in the tuning and finalization phases this documented explicit information is merged together with the service documentation into the final commercial material and put into the intranet and different databases.

The final fourth (4) mode is internalisation, which means that in order to act on formed information; individuals have to understand and internalise the codified knowledge of others. This internalisation involves creating own personal tacit knowledge by combining the existing tacit knowledge with new explicit knowledge from others. However, this process is becoming more challenging because individuals have to deal with ever-larger amounts of information (Nonaka, 1994). In the design and development of ICT consulting services, internalization took place in two phases: training the service with the internal organization and the actual roll-out. The training phase was about

education that was based on the codified information in the form of ICT consulting service material. The people in different parts of the organization were trained and educated to enable them to sell, deliver and implement the ICT consulting services. From this point of view, internalization occurred also in piloting and selling phases with external customers. When the ICT consulting service was piloted and then later on sold to customers, the developed existing material (product description, sales slides, workshop slides, offers, etc) was used by people involved to actually sell, deliver and implement the ICT consulting service. Again, however, from the design and development process perspective, the purpose of these phases was to gather tacit information to confirm or reject presumptions made about the ICT service. The process ends in the roll-out phase where other people continue training and learning to be able to sell, deliver and implement the service. After this, the process returns to the socialization phase in which people are finally able to learn through practical experience.

6.2.2 Service Packaging Process as an Organizational Learning Process

The SECI model developed by Nonaka and Takeuchi (1995) defines how knowledge transfer occurs between different modes of knowledge - tacit and explicit. The model does not take a stand on whether the transfer happens between individuals, groups or on the organization level in general. Crossan et al. (1999) introduced their 4I model that examines also the levels on which the knowledge transfer occurs. In their model, Crossan et al. (1999) describe four sub-processes in organizational learning. Firstly (1), intuition is a uniquely individual process. At its most basic level, individual learning involves perceiving similarities and differences, patterns and possibilities. Experts may not be able to explain their actions, which may be based on unconscious knowledge or skills - on intuition. In the design and development of ICT consulting services this happened in the 0 phase, i.e. when packaging was identified as a solution to the current challenge. Secondly (2), interpreting is the explaining of an insight or idea to oneself and to others. This process goes from the preverbal to the verbal and requires the development of a language. The process spans the individual and group levels, but it does not extend to the organizational level. In the design and development of ICT consulting services, this happened in the first phase, i.e. when the core development team was established and goals of the project were defined. Thirdly (3), integrating has a focus on coherent, collective action. For coherence to evolve, shared understanding, same language and/or joint actions are required in the integrating process, which is initially informal. In our case this happened in the majority of the different phases, all the way from service specification to the training of the service for the internal organization. If the process is coordinated and routinized, the learned actions or knowledge become institutionalized. This fourth process (4), institutionalizing, basically means that organization is no more dependent on individuals' learning since their knowledge is embedded into the organization including systems, structures, procedures and strategy. In the design and development process this happened in the final phase – that is in the roll-out of the ICT consulting service. The tasks are defined, actions specified and organizational mechanisms put in place to ensure that certain actions occur. (Crossan et al., 1999)

When the different phases of the ICT design and development process are categorized according to the definitions of the four different types of knowledge transfer (intuiting, interpreting, integrating, and institutionalizing), which were explained above, we get the following table.

 Table 9 Categorization of different phases of the ICT design and development process according to the Organizational Learning Framework.

Intuiting	Interpreting	Integrating	Institutionalising
Identifying packaging as a solution	Establishing the core development team	Services and tasks information gathering	Roll-out of the ICT consulting service
		Service content creation	
		Documenting the content for all parties, including marketing, sales etc.	
		Prototyping with the internal organization	
		Piloting with (external) customer	
		Tuning the material for marketing, sales etc.	
		Selling the service to the first customers Marketing the service for the internal organization Finalizing and concretizing of the	
		material Training the service to the internal organization	

One could argue whether some of the documentation phases are part of integrating or institutionalizing. In table 9, also those phases that are aiming for the information to be institutionalized are categorized as part of integrating. Only those phases in which the information is really embedded into the organization including systems, structures, procedures and strategy are categorized as institutionalizing. The 4I model describes organization learning as a process where the main stages are identified, interactions among the three levels of the organization are recognized and the influence of the individuals on the dynamic creation of knowledge are described as the feedback and forward

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elements. This means that learning is a continuing process, where previous knowledge can either help or prevent further development. In the design and development process of ICT consulting services this became evident when some of the phases proved to be more critical than others – some of the phases could even stop the whole process. Proper previous knowledge proved to be very important in these phases. Especially in the phases of establishing the core team, piloting, selling the service to the first customers, marketing the service to the internal organization and training, previous knowledge played a significant part. If there was not enough practical evidence that this kind of design and development really works, it was almost impossible to continue to the process. That is how big the resistance was. These four phases will be examined in more detail in the following section that explains the design and development process from a knowledge justification point of view.

6.2.3 Service Packaging Process and Knowledge Justification

Dominant logic is a perspective through which managers conceptualize the business and make critical resource allocation decisions (Bettis and Prahalad, 1995). Bettis and Prahalad (1995) continue that dominant logic is also an information filter, a funnel, through with the relevant information is incorporated to an organization's behavior. As discussed in the previous chapter, the 4I model by Crossan et al. argues that learning is a continuing process, where previous knowledge can either help or prevent further development. Dominant logic is what managers and such base their decisions on. When they apply dominant logic, knowledge justification occurs.

In the design and development process of ICT consulting services, knowledge justification happened in five different phases: 1. establishing the core development team, 7. Piloting with external customer, 9. selling the service to the first customers, 10. marketing the service for the internal organization, and 12. training the service to the internal organization. From the process point of view it was extremely important to recognize the dominant logic that the managers and vice presidents based their decisions on – and that was still very much product based. In other words, service oriented projects had to undergo a much more scrutinized examination than product based projects. When this was realized, it became evident that the "previous" knowledge had to be such that it provided some sort of empirical evidence that supported the service oriented projects. In the establishing phase it meant that the project could only be initiated by people who really believed in the design and development of ICT consulting services. The Piloting and selling phases in turn proved to be phases that were later

evaluated, and if they were not successful or not done at all, the process would not continue. People saw these two phases as practical evidence that the design and development really works. Evaluation of these two phases took place during the aforementioned marketing and training phases.

6.2.4 Knowledge Management Taxonomy and Enablers for an ICT Consulting Service Design and Development Process

From a knowledge management perspective there are three critical elements for an efficient production of ICT consulting services – the tacit and intangible nature of the particular type of knowledge, the organizational transfer of that knowledge, and the organizational adoption and utilization of that knowledge. These three elements are examined by uniting the three core dimensions of the SECI model (how knowledge changes its form), the organizational learning framework (how knowledge is transferred in different levels in an organization) and knowledge justification (what are the critical phases in the process). By uniting these three different dimensions and using the data from tables six and seven, we get the following model taxonomy for knowledge creation and transfer in an ICT consulting service design and development process that is presented in figure 28.





During the application of the ICT consulting service packaging process model, it was noticed that the Tuning material for production, marketing and sales phase was actually a recurring activity that did not happen just after piloting but also after prototyping and selling. This was not emphasized by Kaitovaara and Hyötyläinen (2003) earlier, so it is now done here by renumbering the ICT consulting service packaging process phases. In practice, there is a total of 16 phases instead of 14, because the Tuning phase happens three times (two times more than in the original model). This can be seen in the Nonaka's and Takeuchi's (1995) SECI model forms the foundation of the taxonomy. In addition, the framework of organizational learning (Crossan et al, 1999) as well as the principles of justification (Von Krogh et al. 1996) are embedded into the model. This combination of the three different models provides a comprehensive taxonomy to be used in examining the design and development process from the knowledge creation, transfer and justification perspectives.

The different phases of the design and development process – including the first idea phase and the last roll-out phase – are mapped in the model according to the dimensions of tacit and explicit information. This is examined in more detail in chapter 6.2.4.1. The levels, individual, group and organization, are illustrated in different colors that are explained in the legend. Phases that involve justification are of a round shape. In chapters 6.2.4.2 and 6.2.4.3, the design and development process is examined in more detail. The original cases combined with the aspect of justification in chapter 6.2.4.4 provide insight to the practical enablers of the design development process.

6.2.4.1 Explicit vs. Tacit Knowledge in the Design and Development Process

Figure 28 illustrates which of the service design process phases involve mainly explicit or tacit information. The first two phases of the model (0. identifying packaging as a solution and 1. establishing the core team) deal mainly with exchanging tacit knowledge. The phases involve a lot of brainstorming, sharing successful experiences and generating new ideas. Especially idea generation is a typical step that involves mainly tacit knowledge, since ideas mostly originate from intuition.

During phases two to five (2. service specification definition, 3. services and tasks information gathering, 4. services content creation and 5. documenting the content for all parties, including marketing, sales etc) the tacit knowledge gets transferred into an explicit form as the ideas and experiences get turned into different documented processes, tools and manuals. As a result, the service description (internal + external), process description, offer, sales slides, workshop material, questionnaire, answer sheet, internal presentation documents are made.

All the remaining phases from 6 to 12 deal mostly with explicit information as the newly designed and developed service gets prototyped, marketed and sold to the internal organization and to customers. There are differences however. Although phases six, eight, ten, and twelve involve mainly explicit information, from the design and development process point of view the aim of these phases is to get feedback, that is to further test and validate the service content. In other words, the main emphasis is to harvest more tacit information from people who either confirm or reject earlier made presumptions.

On the other hand, phases seven, nine, eleven, and thirteen (7., 9., 11. Tuning material for production, marketing and sales, etc, and 13. Finalization and concretization of the material) deal with explicit information in another way. Their aim from the design and development process point of view is more on finalizing existing explicit information. In the prototyping phase all the documents get tested

in practice. The same happens in piloting apart from the internal presentation document. In the tuning phase, all the materials are revised based on the input from prototyping and piloting. The selling phase again uses all the documents except the internal presentations. All documents are then again used in marketing and training phases. In the finalization phase before the training, all materials are revised for the last time.

When the new service is finally rolled-out, the people carrying it out will learn new skills and acquire new tacit knowledge. This in turn leads to a continuous circle of knowledge creation. This last step of the process also brings the important continuity perspective (Vandermerwe, 1994) into the design and development process. When the ICT consulting services are further developed, feedback after the roll-out phase is vital to ensure that the services really meet the market as well as internal requirements.

6.2.4.2 Design and Development Process as Knowledge Transfer

The four modes of knowledge conversion are presented as the ICT consulting service design and development project goes through from the establishment of the core development team to the ICT consulting service roll-out phase. All four conversions are necessary for the transfer and creation of knowledge (Nonaka et al. 1998). In the project, two first phases are considered to be sharing the tacit knowledge of individuals in the core team. In the first phase (0 phase), identifying packaging as a solution, the sharing of tacit information occurs between the members of the steering group. In the second phase, establishing the core team, communication between the core team is mostly based on sharing the experience of core team members and is mostly based on feelings and hunches. Furthermore, these feelings and hunches are mainly based on rumors and possible personal experience of ICT consulting service packaging. Therefore, the establishment of the core team as well as identifying and packaging as solution phases follow Nonaka's (1994) description of socialization as a process of creating tacit knowledge through shared experience. The face-to-face interaction among core team members provides an important advantage in pursuit of sharing tacit knowledge (Mascitelli, 2000).

The second mode of knowledge conversion is externalization, where tacit knowledge is articulated and translated into forms that can be understood by other members of the project (Nonaka et al. 1998). This means that through conversations and core group meetings, the service is specified, information, tasks of the ICT consulting service are gathered and translated to an agreed form, and the

content of the ICT consulting service is accurately explained and documented in the internal and external service descriptions. The rest of the documents that are formed in the documentation phase are: process description, offer, sales slides, workshop material, questionnaire, answer sheet, and internal presentation documents. After mutual understanding of the service is formed, feedback from other parties can be then asked, gathered and documented. This feedback is gathered in the prototyping, piloting, selling, and marketing phases. Feedback here refers to the interest groups' existing knowledge, the expertise that they have about selling services and of delivering and implementing them. When the service is actually sold to internal and external partners, their comments, opinions and feedback are used to further revise the final ICT Consulting service.

Externalization leads to a combination, where all the explicit information that has been created during the design and development process is combined with existing information. As Nonaka (1994) puts it, in order to benefit from new knowledge (here, the ICT consulting service prototype) it has to be combined with existing knowledge. Since all the services that are designed and developed here are totally new, no service specific definitions, documentation or processes have existed before. The existing explicit knowledge that is here combined with explicit knowledge formed during the design and development process consists mainly of general company templates, process manuals and diagrams as well as brand guides. In phases 7., 9. and 11. Tuning material for production, marketing, sales, etc, the existing documentation that has been formed is further developed based on the documented feedback from the prototyping, piloting, and selling phases. After this, in the Finalizing and concretizing of the material (13.) phase, all the service documentation is finalized to comply with the company's templates and brand guidelines, and the service is implemented into the process manuals and diagrams.

The last steps of the project, internal training and the roll-out of the product, approach the final mode of knowledge creation model – internalization. Internalization means the conversion of explicit knowledge to an individual's tacit knowledge (Nonaka, 1998). In here, internalization means that newly created explicit knowledge in the form of ICT consulting service is converted to the individuals' tacit knowledge. When the people actually sell, deliver and implement the ICT consulting service they use the documentation about the service and through practice turn part of that documented, explicit knowledge into their own implicit knowledge. Learning by doing, training and exercises are important in order to embody explicit knowledge (Nonaka et al. 1998). Also coaching and mentoring are seen as enablers of internalization (Lubit, 2001).

6.2.4.3 Design and Development Process from Organizational Learning's Point of View

In 4I organizational learning model (Crossan et al, 1999) four related learning subprocesses – intuiting, interpreting, integrating, and institutionalizing, are combined with the organizational levels – the individual and group levels, and the level of the whole organization. The information about the ICT consulting services and their delivery and implementation, is scattered throughout the organization in different units and ultimately in the minds of people working in those units. During the design and development process of ICT consulting often several people are needed to sit down together to elicit and construct the needed information and knowledge. Thus, most of the phases in the design and development process of ICT consulting services involve several people. In these phases shared understanding is formed through dialogue and joint actions – as Crossan and Berdrow (2003) describe – as an integrating process on a group level.

Individual learning is taking place in the very first two steps of the project. Intuiting happens, when an individual first visualizes the ICT consulting service packaging project as a solution and also when the project manager chooses other members for the core project group. These actions are based much on individuals' own hunches that are subjective and rooted in individual experience. To identify packaging as a solution is only possible if the person in question has some prior knowledge and experience in similar projects. The way to select the members to the core project group is based on two things: what kind of knowledge is needed during the design and development process and also who are the potential persons who might pose this knowledge. To successfully handle these both is also only possible if the person in question has some prior knowledge and experience of similar projects. Learning in the establishing of the core team phase (1) does not take place solely on the individual level. When the project manager explains his or her personal insights about ICT consulting service packaging through words and actions to other members of the group, also interpreting happens among the members of the core team. During this phase, the core team begins to develop a common language to examine and further understand the ICT consulting service packaging phenomena and the process itself.

Integrating starts in the next phase of the design and development process – the Service specification definition (2) phase – and it continues and extends all the way to the Finalization and concretization of the material phase (13). In these phases, during which the ICT consulting service is actually being designed, the learning happens on the group level as the service design tools (industrialization, tangibilization, service blueprinting, and service scripting) are actually applied and

used. The learning extends itself also to other members – in addition to the core team – as more and more people are added to the project. However, the learning does not yet extend to the organization level.

Finally institutionalizing can be seen to happen when the ICT consulting service is being trained to the internal organization (14) and then finally rolled out to use. According to the definition of institutionalizing, the absence of one core person does not affect an organization's functionality (Crossan et al. 1999). After the packaging process, the know-how that used to be possessed only by the individual people working in different parts of the organization is defined and packed into the ICT consulting service and trained to the organization. The organization is able to sell, deliver and implement the ICT consulting services without the knowledge of any of the members in the core project group. Therefore, the roll-out phase of the packaging process can be seen as a form of institutionalizing.

6.2.4.4 Dominant Logic and Knowledge Justification in the Service Design and Development Process

There were five phases in the ICT consulting service design and development process in which some form of justification took place. In other words, if any one of these phases would fail, the whole process could be endangered. If the idea was not successfully sold or bought in each and every one of these phases the project would end there and the new service would not be launched. These phases were:

- 1. Establishing the core team,
- 2. Piloting with an (external) customer,
- 3. Selling the service to the first customers,
- 4. Marketing the service to the internal organization, and
- 5. Training the service to the internal organization.

In the following sections the underlying dominant logic in each phase that determined whether the projects were justified will be examined more closely.

Establishing the Core Team

Before the core team began with the projects, the idea of the need for design and development efforts had to be sold to the team. What the projects basically meant to the members of the core team

was more work. So in order for them to be fully motivated they had to be convinced of the project's benefits. The projects were sold by the management as a new way of working that would enable the core group to work much more efficiently. The core group was also told that the sales organization is able to sell the ICT consulting services more easily and thus create more demand for consulting resources.

The dominant logic of the core group to justify the new approach (service design and development) was actually quite obvious: they needed to be convinced how the projects helped their practical work and how they would be able to increase the level of valuation of their work (=consulting) in the company.

Piloting with an (External) Customer and Selling the Service to the First Customers

The piloting phase and selling the service to the first customers are quite similar phases in terms of justification. The justification process by the customer – whether the customer is a pilot or a real customer – is quite the same and obvious as it resembles a common sales process. The customer simply wants to know how the service that is being sold helps him or her to increase his or her profits. Respectively, the dominant logic behind the justification is to be convinced of the benefits of the service.

Marketing the Service to the Internal Organization

After the service was sold to the first customers it needed to be marketed to the internal organization. The people involved in this phase were mostly of higher status (vice presidents, sales directors etc.). The reason for doing things in this order was also part of the dominant logic in the marketing phase. As with the core team, the internal organization that the services were being marketed to also needed to be known, what this can do for them before they are ready to buy the idea. In addition, these people also wanted to act as gatekeepers in a way that they wanted to have their fingerprints in the services.

The dominant logic in this phase had two dimensions. Firstly, as before, these people needed to know how this new service would enable them to achieve their goals more easily, and second, they wanted to validate their role in the line organization.

In practice, the latter part of the dominant logic became visible when it was first attempted to train the service to the line workers, before getting an "approval" from the line directors. This order led to nowhere no matter how enthusiastic the line workers were of the new services.

Training the Service to the Internal Organization

Justification takes place also in the last phase of the design and development process – that is, training the service for the internal organization. In this phase, the people who were being trained were mainly sales people. For them the most crucial question was whether there was a sufficient demand of the particular service. In other words, would this increase their sales results. Secondary questions were also raised about how easy it would be for them to be able to sell the service.

The basic dominant logic in this phase was the same as with the previous ones, to convince people involved of the benefits for them. Here, the sales people wanted to know how this idea (the new service) would be able to help them achieving their goals easier, that is, to bring more sales to them.

6.3 Results of Case II – Issues in Service Packaging Process from Social Networking Perspective

The earlier chapter 6.2 examined the results of the case II from a knowledge management perspective. This chapter 6.3 continues examining the same case II, but from a social networking perspective. These results are reported in four different subchapters. The first subchapter (6.3.1) examines ICT consulting service packaging process as a social network formulation from an internal perspective. The second chapter (6.3.2) does the same but as an external social network formulation. The third chapter (6.3.3) combines the internal and external networking models into a single model that represents the social network that emerges during the ICT consulting service design and development process. Finally chapter 6.4 examines key issues in the ICT service packaging process from knowledge management as well as from social networking perspective.

The five service design and management projects were planned and constructed in such a similar fashion that the project groups in the different projects were very similar. Furthermore, the people for the project were selected based on the role concept discussed earlier (Frings and Weisbecker, 1999; Meiren 1999; Bulliner et al., 2003). Because of this, different people were involved in the five different projects, they represented same organization parts and were working on the same level of the

organization. The role concept utilization means that when new ICT consulting services were designed and developed, there were not always people in place taking responsibility, of service delivery for example. Instead in this design and development phase, a delivery role was assigned to the technical development manager of the product who was asked to look at things from a delivery angle.

Because of the similar composition of people and their roles, and the organizational responsibilities in the five different projects, the network models constructed here present average compositions of all the five projects. Further, it can also be said that very little actual differences existed between the projects in this regard. The main emphasis from the network perspective is on the development of the network in comparison to the packaging process – not the relational ties between the actors or the attribute data of the actors (Scott, 1991; Wasserman and Faust, 1994) that are often the basic focus in social networking studies. Nonetheless, considering the further research topics, the methods of social network research are applied as appropriate.

The network as a whole is illustrated as a sociogram – an analytical technique applied for social configurations first by Moreno in 1930's (for a discussion of the development of sociograms see for example Scott (1991)) – where actors are depicted as points and relational ties between them as lines or arrows. Actors refer to the individuals in the project and their relations as information flows between them (Wasserman and Faust, 1994). This is a usual illustration of a layout in different types of network research traditions (e.g. Stephenson and Zelen, 1989; Håkanson and Snehota, 1994; and Anderson, Håkanson and Johanson, 1994; Economides, 1996).

As the process of packaging ICT consulting services involves individuals from inside and outside the case company, the network is first divided into internal and external networks accordingly. The project manager is in the centre of the network, since he/she starts the project by establishing the core development team (Kaitovaara and Hyötyläinen, 2002). Additional members are then added to the project step by step. In the formulation of the networks, the different stages of the networks are explained through the 14 process phases, which were:

- establishing the core development team,
- ICT consulting service specification definition,
- ICT consulting services and tasks information gathering,
- ICT consulting service content creation,
- documenting the content for all parties includig marketing, sales etc.,
- prototyping with an internal organization,
- piloting with an (external) customer,
- tuning the material for marketing, sales, etc. (this happens three times),
- selling the ICT consulting service for the internal organization,
- selling the ICT consulting service to the first customers,
- finalizing and concretizing the material,
- and training the ICT consulting service for the internal organization.

6.3.1 Formulation of the Internal Network

In the illustration of the network only the job descriptions are depicted as an attribute data of the actors. The network formation is divided into separate stages each time new actors, new project participants, joined the project. This principle in mind, the 14 phases of the service design and development process are compressed into four distinct stages. When the project manager is the only member in the project it could be seen that the network is in stage 0. As can be seen from Figure 29 29, four different stages of the network can be identified.



Figure 29 Different stages of the internal network formation.

The first stage (I) of the internal network covers the phases from the "establishment of the core development team" to "documenting the content for all parties" of the process model. During these phases the project group – the network – operates with the same resource composition.

The second stage (II) of the network is reached when the prototype is tested within a small group of internal personnel (prototyping with an internal organization). The group should consist of those who are already familiar with the basic concepts of the ICT consulting service to be packaged. The reason for this is that the people should already have bought the idea itself and can focus on improving the coming service content itself. Otherwise the focus could turn on discussing the basic idea and the approach, away from the particular content. Suitable people to be used as a test group could be, for example, the members of the extended project management group that are not part of the daily development work.

The network is expanded to the third stage (III), when the ICT consulting services is sold to the internal organization (selling ICT consulting service to the internal organization). At this stage, the
network expands its reach to the executive managers. To save time, also other members than those with executive status can be reached at this time. The primary purpose is however to join the necessary executive mangers to the network. The relationships to them can be formed either through the core development team members or directly through the project manager.

The final level (IV) of the internal network corresponds to the "training of the material for the internal organization" phase in the process model.

6.3.2 External network formulation

The composition in stage I is same as in stage I in the internal network, so it is left out in here. Figure 30 illustrates the formation of the external network.



Figure 30 Different stages in the formation of the external network.

The second stage in the network formulation is reached when the ICT consulting service is piloted with external customers (piloting with external customers). The relationships to the external customers are most likely to be formed between the core development team's members rather than directly to the project manager.

The stage (III) of the external network model could be divided into two, but it is handled here as one. The expansion to this level occurs, when the ICT consulting service is sold to the first customers (selling the ICT consulting service to the first customers). Since the packaging of the ICT consulting services process contains only these first cases, only those customers have relationships to the rest of the network. The rest of the customers are depicted here because they will join to the network later on, which is really happening in the roll-out phase. However, that is not a part of the process model for packaging professional ICT consulting services (Kaitovaara and Hyötyläinen, 2002, p.10).

6.3.3 Network Model for the Packaging Process

The different stages of both the internal and external networks are merged into a single network model in Figure 31. The stages are presented in a chronological order so that the first one to occur is in the center. Those stages that relate to the internal network formation are depicted here with a gray background color, while the external ones are white. The four stages of the internal network and three of the external network are here divided into seven levels of the network model (initial stages in the internal and external networks are marked with i's and e's respectively). It should be noted, however, that the seventh level does not really belong to the process model for professional ICT consulting service design and development, but is depicted here since it represents a logical continuum from the networking point of view.



Figure 31 Network model for the packaging of ICT services in the case study.

In Figure 31, levels I and II are identical in the first two stages of the internal network model. Level I is also identical with stage I of the external network model whereas levels III and IV correspond to stages II and III. To be precise, stage III of the external network model diverges into levels IV and VII of the network model. Levels V and VI correspond to stages III and IV of the internal network model. Although the VII level is not really a part of the ICT service design and development process – because it is considered to end in the roll-out phase – it is shown in the model due to the clarity reasons (level VI corresponds to the roll-out phase). With the process phases of "tuning material" and "finalization and concretization of the material" no network expansion occurs. Instead, both of the phases are executed within the core development team.

From this network model for professional ICT consulting service design and development process, three interesting findings can be distinguished. *Firstly*, there seems to be a clear relation between knowledge justification and network expansion from one level to the next. In every instance – except when moving from level 1 to 2 – when the existing network composition is changed, the following phase in the design and development process requires knowledge justification. In a sense this is quite logical – when new people are added to the project group they first need to buy the core idea of the project, before they commit to contributing the project. From this point of view it is also quite logical, why the transition from level 1 to 2 does not require the knowledge justification – the prototyping phase is a simple test, where the new members do not need to buy the idea, they just express their opinions. Whereas in the other phases where the network is expanded, new members in the following phases first need to buy the core idea, because they will be actually involved either in the service production or they are real customers who are actually buying the service.

<u>Secondly</u>, another interesting notion is that the network has to expand externally before it can expand internally. This may be explained by the importance of external customer feedback that has also been highlighted by Bowen and Youngdahl (1998) as well as Alam and Perry (2002). They all argue that as the role of the customer is much more intense and deep in services than in products, it should also be visible in the service design phase. The importance of external feedback can be explained from a knowledge justification point of view. When the service is piloted and sold to real customers, it proves to internal parties that the service has real demand and suitability in the markets.

<u>Thirdly</u>, when the attributes of the actors in the network model's level V are viewed, it can be seen that the actors' job descriptions belong mainly to the executive level. These executive managers have to be convinced before the process can continue and the internal personnel trained. This could imply that they are what Hildebrand (1998) described as gatekeepers in social networks. The network model emphasizes their role by illustrating how they operate, in addition to being gatekeepers, also as hubs that provide multiple connections to important people (Hildebrand, 1998) that play crucial role in actually selling the service product. This could also be seen as reaching the critical mass of a network (see for example Rogers, 1995 or Kelly, 1998).

6.4 Summary of the Results in Case II: Critical issues in the Service Packaging Process Identified

6.4.1 Key Issues in the Packaging of Professional ICT Consulting Services Process

Chapters 6.2 and 6.3 examined key issues in the packaging process of professional ICT consulting services. Chapter 6.2 examined this process particularly from the knowledge management perspective, and chapter 6.3 did the same from the social networking perspective. Both perspectives focused on different changes that took place during the process. Knowledge management focused on the changes that happened as knowledge was created and transferred during the different phases of the process. The models that were used to examine this were: (1) knowledge justification, (2) knowledge transfer across different modes and (3) organizational learning. Social networking focused on examining the changes in the composition of the project group during the process (4) – at which phases of the project new people joined the project group.

When discussing the significance of the different phases, one phase might be very important from one perspective but not relevant at all from another perspective. Some phases might be very important from the knowledge justification point of view, but not at all important from the social networking point of view, or vice versa. When the overall importance of the different phases is considered, all the different perspectives should be taken into account. One way to achieve this is to see in which of the different phases the most changes occur simultaneously. If all of the four different types of changes were examined simultaneously, then one would get a quite comprehensive overview on what might be considered important and what would be less important on an overall level. For example in which of the phases are there more changes than not? In the following table 10, all the four changes are examined in relation to the different phases in the professional ICT consulting service design and development process.

	Justification	Knowlegde transfer across modes	Organizational learning across processes	New members added to network
0. Identifying				
1. Establishing	Х		Х	Х
2. Specification		Х	Х	
3. Gathering				
4. Creation				
5. Documenting				
6. Prototyping				Х
7. Tuning		Х		
8. Piloting	Х	Х		Х
9. Tuning		Х		
10. Selling	Х	Х		Х
11. Tuning		Х		
12. Marketing	Х	Х		х
13. Finalizing		Х		
14. Training	Х	Х		х
15. Roll-out			х	

Table 10 Different changes in different phases during the service design and development process.

In table 10, all the changes – from the four different perspectives – that are taking place during the different phases of the service design and development process are marked with an X. For example, in the (8.) piloting phase, knowledge justification is taking place as the customer simply wants to know how the service that is being sold helps the organization to increase profits. Furthermore, the dominant logic behind the justification is for the customer to be convinced of the benefits of the service. Change in knowledge transfer across different modes is taking place as in the previous phase (tuning) knowledge transfer was from explicit to explicit, but in this piloting phase it is from tacit to explicit. Also in the piloting phase, the composition of the project group changes when an external customer joins the project. On the other hand no changes happen from the organizational learning point of view, because integration takes place in both of the phases – tuning as well as piloting.

The overall importance of the different phases in service design and development process is examined through the number of simultaneous changes happening in a particular phase. The phases where there are more changes than status quo from these four different perspectives are highlighted with dark grey color. In other words, those phases where changes concerning at least three of the four models take place. These phases are: (1.) Establishing the core team, (8.) Piloting with an external customer, (10.) Selling the service to the first customers, (12.) Marketing the service for the internal organization,

and (14.) Training the service for the internal organization. Each of these five phases is examined in more detail as follows.

(1.) Establishing the core team

Before the core team began with the projects, the idea of the need for a design and development process had to be sold to them. What the design and development projects meant for the members of the core team was basically more work. So in order for them to be fully motivated they had to be convinced of the projects' benefits. The projects were sold by the management as a new way of working that would enable the core group to focus mostly on the actual consulting, not so much on internal marketing. The core group was also told that the sales organization is able to sell the ICT consulting services more easily and thus create more demand for consulting resources.

The dominant logic of the core group to justify the new approach (service design and development) was actually quite obvious: they needed to be convinced how the projects helped their practical work and how they also were able to increase the level of valuation of their work (=consulting) in the company.

Changes in the organizational learning also took place. From the organizational learning perspective the process moved from intuiting to interpreting. In the previous phase (identifying the packaging as a solution) learning happened mostly on an individual level, but in this phase (establishing the core team) learning happened on a group level as the project manager explained his idea of the packaging project to other members of the core group. Respectively, the composition of the social network also changed as new members (the other members of the core group) took part to the project.

(8.)Piloting with an external customer

Knowledge justification took place also in the piloting phase. Although it was a pilot, the customer wanted to know how the particular ICT consulting service that they were being sold helps them to increase their profits. Respectively, the dominant logic behind the justification is to be convinced of the benefits of the service. In this piloting phase, also the social network was changed as it was – for the first time – expanded externally when the external customer joined the project group. Although the customer may not have been thinking to be a part of the design and development project they were just that from the project point of view.

In addition to knowledge justification, also changes in knowledge transfer took place. In the previous phase (tuning the material) the transfer took place from explicit to explicit. Whereas in this phase (piloting with external customer) the transfer took place mainly from tacit to explicit as the main purpose was to test the particular ICT consulting service with an actual customer to get their feedback. This tacit information was then analyzed and when seen important, further transformed into an explicit form to the design and development process. No changes took place from the organizational learning point of view as the learning continued to happen on a group level.

(10.) Selling the service to the first customers

The piloting and selling the service to the first customer phases are quite similar in terms of justification. The justification process of the customer, whether pilot or real, is quite the same and obvious as it resembles a common sales process. The customer simply wants to know how the service that is being sold helps to increase profits. Respectively, the dominant logic behind the justification is to be convinced of the benefits of the service. Also in this selling phase, the social network was changed as it was – again – expanded externally when the new external customer joined the project group. Here also the customer did not think of being part of the design and development project but from the project point of view they were just that.

In addition to knowledge justification, also changes in knowledge transfer took place. As the process returned to the tuning the material phase (where the transfer took place from explicit to explicit), a change took place when in this phase (selling the service to the first customers) the transfer took place mainly from tacit to explicit. Here too the main purpose was to test the particular ICT consulting service with an actual customer – and in this phase in a real life situation – to get their feedback. This tacit information was again analyzed and, when seen important, further transformed into an explicit form to the design and development process. No changes took place from the organizational learning point of view as the learning continued to happen on a group level.

(12.) Marketing the service for the internal organization

After the service was sold to the first customers it needed to be marketed to internal organization. The people involved in this phase were mostly of a higher status (vice presidents, sales directors, etc.). The reason for doing things in this order was also part of the dominant logic of the marketing phase. As with the core team, the internal organization that the services were being marketed

to also needed to know what this can do for them before they were ready to buy the idea. In addition, these people also wanted act as gatekeepers in a way since they wanted to have their "fingerprints" in the services.

The dominant logic in this phase had two dimensions. Firstly, as before, these managers needed to know how this new service would enable them to achieve their goals more easily, and secondly, they wanted to validate their role in the line organization. In practice, the latter part of the dominant logic became visible when it was first attempted to train the service to the line workers, before getting the "approval" from the line directors. This approach led to nowhere no matter how enthusiastic the line workers were of the new services.

Internal marketing involved also changes in the social network as the vice presidents and directors joined the project as new members. Although their input may sometimes have been quite small in practice – at least compared to the other members – they needed to be convinced that they really were members of the design and development project, and furthermore that the project team was really eager to receive their input. In practice, this input also needed to be actually visible one way or another in the documentation of the ICT consulting service. No changes happened from the organizational learning perspective as the learning continued to happen in a group level.

(14.) Training the service to the internal organization

Justification takes place also in the last phase of the design and development process, training the service to the internal organization. At this phase, these people were mainly sales people. For them the most crucial question was whether there was a sufficient demand for the particular service. In other words, would this increase their sales results. Additional questions were also raised about how easy it would be for them to be able to sell the service. As the people to be trained joined the project group, changes in the social network took place as the network expanded for the last time. Sales persons were not thinking so much to be part of the project, but from the project perspective their role was vital. If these people were not trained properly, there would be difficulties in the service delivery, and more importantly there would not be people who know how to sell the service.

The basic dominant logic in this phase was the same as with the previous ones, to convince sales persons of the benefits for them. The sales people wanted know how this idea (the new service) would help them to achieve their goals easier, that is, to bring more sales to them.

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Changes also take place in the knowledge transfer as the transfer takes place from explicit to tacit whereas in the previous phase (finalizing the material) it took place from explicit to explicit. In this phase (training the service), the main purpose is to educate the people with the explicit documentation and enable them to actually sell and deliver the service. Professional services are not like products, one can not sell them just with the help of brochures. One really needs to know and understand the ICT consulting service in order for the customer to be convinced. In practice this means that during the training session the people need to also create some tacit information, in order to convince the customer. No changes happen from the organizational learning perspective as the learning still continues to happen on a group level until the service is actually rolled-out into the whole organization.

6.4.2 AR – Specifying learning

The practical outcome of the five projects in this Case II is quite straight forward – the actual ICT consulting services were designed, developed and packaged. Each of the five projects delivered the template-sets that were developed during Case I. These templates of the packaged ICT consulting service were divided into three different types – reflecting their depth – 1) framework, 2) process and 3) document. The framework type (1) covers service descriptions, various presentation slides, and price lists. This material mainly helps in explaining and depicting the approach and context of the service product. The process (2) templates is used to describe the different phases of the process in process charts, the associated tasks and corresponding task descriptions - such as responsibilities, inputs, outputs etc. The document (3) templates were divided according to the different phases. These templates included namely instructions and the actual questions. The five consulting services all included the same set of templates. All the templates and some details of delivery, execution and resourcing are listed in the following table.

Table 11	Details	of	the f	five	consultin	g services.
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Services	Delivery time	Execution	Documentation	Resourcing
			Service description (internal +	
CRM consulting service, Mobility			external), process description,	
consulting service, MAP consulting			offer, sales slides, workshop	
service, MC consulting service,		3 - 5	material, questionnaire, answer	
and ML consulting service	2-4 weeks	mandays	sheet, internal presentation	1

The delivery time, execution time, documentation, and needed resourcing of all the five consulting services. The delivery time was from two to four weeks depending mainly on the customer's

schedule – that is how fast they were able to gather the needed people from their side. The execution took from three to five mandays depending on the complexity of the customer's environment and size. If needed, all of the ICT consulting services could be conducted by one consultant. Of course with larger customers two consultants would be better, but that would require the customer to pay for both of them.

From a theoretical perspective this case II had two most important contributions. Firstly (1), the application of the ICT service design process model (that was developed in case I) in these five cases proved that the process model is also applicable with totally new services. The model worked just as well with totally new services than it did with a service that had already been delivered a couple of times but did not have any established delivery or production processes in place. This makes a clear contribution to service management theory. The second (2) contribution is the identification of the important roles of knowledge management and social networking in the ICT service design. The description of the detailed role of knowledge transfer and creation as well as the role of social network expansion in the ICT service design process contributes both to the service management theory as well as to the practices of knowledge management and social networks.

7 Service Desing Case Studies – Case III: Towards a New Service Architecture

7.1 Case III – Constructing a New Service Architecture

7.1.1 Case Description

The knowledge and understanding that was gained during the first two cases really build foundation for the journey towards a true service company. The case company now understood how services – or complementary service elements – can be designed, developed and managed. However, this understanding also allowed focusing on new challenges. As the number of new products and services in the case company increased, the service management aspect became ever more important.

In the early 2004 the management of the TeliaSonera business services started to recognize that their key business services – the "managed services" group (containing among others the briefly described "Fieldwork services", "eCenter services", "Cstream services", "Security services", and "Alerta services") were becoming very difficult to manage. These services originated from earlier subsidiaries of the company and had been created by various organizational units serving special customer needs. Because of this history, the services utilized many different software technologies, provided different functionalities, had different processes, and used different kinds of backend systems. Some of the challenges concerning the development, production, and selling of these services were originated from the incorporation of most subsidiaries back to the mother company (TeliaSonera Finland) in the summer of 2002. The extent of different types of services and their technological variation led to increased complexity, which manifested in problems concerning service quality and increased production costs. These challenges lead to the establishment of the Service Architecture Redesign project.

Multiple sources of evidence were used in data collection. The case material was collected during 61 meetings (see Appendix III) in which the author participated by being in charge of the Project. The meetings have been divided into three different types according to their purpose: 1) framework, 2) project, and 3) review. In 15 framework meetings with the business and product development management and other stakeholders, the overall service architecture framework, service design and development methods, and application (industrialization, tangibilization and service blueprinting) were discussed and further developed. In 36 project meetings with managers and experts

representing sales, product management, and business and technical development, the actual Service Architecture model was designed and developed. Ten review meetings with vice presidents and directors representing business, sales, product management and production concentrated on getting feedback and acceptance for the Service Architecture framework philosophy. These meetings also discussed the project itself and the implications and learning that could be extracted from the project. These meetings were mostly one-to-one interviews.

Most of the results that are presented in chapter 7.2 were initially published by Hyötyläinen and Möller (2007). These initially published results are further elaborated and examined in more detail. Also the case material is based on additional meetings.

7.1.2 AR – Diagnosing

In diagnosing the service business situation, complexity was identified as the core problem. As a result, a project labelled SARDIN (Service Architecture Redesign), targeted at reducing the service offering complexity, was launched in the beginning of 2004. The project concentrated on Business Process Networking (BPN) services in the managed services portfolio. An example of these services is a BPN User Integration service that enables a company to mobilize their SAP system in a way that all data traffic between the SAP and a mobile device is secured and guaranteed.

7.1.3 AR – Action planning

When the core problem was examined further, it was identified that the large variety in every aspect of the services led to increased complexity (Miyazaki and Kijima, 2000), which in turn led to challenges concerning service quality, cost structure, and customizability. As alternative actions were identified to reduce the variety, it was recognised that the complexity challenge could be approached from various perspectives – customer need, technology, process, system, etc.

7.1.4 AR – Action taking

In the end it was decided that the project would concentrate on developing a framework that encompasses both the customer need perspective as well as the technology perspective. Service Industrialization, Service Blueprinting and Service Tangibilization were identified as suitable methods to do this. From the customers' point of view, it was seen that about ten services under the old BPN concept should be integrated and regrouped into one BPN service.

7.1.5 AR – Evaluating

The SARDIN Project was concluded in February 2005. As a result of the project, a new Service Architecture framework was developed that will enable significant reduction in the number of different software technologies as well as functionalities used and offered by the BPN services. The framework also contains rules and standardized ways of working for processes that involve service design, development and production. These processes themselves will be also significantly simplified. The implementation efforts of the framework were started during late fall of 2005.

7.2 Results of Case III: Applying the New Service Architecture

7.2.1 Applying Service Industrialization: Building a Modular Service Architecture

Service Industrialization means using hard, soft or hybrid technologies, borrowed from manufacturing, in service design and development (Levitt, 1972). In the SARDIN Project mainly soft technologies were used because of the critical design phase of the ICT services were highly people-dependant, being carried out by various groups of experts. Applying soft technologies in this context means systemizing something that has been done uniquely every time and/or pre-planning something that has been done in an ad-hoc manner (Levitt, 1976).

When reflecting the potential principles of complexity reduction, it was identified that we should minimize idiosyncratic, one-time performances and that as much as possible of the service design work or actions should be reusable. This in mind, modularisation from the manufacturing industry was selected as a cornerstone principle (Peters and Saidin, 2000; Jiao et al, 2003; Voss and Hsuan, 2009). Modularisation in general aims at packaging individual functionalities in a way that functionalities in one module would have as much in common as possible and that those modules would be as reusable as possible (Tsai and Wang, 1999; Erradi, Kulkarni and Maheshwari, 2007).

When analysing the modularisation of TSF's BPN services, it was discovered that modularisation could be used on two levels: technical and functional. On the technical level modularisation involved an ability to create a limited set of product platforms to produce the targeted functionalities, instead of using about ten different individual products to produce the same functionalities. The targeted product platforms were based on a handful of selected software technologies, leading further to a considerable reduction in software complexity. The original products had each been based on a separate software technology.

On the functional level, modularisation led to splitting the original service products into functionalities. Because the existing BPN services were not structured in a similar manner, the very first task in the modularisation was to examine the current architectural situation. When the current situation was unfolded, it was realised that the reusability of modules could be further enhanced if the functionalities were further divided into two sets: peripheral functionalities and core functionalities.

The core functionalities (e.g. message conversion, reliable message routing, triggering a chain of events, etc.) were crucial in addressing actual customer needs, so greater variability existed among them. The peripheral functionalities in turn, were ones that were more involved with service management issues or the service aspect per se (e.g. billing of the service, service desk operation, service delivery, service reporting, etc). These peripheral functionalities had more things in common among the 10 different BPN services, or at least it was seen that these could have more in common, which meant greater reusability in practice.

The impact of modularization on the service production architecture is illustrated in figure 32. It should be noted that the functional product elements (FPE's) or technology elements (TE's) of the different services were not so clearly known nor structured before the SARDIN project. Here similar structure is used to illustrate the situation before and after the project so that they could be more easily compared. As an example of the acronyms on the left side of the figure 32, Service 1 stands for "Cstream" (providing means for multichannel messaging), Product 1 would be "Topcall" and Technology 1 would be "WM Ware". TEs in this context would be "Link Server", "Archive Server" and "Voice Server". FPE 1 in turn is "office messaging", FPE 2 "message archiving" and FP3 "business critical messaging."

The modular service architecture comprised now of three levels: technical modularity (shown on the left hand side of figure 32 as technical modules / elements), core functional modularity (shown on the left hand side of figure 32 as core functional modules / elements) and peripheral functional modularity (shown later in figure 33 on the left hand side as peripheral functional modules / elements).

After this basic high-level structure of the service architecture was developed, the actual existing set of functionalities provided by BPN services were examined. This was done by using a kind of tree methodology to break the functionalities down to their smallest possible elements. After this basic step, the individual functionalities were examined in order to find ones that were fulfilling the same customer need. When this was done, those functionalities that were used in several services were all grouped into one module called CORE. The CORE module would then be made usable for other modules. At this

Figure 32 Influence of Modularization on the Architecture of Complex ICT Services.



point it was not yet selected which software technologies would be used to produce the functionalities in the CORE module and which ones were to be abandoned.

When the lowest functionality level (those that were not part of the CORE module) was further examined, functionalities that had the most synergies between them (Tsai and Wang, 1999; Erradi, Kulkarni and Maheshwari, 2007) were grouped together into three modules (M2M, B2B and UI). In the end, about ten services were reassembled into one BPN service that consisted of four basic and one extra modules: CORE, B2B (business transactions), M2M (machine initiated transaction), and UI (user initiated transaction). In addition, there is a fifth module (Integrated Network Services) for integrating other services to the BPN. These are shown in figure 33 as the five FPM's (Functional Product Modules).

7.2.2 Applying Principles of Tangibilization: Creating Service Manuals

The main philosophy of tangibilization is to transform intangible activities or acts into as concrete a form as possible (Levitt, 1981). In the case of BPN services, very often the different functions are in fact outcomes of certain processes performed by different units in the organization. For example, price rating or billing functions in a BPN service are only the intangible outputs of the billing process performed by TeliasSonera's billing organization. In a similar manner, also service design and delivery functions are intangible outputs of design and delivery processes. The challenges with these intangible outputs are that they are often quite hard for people to grasp, and the variance in the outputs is high, because the output itself is not usually defined in a clear and consistent manner.

By applying tangibilization, the number of outputs will be limited and clear boundaries are set for the outputs. In other words, some choices are made in advance for controlling which actions and things are allowed or not allowed during the service production. In practice this meant that if the service charge comprised of a set-up fee, variable data-traffic charge, usage based monthly fee and an smstraffic charge, by applying tangibilization the billing structure would be simplified by allowing only a set-up fee and three different levels of monthly fee (monthly fees depending on predefined traffic amounts), for example. As a result there was a limited number of billing structures that could be used in a billing function or a limited number of attributes (e.g., duration, mandays, etc) in a design function that are allowed to be changed. The second stage in tangibilization is to concretize the outputs to make them more tangible for people to handle. In the SARDIN Project, the original variety in rating and billing functions alone was quite big. So, first the number of allowed outputs was limited and then some design attributes were set as fixed. The second stage of tangibilization in the project was done by establishing the idea of service design manuals for different internal organizational units that were producing the functions. In practice this meant that instead of making rating structures uniquely for every product, the rating and billing organization would have a ready service manual containing the possible rating structures (=service elements) that they are allowed to produce. The manual would also indicate the cost levels of different service elements, so that the designer developing a new ICT service would appreciate the implications to the overall costs his/her decisions concerning billing, delivery, and help-desk opening hours, etc., would have.

During the SARDIN project, two service catalogues for two peripheral functional modules were created – one for "rating and billing" structures and another one for "monitoring & service management" (these peripheral functional modules are shown in figure 33). The contents of these two manuals are very detailed and thus also very confidential, so it is impossible to include the full copies of those two documents. However, an example of the illustration and the descriptions of the original rating structure for the Fieldwork service can be found in Appendix VI. The purpose is just to give an overview of how the structures were illustrated, defined and described. Also in Appendix VII, the structure of the service catalogue for monitoring & service management is illustrated, and the overall logic of how the elements will be defined is also described.

Utilizing this form of tangibilization helped to limit the number of outputs and by defining the content of service outcomes clearly in the service manuals reduced further the perceived complexity of service design and production. The overall variance in both the outputs and in their production was significantly reduced. All this makes the outputs, which are functions of the overall ICT service, easier for people to handle.

7.2.3 Applying Service Blueprinting: Defining Interfaces

Service blueprinting (SB) looks at a service from a process point of view. Its aim is to find points in the process that cause unnecessary variance in the overall output or that could be carried out more efficiently (Shostack 1987). After it was clear that the different functions of the overall ICT service were to be tangibilized as service elements in the service manuals, the next thing was to concentrate on the interfaces in the processes between the development organization and the internal units that were producing the service elements. The term "interface" here refers to methods, tools, and the actual processes used.

As the processes were broken into smaller pieces it became clear that especially those parts of the processes that involved two different organizational parties (one was the performer and the other was the internal customer of the process) were more or less performed in an ad-hoc manner. This meant that the performer had quite a lot of discretion in many process phases, which often lead to quite long lead-times. After this diagnosis, the main service blueprinting activities were targeted to those parts of the processes that involved interfaces with different organizational parties.

This turned out to be probably one of the easiest parts in the SARDIN Project. As said before, the different processes worked more or less in an ad-hoc way. All that needed to be done, was to develop simple rules and guidelines to the interfaces for the people to use, to significantly reduce the need for performers' discretion as well as to remove phases that were not producing any real value for the service elements. In practice this meant that there were as many processes to do pricing structure designing, for example, as there were people participating in it. Every product manager had different contact persons in the Pricing & Billing production unit and every one of them did things a little bit differently. What was needed was to define the interface between the Pricing & Billing organization and Product Management so that the change requests are handled in a coordinated fashion, preevaluated, "is this really necessary", according to an agreed schedule, in an agreed form and sent to a predefined contact person. It was also agreed that Product Management would also need some guidelines for designing pricing and billing structures for new products. This would also include the definition of prices, estimated delivery times and work-estimates of different kind of change requests concerning pricing and billing elements as needed.

The output of service blueprinting was defined as a description of the mode of operation which includes a couple of documents that will be used for communications and as templates for the actual orders of the development work. For communicating the way of working, three documents were defined 1) Guidelines for designing new pricing and billing structures, a 2) List of works that can be ordered (Changes, New products etc) and a 3) Process description. These documents contained a lot of confidential information about different systems contact persons, etc, so they cannot all be included here. However the guideline document of pricing and billing structures is presented in Appendix VIII.

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The process description was a definition of the different phases and the way work is ordered including the contact persons. For ordering development work, two documents were defined, a 1) Price list for what that can be ordered and 2) order-forms for the different tasks. It was agreed that the first document would contain at least some estimates for tasks in different categories. E.g., tasks belonging to category 1 take 2 weeks at the most – no external work required, tasks in category 2 take 4 weeks at the most, of which 1 week is external work, and so on. The price list also contained response time estimates on the time required to perform work belonging to different categories. Order-forms for the different tasks were often very simple documents that basically defined what preliminary information was required.

During the process it was also defined what was not the purpose of Service Blueprinting. It was stated that documentation is not the end in itself. The most important thing in service blueprinting is to develop a common way of working, and describing it in a way that it can be communicated to people involved in that process. In addition, order forms were an important method in making sure that both parties share a common understanding of what can be delivered and what information is needed in order to do this properly. Documentation was just a way to describe all this. This process redesign in pricing and billing development shortened the pricing and billing design and service production times considerably.

7.2.4 Service Architecture Framework

Based on the analyses and outcomes of the adopted three methods of service design and production (industrialization, tangibilization and service blueprinting) a new Service Architecture Framework was constructed, summarizing the key results of the SARDIN Project. The framework is illustrated in figure 33. Applying industrialization tools resulted in developing overall modularization architecture for the Business Process Networking (BPN) services. In figure 33 this is shown as the usage of modules and elements. Tangibilization in turn was used to transform the intangible process outputs into more tangible product elements that were listed in service manuals. These are shown as

Figure 33 The Service Architecture Framework of the SARDIN Project.



common product modules and elements instead of process outputs in figure 33. Finally, service blueprinting was used to standardize the interfaces between the organizational units that were producing functions to the services. In figure 33 this is illustrated as systemized interfaces between the internal service providers.

When the design part of the SARDIN project was finished the basic principles of the modular service architecture (cross use of modules between different services) were immediately discussed in the product management as well as in the development organization. The idea of modularity was well received and the results of this were immediately shown in the new development projects: Functionalities from different services (e.g. Alerta) were planned to be reused in new services (e.g. new versions of Cstream). Also, old hardware (e.g. of eCenter) was utilized more efficiently in new development projects (e.g. in new versions of Alerta).

The implementation was well planned and because new skilled architects needed to be hired, the implementation planning lasted until January 2006. The preliminary calculations made during the implementation planning showed estimates of +3,5Meur yearly EBIT effects after 2,5 years from the implementation. Positive EBIT (Earnings Before Interests and Taxes) effects were evaluated to come from direct cost saving as well a better scalability of the platform.

7.2.5 AR – Specifying learning

When only the basic principles of the modular service architecture (cross use of modules between different services) were discussed in the development organization, the results were immediately shown in the new development projects: Functionalities from different services (e.g. Alerta) were planned to be reused in new services (new versions of Cstream, for example). Also old hardware (e.g. of eCenter) has been utilized more efficiently in new development projects (e.g. in new versions of Alerta).

From a theoretical perspective, the case results were a major contribution to the service management theory with the service factory construction. The service factory philosophy connects several methods (industrialization, tangibilization and service blueprinting) in an innovative way and successfully applies them in complex ICT b2b service environment.

8 Service Desing Case Studies – Case IV: ICT Service Factory Framework

Each of the previous cases I - III focused on a specific aspect in professional ICT service packaging. Case I concentrated on constructing the overall process model for professional ICT service design and development. Case II continued to examine this process model in more detail and focused on identifying the most critical phases in the design and development process. Case III focused on the application of the different service design and development tools and methods in the professional ICT service design and development process. Although each case had a specific focus, the examined research and development projects provided knowledge also from other areas – Cases II and III also gave insight into the process model itself as well as to the overall service design and development philosophy. Together, the three elements (1. the design and development process, 2. critical phases in the process and 3. application of different methods and tools in the process) form the service factory framework. Although each of the elements were examined through cases I – III, they have not been examined as a holistic model.

This section examines how this new construction – Service Factory framework – functions as a service design and development philosophy and model and how it can be applied in practice. This term – Service Factory –became actually very popular, since it also expressed the true idea behind the service architecture framework in a better way – how to produce ICT services with a same precision as factories in the manufacturing industry.

8.1 Case IV: Service Factory – Applying Service Factory Philosophy

8.1.1 Case Description

When the service factory model was constructed, the ideas and overall philosophy behind it were introduced to various stakeholders of TeliaSonera. As the current trend of downsizing and rationalizing was a major item in the management's agenda also in the case company, the ideas of the service factory model were beginning to spread internally. In autumn 2006, some discussions were held together with the management of the Managed Services business area. These discussions concerned the Service Factory ideology and thoughts about how it could be used to rationalize TeliaSonera's professional ICT service portfolio. During and after those discussions it was decided that the service factory ideology

should be put into practice, and we should start developing professional ICT services according to the service architecture framework.

Four services that were selected to be developed according to the service factory ideology were Solution Design, Key Customer Service, Technical Key Customer Service and Quality Management. A short description of each of these four services is shown in the following table 12.

Table 12 Description of the four services to be developed according to the service factory ideology.

Service	Description
Solution Design	Solution Design is a professional service that is produced by an IP or IT expert. The expert examines the customer's network and/or IT environment and makes an assessment of the current environment and recommendations for future actions. Based on these recommendations, the customer network or IT systems are developed or new ones installed.
Key Customer Service	Key Customer Service is a professional service that is produced by a customer servant. The customer servant is dedicated to the customer. He or she is familiar with all the services the customer has from TeliaSonera and the customer itself and the customer's processes. The customer servant is a single point of contact for the customer and handles orders, change requests and service process (such as billing) oriented problem situations.
Technical Key Customer Service	Technical Key Customer Service is a professional service that is produced by a technically oriented customer servant. The customer servant acts otherwise in a similar role than in Key Customer Service but is only concerned with technical problem situations or change requests. The customer servant naturally keeps the customer up-to-date with the progress of problem situations.
Quality Management	Quality Management is a professional service that is produced by a technically oriented service manager. The service manager presents a single point of contact for the customer concerning the production of TeliaSonera's services. The Service Manager follows the quality of TeliaSonera's services and reports (SLA-performance) to the customer. He or she also evaluates development aspects of the services and optimizes the customer's total solution.

The first of a series of four service packaging projects was started in June 2006. Although the last one of the four sub-projects was finished in July 2007, the work continued by the packaging of other professional ICT services until June 2008. At that time altogether nine professional ICT services were packaged, five in addition to the four mentioned above. In June 2008, the organization was under a major restructuring and at that time there were no clear statements about how the work would continue. The author was in the role of a project owner in all the four projects. In practice this meant that the author participated both in the content discussions and in the steering of the projects.

Multiple sources of evidence were used in data collection. The case material was collected during 39 meetings (see Appendix IV) in which the author participated by being the owner of the projects. The meetings are divided into three different types according to their purpose: 1) framework, 2) project, and 3) review. In 21 framework meetings (May 2006 - March 2007) with the vice president of professional service management, senior vice president of product development and management as well as other stakeholders, the overall service factory framework and the design and development methods and application (industrialization, tangibilization and service blueprinting) were discussed and elaborated. In nine project meetings (May 2006 - July 2007) with managers and experts representing product management, business and the production personnel of the professional services, the actual professional ICT services (Solution Design, Key Customer Service, Technical Key Customer Service and Quality Management) were produced and packaged. In nine review meetings (May 2006 - May 2007) methods and tools, their application as well as the critical phases of the packaging process were discussed together with the interim results of the projects with the vice president of professional service management, senior vice president of product development and management, two directors responsible for process development and production development and other stakeholders. All meetings were documented in memos containing information of the decisions, activities, and frameworks. This rich material base was further supported by Email logs.

8.1.2 AR – Diagnosing

As rationalizing was on the management agenda the pressure to find new ways to increase revenue or cut costs were high. It had earlier been discussed in different management forums that cost cutting cannot continue forever, but that also new streams of revenue should be discovered. Many managers that were in charge of functions that produced peripheral service elements for services had already earlier identified that only a fraction of their unit's work was directly charged from the customer. If additional revenue streams were found, they would offer an alternative to cost cutting. Of course, the task was not so straightforward, since at first it was not properly known where in the organization the tasks that were not ultimately billed were performed. So the first thing was to identify those activities all over in the organization. Around ten different tasks were identified in the first place.

As four of those activities were further examined, it was soon discovered that their services elements were in general given for free to customers and those activities were also incurring heavy

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costs. These service elements included: 1) key customer care, 2) technical key customer service, 3) solution design, and 4) quality management service. The commercialization status of the activities is illustrated in the following table.

Service	Commercialization	Pricing	Documentation	Systems & Processes
Solution Design	Some	per man-day	Service description	yes
Key Customer Service	None	no	none	no
Technical Key Customer Service	None	no	none	no
Quality Management	None	no	none	no

Table 13 Commercialization status of the activities.

Although many people argued that the prices of these "tasks and activities" are in the prices of the end services, a more detailed examination showed that this was not the case in practice. Some cost elements were included in the end services, but those cost elements were almost always given for free to the customers, since it was not properly defined what they included. In other words, the sales were not able to charge anything for the elements because they did not know what the customer actually got for the price. The rest of the cost elements had emerged over time and they had not been calculated in any of the end services.

The cost elements were typically such that in large customer cases some additional expert work was included in the total solution. But as the margins became down, this was not feasible anymore. The current way of operating had led to a situation were high cost were incurred by the functions, but almost no revenue came in.

It was first argued that since those service elements were given for free, it had a significant boost for sales of the ICT services. Although this was partially true, the margins in the basic communication services were decreasing very rapidly. When comparing the margins from this sales boost to the cost that those functions were incurring, it became quite evident that those service elements could not be offered for free in the future. The sales organization was originally quite strongly against the idea, but when it was shown that other professional ICT service providers had been doing this all the time, the resistance somewhat decreased. It was also argued that these services (Solution Design, Key Customer Service, Technical Key Customer Service and Quality Management) were not mandatory in order for the customer to buy, implement or use our services, but that they provided real added value, were also recognized by the customersm, and had a real market price.

The main managerial challenge was summed up by the management as "to move from providing free services into providing fee services". In other words start charging for service elements that had been given for free to the customers for some time. From the research point of view the main interest was to test the overall service factory model and its philosophy in practice. To see how all the building blocks (the professional ICT service design and development process, the critical phases in the process and the packaging methods and tools used in the process) fit together and to examine how well the service factory model and philosophy work in practice.

8.1.3 AR – Action planning

As alternative actions were pondered upon in the management team, it became quite clear that continuing as business as usual was not a feasible option. The costs that the functions were incurring were high, but on the other hand those tasks and activities were often critical from the point of view of customer needs. So, mere cost cutting, not performing the activities any longer, was not possible either. A way had to be found to keep on performing the tasks and activities, but not for free.

8.1.4 AR – Action taking

After the discussions, it was decided by the management that a series of four projects was to be started in June 2006 aiming at turning the activities and tasks into commercial services. The service factory model was recognized as the most prominent way to solve the identified challenge. A major impact in this was of course that service packaging had through the years been discussed and presented in so many management forums that enough people were aware of it.

8.1.5 AR – Evaluating

The series of first four projects was concluded in July 2007. As a result of the projects all of the four aforementioned services (key customer care service, technical key customer service, solution design service, and quality management service) were packaged. They all were defined, priced, trained, and implemented into processes and the related back-end systems. In other words, they were all ready to be sold and billed and produced in a professional way.

8.2 Results of Case IV – Towards Industrial ICT Service Production

The findings and learnings from the first three cases, from the seven service design and development projects, laid down the foundation for the journey from a product oriented company towards a service oriented company. The context in which the company operated in 2006 was very different from the context at the beginning of the research process in 2001. Knowledge and understanding of services and above all the right mindset for the service business was starting to emerge among a larger group of people. The basic differences between products and services were identified and successful processes and tools were constructed to design and develop services. The main business challenges also evolved. As the service factory ideology gave answers to the resource and cost efficiency issues, the business management started to think also about quality issues.

Case IV focused on the implementation of the service factory philosophy in this new business environment in a company that is far more advanced in terms of service business that was the case at the beginning of the research period in 2001. The main focus on the results of Case IV is on three things 1) the essence of packaging b2b ICT services, 2) the service factory framework itself, and 3) implementation of the service factory framework. Different parts (the design and development process, the tools and methods as well as the critical phases in the design and development process) of the service factory framework have been discussed during cases I, II and III, so these findings are reported here only to the extent in which they differ or bring new insights to the results found in Cases I-III. Technically, some of the findings reported here could have been identified also during cases I – III, had there been similar knowledge of the phenomena than is available today. Findings that remain the same as in the previous cases are not repeated here.

8.2.1 The Essence of Packaging b2b ICT Services

Kaitovaara (2004) defined the packaging of IT services as "*a transformation process of existing IT services and tasks into an IT service product*". He further classified that there are two archetypes of packaging IT services, incremental and radical. The term "service product" in the definition refers to the end result of the packaging process. The term "Service Product", suggest that the focal service has moved from the service dimension towards the product dimension, indicating that what comes out of the packaging process is more "product like" than the service is before the packaging process. Although the definition provides some explanation to the process of packaging services, it suffers from an inherent paradox. If we recall the concept of the service continuum (figure 16), there was a service dimension and a product dimension. The service dimension consisting more of intangible elements and the product dimension more of tangible elements. Service packaging means a transition from the service dimension towards the product dimension. Now, if there is a service that would originally be located at the end of the service dimension and then it would undergo a packaging process, it would move towards the product dimension end, let's say two "steps". The end result is now a "Service Product". Now what if a service – that would not have been packaged – would be in the "step" four in the first place. How could it be possible for it to be labelled a service when it is more "product like" than the service that was packaged and turned into a "service product". Even if the paradox of the definition were ignored, it could be argued that the definition provides only an idea of what is the very idea of service packaging.

Many words can describe the idea of packaging – defining, delimiting, bounding, or focusing, etc. During the four cases and the eleven sub-cases, the core, the idea of service packaging, became quite clearly articulated. Depending on whether one is speaking with academics, technical experts or business consultants, the core idea can be expressed with different words. The idea of service packaging is to *delimit the universe based on well-educated guesses* or to be more down-to-earth to *make predetermined choices based on best available knowledge* or to put it simpler, to *decrease the performer's discretion*. As discussed in chapter 3.1, the production process is an inherent part of a service. Moreover, the service can be produced and consumed more or less simultaneously. In every part of the production process, where the ICT service provider's employee is in contact with the customer, the employee – the performer – has some degree of discretion over his or hers actions. If there are many points of encounters with no limitations of the actions, the customer's experience of the service can ultimately vary in numerous ways.

Homburg and Garbe (1999) identify two aspects of service quality; outcome quality and process quality. Similar quality dimensions are identified also by Gounaris and Venetis (2002). Service packaging addresses both of these dimensions. Reflecting this and the descriptions above the very idea of service packaging could be formulated as *decreasing the performer's discretion by defining the content of the outcomes in various stages of the process and moreover by defining and standardizing the production process itself.*

When considering this definition one can easily argue that not everything can be predetermined, not everything can be standardized. This is partly true. If figure 7 presenting a b2b ICT service is recalled, 14 different elements constituting the ICT service that were identical can be found. These elements organized to different layers are:

- ICT application/system elements
 - o Data conversion
 - Data routing
 - o Format conversion
 - Data integrity
- Core ICT service elements
 - o Billing
 - o Data back-up
 - Server monitoring
 - o Help-desk
- Complementary ICT service elements
 - o Process consulting
 - o Business analysis
 - o Training
 - o Implementation
 - o Problem resolution
 - Technical expert services

The further we are moving from the ICT application/system elements, the less technology, method and process dependency and the more individual knowledge dependency there is in the production process of the particular service element. When knowledge dependency overruns technology, method and process dependency, then benefits that can be achieved through packaging start to decrease. For example, "data back-ups" is very much dependent on various systems and on the

process by which the individual performer/performers is producing the service element. Not much knowledge is necessarily needed. On the other hand process consulting, for example, is very knowledge dependent. The performer can produce that particular service element with minimal (except to use of PC) aid from systems and in a very varying fashion, basing the outcome solely on his or her individual knowledge. However, it should be noted that here too packaging can provide benefits. Standard process design programs can be used, report and presentation templates can be fixed and standardized, and the output of the service can be defined using same service description templates as with the core service elements. In other words, the benefits achieved through packaging are greater the more technology, method and process dependency there is. But they are not totally insignificant when knowledge dependency is increasing.

8.2.2 Service Factory Framework

Case I examined the packaging process and its individual phases. Case II identified critical phases and task in that process. In Case III packaging methods and tools were identified and applied in practice. In the final Case IV all parts of the framework were tested in practice: the packaging process, the tools and the methods, and the critical issues. These three parts constitute the framework, which is shown in the following figure 34.



Figure 34 Different parts of the Service Factory Framework.

During Case IV and its four sub-projects, two major issues concerning the first part of the service factory framework – the process for packaging b2b ICT services – were discovered: First, some important phases were not evident in the early development projects, so these were missing from the process model, and second, the resulting packaging process model was quite heavy for services that needed some redesign and development efforts but that had been produced for some while in a more or less ad-hoc manner. In the early development projects, the focus was very much in the basics of service design and development – that is defining and limiting the content – so some business and system

related issues were neglected. During the four sub-projects three additional phases were developed: 1) creating a business case, 2) pricing and 3) implementing the service to the support system environment. These phases are nested in the process model in figure 35. The details and rationale for these phases will be further explained and discussed in the following section 8.2.2.1.

Concerning the second notion, none of the phases or tasks in the overall process model for packaging b2b ICT services were seen as irrelevant, but some of them take considerable time to complete. It was also realized that some of those time consuming phases were the most important ones from a knowledge management and social networking point of view. In other words, skipping those phases would most probably result in difficulties in organizational implementation. So, it was realized that skipping certain phases was a trade-off between a faster time-to-market and greater ease of organizational implementation. As the ultimate goal was to achieve a level good enough for the services to be in a condition in which they could be sold, delivered and billed as soon as possible, it was decided that there was a need for a fast track. During the four subcases, a fast track for packaging b2b ICT service design was developed. These additional insights were integrated with the accumulated experiences from cases I - III resulting to the Service Factory Framework is shown in the following figure 35.

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Figure 35 Service Factory Framework.

Each part of the framework – packaging process, packaging tools and methods and the critical phases – will be discussed in more detail in the following three chapters 8.2.2.1, 8.2.2.2 and 8.2.2.3.

8.2.2.1 The Service Packaging Process

As the packaging process model developed during the first II cases was used in the four packaging projects during Case IV, a need for three additional phases arose. These were: 1) creating a

business case, 2) pricing and 3) implementing the service to the support system environment. These phases are illustrated in figure 35 as phases two, six and seven as well as phases B, D and E in the fast track (the idea of the fast track will be covered next). The importance of the business case development became clear when the content of different service packages were defined. The market prices for different packages had a great influence on the content development of different packages as they limited the extent of what could be produced within the boundaries of a particular price. One could of course argue that pricing could be part of the business case phase or that it could be part of the content creation or definition phases, but it is separated here as its own phase on purpose. The reasoning for this is that there has to be an unambiguous price for the service and that price has to be approved by all necessary parties at the very start of the packaging process. The word "unambiguous" is used to highlight that as the price has a fundamental influence on what can be included (in other words how many manhours) in the service and what tasks and activities need to be price as an extra charge or left totally outside, there needs to be a common understanding of the possible price range. This enables the service content to be properly designed. Even though the business case also includes different pricing schemes, the prices needs to be commonly decided and agreed on before the process proceeds further.

The discussion of the business case and pricing did not come up in the first two cases – Case I and Case II. Retrospectively, examining the reason, one major cause for this is the difference in the packing projects' objectives. In Cases I and II the major goal for packaging was to design and develop a new professional service to help in promoting and implementing TeliaSonera's core ICT services. In other words, the main emphasis was on what needed to be done in order for the customers to realize the full business benefits of the ICT services and to plan and implement them properly; the emphasis was on the tasks that needed to be performed. Whereas in the packaging sub-projects in Case IV, the main emphasis was to redesign and develop the professional ICT services in a way that they could be sold and produced more efficiently. In other words the emphasis was on the price and costs.

The knowledge and information about b2b ICT service packaging has accumulated during the whole research period – during the four cases and corresponding 11 sub-projects. The need for these additional business case and pricing phases became evident during Case IV as the other "old" phases became more familiar. Although retrospectively thinking their role should have been identified already in during Cases I and II, it did not. Partly due to the reasons described above, partly because of the immature developing status of service packaging in general. Nevertheless, as their importance was

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identified, both of these phases – business case and pricing – were added to the packaging process models in figure 35 (complete track and fast track).

Another aspect that was not evident during Cases I and II, was that the services need also to be implemented in different sales, pricing, billing, and delivery systems. During the four sub-projects in Case IV it was identified that this was actually a necessity, because if these services were not implemented in the systems it was a perfect excuse to continue giving these services for free. Every sales person wants to avoid any extra work, because the need to spend as much time as possible with actual customers. And every one of them knows that selling a service that is not properly implemented to the back-end systems means extra work later on. This important phase should have been identified already during the Case I and II, but it was not. The same reasons apply here as with the business case and pricing phases; the emphasis and focus in the earlier cases was more on the content development of the b2b ICT services than it was on the organizational implementation of those services. At the time of Case IV the knowledge and information accumulated around service packaging was far greater than in the early stages of the research process, more time and focus was available also to things outside the content design and development. This made it possible to address the relevance of the back-end systems. So also this implementation to the back-end systems phase was added to the packaging process models in figure 35 (complete track and fast track).

During Case IV it was seen that in designing and developing totally new services, the role of internal marketing and selling is emphasized and has a greater meaning. It was also noticed that considering the objectives, some phases in the process model for packaging b2b ICT services prolonged the lead time quite a lot. These phases included: prototyping with internal organization (9), piloting with an (external) customer (11) and marketing the service to the internal organization (15). As discussed earlier, these phases were not irrelevant, but because the focus was on redesigning and developing existing tasks and activities into commercialized services in order to start billing for them, it was seen that the benefits from these three phases were outweighed by the time gain in the process. The piloting phase was seen as unnecessary because the production itself was not that much affected by this redesign and development that it would have required prototyping. Another thing that allowed skipping the piloting and marketing phases was that sales were not suspicious about whether or not these services can be delivered. The services had been produced for quite a while, just not as commercialized services.
From experience, Sales also knew that customers appreciated the value that these services delivered to them.

As there already was some material available about the tasks and activities and there was –to produce them – although an ad-hoc one – the packaging did not require as much content creation or fine tuning as was required in Cases I and II that aimed at packaging totally new professional b2b ICT services. Considering the lead time, the aforementioned conditions allowed skipping also the ICT services and tasks information gathering (4), service content creation (5), tuning material for production, marketing and sales (10, 12, 14, 16), and finalizing and concretization of the material (17) phases.

These changes to the packaging process model produced the so-called fast track model that could be applied when redesigning and re-developing existing tasks and activities into commercialized ICT services. As a result, in the first part (Process model for packaging b2b ICT services) of the Service Factory framework illustrated in figure 35 two alternative process models can be found – the complete track and fast track. After the 11 packaging projects, a completion time for the fast track was around one month and for the complete track around three to six months. It should still be noted that the time that it takes to move from the idea phase – "let's design this new service" – to the moment when the core team is established can be even some months. The criticality of the different phases in both tracks is further discussed in chapter 8.2.2.3. Next, the second part of the Service Factory framework – methods and tools – is further examined.

8.2.2.2 Service Design and Development Methods and Tools in the Packaging Process

The application of different tools and methods is more or less the same whether one is dealing with existing services that need to be developed through packaging or whether one is dealing with totally new services that need to be designed through packaging. In both cases, one needs to start with industrialization, continue with tangiblization, service scripting, and finally end with service blueprinting. The differing aspect is how the tasks and activities constituting the particular service are examined.

With existing services the task proved to be rather simple. One should start by interviewing those people who are actually producing the service, those experts and specialist that are actually conducting the operative tasks and activities. In addition, one or two senior managers in charge of the particular function should also be interviewed. The main reason to involve these senior managers is to

get their approval and commitment to the design and development work. However, since they usually have a long history in the work, they also have some insights and knowledge that the younger experts and specialist do not have.

With new services the task is not so straightforward. The packaging process needs to start by identifying the tasks and activities that need to performed, in order for the customer to be able to start using the functionalities of the core ICT system/application. This can be done with what one might label as a "reverse service design" method. This is illustrated in following figure 36.



Figure 36 Reverse service design method.

With this kind of approach the technical ICT product (ICT system/application) – for example a fieldwork solution to enable workers to access the company's SAP system while on the move – is first viewed purely from a technical perspective. In other words, the ICT product – fieldwork solution here – is examined in order to find out what kind of technical issues need to be taken into consideration before it is certain that the ICT product can be implemented into the customer environment. Do the needed API's (Application Programming Interfaces) exist, does the company's security policy allow the SAP system to be accessed outside the internal network, what kind of terminals are currently in use, etc? Some of the issues can just incur more costs, but some can be even possible "show-stoppers" for the actual implementation.

Then issues that are found are further examined from the process perspective. For example, is the information that the people on the move need updated in real time with the system, if some updates are made while on the move does the rest of the process adopt to this information, what is the current order of the process, does it comply with the order used by client, etc? In some customer cases these are really big issues. If some activities have been done in a certain order and in a certain fashion for some years by hundreds of people, it costs a lot of money to change it.

Finally, the new process findings are examined from a business perspective. In some occasions this can be just business case calculations, but sometimes some of the process changes needed in the ICT system may not be aligned with the rest of the strategy. By means of a business analysis it is ascertained that when a particular ICT service is taken into use by the customer, it really is aligned with their business goals, supported by their processes and fits into their existing technical environment.

Applying Industrialization

The application of industrialization does not differ very much whether one is dealing with new vs. old services. However, one thing that is much easier with existing tasks and services is modularization. When there is knowledge and history of producing the tasks and activities, it is easier to perceive the modularity of the service. Whereas with a new service more time is needed to outline what the actual tasks and activities that need to be performed are. The actual sequence of applying industrialization is briefly described next.

When dealing with new services, the ICT system/application is first viewed from a technical perspective. What tasks and activities need to be take care of before and during the use of the ICT system/application? What technical details need to be determined before the ICT system/application can be implemented? What prerequisites are there concerning the customer environment? What needs to be defined so that the ICT system/application can be configured correctly? When the information of the tasks and activities is collected, it is further examined and packaged into service elements. After this the ICT system/application is viewed from the process perspective. If the ICT product is complemented with the service elements that were packaged in the previous step, what kind of issues should be examined in the customer's processes to make sure that there are not any potential show stoppers as far as processes are concerned? What requirements for that particular area's processes are there so that the ICT system/application can be implemented? What parts of the processes need to be re-engineered to support the ICT system's/application's information flow? Can this be done in practice and what kind of

costs does this incur? Are people able to adapt to the new processes? When the information of the tasks and activities is collected, it will be further examined and packaged into service elements.

When the technical as well as process perspectives have been covered, it is time to look at the ICT system/application from the business perspective. What kind of issues need to be considered to make sure that the particular ICT system/application is able to support processes that support the company's business goals? Is the procurement of the ICT system/application necessary to achieve the business goals? Does the business case hold and is it in line with the business goals? When the information of the tasks and activities is collected, it will be further examined and packaged into service elements. After this all the necessary service elements have been recognized and packaged around the core ICT system/application.

When applying Industrialization to existing services, one needs to figure out what the tasks and activities performed at the moment are. The best people to do this with are usually the actual performers of the service and one or two people who are in charge of that particular function or service. By simply going through the usual day and asking what tasks are consuming their time, the most important tasks and actions that are constituting the particular are quite easily discovered. This takes usually a couple of 1-3 hour workshops with 2-3 experts. The workshops can be augmented with one senior manager who is in charge of the particular service. Although the experts often have a much more clearer picture of how their time is spent, the senior managers often have a more holistic picture of how their time should be spent. Many times the challenge with these existing services, which have not been formalized in any way but are in the worst case just mere oral promises of the sales people, is that the people are spending their time in various tasks and actions that have just been adding through the years. When developing these services through packaging, the services descriptions that will be developed, should be stripped away from all these kinds of tasks and activities. This is a phase where the senior managers often have a more holistic picture of the tasks.

During the workshops (both with new as well as existing services) the tasks and actions identified are then grouped into higher level tasks that form the top level modules of the service. Then these top level modules are further broken down into more detailed modules. This modular service structure creates a very good ground when designing different service levels or service packages. During the modularization the modules that form the basic level of the service should be marked from those that can be optional modules. The modules should also have an identifier of how laborious they are to produce. When creating the different service levels or service packages those modules that burden the organization more or create clearly more value to the customer should be included only in the levels or packages that are surcharged.

Applying Tangibilization

The same differences with old vs. new service also apply here as they did with industrialization – the work is much easier with existing services. The essence of tangibilization is about documentation; to identify, develop and define things. Although tangibilization and documentation have been done during all the cases, the extent to which the "document library" can be reported here is the outcome of eleven projects and years of research.

After the service has been developed into a modular structure, tangibilization can begin. With tangibilization the service modules were defined and limited. It was unambiguously stated what is part of the modules and what is not. Then the service was brought into as concrete a form as possible. The main differentiation between industrialization and tangibilization is that tangibilization goes much further in defining the tasks and activities. The main role of industrialization is to form a modular structure and the actual modules. The main role of tangibilization is to define the content of the modules and build a suitable document structure or library to store that information. In practice all service documentation is made in this phase. In this Case IV the documentation that was produced during the packaging process is shown in the following table 14.

Table 14 Service Documentation.

Purpose of the Document	Internal Documentation	Basic External Documentation	Additional Internal Documentation	
What	Product Offering Outline.doc	Sales slides.ppt		
	Product Offering Description		Sales sheet.ppt, Business Case.xls,	
How	Outline.doc	Scope of Work.doc	Customer Solution Template.doc, Sales	
			instructions.ppt, Process	
Specify	Modular Product Structure.ppt	Statement of Work.doc	Description.ppt, Launch Plan.doc	

As can be seen from the table the documentation is divided into three categories: internal documentation, basic external documentation, and additional internal documentation. The basic external documentation with the exception of the business case forms the so-called minimum level of documentation. This means that when tangibilization has reached that level, the service is ready to be sold and billed. Other documentation is useful and practical, but it is not necessarily needed in order for

the service to be sold and billed. A short description of the content as well as the purpose is found from the following table 15.

Document	Content	Purpose
Product Offering Outline.doc	Describes the product on a high level from a business perspective.	Intended for high level managers to give a holistic picture of the service and its business environment.
Product Offering Description Outline.doc	Describes the product from a functional perspective.	A basic document for product managers to give a more detailed picture of the service and its functionality.
Modular Product Structure.ppt	Outlines the modular service structure.	Outlines all parts of the service in a detailed level.
Sales sheet.ppt	Describes the basic things of the service in one slide.	To be used by the sales people to communicate the whole service portfolio in a uniform fashion to the customer.
Scope of Work.doc	Describes the service.	To be used as a basic service description document to present the content of the service to the customer. What is included and what is not.
Statement of Work.doc	Describes how the service is produced to the customer.	To be used to develop the production production of the service as well as to communicate the professional way the service is produced to the customer.
Sales slides.ppt	A more detailed description of the service and its benefits.	To be used in a sales situation where the sales people are presenting the service, its content, modules and the benefits to the customers.
Business Case.xls	Calculation of the costs of producing the service and desired profit levels.	The be used in pricing the service and its different service levels. Provides also support when launching the service to sales people.
Customer Solution Template.doc	Description of the customer solution.	To be used as an order form, with which the service is ordered.
Sales instructions.ppt	Detailed intructions of the service and its benefits to the customer.	To be used when training sales people of the service. Provides some detailed information of the service and how it can be used by the customer.
Process Description.ppt	Service in order, pricing, billing and delivery systems.	Describes how the service is ordered, billed and delivered through support systems.
Launch Plan.doc	Time table for marketing activities.	Describes the timing of different marketing activities.

Table 15 Description of the content and purpose of the documents.

Examples of the Scope of Work, Statement of Work and Modular Product Structure can be found in appendix IX. Tangibilization provides the most benefits in such services where the outcome can be accurately defined. In other words, where the basic service can be replicated to a very high degree and offered to many customers. During Case IV, and to some extent also during Cases I-III, it became quite evident that the degree of tangibilization should always be fitted to the context. If the actual outcome of the service process is always different, and furthermore if the customer cannot be directed towards a limited amount of variations with price discrimination, then tangibilization should only be used to harmonize services and define what is included in the service and more importantly what is left outside the scope. If, on the other hand, the outcome is quite similar, or more importantly if the customer can be directed towards a limited amount of variations with price discrimination, tangibilization can be used to really define and delimit the outcome of the service process. To define in a very detailed level what the particular parts that are included in the service are and what parts are only available for additional charge, and what is not available for that particular service at all.

Applying Service Scripting

Service scripting is the third tool to be used in service packaging and probably the trickiest one. It can be done also with new services, but the scripts will most probably be rewritten many times, because the more the service is produced, the chances are that some things will be done more efficiently in some other way than originally anticipated. This is not necessarily a reason not to apply it with new services, but one needs to bear that in mind. Careful consideration has to be applied when using it. If service scripting is used in a wrong context or inappropriately, it can produce unnecessary documents that provide little help for anyone. In Case IV the service scripting method was used in creating instructions for sales people (Sales Instructions.doc). The instructions included detailed descriptions of the arguments that customers may raise in various sales situations and corresponding counter-arguments. These instructions were then mostly used in the training phase of the packaging process (phases 18 and G in figure 35).

The four services that were packaged during Case IV were not so much based on the customer encounter element - at least not in the extent that business consulting relies on, for example. But nevertheless also these services can benefit from service scripting, when applied to instructing sales about the customer encounter.

In general terms, the larger the role of the customer encounter in the service, the more beneficial service scripting can be. In practice the role of the customer encounter tends to increase the further one is moving from the core ICT system/application. The role of the customer encounter is probably the biggest in some form of business strategy consulting. However, it should also be noted that service scripting is only useful when repetition is the goal. In other words, if there is only one person doing business strategy consulting, it does not make any sense for him to write a service script for himself. But if there are many people doing it, then it would make sense to try to copy and replicate the knowledge that the most senior people have to the most junior ones.

Applying Service Blueprinting

Service Blueprinting is the final service packaging tool to be used when dealing with existing services. In practice service blueprinting means re-engineering the processes through which the service

is produced. With new services some of this engineering work is done already in the industrialization and tangibilization phases, the modules and contents define what is produced, but not how it is produced. The part that involves designing and developing the actual production process is called service blueprinting.

The first step of service blueprinting was to develop the Statement of Work document. In that document the way the service is produced to the customers is described in general terms. Although no actual development for the process occurs during the creation of the document, it is the first step in service blueprinting where the production process is identified. In this Case IV, service blueprinting was only applied using this first step. Still, plans for completing all steps of service blueprinting exist. During the Case IV it was identified that after the basic things of packaging have been completed, the real efficiency and quality gains in terms of the service factory philosophy can be achieved through service blueprinting. When efficiency, repetition and quality are pursued, the re-engineering of the production process is inevitable.

8.2.2.3 Critical Phases of the Packaging Process

Despite the fact that the packaging of ICT services is more on the footing of design and development than typically has been associated with service tangibilization, it was interesting to find out that the crucial phases in the process were found from other phases than in the essential content development work. In a professional service organization, such as an ICT service provider organization, the know-how and information can be gathered and turned into concepts, models, and methodologies. The laborious documentation phase can be handled as a project. But in the end, these issues are mainly a matter of time and available personnel. The real challenges arise in the phases in which knowledge has to be transferred to people or new people have to be convinced about the core idea of what is to be done. The underlying reasons and findings of each of the critical phases are discussed in more detail as follows.

Establishing the core development team

The first challenges relate to the establishment of the core development team. The composition of the core team is established partly on the basis of relevant expertise and partly on the basis of internal and external relationships. The expertise is needed for the particular ICT service and the relationships

for both communicating as well as selling. Moreover, the core development team is responsible for the whole project.

Piloting with an external customer

In the pilot phase the core team is expanded for the first time. The expansion is complicated because it involves external parties. The role of customer feedback, based on the real market environment, cannot be ignored since it is the first actual step demonstrating that the IT service product really meets the market demands. Before this phase, it cannot be implemented or sold as easily as a real ICT service. In this phase, the quality of the core team's external relationships is put under a test. That is, can they identify and recruit critical and evaluative potential customers to the project?

Selling the ICT service to the first customers

The project team continues expanding here. Since the characteristics that the customer's is looking for in the actual selling phase differ somewhat from those in the pilot phase, a different approach is needed to build these relationships. This phase is crucial, because selling the ICT service for the internal organization becomes an overly difficult task without any external references. By having such references, the credibility of the ICT service will be increased. The challenge becomes from the fact that until now, only the core development team knows the ICT service well enough. In other words, the external relationships of the core development team come under a serious test.

Marketing the ICT service to the internal organization

In the internal selling phase, some executive managers should be recruited to the project team. The ICT service has to get approval also from the executive managers before it can be communicated further in their responsible organizations. This is not as self-evident as one might think, and it gets much harder if more innovative and fresh ideas and concepts are concerned. The approval ensures that the ICT service has the support from the managers on higher levels. The members of the core team have to act as messengers towards the executive managers within the ICT service provider organization and thereby get their attention. The value of internal relationships of the core development team is emphasized in this phase.

Training the internal organization for the ICT service

In this phase the project team experiences its final expansion. The underlying logic of the ICT service and the ideas and concepts around it have to be communicated to a heterogeneous group of people in a simple but straightforward way. The importance of the previous phase is still underlined, since the executive managers' attitudes towards the ICT service will have an impact on the successful completion of training.

8.2.3 Implementing Service Factory Philosophy

It seems a paradox that even though many models and frameworks are applied hundreds of times, and many success stories can be found to support them, it is more a rule than an exception that the implementation of those models and frameworks fails. Sometimes it seems nearly impossible for a good model or framework to get properly implemented. During all the four cases, and especially during Case IV, three most important aspects that affected the success of the implementation were identified. These were, in the order of importance: 1) the implementation of an idea, 2) the application of the idea into a particular context and 3) avoiding excess documentation.

8.2.3.1 Implementing an Idea

Companies are currently implementing more advanced models or frameworks in their organizations. These models are communicated and trained to people and often their application is even guided. Then it is assumed that people will start working according to the models and frameworks. But adopting new models or frameworks normally means abandoning the way things have been done before. So, people would need a reason to change their often deep ingrained behavioural models. The thing that is often missed in model application is that for most of the people one particular model is just that -amodel, just as good as the next one. They do not necessarily see any difference between them, even if the new one would be far more superior. What should be done is to implement, to sell the idea behind the model. To sell the reason why they should change their current way of doing things.

Although all this sounds quite self evident, it is not. Many times people are too much concentrating on the model itself, for example ITIL (Information Technology Infrastructure Library). When companies are Implementing ITIL, they train their organization of the different standards, and explain how ITIL is the industry standard, how their competitors are adapting it, how customers are

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demanding it, etc. What they really should do, is to sell the idea of predefining the processes of producing the services. Why do the employees benefit from having a uniform process for incident management, for example? How does that make their work easier?

Models and frameworks are just tools that can be used to communicate complex ideas to people. It should always be remembered that they are simplifications of the real world. They are abstractions of reality describing average situations, which may not occur at all in real life. That is why when implementing the service factory framework, a company should sell and implement the idea behind it. To implement a philosophy of producing ICT services in a factory-like fashion. To reduce complexity by having less of everything. To produce ICT services according to a standard setting that uniforms the output. How much easier is it for the production people, when sales people have only a limited amount of configurations to sell. How much easier it is for the sales people, when they know the services are of a high uniform quality, because there is only a limited number of configurations to be managed.

8.2.3.2 Applying the Idea in a Particular Context

As already discussed in the previous chapter, models and frameworks are abstractions of some average situation, a way to simplify the hundreds of different situations that occur in real life. Any model should be carefully examined and its applicability into a particular context critically evaluated. When applying the Service Factory framework, it should be adjusted to fit into that particular situation. Services elements that are more knowledge intensive should not get as deep a packaging as service elements that follow a strict process and benefit more from a set of methods and tools. Both benefit from the approach, but in a varying degree. When expected volumes are very low, benefits gained through repeatability are not so high. So when dealing with service elements that have low volumes, then it should be carefully evaluated how much time and effort should be put in service blueprinting that aims at making the production process more efficient, for example.

As with every model, also the Service Factory framework should be applied to fit with the context. But that does not mean that there can be numerous variations of the application. What is meant here is that the application of the framework needs to be managed and controlled. For example, there could be two different applications depending on the level of knowledge intensiveness, but no variation inside the two categories. Or that one part of the framework, for example the documents, could be the same for every service element, but the content could be of varying depth depending on the expected

volumes of the elements. Whichever application of the framework is used, it has to be done in a managed and controlled way.

8.2.3.3 Avoiding Excess Documentation

The most evident output of service packaging is documentation. And when dealing with ICT services, those documents can be the only tangible outputs of the service. As shown in table 15 there are quite many documents that are produced during the packaging process. The documents and their content have been developed during the six year research period and a lot of effort has been put into them. It could be argued that not one of them is useless and that every one of the documents serves its purpose. However, the documentation is just a means, not an end. The purpose is not to produce documents, but to create a common understanding of the service elements – a common language (Wijnhoven and Kraaijenbrink, 2008). In practise the documents function as practical tools for the sales, delivery, implementation and management of the service elements. And that is just what the documents need to be considered as, a set of tools.

Again, the documentation should be applied to fit a particular context. If a service element costs \notin 200/month for a customer then the documentation associated with it should be far lighter than documentation for a service element that costs \notin 10000 for a customer. When an individual's tacit knowledge is codified into the explicit form of a document, it needs to be made certain that the codification will not lead to bureaucracy that is an excess of documentation (Boiral, 2002).

8.2.4 AR – Specifying learning of Case IV

Before the service packaging projects were launched, three of the four services had no commercialization and one had some level of commercialization. The status of commercialization, pricing, documentation, and systems & processes is shown in the following table.

Service	Commercialization	Pricing	Documentation	Systems & Processes
Solution Design	Full	per manday	Service Description, Sales Slides, Statement of Work, Data-Sheet, Oder/Delivery Form, Sales Instructions, Product Management Outline, Product Management Description, Product Structure Description	yes
Key Customer Service	Minimum	fixed	Service Description, Sales Slides, Data-Sheet, Oder/Delivery Form, Sales Instructions	yes
Technical Key Customer Service	Minimum	fixed	Service Description, Sales Slides, Data-Sheet, Oder/Delivery Form, Sales Instructions	yes
Quality Management	Full	fixed	Service Description, Sales Slides, Statement of Work, Data-Sheet, Oder/Delivery Form, Sales Instructions, Product Management Outline, Product Management Description, Product Structure Description	yes

Table 16 Commercialization status after packaging of the four services.

As can be seen from the table, Solution Design and Quality Management services are fully commercialized and Key Customer Service and Technical Key Customer Service have the minimum level of commercialization. As can be seen from the documentation, Key Customer Service and Technical Key Customer Service lacked some product management documentation and also the Statement of Work.

The more services were packaged the easier the packaging itself became. The last service was packaged to the full commercial status in one month. It was clearly demonstrated that the service architecture philosophy and its methods do work. The packaging process is valid, although there have to be variations of it for short term actions, i.e. quick and dirty solutions. All the critical phases that were identified in the earlier cases do apply and they have to be taken into consideration early enough so that the pitfalls can be avoided.

From a theoretical point of view, case IV results consistent support for the framework and proves that it is a valid systemic tool for complex service design. The Service Factory framework thus makes a major contribution to service marketing and management and provides also support for the usefulness of knowledge management and social network aspects in service design.

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9 Conclusions and Managerial Implications

Service production itself is actually quite a complex system (Paton and McLaughlin, 2008). As was described in chapter 2.6, it involves several people from several parts of the organization. The deeply rooted role of people makes the production process of services very complex and challenging to control in general (Cipolla and Manzini, 2009) and to design in particular (Orman, 2008). Cipolla and Manzini (2008) go on even further and argue that services can never be fully designed beforehand. However, this significant increase in the complexity of ICT services (Kallinikos, 2005; Davies, Brady and Hobday, 2006; Oliva And Kallenberg, 2003) is creating many challenges for all stages of service lifecycle – service development, marketing, implementation, and management (Paton and McLaughlin, 2008). If a service provider cannot manage this complexity it will lead to increasing production costs, and systems failures (Davies, Brady and Hobday, 2006) resulting to serious problems in customers' business processes, and ultimately to customer dissatisfaction and defection (Chapman and Hyland, 2004). On the other hand, if ICT service providers are able to decrease this complexity, they can turn it into real competitive advantage.

In this study it is argued that proper service design is a critical aspect (Wijnhoven and Kraaijenbrink, 2008) in addressing the described complexity as design influences service development, marketing, implementation production, and customer perceptions and satisfaction (Bullinger, Fähnrich and Meiren, 2003; Hyötyläinen and Möller, 2007). Thus the main research objective of this study was to "to construct and validate a framework and toolset for b2b ICT service design to decrease the complexity of these services". In order to approach this relatively new phenomena the main objective was further divided into three mutually related sub-objectives:

- to construct & validate an ICT service design process and identify individual phases in it – which can be used to decrease complexity of b2b ICT services ad their provisioning process,
- 2. to search, identify and integrate suitable methods and tools that can be used in that process, and
- 3. to examine the application of the process and methods from knowledge management and social networking perspectives.

The main research objective and the corresponding three sub-objectives were approached through three different theories: service management, knowledge management, and social networking. Because of the nature of information involved in packaging ICT services, the context dependency and wide organizational reach, action research oriented multiple embedded case study with constructive approach was seen to provide both in depth conceptual understanding of the ICT services packaging process and relevant managerial implications and know-how. Next the theoretical contributions, managerial implications as well as limitations, and suggestions for further study are discussed.

9.1 Theorethical Contributions

The reported research process lasted over six years – it started in March 2001 and ended in July 2007. During this long research period, the theoretical understanding of the phenomena has increased significantly. Because of the action research orientation and the resulting dual role of the researcher, also the managerial understanding of the research phenomena has increased. This has had a significant effect for the development of the case company's approach towards service business as such. Both theory and practical applications have nurtured each other and a mutually benefitting cycle has been established. As theoretical understanding of the phenomena has increased the learnings have been taken also into practice. When new research problems have arisen the case company has been equipped and prepared to examine these 'next questions'. The case company and its challenges have evolved during the six year period and thus provided new opportunities from a research perspective. This mutually nurturing cycle has provided a truly unique opportunity to examine the phenomena and its development in a consistent environment over a reasonably long period of time, and really develop theoretical understanding about the domain and process of service design and development.

This research focused on the area of service design and development. The principal theoretical focus was on service management but included also, knowledge management and social networking literature. The main research gaps that were identified were:

- 1. merging of different methods and tools,
- 2. detailed level description of the design and development process,
- 3. practical application of the process as well as methods and tools
- 4. social composition of the service design team and its links to the design and development process, and
- 5. knowledge creation and transfer in service design and development process.

The first three gaps were associated mainly with service management theories, the fourth one with social networking theories, and the last one with knowledge management theories. Service design and development as a phenomena, has previously been mainly studied in the context of service management theories, but the inclusion of social networking and knowledge management perspectives enabled extending service management understanding beyond its traditional boundaries. The same applied naturally also vice versa, since neither knowledge management nor social networking researchers, have previously been studying the phenomena of service design and development.

Contributions to Service Management Theories

The main contribution of the study is the construction and evaluation of the service factory model presented in chapter eight outlined a detailed process description for designing and developing b2b ICT services. The process had two variants, one for designing and developing new services (complete track) and other one for designing and developing existing services (fast track). It was also noted that the process model for designing new services was better fitted for organizations that operate in the early stages of the transformation from product business into a service business. This process construction makes a clear contribution to service management literature and addresses the second research gap (detailed level description of the design and development process).

The service factory model also included a set of tools to be used in b2b ICT service design and development. These tools were industrialization, tangibilization, service blueprinting and service scripting. Each of these tools and methods were described in detail and included several model templates to be used in actual service design and development. The first research gap that was identified was that there was no overall toolset developed for service design and development. There were some individual tools and methods that had been presented in different contexts, but they haven't been taken into same context. The holistic and detailed toolset that has been constructed, is illustrated in chapter

eight in the service factory model, makes a significant contribution to service management literature and addresses the first research gap (merging of different methods and tools).

Besides the service factory model, the service factory framework presented in chapter eight also included two other parts 1) the essence of designing and developing b2b ICT services and 2) the implementation of service factory philosophy in practice. As identified in chapter one the third research gap was the absence of practical applications of service design and development processes as well as methods and tools. The "implementation of service factory philosophy" as a part of the framework points out what are the core issues that need to be taken into consideration while designing and developing services. These were a) the implementation of an idea instead of a model, b) always applying every model into a specific context and c) avoiding the excess of documentation. This insight has been collected through four different cases and eleven projects in different stages of organization transformation during over six years and well over three hundred meetings and presents a significant contribution to service management literature.

The service factory framework also included a part describing the very essence – the underlying philosophy – of b2b ICT service design and development. Although it was not originally identified that there was an actual research gap in the existing literature concerning this, it was realized during the research process that the current literature was actually missing the attempt to fully capture and crystallize what is the very essence, the very key in designing and developing services. Although some previous definitions provided ideas about the technical execution in a very precise manner, they failed to grasp the very ideology and philosophy in service design and development. The definition in the service factory framework was the following *"the very idea of service design and development is to decrease performer's discretion by defining the content of the outcomes in various stages of the process and moreover by defining and standardizing the production process itself"*. It describes the very idea – simply because service design and development always needs room for interpretation. In service design and development it is enough to plant the idea. This "the essence of designing and developing b2b ICT services" aspect of service factory is also making a significant contribution to service management literature.

The fourth and fifth research gaps concerned knowledge management (knowledge creation and transfer in service design and development process) and social networking (social composition of the service design team and its relations to the design and development process) aspects of service design

and development. These two aspects of service design and development had remained practically unexplored. This was somewhat surprising, because knowledge management and social networking aspects of service design and development work were immediately identified after the first case which focused on constructing the first version of the design and development process.

After the more detailed examination in case II, it was discovered that knowledge creation and transfer as well as social composition of the service design and development project were the major sources for significant challenges during the design and development process. These notions lead to the constructions of the "Knowledge Management Taxonomy and Enablers for ICT Consulting Service Design and Development Process Model" and the "Network Model for ICT Consulting Service Design and Development Process". Both of these models themselves make a significant contribution to service management literature. These models further lead to the identification of the most crucial phases in the b2b ICT service design and development process. This may not at first strike as that important, but a firm belief developed in this research is that the identifications of these phases is extremely important for companies in the early stages of the transformation from a product oriented company towards a service oriented company. The identification and description of the critical phases form the third and integral part of the service factory model. This construction is addressing the research gaps of "knowledge creation and transfer in service design and development process" and "social composition and its relations of a design and development process" and thus making a valuable contribution to service management literature.

As discussed in chapters 1.3 and 3.5 Service Dominant Logic (SDL) is one of the most recent advancements in the area of service management. SDL emphazises the value-in-use over the value-inexchange. According to SDL, since it really is the customer that gets to decide whether or not any value is experienced during the use, it should really be the interaction that happens between the service provider and the customer, that should be in the central focus of study. From this perpective one might argue that this study is not adequatelly emphasizing the customer perspective. From this SDL perspective one is right. However, as Ojasalo (2009a) argues quite correctly that allthough SDL has a very valid proposition (that one need to pay adequate attention to the role of the customer), one should also recognize the stage a particular company is in the transition from a product oriented compay into a servce oriented company. If a company is in the early stages of the product-service transition, then a too deep inclusion of the customers role can make service design too hard for the company to handle (Ojasalo, 2009a), as the customer brings just another uncontrollable variable to the already complex equation (Cipolla and Manzini, 2009).

Concidering this set-up from an ICT service providers perspective, it should be safe to say that in the beginning of this study in 2001, the ICT industry was really in the very early stages of development from a product company into a service company. I will argue that this contiued to be pretty much the case all the way to 2007 – the time of the last case study. However, now in 2010 the situation is more favourable. In TeliaSonera, the late of 2009 presented a turning point towards the ideas of SDL. Along with the a new management (in the Finnish b2b organization) together with the ten year journey (from a product company into a service company), the focus has shifted from the inside – process oriented – perspective towards the more customer oriented perspective. As a results a new service concept for SME customer was actually finnished in the beginning of 2010. It is fair to say that Sonera Kumppani is the first truly customer oriented concept that was desinged following the ground ruled and ideas of SDL in TeliaSonera (and propably in the Finnish ICT industry for sme companies). It is worth mentioning that the author was the project manager also for this project. Presently it is safe to say that if this study were to be continued during this time, at least the case company would be starting to be ready to digest the ideas of SDL and the role of the customer would be more prevalent already in the design phase.

The remaining question that might bear ones mind is that do the principles of current SDL thinking make the service factory framework constructed in this study some how less valid. I argue the opposite – that the service factory framework is totally valid for companies that are in a similar phase of the transition from a product oriented company into a service oriented company. Furthermore, as Larsen, Tonge and Lewis (2007) argued, service design is really in childs shoes in the majority of companies still today. This means that for this majority of companies, the service factory framework presents much work for many years to come before they should focus on the service provider-customer interface in the extent that SDL proposes.

Contributions to Knowledge Management and Social Networking Theories

The provisioning of ICT services is a complex, highly social, process generally involving cooperation of several organizational units and their personnel. Typical units include product management, product development, sales support, support systems etc. The information needed in this production chain is typically embedded in processes and generally not documented. It is usually only stored in minds of people and highly context depended.

In practice there hasn't been any significant research in areas of knowledge management or social networking concerning b2b ICT service design and development. Models from knowledge management as well as social networking were more or less isolated models and perspectives that were taken into the context of b2b ICT service design and development for the very first time. The "Knowledge Management Taxonomy and Enablers for ICT Consulting Service Design and Development Process" model, presented in chapter 6.2.4, as such was constructed from separate knowledge management. Considering this model, its application is not restricted to service design and development process alone, but can be used to examine knowledge creation and transfer in any knowledge intensive process, which has a wide organizational reach. The model itself can be seen to make a contribution to knowledge management literature. In addition, the practical application of knowledge management theories in b2b ICT service design and development as a freshly phenomena makes a contribution to knowledge management literature.

The study benefits from the social networking theories in a similar manner. b2b ICT service design and development phenomena was new in the field of social networking. This research has shown how social networking plays an important part in the service design and development process. Understanding of the process from social networking perspective can help to avoid many mistakes that could otherwise be made. Furthermore in case II, certain ideas and concepts from social networking were borrowed and the service design and development process was illustrated as a development of a social network. The aforementioned implementation of social networking practises in the new area of service design and development together with the social networking model for service design and development constructed in chapter 6.3.3, presents a small contribution to the area of social networking.

9.2 Managerial Implications

Along the six year long research process the case company has been facing changing business challenges. In the beginning of the research process the case company was dealing with, retrospectively speaking, relatively primitive challenges in the area of ICT services. Systematic research process together with open-minded practical applications gave input to planning and strategy work and enabled

the company to evolve as an ICT service provider as the understanding of ICT service business increased. The case company's knowledge about the complexity of ICT service design has evolved considerably during the six year long research period. As initial questions were answered, next challenges were identified and new questions arose. As new methods and conventions were taken into use, next problem areas were identified and further developed.

In 2001 the main business challenges concerned service management in general. As the complexity of the case company's product portfolio increased, the need for certain professional services also increased among the company's customers. This brought out a new kind of a business challenge – how to develop, sell and manage services in a company that was really in a product business. The results and findings from case I helped the case company to understand the basic differences between products and services and also provided them with a tool, a process to design and develop services. This basic understanding was further developed during case II (2001 - 2002).

By the end of 2003 the case company had evolved a long way – from a product oriented telecommunications provider into a more service oriented ICT service provider. In the beginning of 2004, the main business challenges were no longer concerning the basic questions in service management, but about cost and resource efficiency in more particular. The results that had earlier been achieved with service design development projects encouraged the management to continue with the same methodology. As a result the service architecture redesign project was formed and the basis for the next case (III) was born. Case III that focused on the applying the different service design and development methods and tools, produced excellent results and provided much insight about the challenges at hand. The service architecture framework started to change the basic thinking in the case company's service development.

In the mid 2006, the case company was starting to behave like a real service company. The journey that the company had experienced, had been a long one, but nevertheless it had not yet reached its end, not by a long shot. The management recognized that although there were still challenges concerning cost efficiency in service production, also quality issues raised their importance. It was noticed that services were too much produced in an ad-hoc manner and their production was too heavily dependent on individuals. Every individual seemed to have their personal way of doing things, which they had learned during the past years. Certain members of the management had at this time a reasonably long history in service design and development, so it was no longer a question of which

methods to selected, but more of a question of which services needed to be redesigned and developed first. In the end, five services were selected and correspondingly five projects were established. These five projects provided perfect change to test the different parts of the service factory framework in Case IV that had been constructed during the first three cases.

9.2.1 Lessons Learned During the Research Process

The six year long research process has provided – unusual, perhaps even a unique – opportunity to examine from a close proximity the development of the b2b ICT service design and development phenomena and a real life case company's transformation from a state owned traditional telecommunication products company into an ICT service provider. Just by examining this phenomena for such a long period of time, made it possible to gather many insights that were not directly about service design and development as such, but were intimately related to the success of service design and development. These insights fall into two categories: understanding the transition from a product oriented company into a service oriented company and focusing on the implementation of Service Factory Philosophy. Next, both of these issues are discussed in more detail.

Moving from a Product Oriented Company into a Service Oriented Company

There are two basic things that one needs to properly understand and identify before starting to design and develop b2b ICT services: at what stage the company is in the product-service transition (Ojasalo, 2009a) and what it actually takes to move from a product oriented company towards a service oriented company. Both aspects may sound self-evident at first, but one the major learnings during this research process was that these aspects are strongly underestimated in every company, time after time.

When the case company was starting to develop professional services, many people had the view that the company had in fact been in a service business for quite some time, and that there wasn't really that much to develop. As during the Case I the knowledge and understanding of the service business as well as knowledge of service design and development itself started to grow, it became quite clear to the core project group that the transition is going to be a real challenge. The importance here is that different aspects need to be emphasized in service design and development work, depending on the stage the particular company is at concerning the transition. In the beginning it is important that many things are "done by the book" and much effort is put to the organizational implementation. Companies may be tempted to cut corners in phases that are time consuming, but that leads to nothing else than trouble. The transition from a product company into a service company really is a long one, which makes it increasingly crucial that the basic things are properly learned before on can make decisions of what is important and when.

Relating this to the Service Factory Framework introduced in chapter 8.2.2., one cannot emphasize enough that the complete track of the process model needs to be applied many times before the fast track can be applied. Although there are many stages that are quite time consuming (e.g. piloting and selling to the first customers) and require much challenging and difficult discussions with various stake holders in the organization, one needs to perform those phases in order to learn from them and understand their purpose. That way it is learned what skipping those phases mean. And skipping always has some consequences to the success of implementation. In this regard, the service design and development is like projects in general, if one compromises too much in the early stages, the changes are that the end result is not what was originally aimed at.

As discussed earlier, companies often see themselves to be far more advanced in terms of service business than they actually are. Unfortunately, there are no cook books available in explicitly stating how companies rate in this aspect, so one needs to have enough humility to preferably underestimate than to overestimate. Service business philosophy touches every corner of the organization so one should estimate how well have all the parts of the organization abandoned the old product business paradigms and adopted new service business ones. When one takes one look at the figure 9, illustrating the different parts of the organization needed to provide ICT services, one comprehends that really all parts and all levels of the organization are involved. And even when it seems that the job is really done, one needs to accept that some tension will always remain between product people and service people (Antioco et al, 2008).

If the table 1 from the introduction chapter is recalled and the timeline is added, one can see how case company's transition developed during the six year period. This is illustrated below in table 17.

	Timeline	Main business focus	Business Challenge	Research focus
Case I	2001	product	managing services	design process
Case II	2001-2002	product	managing services	challenges in the design process
Case III	2004-2005	product and service	cost & resource efficiency	tools and methods
Case IV	2006-2007	service	standardized quality	service factory

Table 17 The transition of the case company from a product business into a service business.

As can be seen from the table above, it has taken six years for the case company to move from a product business into a service business. And even at his time it is fair to say that the transition is by no means reached its end. The case company's transition could be divided into three different stages, which were each characterized by three different types of questions: 1) what should be done and how, 2) how can we cut costs and 3) how can we improve quality. In the first phase, the questions are mostly related to what should be done and how. For example how should we manage service, how should we sell services, how should we produce them etc. In other words people do not exactly know what should be done and how, but they are convinced that something needs to be done. In the next phase, after the basics have been learned, the focus turns into the costs. In the first phases the emphasis has been on putting various tasks and activities into some kind of order, which also makes it possible to see the true costs of these tasks and activities. After the costs are know, it usually leads to debate that the costs are too high. This puts more effort and focus on controlling and decreasing the costs of providing services. It is important to recognize that this might also be one of the reasons for some people not to be interested in designing and developing services - because it makes them open for discussions about efficiency. As long as things are done in an ad hoc manner and no one really knows what exactly is done, by whom and why, it is possible to stay away from discussions about productivity.

The last phase is characterized by questions about the quality. After the company has learned to provide services in a systematic standardized way, and in a cost efficient manner, they tend to see also lack of quality. In the case company this marked one important point in the transition from a product company towards a service company. For the first time, the main focus was on what does the end customer what. Management saw that although it was known how services needed to be provided in a professional manner, how they could be provided in a cost efficient manner the quality of the services

was not totally matching the customers' requirements. In the case company this development through these three stages seemed quite natural and identifiable – at least retrospectively examining. Although this is not meant to be rock solid categorization about the different stages in the transition from a product company towards a service company, one might benefit from the questioning characterizing the different stages. This examination about the different stages in the transition leads to the other important aspect in the transition – the effort needed.

In addition to the tendency to overestimate the stage a particular company is in the transition there is a tendency to underestimate the effort that is needed to continue that transition. The case company's six year transition hasn't been easy and it hasn't happened by it self. As with any organization change (Kotter and Rathgeberg, 2006) much hard work, much failing and much continuous repetition and reminding is needed for a company to be able to change from a product company into a service company. The fundamentals in product business compared to service business are so different that the effort required in making every one in a large corporation to understand that and then make them abandon their old ways of working and further make them adopt to new ways of working, is many times bigger than one can estimate in the beginning.

During the research process, these fundamentals have culminated into a two primary aspects. The first one is that service production process is really a never ending one. In other words, when one delivers a product the process ends in a way to the moment, when the customer purchases the product. With a service the process continues all the way to the point when the service is terminated on behalf of the customer or the provider. Following the reasoning of SDL, this "minor" difference alone has quite fundamental impacts on the thinking about value creation: in product companies the value is created before the delivery, but in service companies the value creation starts after the delivery. This leads to the other fundament – a service is an abstract, intangible thing that is not perceived the same way by the customer than a product. Even if a product a broken (temporarily or for good) customer can still see the tangible product and maybe evaluate the quality based on how the product has functioned before. But an abstract service is evaluated continuously and the quality is very much dependent on the present time. In other words especially with ICT service, it is very hard for the customer to evaluate the past quality of a service, if the service is presently not working, because there are no tangible outputs to remind him or her.

These two fundamentals have a huge impact on the ways of working in the organization and have a huge impact on the sense of urgency that needs to be on the top of the mind of those people that are affected by customers – and that means everyone in the organization. Because companies do not understand or do not completely realize the ramifications of these two aspects, they very often underestimate the effort needed to successfully carry out the changes during the transition from a product company into a service company. On of the ways this was visible in practice, was that after each of the phases there was a short period of complacency after each of the phases. After people learned how to manage service in general, they thought that now the job was done. And after they further learned how to do that in a cost efficient way they again thought that now the job was done – as do they think after the third phase. The important lesson within the case company was that nevertheless how much time and effort was planned to be needed in carrying out the change, it always required a bit more.

Allthough this research period ends at a time when the case company wasn't yet ready for a deeper focus on the service provider-customer interaction, a couple words can be said about the next steps. I argue, that the very next steps in the transition from a product company into a servce company will become more and more focused on the role of the customer. Now when the company starts to master the things that happen inside the company, it should start to pay more attention to what happen outside the company. In other words the principles of SDL present the focus that the case company will concentrating on for the next three to five years.

Implementation of Service Factory Philosophy

The overall service factory model introduced in chapter 8.2. consists of three different aspects 1) the essence of designing and developing b2b ICT services, 2) the service factory framework and 3) the implementation of the service factory framework. During the research process, three specific aspects were highlighted in the implementation of the service factory model I) the implementation of an idea, II) application of a model into a particular context and III) avoidance of excess documentation.

At first the implementation of an idea instead of a model might sound more of a semantic issue than an issue of practical relevance. However, there's much more behind it than just that. Models are often quite complex, theoretical constructions that are left open for debate and further discussion. This makes them quite challenging to be unambiguously communicated and adopted throughout an entire organization. The mere notion that they are almost always left open for debate makes it nearly impossible to make any change happening. In addition, the complexity makes it difficult for people to understand the purpose in a uniform way. An idea instead, is much simpler and unambiguous for people to grasp. When people have bought the overall idea, tools and methods in a particular model become mere means to an end, not objects open for discussion.

The second notion of application of the model into a particular context is related to the first one. When it is understood that the purpose is to get people to buy an idea (that a model is a construction of) it is also understood that models themselves have no value unless they fit to the circumstances and environment of the particular company. And because models are usually designed to work in a particular context, it means that they need to be applied to fit into another context. It is important that people that are steering service design and development are ready to compromise the orthodox use of the model when the context differs enough from which the model was originally designed for. However some caution is needed here. Application of a model doesn't automatically the same than skipping all of the laborious phases it simply means that the main goal is not the orthodox use of a model but an appropriate use of a model. And that means that people must also be ready fine tune the model when the context is different.

This leads to the final aspect in the implementation. Although service design and development is very much about tangibilizing the intangible, about abstracting the knowledge, the know-how from people's minds, documentation is not end goal itself. Service design and development can easily lead to excessive amounts of documentation. This might at first seem even appropriate, but will eventually turn out to be unbearable as no one has time to read them all, no one has time to update them all and no one really benefits from all the information in the documents, except the people who have designed and developed the services. Documentation structure of a service should always be constructed to function throughout the entire lifecycle of the particular service, not just in the design and development phase. Many documents may be useful and necessary in the design phase. But if they are not used after that, they will not be updated as the service develops over time and will end up being just another reason why not to manage services in a systematic way.

In many ways service documentation is about balancing between practicality and standardization. On the other hand service production needs to be standardized and in order to do that certain things need to be documented. On the other hand service production is in practise about people

performing various tasks and activities. Although one would like every one to follow the same process and perform the tasks and activities in a similar fashion, in practise it is just not possible. At least it is not possible in knowledge industries, such as ICT service production. Every one wants to perceive themselves as more of an artist than just one piece of machinery functioning in a predefined fashion. This means that every document needs to have a purpose that is relevant to the person that is supposed to follow and update that particular document. For example a well defined service description needs to be sold to the production people, who think that every service needs to be unique customer specific performance as a way to prohibit sales people to sell something that cannot be delivered. As a way for the production people to ensure that they do not receive customer reclamations from poorly defined service outputs. If one cannot justify the purpose of a document to the person who is intended to follow and/or update that document, there are good changes that the particular document falls into the category of excess documentation.

9.2.2 Practical Relevance of the Study

The previous chapters discussed about the practical learning's that have been accumulated during the research period. But what about the service factory framework as such, is it just another theoretical construction without any practical relevance. The service factory model is consisted of three parts 1) the essence of designing and developing b2b ICT services, 2) the service factory framework and 3) the implementation of the service factory framework. The first and third part are – as discussed – pretty much about the practical learning's that have been captured during the research process, so the second part – the actual framework – is probably most open for debate over practical relevance. The framework itself consists of 1) the packaging process, 2) the tools and the methods and 3) the critical issues. From a practical relevance view point they are all considered to be equally open for discussion. The evaluation of the practical relevance of the framework is based on three aspects: 1) empirical foundation, 2) application of the framework and 3) the content of the framework.

Although the framework is a theoretical construction, it is based on four cases that are themselves based on 11 real-life projects. Moreover the research period during which the framework was constructed lasted over six years. During this time the case company went through many phases in the transition from a product company towards a service company. This six year long research period during which the framework was constructed, gave a lot of perspective to the framework. The fact that

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the empirical foundation, based on which the framework is constructed, is heavily based on real life context, increases the possibility a lot that the framework really provides practical significance. In addition the long research perspective further increases the possibility that the framework is not just a snapshot in a time but can be applied over time. The second fact that different parts of the framework and the framework as a whole have successfully been applied in practice during the four cases, further increases the possibility that the framework works in real life context. The service factory framework is not just a construction that has been developed based on real life cases, but it has also been further tested in real life cases. Time after time the four cases reported how the different parts of the framework were applied in real life context and how they prevailed.

The content of the Service Factory Framework is comprised of three different parts 1) the process for designing and developing b2b ICT services, 2) the tools and methods to be used in the design and development process and 3) the critical tasks and issues in the design and development of b2b ICT services. The process part acknowledges practical limitations by providing also the fast track description for more advanced companies in further down the transition. This could be argued to increase the usefulness of the process model. The set of tools and methods for designing and developing services comprised of four different approaches 1) industrialization, 2) tangibilization, 3) service blueprinting, and 4) service scripting. All of these are more or less theoretical models that need to be properly understood and learned before they can be successfully applied in practice. From a practical view point these might – at least at first glance – seem a bit too theoretical to be used in practice. This practical weakness has been tried to be controlled by providing insights and instructions about how they have been applied in practice during the four cases. Nevertheless it is acknowledged that they are the weak point from a practical point of view.

The individual models and theories through which the critical tasks and activities in service design and development process were identified are a bit too complex for practitioners to be used in every day operations. That's one reason why the framework focused on elaborating the critical tasks and activities as such as well as the reasons behind them – not the knowledge management nor social networking models and theories themselves. The part of the service factory framework examining the critical tasks and activities provides very practical advices and ideas of was needs to be considered and remembered during the design and development to ensure the success of the overall process. This can be argued to increase the probability of the practical relevance of the framework. Finally the framework

contains many real life templates that have been developed for service design and development in the case company. In addition the framework contains a detailed description of the document structure that was developed in the case company. All of these templates and example documents can be used as such or with minor modifications a companies that want to apply the service factory model. This example documents provide very practical and very useful sources of information for practitioners planning to use the service model.

Considering the three different aspects as sources for practical relevance (empirical foundation, application of the framework and the content of the framework) it can be argued that the probability for the service factory model to be of high practical relevance is very high. The model is based on strong empirical foundation, applied in several real life cases and the content of the model is such that it takes into account many limitations facing practitioners in a real life context. It is thus strongly believed by the researcher that the service factory model suits into a real life context with high remarks.

9.3 Limitations and Suggestions for Further Studies

In the chapter the limitations of this study as well as suggestions for further studies are discussed. Both of these aspects are examined in more detail in the following two chapters.

9.3.1 Limitations for this study

The limitations of this study come from three different sources 1) the nature of service business itself as well as the nature of service design and development as a phenomenon, 2) the characteristics of the case company and 3) action research oriented multiple embedded case study with constructive approach as a selected research methodology.

The Nature of Service Business

As discussed throughout this study, service business differs from a product business in a fundamental way. The differences in the fundamentals need to be properly understood, before the phenomenon of service design and development can be examined. In many ways service business is much more abstract than product business. This fundament causes many challenges when one is trying to conceptualize things in order to raise one's knowledge. For people who have been dealing with product business for years the mere change in perceiving abstract services in stead of more tangible

product requires much work and effort. When further trying to capture the idea of service design and development into models that are used in this abstract context, the resulting model is many times quite theoretical and complex. The mere understanding of models describing service design and development require quite a lot from the perceiver. It is not self evident that everyone is equipped for that. Actually quite a few people are equipped for that. Service design and development requires people with good conceptualization skills and a mind set that encourages the use of different theories. Finding this kind of people is by no means easy. These requirements expected from the user, propose a clear limitation to the service factory model constructed in this study. Although the model itself is sound and it has been developed in a way that allows it to be used in practice, there are actually quite a few people that can conduct service design and development in a real life context. This limitation is not specifically for this study, but in general a limitation for all studies in the field of service management studying service design and development.

Characteristics of the Case Company

The second limitation is dealing with the characteristics of the case company. As discussed in chapter 4, the selected case company is large multinational-corporation employing around 6000 employees, operating in high technology field of business. Although ideally the service factory model constructed is focusing on the phenomena of service design and development in general and thus would be applicable among all sizes of companies, the issues that are related to its use and implementation may vary quite a bit depending on the size of the company. As stated by Smith and Fischbacher (2002), in a way service design and development is a political bargaining process. This degree of different political ambitions concerning service design and development is more or less affected by company size. In bigger companies the political game that is constantly played is probably much more intense than in smaller companies. This has undoubtedly an effect on the use and implementation issues concerning the service factory model. In addition to the size of the case company, the field of business has also significance when generalizing the findings. The basic issues in service design and development can be the same irrespective of the field of business, but again different aspects maybe important for a company operating in a health care business compared to company operating in ICT business. The case company is very technologically oriented which probably shows in the results. On the other hand the thinking of "what service elements do we need in order to be able to sell this technology" may not be so different from "what service elements do we need order to enhance the sales

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of this blood pressure meter". The differences may very well be more related to the stage in the transition from a product company towards a service company than in the field of business. Nevertheless the size of the company and the high technology field of business do have certain limitations that need to be taken into account when generalizing the findings of this study.

Action Research as the Research Approach

The third source for limitations origins from the selected research methodology. Action research as a research approach added with constructive nature is not the one that is argued to produce the most general findings. As Kaitovaara (2004) summarized the criticism, AR has been associated with a symptom of having more relevance but less rigour. When acting as a complete participant (Roth et al, 2003) in performing AR there is always the danger of being more of a practitioner than academic when agendas conflict (Robert, 2003). This leads to the question of how objective is the Service Factory model constructed. Is the model objectively describing the service design and development phenomena or is it just a subjective view of my own. The quality of any research design and approach can be evaluated using certain logical test. In case study research four tests are most commonly used (Yin, 2003). These tests are construct validity, external validity, internal validity and reliability. I have provided explanations and evidence of how these tests have been applied to increase the validity and reliability of this study. From this point of view I feel that proper methods and conventions have been used throughout the research period.

Moreover, during the six year long research period I have become quite convinced of at least one thing, I claim that service design and development cannot be reliably studied without some degree of participation by the researcher. My role as a complete participant has allowed access to confidential data such as cost, pricing and customer data as well as future visions, business plans, and strategies. Access to this kind of sensitive information would have never been possible, unless I had been a full member of the organization and the group. Furthermore my participant role has positively influenced the co-operation with the other people in the projects. I don't believe that the development in regards to the understanding of service business – and especially understanding of service design and development – would have been the same unless there had been an academic conceptualizing things and pursuing new challenges all the time. I strongly believe that although purely from a methodological point of view this kind of a symbiotic relationship between theory and practice is not the most rigorous, the practical relevance out weights these short comings in this case. And I further think that the Service Factory

model constructed in this study would not have possible through any other research approach and that it truly provides a good ground that further research can benefit from and build also more rigorous research on.

9.3.2 Suggestions for Further Studies

During this research period four ideas for further studies have risen above others and each of these three areas focus on different aspects of the service design and development phenomena. These areas are: 1) application and further development of service design and development tools and methods, 2) testing Service Factory model in other contexts 3) development of metrics for service design and development, and 4) emphasizing the role of the customer in service design.

Suggestion for Further Research 1: Application and Further Development of Service Design and Development Tools and Methods

The basic methods and tools – industrialization, tangibilization, service blueprinting and service scripting – are presented during 70s and 80s, well over 20 years ago. Although they are very much valid today, surprisingly few researches have tried to apply them or further develop them. Service design and development altogether has been somewhat unexplored area until recent years. Now again during this decade, new research interests has been shown in this area. Yet, these old methods have still stayed pretty much untouched – this presents one very potential area for further studies.

Future studies could examine both the applicability of the above mentioned four tools and methods as well as the further development of those tools and methods. These models themselves present certain ideas and approaches, provide some philosophies of how one can design and develop services, but before those ideas and philosophies can properly be understood and their full potential captured, they need to be applied in different contexts and in different kinds of case companies. More research needs to be conducted to apply these tools and methods so that they can be further developed and new tools and methods can be developed.

Suggestion for Further Research 2: Testing Service Factory Model in Other Contexts

As discussed in the previous chapter, the Service Factory Model has been constructed in a certain corporate environment in a certain high technology business context. It is not known how well the model can be applied in other environments, in other kinds of contexts. Some laws concerning the

service business logic are undoubtedly the same irrespective of the environment and context, but some laws are different. From design and development perspective, the process for designing and developing services may very well vary especially in relation to the company size. This in turn poses questions of how essential roles do knowledge management and social networking aspects play in smaller companies. In a way the knowledge management aspects are associated with the challenge of context specific, scattered information. This kind of challenge may not exist in smaller companies or at least may not exist to a same extend.

In a similar manner the social networking aspect is associated with the challenge of multiple persons that have contradicting goals, have this scattered tacit information. First they need to be convinced that they should tell this information and then the information needs to be organized and further conceptualized. In smaller companies the information is not so widely scattered (simply because there aren't so many people) and the role of persuasion may not be so strong.

In addition to the corporate size aspect, the high technology business context brings another angel. How much do business context affect service design and development. As discussed in the previous chapter, the business context may have some affect, but then again many things are inherently the same irrespective of the line of business. At least the effects are not as obvious as they are related to the company size. To seriously test the generalizability of the service factory model, it should be applied in case companies in different kinds of environment in different kinds of business contexts. I strongly believe that most of the laws concerning service design and development are pretty much the same, but I also believe that some surprises will be found.

Suggestion for Further Research 3: Development of Metrics for Service Design and Development

In a way the Service Factory model describes and outlines the ideal and optimal situation in a service company. It illustrates how services should be designed and developed using certain tools and methods and how these services should constructed following a modular architecture. As discussed earlier, in the case company – TeliaSonera – this transition has taken over six years and is till today by no means ended. Taking this into account, the third area for further studies could to develop some kind of metrics to measure how well the transition from a product company into a service company is

happening in a particular company. In other words, to develop metrics to follow up how well the different aspects of the service factory model are turning into a reality.

Purely from a managerial point of view, the metrics could also cover the benefits gained from the transition. Although it may feel that the benefits are quite self-evident and trivial an moreover it is a more a question of business decision to move from a product oriented company into a service company, the transition altogether is a huge change. And as in any change, there will be people how will question the necessity or sanity of the transition from a product oriented company into a service oriented company. Bearing these people in mind it would useful if there would be key performance indicators measuring the before and after situation – what has changed and how. And really developing these KPI's into quantitative measures that bring hard evidence of how much better things are when companies began to adapt to the Service Factory ideology.

Suggestion for Further Research 4: Emphasizing the Role of the Customer in Service Design

As discussed earlier, the role of the customer cannot be overemphasized in terms of value creation. And at the same time, it should be carefully assessed when is a particular company is ready for this customer oriented thinking in such a passion that SDL proposes. That being said, this study suggests that the fourth area for further research is to examine how the role of the customer should be promoted in b2b ICT service design by companies that are ready for the next steps in the transition from a product company into a service company. In companies that are at this phase of the transition, it could be evaluated how the ideas of SDL could be incorporated to service design process proposed in the service factory framework. This could present the third process variant in addition to the complete and fast track models presented in figure 35.

References

- Agahi, F. (2002), Support consultation by growing agreements. In *Proceedings of DSIage2002 An IFIP TC8/WG 8.3. Open Conference.* eds. Adam, F., Brézillon, P., Humphreys, and Pomerol, J.-C., pp. 377-386. Oak Tree Press, July, Cork, Ireland.
- Alam, I., and Perry, C. (2002) A customer-oriented new service development process. Journal of Services Marketing, Vol. 16, No. 6, pp. 515-534.
- Anderson, J.C., Håkanson, H., and Johanson, J. (1996) Dyadic Business Relationships within a Business Network Context. *Journal of Marketing*, Vol. 58, pp. 1-15.
- Antioco, M., Moenaert, R.K., Feinberg, R.A. and Wetzels M.G.M. (2008) Integrating service and design: the influences of organiational and communocation factors on relative product and service characteristics. *Journal of the Academic Marketing Science*, Vol. 36, pp. 501-521.
- April, D. (2004) Towards a classification of ICT services. *Voorburg Group of Services Statistics; Science, Innovation and Electronic Information Division*, Canada.
- Araujo, L., and Easton, G. (1996) Networks in Socioeconomic Systems. *In Networks in Marketing*, eds. Iacobucci, D., pp. 63-107. Sage Publications, Thousand Oaks, US.
- van Ark B. and Piatkowski, M. (2004) Productivity, innovation and ICT in Old and New Europe. International Economics and Economic Policy, Springer, Vol. 1, No. 2, January, pp. 215-246.
- Arnould, E.J. (2008) Service-dominant logic and resource theory. Journal of the Academy of Marketing Science, Vol. 36, pp. 21-24.
- Artto, K.A. (1994) Life cycle cost concepts and methodologies. *Journal of Cost Management*, Vol. 8, No. 3, Fall, pp. 28-32.
- Aurich, J.C., Fuchs, C. and Wagenknecht, C. (2006), Life cycle oriented design of technical productservice systems. *Journal of Cleaner Production*, Vol. 14, No.17, pp. 1480-1494.
- Baum, S.H. (1990) Making your service blueprint pay off. *Journal of Services Marketing*, Vol. 4, No. 3, pp. 45-52.
- Bakhshi, H. and Larsen, J. (2005) ICT-specific technological progress in the United Kingdom. *Journal* of Macroeconomics, Elsevier, Vol. 27, No. 4, December, pp. 648-669.
- Ballantyne, D. and Varey, R.J. (2008). The service-dominant logic and the future of marketing. *Journal* of the Academy of Marketing Science, Vol. 36, No. 1, pp. 11-14.
- Baskerville, R. and Wood-Harper A.T. (1998) Diversity in information systems action research methods. *European Journal of Information Systems*, Vol. 7, No. 2, June, pp. 90-107.
- Baskerville, R.L. (1999) Investigating information systems with action research. Communications of for Association Information Systems, the Vol. 2. Article 19. October, http://www.cis.gsu.edu/~rbaskerv\CAIS 2 19/CAIS 2 19.html, accessed August 31st, 2000.
- Bebko, C.P. (2000) Service intangibility and its impact on consumer expectations of service quality. Journal Of Services Marketing, Vol. 14, No 1, pp. 9-26.
- Bettis, R.A. and Prahalad, C.K. (1995) The Dominant Logic: Retrospective and extension. Strategic Management Journal, Vol. 16, pp. 5-14.
- Bloom, P.N. (1984) Effective marketing for professional services. Harvard Business Review, Vol. 65, No. 5, September-October, pp. 102-110.
- Boiral, O. (2002) Tacit Knowledge and Environmental Management. Long Range Planning, Vol. 35, pp. 294-317.
- Boström, G.-O. (1995) Successful cooperation in professional services. What characteristics should the customer have? Industrial Marketing Management, Vol. 24, No 3, pp. 151-165.
- Bowen, D.E. and Youngdahl, W.E. (1998) Lean service: in defense of a production-line Approach. International Journal of Service Industry Management, Vol. 9, No. 3, pp. 207-225.
- Bower, J.L. and Christensen, C.M. (1995) Disruptive technologies: catching the wave, Harvard Business Review, Vol. 73, pp.43-53.
- Bowers, M. (1986) New Product Development in Service Industries, Ph.D. Dissertation, Texas A & M University, College Station.
- Bowonder, B., Swamy, J. and Mastakar, N. (2005) Regaining competitiveness using an ICT platform in a traditional industry: adoption of computer aided design for carpet weaving. International Journal of Services Technology & Management. Vol. 6, pp. 402-415.
- Brady, M., Saren, M. and Tzokas, N. (2002) Integrating Information Technology into Marketing Practice - The IT Realize of Contemporary Marketing Practice. Journal of Marketing Management, Vol. 18, pp. 555-577.
- Brown, S.W., Fisk, R.P. and Bitner, M.J. (1994) The Development and Emergence of Services Marketing Thought, International Journal of Service Industry Management, Vol 5, pp 21-48.
- Brown, S.W. and Swartz, T.A. (1989) A gap analysis of professional service quality. Journal of Marketing, Vol. 53, No. 2, April, pp. 92-98.
- Buhalis, D. (2004) eAirlines: strategic and tactical use of ICTs in the airline industry, Information & Management, Vol 41, pp 805-825.
- Bullinger, H-J., Fähnrich K-P. and Meiren T. (2003), Service engineering-methodicaldevel opment of new service products, International Journal of Production Economics, Vol. 85, pp. 275–287.

Burt, R.S. (1976) Positions in Networks. Social Forces. Vol. 55, pp. 93-122.

- Burt, R. S. (1982), Toward A Structural Theory of Action: Network Models of social Structure, Perception and Action. Academic Press, New York.
- Buttle, F.A. (1993) Selling services: a contingency model. *Journal of Services Marketing*. Vol. 7, No. 3, pp. 36-48.
- Caceres, R.C. and Paparoidamis, N.G. (2005) Service quality, relationship satisfaction, trust, commitment and business-to-business loyalty, *Journal of European Marketing*, Vol. 41, No.7, pp. 836-867
- Cette, G., Lopez, J., and Noual, P-A. (2005) Investment in ICTs: an empirical analysis. *Applied Economics Letters*, Vol. 12, No. 5, April, pp. 309-312.
- Cipolla, C. and Manzini, E. (2009) Relational Services. *Knowledge, Technology & Policy*, Vol. 22, No. 1, pp. 45-50.
- Chapman, R. and Hyland, P. (2004) Complexity and learning behaviors in product innovation. *Technovation*, Vol 24, pp 553-561.
- Chase, R.B. (1978) How Does the Customer Fit in a Service Operation. *Harvard Business Review*, Vol. 56, No. 6, November-December, pp. 137-142.
- Checkland, P. and Holwell, S. (1998) Information, Systems and Information Systems making sense of the field. John Wiley & Sons, Lancaster University, UK.
- Chuang, P-T. (2007) Combining Service Blueprint and FMEA for Service Design. *The Service Industries Journal*, Vol. 27, No. 2, pp. 91-104.
- Cope, M. (2000), *The Seven Cs of Consulting*. Financial Times, Prentice Hall, Pearson Education Ltd, London.
- Crossan, M.M., Lane, H.W. and White, R.E. (1999). An organizational learning framework: from intuition to institution. *Academy of Management Reviw*, Vol. 21, No. 3, pp. 522-537.
- Crossan, M.M. and Berdrow, I. (2003). Organizational learning and strategic renewal. Strategic Management Journal, Vol. 24, pp. 1087-1105.
- Davies, A. and Brady, T. (2000) Organizational capabilities and learning in complex product systems: towards repeatable solutions, *Research Policy*, Vol. 29, No.7/8, pp. 931-953.
- Davies, A. (2004) Moving base into high-value integrated solutions: a value stream approach, *Industrial and Corporate Change*, Vol. 13, No. 5, pp. 727–756.
- Davies, A., Brady, T. and Hobday, M. (2006) Charting a path toward integrated solutions, *MIT Sloan Management Review*, Vol. 47, No.3, pp. 39-48.

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- Donnelly, J.H. Jr., Berry L.L. and Thompson, T.W. (1985) *Marketing Financial Services*, Homewood, Illinois, Dow Jones-Irwin.
- Easton, G. (2010) Critical realism in case study research. *Industrial Marketing Management*, Vol. 39, Issue 1, January, pp. 118-128.
- Economides, N. (1996) The Economics of Networks. *International Journal of Industrial Organization*, Vol. 14, No. 6, pp. 673-699.
- Eisenhardt, K.M. (1989) Building Theories from Case Study Research, Standford University, *Academy* of Management Review, Vol. 14, pp. 532-550.
- Eskola, J. and Suoranta, J. (2000) Johdatus laadulliseen tutkimukseen (Introduction to qualitative research), Tampere: Osuuskunta Vastapaino.
- Eriksson, P. and Kovalainen, A. (2006) *Qualitative Research Methods in Business Studies*, Sage Publications.
- Erradi, A., Kulkarni N. and Maheshwari, P. 2007, 'Service Design Process for Reusable Services: Financial Services Case Study'. *Fifth International Conference on Service-Oriented*, Vienna Austria. Springer-Verlag, Berlin Heidelberg, pp. 606-617.
- Falk, M. (2005) ICT-linked firm reorganisation and productivity gains. *Technovation*, Vol. 25, pp. 1229–1250.
- Ford, D. (1990) Understanding Business Markets: Interaction, Relationships and Networks. The IMG Group, Academic Press Limited, London.
- Frei, F.X. (2008) The Four Things a Service Business Must Get Right. *Harvard Business Review*, Vol. 86, Issue 4, pp. 70-80.
- Frings, S. and Weisbecker, A. (1999) Role Concept in Software Development, in: H.-J. Bullinger, ed., Human-Comupter Interaction. Ergonomics and User Interfaces (Mahwah), pp. 1189-1198.
- Gabrielsson, P., Gabrielsson, M., Darling, J. and Luostarinen, R. (2006). Globalizing Internationals: Product Strategies of ICT Manufacturers. *International Marketing Review*, Vol. 23, No. 6. pp. 650-671.
- Gago, D. and Rubalcaba, L. (2007) Innovation and ICT in service firms: towards a multidimensional approach for impact assessment. *Journal of Evolutionary Economics*, Vol. 17, No. 1, February, pp. 25-44.
- Gounaris, S.P. and Venetis, K. (2002) Trust in industrial service relationships: behavioural consequences, antecedents and the moderating effect of the duration of the relationship, *Journal of Services Marketing*, Vol. 16, No.7, pp. 636-655.
- Gummesson, E. (1978) Towards a theory of professional service marketing. *Industrial Marketing Management*. Vol. 7, No. 2, April, pp. 89-95.

- Gummesson, E. (1994) Service management: an evaluation and the future. *International Journal of* Service Industry Management, Vol. 5, No. 1, pp. 77-96.
- Grönroos, C. (1990) Relationship Approach to Marketing in Service Contexts: The Marketingand Organizational Behaviour Interface, *Journal of Business Research*, Vol 20, pp 3-11.
- Grönroos, C. (2008) Service logic revisited: who creates value? And who co-creates? *European Business Review*, Vol. 20, No. 4, pp. 298-314.
- Halinen, A. (1997) Relationship Marketing in Professional Services A Study of Agency-Client Dynamics in the Advertising Sector, Routledge, London.
- Halinen, A. and Törnroos, J-Å. (2005) Using case methods in the study of contemporary business networks. *Journal of Business Research*, Vol. 58, Issue 9, September, pp. 1285-1297.
- Heeks, R. (2002) i-Development not e-Development: Special issue on ICTs and development. *Journal* of International Development, Vol. 14, pp. 1-11.
- Hildebrand, C. (1998) In Mapping the Invisible Workplace, CIO Enterprise Magazine, July 15.
- Hollins, W.J. and Shinkins, S. (2006) *Managing Service Operations: Design and Implementation*. London: SAGE Publications Ltd.
- Holmlid, S., Evenson, S. (2008). Bringing Service Design to Service Sciences, Management and Engineering. In Hefley, B., Murphy, W. (eds) Service Science, Management and Engineering: Education for the 21st Century, Springer Verlag, pp. 341-345.
- Homburg, C. and Garbe, B. (1999) Towards an improved understanding of industrial services: quality dimensions and their impact on buyer-seller relationships. *Journal of Business-to-Business Marketing*, Vol. 16, No.2, pp. 39-71.
- Hoogervorst J.A.P., Koopman P.L. and van der Flier, H. (2002) Human resource strategy for the new ICT-driven business context. *International Journal of Human Resource Management*, Vol. 13, No. 8, December, pp. 1245-1265.
- Hyötyläinen, M. and Möller, K. (2007) Service packaging: key to successful provisioning of ICT business solutions. *Journal of Services Marketing*, Vol. 21 No.5, pp. 304-12.
- Håkanson, H. and Snehota, I. (1994) Analysing Business Relationships, In Developing relationships in business networks. Eds. Håkanson, H., and Snehota, I., Routledge, London, UK, pp. 24-49.
- Ibarra, H. (1993) Network Centrality, Power and Innovation Involvement: Determinants of Technical and Administrative Roles. *Academy of Management Journal*, Vol. 36, No. 3, pp. 471-501.
- IDC (2003a) Nordic Quarterly Executive Service: Market Analysis, IDC, Market Analysis August, Copenhagen.
- IDC Per-Arne Sandegren (2003b) Nordic Enterprise Survey: Outsourcing What Does it Takes.

- IDC Esa Peltonen (2003c) Finland IT Services Marker Forecast and Analysis, IDC, Market Analysis September, Copenhagen.
- IDC Eric Owen and Romolo Pusceddu (2008) Western European Telecom Services Market Update: 1Q08, London.
- Inklaar, R., O'Mahony, M. and Timmer, M.P. (2005), ICT and Europe's Productivity Performance, Industry-level growth account comparisons with the United States. *Review of Income and Wealth*, Vol. 51, No. 4, pp. 505-536.
- Jiao, J., Ma, Q. and Tseng, M.M. (2003) "Towards high value-added products and services: mass customization and beyond", *Technovation*, Vol 23, pp 809-821.
- Jiménez-Zarco, A.I., Martínez-Ruiz, M.P. and Llamas-Alonso, M.R. (2006) Analysis of ICTs opportunities on Firm's sucess: an innovation process. *Problems and Perspectives in Management*, Vol. 4, Issue 4, pp. 84-94.

Johnson, E.M., Scheuing, E.E. and Gaida, K.A. (1986) *Profitable Service Marketing*, Homewood, Illinois, Dow Jones-Irwin.

- Johnson, M.D. and Ettlie, J.E. (2001) Technology, customization, and reliability. *Journal of Quality Management*, Vol. 6, pp. 193-210.
- Johnston, R. (1994) Operations: from factory to service management. *International Journal of Service Industry Management*, Vol. 5, No. 1, pp. 49-63.
- Judd, R.C. (1964) The Case for Redefining Services. Journal of Marketing, Vol. 28, pp. 58-59.
- Kaiser, U. (2005) Strategic Complementarities Between Different Types of ICT-expenditures. *Problems and Perspectives in Management*, Vol. 3, No. 1, pp. 72-81.
- Kaitovaara, P. and Hyötyläinen, M. (2002) Towards Packaged IT Consulting Services: an Illustrative Case from IT Business. TUCS Technical Report, Turku Centre for Computer Science, No. 470, Turku, Finland.
- Kaitovaara, P. and Hyötyläinen, M. (2003) A model for packaging IT consulting services: a case of an IT service provider. In Proceedings of Second Annual International Outsourcing Conference (Center for Global Outsourcing). eds. Palvia, S. and Yee, E., Section 4. August, New York, USA.
- Kaitovaara, P. (2004) The Packaging of IT Services: Conceptual and Empirical Studies (IT-palvelujen tuotteistus: käsitteellisiä ja empiirisiä tutkimuksia). *TUCS Dissertations*, Turku Centre for Computer Science, No. 52, August, Turku, Finland.
- Kakabadse N.K., Kakabadse, A. and Kouzmin, A. (2005) After the Re-Engineering: Rehabilitating the ICT Factor in Strategic Organizational Change through Outsourcing. *Problems and Perspectives* in Management, Vol 1, pp. 55-71.

- Kallinikos, J. (2005) The Order of Technology: Complexity and Control in a Connected World. *Information and Organization*, Vol. 15, No. 3, pp. 185-202.
- Kaltabani, A., Cardoso, E., Tzifa, E., Demestichas, P., Silva, A. and Anagnostou, M.E. (1999) Service Logic Deployment and Distribution Configuration. In H. Zuidweg et al. (Eds.) IS&N'99, LNCS 1597, Springer Verlag, Berlin Heidelberg, pp. 341-345.
- Kang, Gi-Du and James, J. (2004) Service quality dimensions: an examination of Gronroos's service quality model. *Journal: Managing Service Quality*, Vol. 14, No. 4, pp. 266 – 277.
- Kannan, P.K. and Proenca, J.F. (2010) Design of service systems under variability: research issues. Information Systems and e-Business Management, Vol. 8, pp. 1-11.
- Kasanen, E., Lukka, K., and Siitonen, A. (1993) The constructive approach in management accounting research. *Journal of Management Accounting Research*, Vol. 5, pp. 243-264.
- Kelly, K. (1998) *New Rules for the New Economy, 10 Ways the Network Economy is Chancing Everything*, Fourth Estate Limited, London, UK.
- Kesner, I.F. and Fowler, S. (1997) When consultants and clients clash. *Harvard Business Review*, Vol. 75, No. 6, November-December, pp. 22-38.
- Klein, H.K. and Myers, M.D. (1999) A set of principles for conducting and evaluating interpretive field studies in information systems. *MIS Quarterly*, Vol. 23, No. 1, March, pp. 67-94.
- Koskinen, K.U. (2000) Tacit knowledge as a promoter of project success. *European Journal of Purchasing & Supply Management*, Vol. 6, pp. 41-47.
- Kotter, J. and Rathgeberg, H. (2006) *Our Iceberg Is Melting: Changing and Succeeding Under Any Conditions*, St. Martin's Press, September, New York.
- von Krogh, G., Nonaka I. and Aben M. (2001) Making the Most of Your Company's Knowledge: A Strategic Framework. *Long Range Planning*, Vol. 34, Issue 4, August, pp. 421-439.
- von Krogh, G., Nonaka, I. and Nishiguchi, T. (2000) *Knowledge creation: a source of value*. Macmillan Press.
- Von Krogh, G. and Roos, J. (1996) A tale of the unfinished. *Strategic Management Journal*, Vol. 17, No. 9, November, pp. 729-737.
- Larsen, P., Tonge, R. and Lewis, A. (2007) Strategic planning and design in the service sector. *Management Decision*, Vol. 45 Issue 2, pp.180-195.
- Lehtinen, J.R. (1983) Asiakasohjautuva palvelujärjestelmä käsitteistö ja empiirisiä sovellutuksia (Customer Oriented Service Systems). Acta Universitatis Tamperensis, Ser. A, Vol. 160, Tampereen yliopisto, Tampere.

- Leinonen, J. H. (2009) Organizational learning in High-velocity Markets: Case Study in the Mobile Communications Industry. *Doctoral dissertation. Helsinki: Helsinki School of Economics*.
- Levitt, T. (1972) A production-line approach to service. Harvard Business Review, Vol. 50, pp 41-52.
- Levitt, T. (1976) The industrialization of service. Harvard Business Review, Vol 54, pp. 63-74.
- Levitt, T. (1981) Marketing intangible products and product intangibles. *Harvard Business Review*, Vol. 59, pp. 94-102.
- Lindberg, N. and Nordin, F. (2008) From products to services and back again: Towards a new service procurement logic. *Industrial Marketing Management*, Vol. 37, pp. 292-300.
- Lipiäinen, T. (2000) "Liiketoiminnan suunnittelu, markkinointi ja johtaminen uudella Vuosituhannella" (Business Planning, Marketing, and Leading in a New Millenium). Kaupunkitohtorit Oy, Gummerus Kirjapaino Oy, Jyväskylä.
- Liu, C-H. and Wang, C-C. (2008) Forecast competitor service strategy with service taxonomy and CI data. *European Journal of Marketing*, Vol. 42, No.7, pp. 746-765.
- Love P.E.D and Irani Z. and Ghoneim A. (2006) An Exploratory Study of Indirect Costs using the Structured Case Method. *International Journal of Information Management*, Vol. 26, No. 2, pp. 167-177.
- Lovelock, C.H (1983) Classifying Services to Gain Strategic Marketing Insights. *Journal of Marketing*, Vol. 47, pp. 9-20.
- Lovelock, C.H. (1984) Services Marketing. Prentice-Hall, Englewood Cliff, New Jersey.
- Lubit, R. (2001) Tacit Knowledge and Knowledge Management: The Keys to Sustasinable Competitive Advantage. *Organizational Dynamics*, Vol. 29, No. 4, pp. 164-178.
- Lusch, R.F., Vargo S.T. and O'Brien, M. (2007) Competing through service: Insights from servicedominant logic. *Journal of Retailing*, Vol. 83, No. 1, pp. 2-18.
- Madhavaram, S. and Hunt, S.D. (2008). The Service Dominant Logic and a Hierarchy of Operant Resources: Developing Masterful Operant Resources and Implications for Marketing Strategy. *Journal of the Academy of Marketing Science*, Vol. 36, No 1, pp. 67-82.
- Mager B. and Evenson S. (2008) Art of Service: Drawing the Arts to Inform Service Design and Specification. In: Hefley, B. and Murphy, W. (eds): Service Science, Management and Engineering Education for the 21st Century. New York: Springer.
- Market-Vision (2003c) "IT-palvelut: asiakastarpeet, markkinanäkymät ja tulevaisuuden kehityssuunnat. Market-Visio Oy, ICT Research and Advisory Services, September, Espoo.
- Mascitelli, R. (2000) From Experience: Harnessing Tacit Knowledge to Achieve Breakthrough Innovation. *Journal of Product Innovation Management*, Vol. 17, pp. 179-193.

- Meiren, T. (1999) Service Engineering. Systematic Development of New Services, in: W. Werther, J. Takala and D.J. Sumanth, eds., Productivity & Quality Management Frontiers, MCB University Press, Bradford, pp. 329-343.
- Metka, S., Jaklic, A., and Kotnik, P. (2006) Exploiting ICT Potential in Service Firms in Transition Economies. *The Service Industries Journal*, Vol. 26, No. 3, pp. 287-299.
- McLean, J.E. (2005). ICT & knowledge management. Management Matters, *British Journal of Administrative Management*, June/July, pp. 17-17.
- Metka, S., Andreja, J. and Patricia, K. (2006) Exploiting potential in service firms in transition economies. *Service Industries Journal*, Vol. 26, No. 3, pp. 287-302.
- Meta Data Stratos Sarissamlis (2003) European IT Outsourcing Market: What to Expect in 2003, Service Management Strategies, Outsourcing & Service Provider Strategies, Meta Data.
- Michel, S., Brown, S.W. and Gallan, A.S. (2008) An expanded and strategic view of discontinuous innovations: deploying a service-dominant logic. Journal of the Academy of Marketing Science, Vol. 36, pp. 54-66.
- Miyazaki, K. and Kijima, K. (2000) Complexity in Technology Management: Theoretical Analysis and Case Study of Automobile Sector in Japan. *Technological Forecasting and Social Change*, Vol. 64, pp. 39-54.
- Mizruchi, M.S. (1994) Social Network Analysis: Recent Achievements and Current Controversies. *Acta Sociologica*, Vol. 37, pp. 329-343.
- Moore, J.F. (1993) Predators and Prey: A New Ecology of Competition. *Harvard Business Review*, May-June. Page 77.
- Moore, J.F. (1996) The Death of Competition. Chichester, John Wiley & Sons Ltd.
- Moreno, J.L. (1934) Who Shall Survive? A New Approach to the Problem of Human Interrelations, Nervous and Mental Disease Publishing, Washington D.C. - Mental Health Resources Inc, 2007.
- Møller, C., Chaudhry, S.S. and Jørgensen, B. (2008) Complex service design: Avirtual enterprise architecture for logistics service. *Information Systems Frontiers*, Vol. 10, pp. 503-518.
- Ng, I.C.L., Maull, R. and Yip, N. (2009) Outcome-based Contracts as a driver for Systems thinking and Service-Dominant Logic in Service Science: Evidence from the Defence industry. *European Management Journal*, Vol. 27, pp. 377-387.
- Nonaka, I. (1994) A Dynamic Theory of Organizational Knowledge Creation. *Organization Science*, Vol. 5, No. 1, February, pp. 14-37.
- Nonaka, I., Reinmoeller, P. and Senoo, D. (1998) The 'art' of Knowledge: Systems to Capitalize on Market Knowledge, *European Management Journal*, Vol. 16, No. 6, December, pp. 673-684.

- Nonaka, I. and Takeuchi, H. (1995). The Knowledge Creating Company, Oxfor: Oxford University Press.
- OECD (2003) STI Scoreboard 2003.
- OECD (2004) ICTs and Economic Growth: The OECD Experience and Beyond. DCD/DAC/POVNET/A(2004)1/RD6
- Office of Government Commerce (OGC) (2007) Service Design, ITIL, Version 3, TSO (The Stationery Office), May.
- Ojasalo, K. (2009a) Designing Industrial Services What is the Role of Customer? *The Business Review, Cambridge*, Vol. 14, No. 1, pp. 125-131.
- Ojasalo, K. (2009b) Business and Design Competences in Service Innovation and Development. *The Business Review, Cambridge*, Vol. 13, No. 1, pp. 216-222.
- Oliva, R. and Kallenberg, R. (2003) Managingthe transitionfromproductsto servies. *International Journal of Service IndustryManagement*, Vol. 14, No. 2, pp. 160-172.
- Orman, L.V. (2008) Service Semantics, Structure, and Design. *e-Service Journal*, Vol. 6, Issue 2, pp. 58-77.
- Ovum (2007a) Phil Codling, 2007, Opportunities in enterprise ICT: strategies for IT services providers.
- Ovum (2007b) *IT Services Quarterly Update, Q1 2007* Published By: Ovum, 2007-05-14 00:00 Analysis and opinion on European country market trends and vendor performance in Q1 2007
- Palaima, T. and Banyté, J. (2006) Marketing Service Relationships: the Relative Role of Service Quality, *Engineering Economics*, Vol. 46, No. 1, pp. 83-94.
- Paloheimo, K.-S., Miettinen, I., Brax, S. 2004. Customer oriented industrial services. [verkkojulkaisu]. Espoo: Teknillinen korkeakoulu. BIT Research Centre. Configuration of Industrial Services (CoInS 2001-2003). [viitattu 6.4.2009]. Saatavissa PDFtiedostona:<http://www.hcl.hut.fi/docs/Customer_Oriented_Industrial_Services.pdf>
- Parasuraman, A., Zeithaml, V.A. and Berry, L.L. (1985) Conseptual Model of Service Quality and Its Implications for Future Research. *Journal of Marketing*, Vol. 49, pp. 33-46.
- Paton, R.A. and McLaughlin, S. (2008) Services innovation: Knowledge transfer and the supply chain. *European Management Journal*, Vol 26, pp. 77-83.
- Peansupap, V. and Walker D.H.T. (2006) ICT Implementation Constraints, a Construction Industry. Perspective. Engineering Construction & Architectural Management, Vol. 13 No. 4, pp. 364-379.
- Peters, L. and Saidin, H. (2000) IT and the mass customization of services: the challenge of implementation. *International Journal of Information Management*, Vol. 20, pp. 103-119.

- Pettigrew, A.M. (1992) The character and significance of strategy process research. *Strategic Management Journal*, Vol. 13, pp. 5-16.
- Pettigrew, A.M. (1997) What is a processual analysis. *Scandinavian Journal of Management*, Vol. 13, No. 4, pp. 337- 348.
- Pinhanez, G. (2009) Services as Customer-Intensive Systems. Design Issues, Vol. 25, No. 2, pp. 3-13.
- Pipe, G.R. (2004) ICT Drives Information Societies, *Digest of Electornic Commerce and Regulation*, Vol. 27. p.2.
- Porter, M.E. and Millar, V.E. (1985) How Information Gives You Competitive Advantage. Harvard Business Review, Vol. 63, No. 4, July-August, pp. 149-174.
- Quinn, J.B. and Paquette, P.C. (1990) Technology in Services: Creating Organizational Revolutions. *Sloan Management Review*, Winter, pp. 67-78.
- Quinn, J.B., Doorley, T.L. and Paquette P.C. (1990) Beyond Products: Services-Based Strategy, *Harvard Business Review*, Vol. 68, pp. 58-68.
- Raajpoot, N., Javed, R. and Koh, K. (2008) Application of Taguchi design to retail service. *International Journal of Commerce*, Vol. 18, No. 2, pp. 184-199.
- Rao., P.M and Klein, J.A. (1994) Growing importance of marketing strategies for the software industry. *Industrial Marketing Management*, Vol. 23, No. 1, pp. 29-37.
- Rathmell, J.M. (1966) What Is Meant By Services? Journal of Marketing, Vol. 30, pp. 32-36.
- Reddy, A.C., Buskirk, B.D. and Kaicker, A. (1993) Tangibilizing the intangibles: some strategies for services marketing. *Journal of Services Marketing*, Vol. 7, No. 3, pp. 13-17.
- Reinilä, I. (1995) Konsultointiosaaminen ja sen kaupallistaminen ja kehittäminen (Consultancy knowhow, its commercialization and development). Working Papers, Helsinki School of Economics and Business Administration, W-119, maaliskuu (March), Helsinki.
- Ritchie, B. and Brindley, C. (2005) ICT Adoption by SMEs: Implications for Relationships and Management. *New Technology, Work and Employment*, Vol. 20, No. 3, November, pp. 205-217.
- Rogers, E.M. (1995) *The Critical Mass in Adoption of Interactive Innovations*. In Diffusion of Innovations, The Free Press, 4th edition, New York, US.
- Roth, J., Sandberg, R. and Svensson, C. (2003) *The Dual Role of the Insider Action Researcher*. In N. Adler, A. Styhre & A. B. Shani (Eds), Collaborative Research in Organizations: Foundations for Learning, Change and Theoretic Development. New York: Sage.
- Rushton, A.M., and Carson D.J. (1990a) Palvelujen markkinointi: Aineettomien tuotteiden markkinointi Osa 1. *Yritystalous* No. 3, pp. 13-22.

- Rushton, A.M., and Carson D.J. (1990b) Palvelujen markkinointi: Miten palvelujen markkinointi todellisuudessa toimii tuotteen aineettomuuden kanssa Osa 2. *Yritystalous* No. 4, pp. 71-75.
- Saco, R.M. and Goncalves, A.P. (2008) Service Design: An Appraisal. *Design Management Review*, Vol. 19, No. 1, pp. 10-19.
- Sakao, T. and Shimomura, Y. (2007) Service Engineering: a novel engineering discipline for producers to increase value combining service and product. *Journal of Cleaner Production*, Vol. 15, pp. 590-604.
- Sandberg, R. (2003) Corporate Consulting for Customer Solutions Bridging Diverging Business Logics. Stockholm school of economics, *Dissertations of EFI, The economic research institute*, Stockholm.
- Scheuing, E.E., Johnson, E.M. (1989) A proposed model for new service development. *The Journal of Services Marketing*, Vol. 3, No. 2, pp. 25–34.
- Scott, J. (1991) Social Network Analysis A Handbook, Sage Publications, Newbury Park, CA.
- Sawhney, M., Sridhar, B. and Vish, K. (2004) Creating Growth with Services. *Sloan Management Review*, Vol. 45, No. 2, pp. 34-43.
- Sempels, C. (2002) The possible contribution of the brand in the process of service Tangibilisation. In *Proceedings of the 7th International Research Seminar in Service Management*. pp. 410-422, 29th-31st of May, La Londe les Maures, France.
- Scharmer, C.O. (2000) Conversations with Ikujiro Nonaka. Reflections, Vol. 2, No. 2. pp. 24 31.
- Sharma, A. and Loh, P. (2009) Emerging trends in sourcing of business services. *Business Process Management Journal*, Vol. 15, No. 2, pp. 149-165.
- Shostack, G.L., (1977) Breaking Free form Product Marketing. *Journal of Marketing*, Vol. 41, April, pp. 73-80.
- Shostack, G.L. (1984) Designing Services That Deliver. *Harvard Business Review*, Vol. 61 No. 1, January-February, pp. 133-39.
- Shostack, G.L., (1987) Service Positioning Through Structural Change. *Journal of Marketing*, Vol. 51, pp. 34-43.
- Shostack, L. and J. Kingman-Brundage, J. (1991) How to Design a Service In: C.A. Congram, ed. The AMA Handbook of Marketing for the Service Industries, AMACOM, New York, pp. 243-261.
- Sipilä, J. (1996) Asiantuntijapalvelujen tuotteistaminen (Packaging of Professional Services). Ekonomia-sarja, WSOY, Porvoo.

- Smith, A.M. and Fischbacher, M. (2002) Service Design: Collaboration or Conflict? Journal of Marketing Management, Special Issue on Not-for-Profit Marketing, Vol. 18, Issue 9/10, pp. 923-929.
- Soete, L. (2001) ICTs, knowledge work and employment: The challenges to Europe, International Labour Review, Vol. 140, No. 2, pp. 143-163.
- Solomon, M., Suprenant, C.R., Czepiel, J.A. and Gatman, E.G. (1985) A role theory perspective on dyadic interactions: the service encounter. *Journal of Marketing*, Vol. 49, pp. 99-111.
- Spender, J-C. (1996) Organizational knowledge, learning and memory: three concepts in search of a theory. *Journal of Organizational Change Management*. Vol. 9. No. 1, pp. 63-78.
- Stake, R.E. (2005) *The art of case study research: perspectives on practice*, Sage Publications, Thousands Oaks, California.
- Stenmark, D., (2001) Leveraging Tacit Organizational Knowledge. *Journal of Management Information Systems*. Wither 2000-2001, Vol. 17, No. 3, pp. 9-24.
- Stephenson, K., and Zelen M. (1989) Rethinking Centrality: Methods and Examples. *Social Networks*, Vol. 11, pp. 1-37.
- Stevens, E. and Dimitriadis, S. (2004) New sevice development through the lens of organizational learnin: evidence from longitudinal case studies. *Journal of Business Research*. Vol. pp. 1074-1084.
- Stowell, F., West, D., and Stansfield, M. (1997) Action research as a framework for IS research. In Information Systems: An Emerging Discipline? eds. Mingers, J. and Stowell, F., pp. 159-200. Information System Series, The McGraw-Hill Companies, University Press, Cambridge.
- Susman, G.I. and Evered, R.D. (1978) An assessment of the scientific merits of action research. *Administrative Science Quarterly*, Vol. 23, December, pp. 582-603.
- Thomas, D.R.E. (1978) Strategy is Different in Service Business. *Harvard Business Review*, Vol. 56, pp. 158-165.
- Tijdens, K.G. and Steijn, B. (2005) The determinants of ICT competencies among employees. *New Technology, Work and Employment*, Vol. 20, No. 1, pp. 60-73.
- Torbert, W. (1999) The distinctive questions developmental action inquiry asks. *Management Learning*, Vol. 30, No. 2, pp. 189-206.
- Tsai, Y. and Wang, K. (1999) The development of modular-based design in considering technology complexity. *European Journal of Operational Research*, Vol. 119, pp. 692-703.
- Turner, A.N. (1982) Consulting is more than giving advice. *Harvard Business Review*, Vol. 60, No. 5, September-October, pp. 120-129.

- United Nations (2004) *Classifying information and communications technology (ICT) Services*, Report DSTI/ICCP/IIS(2004)2, Department Of Economic and Social Affairs, Statistics Division, New York.
- Uchihira, N., Kyoya, Y., Kim, S.K., Maeda, K., Ozawa, M. and Ishii, K. (2008) Analysis and Design Methodology for Product-Based Services. In: Satoh, K. et al. (Eds.): JSAI (2007), LNAI 4914, Springer-Verlag, Berlin Heidelberg, pp. 13-25.
- Vaattovaara, M. (1999) Transforming Services into Products in a Systems Engineering Company. *Ph.D. thesis, HUT Industrial Management and Work and Organizational Psychology*, Helsinki University of Technology, Report No. 9, Espoo.
- Vandermerwe, S. (1994) Quality in services: The 'softer' side is 'harder' (and smarter). Long Range Planning, Vol. 27, Issue 2, April, pp. 45-56.
- Vargo, S.L., Maglio, P.P. and Akaka, M.A. (2008), On Value and Value Co-Creation: A Service Systems and Service Logic Perspective. *European Management Journal*, Vol. 26, No. 3, pp. 145-52.
- Vicente, M.R. and Lopez, A.J. (2006) Patterns of ICT Diffusion across the European Union. *Economics Letters*, Vol. 93, pp. 45-51.
- Voss, C.A. and Hsuan, J. (2009) Service Architecture and Modularity. *Decision Sciences*, Vol. 40, Issue, 3, p. 541.
- Wasserman, S., and Faust, K. (1994) Social Network Analysis: Methods and Applications. Cambridge University Press, Cambridge, UK.
- Wellman, B. (1988) Structural Analysis: From Method and Metaphor to Theory and Substance. In B. Wellman & S. Berkowitz (Eds.), *Social Structures: A Network Approach*, (pp. 19-61). Cambridge: Cambridge University Press.
- Wijnhoven, F. and Kraaijenbrink, J. (2008) Product-oriented design theory for digital information services – A literature review. *Internet Research*, Vol. 18, No. 1, pp. 93-120.
- Wittreich, W.J. (1966) How to Buy/Sell Professional Services. *Harvard Business Review*, March-April, pp. 127-136.
- Woo, J., Clayton MJ, Johnson, R.E., Flores, B.E. and Ellis, C. (2004). Dynamic Knowledge Map: reusing experts' tacit knowledge in the AEC industry. *Automation in Construction*. Vol. 13 pp. 203-207.
- Yin, R. K. (1984) Case Study Research: Design and Methods, Sage Publications, Thousand Oaks, CA.
- Yin, R.K. (2003) Case Study Research Design and Methods. Third edition, Sage Publications, Beverly Hills, California.

- Yoffie, D B. (1997) Competing in the Age of Digital Convergence. Massachusetts, Harvard Business School Press, pp. 22 23.
- Zeithaml, V.A., Berry, L.L. and Parasuraman A. (1988) Communication and Control Process in the Delivery of Service Quality. *Journal of Marketing*, Vol. 52, pp. 35-48.
- Zeithaml, V.A., Parasuraman A. and Berry, L.L. (1985) Problem and Strategies in Services Marketing. *Journal of Marketing*, Vol. 49, pp. 33-46.

Appendix I – Interviews and Meetings in Case I

The main purpose of the meetings is categorized into three different categories, which are framework, project and review. The logic of the categorization is as follows:

- 1. Framework
 - Framework meetings concentrate on discussing and developing the overall framework for packaging ICT services, or parts of it (process, methods & tools, templates, or approach).
- 2. Project
 - Project meetings concentrated on commercializing the individual services (Key Customer service, Technical Key Customer service, Quality Management, or Solution Design).
- 3. Review
 - Review meetings concentrated on getting feedback and acceptance for the Packaging framework. These meetings were mostly one-to-one interviews.

The Meeting Subject describes the general theme of the meeting and the Purpose explains the main content of the meeting in more detail.

Date	Meeting Subject	Participants	Purpose
4.1.2001	Ideas for professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Auer, Timo (Vice President / Product Management)	Framework - Meeting concentrated on discussing the current challenge of consulting services.
12.1.2001	Workshop for discussing the idea of packaging professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Auer, Timo (Vice President / Product Management)	Framework - Meeting concentrated on discussing how to commercialize professional services.
16.2.2001	Workshop for commercializing Prestudy service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Auer, Timo (Vice President / Product Management)	Framework - The meeting concentrated on the different methods and tools to be used in the Prestudy packaging project.
26.2.2001	Workshop for examining alternative ways for packaging professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Auer, Timo (Vice President / Product Management)	Framework - Meeting concentrated on discussing how to commercialize professional services.
2.3.2001	Workshop for commercializing Prestudy service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Auer, Timo (Vice President / Product Management)	Framework - Meeting concentrated on discussing a possible project for packaging professional services.
15.3.2001	Workshop for commercializing	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Otala, Tuomas (Department Director /	Project - Meeting concentrated on establishing the core project team.

	Prestudy service	Professional Services); Auer, Timo (Vice President / Product Management); Kaitovaara, Petteri (Consultant / Consulting)	
19.3.2001	Workshop for commercializing Prestudy service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Auer, Timo (Vice President / Product Management)	Framework - The meeting concentrated on the Prestudy packaging project planning.
23.3.2001	Workshop for commercializing Prestudy service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services)	Review - The meeting concentrated on reviewing the project plan.
27.3.2001	Reviewing commercialization process	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services)	Review - The meeting concentrated on reviewing the packaging process.
29.3.2001	Workshop for commercializing Prestudy service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Lehtinen, Anneli (Development Manager / Product Manager)	Project - The meeting concentrated on discussing the role of documentation in the Prestudy packaging project.
30.3.2001	Reviewing Prestudy service project	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Otala, Tuomas (Department Director / Professional Services); Auer, Timo (Vice President / Product Management)	Review - The meeting concentrated on reviewing the project plan and the tools and methods to be used in the project.
2.4.2001	Reviewing commercialization tools and methods	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Auer, Timo (Vice President / Product Management)	Framework - The meeting concentrated on discussing the packaging tools and methods.
12.4.2001	Workshop for commercializing Prestudy service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services); Kääriäinen, Riitta (Consultant / Professional Services); Otra- Aho, Ville (Consultant / Professional Services)	Project - The meeting concentrated on specifying the Prestudy service.
17.4.2001	Reviewing commercialization process	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Sten, Janne (Director / Sales Sweden);	Project - The meeting concentrated on discussing the role of sales in the commercialization project.
17.4.2001	Reviewing commercialization process	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Otala, Tuomas (Department Director / Professional Services)	Review - The meeting concentrated on discussing the progress and issues in the packaging project.

18.4.2001	Reviewing commercialization framework	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Auer, Timo (Vice President / Product Management)	Framework - The meeting concentrated on reviewing the current packaging process description.
19.4.2001	Workshop for commercializing Prestudy service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services); Kääriäinen, Riitta (Consultant / Professional Services); Otra- Aho, Ville (Consultant / Professional Services)	Project - The meeting concentrated on specifying the Prestudy service.
20.4.2001	Workshop for commercializing Prestudy service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services); Kääriäinen, Riitta (Consultant / Professional Services); Otra- Aho, Ville (Consultant / Professional Services)	Project - The meeting concentrated on specifying the Prestudy service.
23.4.2001	Workshop for commercializing Prestudy service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services); Kääriäinen, Riitta (Consultant / Professional Services); Otra- Aho, Ville (Consultant / Professional Services)	Project - The meeting concentrated on gathering information about the different tasks in the Prestudy service.
24.4.2001	Workshop for commercializing Prestudy service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services); Kääriäinen, Riitta (Consultant / Professional Services); Otra- Aho, Ville (Consultant / Professional Services)	Project - The meeting concentrated on gathering information about the different tasks in the Prestudy service.
24.4.2001	Reviewing commercialization framework	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Koski-Lukkari, Liisa (Vice President / Sales)	Framework - The meeting concentrated on discussing the packaging framework from the sales point of view.
27.4.2001	Workshop for commercializing Prestudy service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services); Kääriäinen, Riitta (Consultant / Professional Services); Otra- Aho, Ville (Consultant / Professional Services)	Project - The meeting concentrated on gathering information about the different tasks in the Prestudy service.
4.5.2001	Workshop for commercializing Prestudy service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services); Kääriäinen, Riitta	Project - The meeting concentrated on creating the Prestudy service content.

		(Consultant / Professional Services); Otra- Aho, Ville (Consultant / Professional Services)	
8.5.2001	Workshop for commercializing Prestudy service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services); Kääriäinen, Riitta (Consultant / Professional Services); Otra- Aho, Ville (Consultant / Professional Services)	Project - The meeting concentrated on creating the Prestudy service content.
9.5.2001	Workshop for commercializing Professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Auer, Timo (Vice President / Product Management)	Framework - The meeting concentrated on discussing the packaging tools and methods.
10.5.2001	Reviewing commercialization framework	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services)	Framework - The meeting concentrated on discussing the packaging framework.
11.5.2001	Workshop for commercializing Professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Väyrynen, Petri (ITIL Manager / Production)	Framework - The meeting concentrated on discussing the packaging framework from the ITIL model's point of view.
11.5.2001	Workshop for commercializing Prestudy service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services)	Project - The meeting concentrated on gathering information about the different tasks in the Prestudy service.
15.5.2001	Workshop for commercializing Professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Auer, Timo (Vice President / Product Management)	Framework - The meeting concentrated on discussing the packaging process.
15.5.2001	Workshop for commercializing Professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Auer, Timo (Vice President / Product Management); Salmela, Jussi-Matti (Development Manager / Production)	Framework - The meeting concentated on discussing the packaging framework from the production point of view.
18.5.2001	Workshop for commercializing Prestudy service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services); Kääriäinen, Riitta (Consultant / Professional Services); Otra- Aho, Ville (Consultant / Professional Services)	Project - The meeting concentrated on creating the Prestudy service content.
28.5.2001	Reviewing commercialization framework	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Auer, Timo (Vice President / Product	Review - The meeting concentrated on discussing the progress and issues in the packaging project.

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		Management)	
28.5.2001	Workshop for commercializing Professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Väyrynen, Petri (ITIL Manager / Production)	Framework - The meeting concentrated on discussing the packaging framework from ITIL model point of view.
29.5.2001	Reviewing Prestudy service project	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Otala, Tuomas (Department Director / Professional Services); Auer, Timo (Vice President / Product Management); Tuomas Otala (Department Director / Professional Services); Koski-Lukkari, Liisa (Vice President / Sales)	Review - The meeting concentrated on discussing the progress and issues in the packaging project.
4.6.2001	Workshop for commercializing Prestudy service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services); Kääriäinen, Riitta (Consultant / Professional Services); Otra- Aho, Ville (Consultant / Professional Services)	Project - The meeting concentrated on documenting the Prestudy service.
5.6.2001	Workshop for commercializing Prestudy service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services); Kääriäinen, Riitta (Consultant / Professional Services); Otra- Aho, Ville (Consultant / Professional Services)	Project - The meeting concentrated on creating the Prestudy service content.
6.6.2001	Reviewing the Prestudy service project	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Otala, Tuomas (Department Director / Professional Services); Auer, Timo (Vice President / Product Management); Kaitovaara, Petteri (Consultant / Consulting)	Review - The meeting concentrated on discussing the progress and issues in the packaging project.
7.6.2001	Workshop for commercializing Prestudy service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services); Kääriäinen, Riitta (Consultant / Professional Services); Otra- Aho, Ville (Consultant / Professional Services)	Project - The meeting concentrated on creating the Prestudy service content.
11.6.2001	Workshop for commercializing Prestudy service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services); Kääriäinen, Riitta (Consultant / Professional Services); Otra-	Project - The meeting concentrated on documenting the Prestudy service.

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		Aho, Ville (Consultant / Professional Services)	
15.6.2001	Presenting commercialization framework	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Sten, Janne (Director / Sales Sweden); Kostilainen, Panu (Director / Swedish Market); Qvarnguard, Lars (Vice President / Sales Sweden)	Framework - In the meeting the packaging framework was presented to the head of the sales unit in Sweden.
18.6.2001	Workshop for commercializing Prestudy service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services); Kääriäinen, Riitta (Consultant / Professional Services); Otra- Aho, Ville (Consultant / Professional Services)	Project - The meeting concentrated on documenting the Prestudy service.
19.6.2001	Workshop for commercializing Prestudy service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services); Kääriäinen, Riitta (Consultant / Professional Services); Otra- Aho, Ville (Consultant / Professional Services)	Project - The meeting concentrated on documenting the Prestudy service.
20.6.2001	Workshop for commercializing Prestudy service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services)	Framework - The meeting concentrated on discussing the different tools and methods used in the packaging process.
20.6.2001	Reviewing Prestudy service project	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services)	Framework - The meeting concentrated on discussing the template set in the packaging framework.
21.6.2001	Workshop for commercializing Prestudy service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services); Kääriäinen, Riitta (Consultant / Professional Services); Otra- Aho, Ville (Consultant / Professional Services)	Project - The meeting concentrated on documenting the Prestudy service.
3.7.2001	Reviewing the packaging process	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Pihlajamäki, Jaana (Project Manager / Process Development)	Framework - The meeting concentrated on discussing the packaging process from the production point of view.
4.7.2001	Reviewing the packaging process	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Pihlajamäki, Jaana (Project Manager / Process Development)	Framework - The meeting concentrated on discussing the packaging process from the production point of view.

5.7.2001	Reviewing commercialization tools and methods	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kääriäinen, Riitta (Consultant / Professional Services); Otra-Aho, Ville (Consultant / Professional Services)	Project - The meeting concentrated on documenting the Prestudy service.
7.8.2001	Workshop for commercializing Prestudy service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services); Kääriäinen, Riitta (Consultant / Professional Services); Otra- Aho, Ville (Consultant / Professional Services)	Project - The meeting concentrated on documenting the Prestudy service.
10.8.2001	Workshop for commercializing Prestudy service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services); Otra-Aho, Ville (Consultant / Professional Services)	Project - The meeting concentrated on documenting the Prestudy service.
13.8.2001	Workshop for commercializing Prestudy service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services); Kääriäinen, Riitta (Consultant / Professional Services); Otra- Aho, Ville (Consultant / Professional Services)	Project - The meeting concentrated on prototyping the Prestudy service with the internal organization.
15.8.2001	Workshop for commercializing Prestudy service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services); Otra-Aho, Ville (Consultant / Professional Services)	Project - The meeting concentrated on documenting the Prestudy service.
17.8.2001	Reviewing the packaging framework	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services)	Review - The meeting concentrated on discussing the issues in Prestudy service project.
20.8.2001	Workshop for commercializing Prestudy service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services); Kääriäinen, Riitta (Consultant / Professional Services); Otra- Aho, Ville (Consultant / Professional Services)	Project - The meeting concentrated on documenting the Prestudy service.
22.8.2001	Workshop for commercializing Prestudy service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services); Kääriäinen, Riitta (Consultant / Professional Services); Otra- Aho, Ville (Consultant / Professional	Project - The meeting concentrated on finetuning the Prestudy service material.

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22.8.2001	Workshop for commercializing Prestudy service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services); Kääriäinen, Riitta (Consultant / Professional Services); Otra- Aho, Ville (Consultant / Professional Services)	Project - The meeting concentrated on documenting the Prestudy service.
22.8.2001	Reviewing Prestudy service project	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Pihlajamäki, Jaana (Project Manager / Process Development)	Framework - The meeting concentated on discussing the packaging process from the production point of view.
24.8.2001	Reviewing Prestudy service project	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Auer, Timo (Vice President / Product Management)	Review - The meeting concentated on discussing the issues in the Prestudy service project.
27.8.2001	Workshop for commercializing Prestudy service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services); Kääriäinen, Riitta (Consultant / Professional Services); Otra- Aho, Ville (Consultant / Professional Services)	Project - The meeting concentrated on documenting the Prestudy service.
28.8.2001	Reviewing Prestudy service project	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services)	Review - The meeting concentrated on discussing the issues in the Prestudy service project.
29.8.2001	Workshop for commercializing Prestudy service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Auer, Timo (Vice President / Product Management)	Review - The meeting concentrated on discussing the issues in Prestudy service project.
30.8.2001	Workshop for commercializing Professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Otala, Tuomas (Department Director / Professional Services)	Framework - The meeting concentrated on discussing the packaging framework.
31.8.2001	Workshop for commercializing Prestudy service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services); Kääriäinen, Riitta (Consultant / Professional Services); Otra- Aho, Ville (Consultant / Professional Services)	Project - The meeting concentrated on finetuning the Prestudy service material.

4.9.2001	Reviewing Prestudy service project	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Auer, Timo (Vice President / Product Management)	Review - The meeting concentated on discussing the issues in Prestudy service project.
5.9.2001	Workshop for commercializing Prestudy service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services); Kääriäinen, Riitta (Consultant / Professional Services); Otra- Aho, Ville (Consultant / Professional Services)	Project - The meeting concentrated on finetuning the Prestudy service material.
7.9.2001	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Otala, Tuomas (Department Director / Professional Services); Auer, Timo (Vice President / Product Management)	Project - The meeting concentrated on reviewing the Prestudy service material to be used in the customer cases.
7.9.2001	Workshop for commercializing Prestudy service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services); Kääriäinen, Riitta (Consultant / Professional Services); Otra- Aho, Ville (Consultant / Professional Services)	Project - The meeting concentrated on finalizing the Prestudy service material.
3.12.2001	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kääriäinen, Riitta (Consultant / Professional Services)	Project - The meeting concentrated on reviewing the issues in the customer cases from a packaging process point of view.
11.12.2001	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kääriäinen, Riitta (Consultant / Professional Services)	Customer - The meeting concentrated on preparing for a pilot customer case
13.12.2001	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kääriäinen, Riitta (Consultant / Professional Services)	Project - The meeting concentrated on reviewing the issues in the customer cases from a packaging process point of view.
17.12.2001	Selling Prestudy service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kääriäinen, Riitta (Consultant / Professional Services)	Customer - Prestudy service workshop with a pilot customer.
4.1.2002	Prestudy service workshop with a customer	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kääriäinen, Riitta (Consultant / Professional Services); Asteljoki, Kaijus (Sales Manager / Presales)	Customer - Prestudy service workshop with an actual customer.

4.1.2002	Selling Prestudy service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kääriäinen, Riitta (Consultant / Professional Services)	Customer - The meeting concentrated on preparing for a customer case
21.1.2002	Prestudy service workshop with a customer	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kääriäinen, Riitta (Consultant / Professional Services)	Customer - Presenting the results for the customer.
30.1.2002	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Arrakoski, Jonni (Sales Group Manager / Channel Sales)	Project - The meeting concentrated on marketing the Prestudy service to the internal organization.
14.2.2002	Workshop of the Prestudy service with a customer	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kääriäinen, Riitta (Consultant / Professional Services)	Customer - Presenting the results to the pilot customer.

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Appendix II – Interviews and Meetings in Case II

The main purpose of the meetings is categorized into three different categories, which are framework, project and review. The logic of the categorization is as follows:

- 1. Framework
 - Framework meetings concentrate on discussing and developing the overall framework for packaging ICT services, or parts of it (process, methods & tools, templates, or approach).
- 2. Project
 - Project meetings concentrated on commercializing the individual services (Key Customer service, Technical Key Customer service, Quality Management, or Solution Design).
- 3. Review
 - Review meetings concentrated on getting feedback and acceptance for the Packaging framework. These meetings were mostly one-to-one interviews.

The Meeting Subject describes the general theme of the meeting and the Purpose explains the main content of the meeting in more detail.

Date	Meeting Subject	Participants	Purpose
3.9.2001	Workshop for commercializing the CRM consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Otala, Tuomas (Department Director / Professional Services)	<i>Project</i> - Discussing the project organization for the CRM consulting service commercialization project.
4.9.2001	Workshop for commercializing Mobility consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Nurmiranta, Pekka (Vice President / Product Management)	<i>Project</i> - Specifying content and goals for the Mobility consulting service.
12.9.2001	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Pihlajamäki, Jaana (Project Manager / Process Development)	<i>Project</i> - Defining delivery processes for the CRM consulting service.
14.9.2001	Workshop for commercializing the CRM consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Pellinen, Timo (Product Group Manager / Product Manager)	<i>Project</i> - Discussing the CRM consulting service commercialization project goals.
14.9.2001	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services)	<i>Framework</i> - Developing templates for commercializing professional services
17.9.2001	Workshop for commercializing the	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Otala, Tuomas (Department Director /	<i>Project</i> - Discussing the CRM consulting service commercialization

	CRM consulting service	Professional Services)	project goals and progress.
17.9.2001	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kääriäinen, Riitta (Consultant / Professional Services)	<i>Framework</i> - Developing the professional services commercialization process
2.10.2001	Workshop for commercializing the CRM consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kääriäinen, Riitta (Consultant / Professional Services)	<i>Project</i> - Specifying the CRM consulting service content.
3.10.2001	Workshop for commercializing the CRM consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kostilainen, Panu (Director / Swedish Market)	<i>Project</i> - Discussing the CRM consulting service commercialization project.
3.10.2001	Workshop for commercializing the CRM consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Liuksiala; Kai (Sales Manager / Sales)	<i>Project</i> - Creating CRM consulting sales material.
4.10.2001	Workshop for commercializing the Multi Access Platform service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Erno Niiranen (Development Manager / Business Development)	<i>Project</i> - Specifying the Multi Access Platform consulting service.
4.10.2001	Workshop for commercializing the CRM consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kääriäinen, Riitta (Consultant / Professional Services)	<i>Project</i> - Creating CRM consulting service content.
4.10.2001	Workshop for commercializing the CRM consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kääriäinen, Riitta (Consultant / Professional Services)	<i>Project</i> - Specifying the CRM consulting service content.
5.10.2001	Workshop for commercializing the CRM consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kostilainen, Panu (Director / Swedish Market)	<i>Project</i> - Discussing the CRM consulting service commercialization project.
5.10.2001	Workshop for commercializing the Multi Access Platform service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Erno Niiranen (Development Manager / Business Development)	<i>Project</i> - Gathering information about the Multi Access Platform consulting service.
5.10.2001	Workshop for commercializing the CRM consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Pellinen, Timo (Product Group Manager / Product Manager)	<i>Project</i> - Gathering information of the CRM consulting service.

9.10.2001	Workshop for commercializing the CRM consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Otala, Tuomas (Department Director / Professional Services)	<i>Project</i> - Discussing the CRM consulting service content.
12.10.2001	Workshop for commercializing the CRM consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Otala, Tuomas (Department Director / Professional Services)	Review - Going through the CRM consulting service project deliverables.
12.10.2001	Workshop for commercializing the CRM consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Liuksiala; Kai (Sales Manager / Sales)	<i>Project</i> - Documenting CRM consulting service.
15.10.2001	Workshop for commercializing the CRM consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Liuksiala; Kai (Sales Manager / Sales); Björk, Magnus (Project Manager / Product Manager)	<i>Project</i> - Documenting the CRM consulting service.
15.10.2001	Workshop for commercializing the CRM consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Keskinen; Mikko (Product Group Manager / Product Management)	<i>Project</i> - Discussing the CRM consulting service commercialization project.
15.10.2001	Workshop for commercializing the CRM consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kääriäinen, Riitta (Consultant / Professional Services)	<i>Project</i> - Documenting the CRM consulting service.
16.10.2001	Workshop for commercializing the CRM consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Lankinen, Pirkko (Product Manager / Product Manager); Kokkonen, Riitta (Product Marketing Manager / Product Management); Ojala, Ritva (Product Marketing Manager / Product Management)	<i>Project</i> - In the meeting the CRM consulting service was prototyped with the internal organization.
16.10.2001	Workshop for commercializing the CRM consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Otala, Tuomas (Department Director / Professional Services)	<i>Review</i> - Going through the CRM consulting service project progression.
17.10.2001	Workshop for commercializing the CRM consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kääriäinen, Riitta (Consultant / Professional Services)	<i>Project</i> - Meeting concentrated on creating internal CRM consulting service documents.
18.10.2001	Workshop for commercializing the CRM consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Liuksiala; Kai (Sales Manager / Sales); Rahkonen, Anne (Sales Manager /	<i>Project</i> - Meeting concentrated on creating external CRM consulting service documents.

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19.10.2001	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Pellinen, Timo (Product Group Manager / Product Manager)	<i>Framework</i> - Meeting concentrated on developing the process for packaging professional services.
19.10.2001	Workshop for commercializing the CRM consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kääriäinen, Riitta (Consultant / Professional Services)	<i>Project</i> - Meeting concentrated on documenting the CRM consulting service.
19.10.2001	Workshop for commercializing the CRM consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Otala, Tuomas (Department Director / Professional Services)	<i>Project</i> - Meeting concentrated on documenting the CRM consulting service.
22.10.2001	Workshop for commercializing the CRM consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Elina Lahtinen (Marketing Director / Marketing)	<i>Project</i> - Meeting concentrated on going through the external material of CRM consulting service.
23.10.2001	Reviewing the CRM consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Auer, Timo (Vice President / Product Management)	<i>Review</i> - Meeting concentrated on getting feedback for the CRM consulting service material.
24.10.2001	Workshop for commercializing the CRM consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Elina Lahtinen (Marketing Director / Marketing)	<i>Project</i> - Meeting concentrated on going through the external material of the CRM consulting service.
25.10.2001	Workshop for commercializing the CRM consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kääriäinen, Riitta (Consultant / Professional Services)	<i>Review</i> - Meeting concentrated on reviewing the CRM consulting project.
26.10.2001	Workshop for commercializing the CRM consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Pyrrö, Riku (Product Manager / Product Management)	<i>Project</i> - Meeting concentrated on gathering information about the technical CRM consulting service.
26.10.2001	Workshop for commercializing the CRM consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Otala, Tuomas (Department Director / Professional Services)	<i>Framework</i> - Meeting concentrated on developing the process for packaging professional services.
30.10.2001	Reviewing the CRM consulting service project	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Otala, Tuomas (Department Director / Professional Services)	<i>Project</i> - Meeting concentrated on documenting the CRM consulting service.

31.10.2001	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Keskinen, Mikko (Program Manager / Product Manager)	<i>Framework</i> - Meeting concentrated on discussing the framework for packaging professional services.
2.11.2001	Reviewing the CRM consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Keskinen, Mikko (Program Manager / Product Manager)	<i>Project</i> - Meeting concentrated on reviewing the CRM consulting service material.
2.11.2001	Workshop for commercializing the CRM consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Vepsäläinen, Heidi (Product Marketing Manager / Product Management)	<i>Project</i> - Meeting concentrated on preparing training material for the CRM consulting service.
5.11.2001	Workshop of the CRM consulting service with a customer	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services); Kääriäinen, Riitta (Consultant / Professional Services); Otra- Aho, Ville (Consultant / Professional Services)	<i>Customer</i> - CRM consulting workshop with a pilot customer.
7.11.2001	Workshop for commercializing the CRM consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Björk, Magnus (Project Manager / Product Manager)	<i>Project</i> - Meeting concentrated on finetuning CRM consulting service material based on the first pilot.
12.11.2001	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services); Kääriäinen, Riitta (Consultant / Professional Services); Otra- Aho, Ville (Consultant / Professional Services)	<i>Customer</i> - Second CRM consulting workshop with a pilot customer.
13.11.2001	Reviewing Mobile consulting service project	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Auer, Timo (Vice President / Product Management)	<i>Review</i> - Meeting concentrated on reviewing the commercialization projects.
16.11.2001	Workshop for commercializing the CRM consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Lankinen, Pirkko (Product Manager / Product Manager); Kokkonen, Riitta (Product Marketing Manager / Product Management); Ojala, Ritva (Product Marketing Manager / Product Management)	<i>Project</i> - Meeting concentrated on preparing training material for the CRM consulting service.
16.11.2001	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Otala, Tuomas (Department Director /	<i>Framework</i> - Meeting concentrated on developing the packaging framewrok for professional services.

		Professional Services)	
20.11.2001	Workshop for commercializing the CRM consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kostilainen, Panu (Director / Swedish Market)	<i>Project</i> - Meeting concentrated on finetuning the CRM consulting service material based on the first pilot.
21.11.2001	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Auer, Timo (Vice President / Product Management)	<i>Framework</i> - Meeting concentrated on developing the tools and methods used in professional services packaging.
28.11.2001	Presentation of professional services portfolio	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Tynjälä, Hannu (Vice President / Presales)	<i>Project</i> - Meeting concentrated on marketing the CRM consulting service to sales organization.
30.11.2001	Training the CRM consulting service to sales	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Vepsäläinen, Heidi (Product Marketing Manager / Product Management)	<i>Project</i> - Training the CRM consulting service for sales groups.
5.12.2001	Workshop for commercializing the CRM consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Liuksiala; Kai (Sales Manager / Sales)	<i>Customer</i> - Presenting the results of the CRM consulting to the pilot customer.
10.12.2001	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Otala, Tuomas (Department Director / Professional Services)	<i>Review</i> - Meeting concentrated on reviewing the feedback from the training session.
14.12.2001	Reviewing the CRM consulting service project	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Otala, Tuomas (Department Director / Professional Services); Auer, Timo (Vice President / Product Management)	<i>Review</i> - Meeting concentrated on reviewing the CRM consulting service material.
14.12.2001	Presentation of professional services packaging model	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Otala, Tuomas (Department Director / Professional Services)	<i>Review</i> - Meeting concentrated on reviewing the feedback from the training session.
18.12.2001	Workshop for commercializing the Mobile Logistics consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Forsten, Tapani (Product Manager / Product Management);	<i>Project</i> - Gathering information about the Multi Access Platform consulting service.
19.12.2001	Workshop for commercializing the CRM consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Vesanto, Pasi (Technical Product Manager / Product Management); Pyrrö, Riku (Product Manager / Product Management)	<i>Project</i> - Meeting concentrated on Finalizing the CRM consulting service material.

2.1.2002	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Auer, Timo (Vice President / Product Management)	<i>Framework</i> - Meeting concentrated on developing the professional services packaging framework.
3.1.2002	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services)	<i>Framework</i> - Meeting concentrated on developing the professional services packaging framework.
9.1.2002	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services)	<i>Review</i> - Meeting concentrated on discussing the lessons learned.
11.1.2002	Workshop for commercializing the Mobility consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Auer, Timo (Vice President / Product Management); Nurmiranta, Pekka (Vice President / Product Management)	<i>Review</i> - Meeting concentrated on reviewing the current progress made in the projects and lessons learned.
15.1.2002	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services)	<i>Review</i> - Meeting concentrated on discussing the lessons learned.
18.1.2002	Training the CRM consulting service to sales	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Vepsäläinen, Heidi (Product Marketing Manager / Product Management)	<i>Project</i> - Training the CRM consulting service for sales groups.
23.1.2002	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services)	<i>Project</i> - Meeting concentrated on creating Multi Access Platform consulting service content.
23.1.2002	Workshop for commercializing the Mobile Care consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Puirava, Minna (Group Manager / Product Management)	<i>Project</i> - Gathering information about the Multi Access Platform and Mobile Care consulting services.
24.1.2002	Reviewing the Mobile Care and Multi Access Platform consulting service projects	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Auer, Timo (Vice President / Product Management)	<i>Review</i> - Meeting concentrated on reviewing the lessons learned thus far in the projects.
24.1.2002	Workshop for commercializing the Mobility consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Handley, Luis (Business Development Manager / Product Management)	<i>Framework</i> - Meeting concentrated on disscussing the professional services packaging framework.
25.1.2002	Workshop for commercializing the	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization);	<i>Project</i> - Gathering information about the Multi Access Platform and Mobile

	Mobile Care consulting service	Puirava, Minna (Group Manager / Product Management)	Care consulting services.
28.1.2002	Workshop for commercializing the Mobile Care consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Aarnikka; Mika (Account Manager / Sales)	<i>Project</i> - Meeting concentrated on gathering information about the Mobile Care consulting services.
28.1.2002	Workshop for commercializing the Mobile Care consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kääriäinen, Riitta (Consultant / Professional Services); Mertala, Jorma (Sales Manager / Sales)	<i>Project</i> - Meeting concentrated on gathering information about the Mobile Care consulting services.
29.1.2002	Workshop for commercializing the Mobile Care consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Puirava, Minna (Group Manager / Product Management)	<i>Project</i> - Meeting concentrated on creating Mobile Care consulting service content.
29.1.2002	Workshop for commercializing the Mobile Care consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kääriäinen, Riitta (Consultant / Professional Services); Kultanen, Eero (Product Manager / Product Management)	<i>Project</i> - Meeting concentrated on gathering information about Mobile Care consulting services.
30.1.2002	Workshop for commercializing the Mobile Care consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kääriäinen, Riitta (Consultant / Professional Services); Kannela, Yrjö (Project Manager / Product Development)	<i>Project</i> - Meeting concentrated on creating Mobile Care consulting service content.
31.1.2002	Workshop for commercializing the Mobility consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Handley, Luis (Business Development Manager / Product Management)	<i>Project</i> - Meeting concentrated on gathering information about the Mobility consulting service.
31.1.2002	Workshop for commercializing the Mobile Care consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Hedlund, Christer (Program Manager / Product Management)	<i>Project</i> - Meeting concentrated on creating Mobile Care consulting service content.
31.1.2002	Workshop for commercializing the Mobile Care consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Morgan, Steve (Development Director / Product Management)	<i>Project</i> - Meeting concentrated on gathering information about the Mobile Care consulting services.
4.2.2002	Workshop for commercializing the Mobile Care consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Aura, Tuomo (Sales Director / Presales); Aarnikka; Mika (Account Manager / Sales)	<i>Project</i> - Meeting concentrated on creating Mobile Care consulting service content.

5.2.2002	Workshop for commercializing the CRM consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Paakkala, Pekka (Sales Manager / Sales)	<i>Project</i> - Meeting concentrated on internal merketing of the CRM consulting service for sales groups.
6.2.2002	Workshop for commercializing the Mobile Care consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kääriäinen, Riitta (Consultant / Professional Services)	<i>Project</i> - Meeting concentrated on documenting the Mobile Care consulting service.
13.2.2002	Workshop for commercializing the Mobility consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Elina Lahtinen (Marketing Director / Marketing)	<i>Project</i> - Meeting concentrated on checking external material of the Mobile Care consulting service
13.2.2002	Workshop for commercializing the Mobile Care consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Mertala, Jorma (Sales Manager / Sales)	<i>Project</i> - Meeting concentrated on creating Mobile Care consulting service content.
14.2.2002	Workshop for commercializing the Mobile Care consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Puirava, Minna (Group Manager / Product Management)	<i>Project</i> - Meeting concentrated on creating Mobile Care consulting service content.
20.2.2002	Workshop for commercializing the Mobility consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Elina Lahtinen (Marketing Director / Marketing)	<i>Project</i> - Meeting concentrated on checking external material of the Mobility consulting service
25.2.2002	Workshop for commercializing the Mobile Care consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Puirava, Minna (Group Manager / Product Management)	<i>Project</i> - Meeting concentrated on creating Mobile Care consulting service content.
25.2.2002	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Laiho, Tiina (Sales Manager / Sales)	<i>Review</i> - Meeting was about presenting the packaging framework to channel sales representative.
28.2.2002	Workshop for commercializing professional services in Sweden	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Carelind, Karin (Consultant / Professional Services)	<i>Framework</i> - Meeting concentrated on discussing the professional services packaging framework.
4.3.2002	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services)	<i>Framework</i> - Meeting concentrated on developing the templates used in professional services packaging.
5.3.2002	Workshop for commercializing the Multi Access Platform service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Lindblad, Thomas (Product Group Manager / Product Management)	<i>Project</i> - Meeting concentrated on specifying the Multi Access Platform consulting service.

6.3.2002	Workshop for commercializing the Multi Access Platform service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Lahti, Heikki (Product Manager / Product Management)	<i>Project</i> - Meeting concentrated on specifying the Multi Access Platform consulting service.
7.3.2002	Workshop for commercializing the Multi Access Platform service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Hakala, Jarmo (Account Manager / Sales)	<i>Project</i> - Meeting concentrated on gathering information about the Multi Access Platform consulting service.
7.3.2002	Workshop for commercializing the Multi Access Platform service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Andersson (Business Development Manager / Product Management)	<i>Project</i> - Meeting concentrated on gathering information about the Multi Access Platform consulting service.
8.3.2002	Workshop for commercializing the Mobile Logistics consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Makkonen, Tapani (Product Group Director / Product Management); Puruskainen, Pia-Maritta (Program Manager / Professional Services)	<i>Project</i> - Meeting concentrated on gathering information about the Mobile Logistics consulting service.
11.3.2002	Workshop for commercializing the Multi Access Platform service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kääriäinen, Riitta (Consultant / Professional Services); Forsten, Tapani (Development Manager / Product Management)	<i>Project</i> - Meeting concentrated on Multi Access Platform consulting service content creation.
11.3.2002	Workshop for commercializing the Mobile Logistics consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Jokinen, Pasi (Sales Manager / Sales); Lindblad, Thomas (Product Group Manager / Product Management)	<i>Project</i> - Meeting concentrated on specifying the Multi Access Platform consulting service.
12.3.2002	Workshop for commercializing the Mobility consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kääriäinen, Riitta (Consultant / Professional Services); Forsten, Tapani (Product Manager / Product Management); Kultanen, Eero (Product Manager / Product Management)	<i>Project</i> - Preparing for the Mobility consulting pilot. Going through the external material.
14.3.2002	Workshop for commercializing the Multi Access Platform service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kääriäinen, Riitta (Consultant / Professional Services)	<i>Project</i> - Meeting concentrated on Multi Access Platform consulting service documentation.
14.3.2002	Workshop for commercializing the Multi Access Platform service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kääriäinen, Riitta (Consultant / Professional Services)	<i>Project</i> - Meeting concentrated on Multi Access Platform consulting service content creation.

15.3.2002	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Handley, Luis (Manager / Product Manager)	<i>Review</i> - Meeting concentrated on reviewing Mobility consulting service documentation.
18.3.2002	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Auer, Timo (Vice President / Product Management)	<i>Framework</i> - Meeting concentrated on developing the packaging framewrok for professional services.
19.3.2002	Workshop for commercializing the Mobile Care consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Eklund, Tommi (Group Manager / Production); Timonen, Heikki (Specialist / Production); Bergström, Pasi (Specialist / Production); Virtanen, Vesa (Specialist / Production); Ranta, Risto (Specialist / Production)	<i>Project</i> - Meeting concentrated on piloting the Mobile Care consulting service
21.3.2002	Workshop for commercializing the Mobile Care consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kääriäinen, Riitta (Consultant / Professional Services)	<i>Project</i> - Meeting concentrated on tuning the Mobile Care consulting service material.
21.3.2002	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Auer, Timo (Vice President / Product Management)	<i>Review</i> - Meeting concentrated on discussing the professional services packaging approach.
3.4.2002	Training the Mobile Care consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Aura, Tuomo (Sales Director / Presales); Aarnikka; Mika (Account Manager / Sales)	<i>Project</i> - Meeting concentrated on training the Mobile Care consulting service.
5.4.2002	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services)	<i>Framework</i> - Meeting concentrated on developing the packaging framewrok for professional services.
9.4.2002	Workshop for commercializing the Mobile Logistics consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Ahonen, Juha (Project Manager / Professional Services)	<i>Project</i> - Meeting concentrated on Mobile Logistics consulting service content creation.
9.4.2002	Workshop for commercializing the Mobile Logistics consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Puruskainen, Pia-Maritta (Program Manager / Professional Services)	<i>Project</i> - Meeting concentrated on gathering information about the Mobile Logistics consulting service.
12.4.2002	Workshop for commercializing the Mobile Logistics	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Hakala, Jarmo (Account Manager / Sales); Lindblad, Thomas (Product Group	<i>Project</i> - Meeting concentrated on specifying the Mobile Logistics consulting service.

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	consulting service	Manager / Product Management)	
12.4.2002	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services)	<i>Framework</i> - Meeting concentrated on developing the packaging framewrok for professional services.
18.4.2002	Workshop for commercializing the Mobile Logistics consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Puruskainen, Pia-Maritta (Program Manager / Professional Services); Hakala, Jarmo (Account Manager / Sales); Lindblad, Thomas (Product Group Manager / Product Management)	<i>Project</i> - Meeting concentrated on Mobile Logistics consulting service content creation.
19.4.2002	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services)	<i>Review</i> - Meeting concentrated on reviewing the current progress made in the projects and lessons learned.
22.4.2002	Workshop for commercializing the Mobile Logistics consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Puruskainen, Pia-Maritta (Program Manager / Professional Services); Hakala, Jarmo (Account Manager / Sales)	<i>Project</i> - Meeting concentrated on Mobile Logistics consulting service content creation.
26.4.2002	Workshop for commercializing the Mobile Logistics consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Ahonen, Juha (Project Manager / Professional Services)	<i>Project</i> - Meeting concentrated on Mobile Logistics consulting service content creation.
26.4.2002	Workshop for commercializing the Mobile Logistics consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Puruskainen, Pia-Maritta (Program Manager / Professional Services); Hakala, Jarmo (Account Manager / Sales); Lindblad, Thomas (Product Group Manager / Product Management)	<i>Project</i> - Meeting concentrated on Mobile Logistics consulting service content creation.
26.4.2002	Reviewing the packaging framework	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Auer, Timo (Vice President / Product Management); Saario, John (Director / Business Development); Otala, Tuomas (Department Director / Professional Services)	<i>Review</i> - Meeting concentrated on reviewing the current progress made in the projects and lessons learned.
29.4.2002	Workshop for commercializing the Mobile Logistics consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Puruskainen, Pia-Maritta (Program Manager / Professional Services)	<i>Project</i> - Meeting concentrated on Mobile Logistics consulting documentation.
3.5.2002	Workshop for commercializing the Mobile Logistics consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Puruskainen, Pia-Maritta (Program Manager / Professional Services)	<i>Project</i> - Meeting concentrated on Mobile Logistics consulting documentation.
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14.5.2002	Reviewing professional services commercialization model	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Otala, Tuomas (Department Director / Professional Services)	<i>Review</i> - Meeting concentrated on reviewing the current progress made in the projects and lessons learned.
15.5.2002	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Tikkanen, Joni (Business Development Manager / Business Development)	<i>Framework</i> - Meeting concentrated on developing the business case part of the professional services packaging process.
15.5.2002	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services)	<i>Framework</i> - Meeting concentrated on developing the professional services packaging process templates.
21.5.2002	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Tynjälä, Hannu (Vice President / Presales)	<i>Framework</i> - Meeting concentrated on developing the professional services packaging approach.
24.5.2002	Reviewing commercialization tools and methods	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Otala, Tuomas (Department Director / Professional Services)	<i>Framework</i> - Meeting concentrated on developing the professional services packaging approach.
24.5.2002	Reviewing the commercialization model	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Asteljoki, Kaijus (Sales Manager / Presales); Aarnikka, Mika (Account Manager / Sales); Miiluvaara Jukka (Sales Manager / Presales)	<i>Framework</i> - Meeting concentrated on developing the professional services packaging approach.
24.5.2002	Workshop for commercializing the CRM consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Elina Lahtinen (Marketing Director / Marketing)	<i>Project</i> - Meeting concentrated on checking the external material of the CRM consulting service
27.5.2002	Reviewing commercialization tools and methods	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Tarmo, Aki (Department Director / Delivery)	<i>Framework</i> - Meeting concentrated on developing the tools and methods used in professional services packaging process.
28.5.2002	Workshop for commercializing the Mobile Logistics consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Puruskainen, Pia-Maritta (Program Manager / Professional Services)	<i>Project</i> - Meeting concentrated on Mobile Logistics consulting documentation.
30.5.2002	Workshop for commercializing	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization);	<i>Framework</i> - Meeting concentrated on developing the professional services

	professional services	Asteljoki, Kaijus (Sales Manager / Presales); Varila, Ted (Sales Manager / Presales); Haavisto, Sami (Sales Manager / Presales)	packaging approach from a sales perspective.
30.5.2002	Reviewing the commercialization model	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Tikkanen, Joni (Business Development Manager / Business Development)	<i>Framework</i> - Meeting concentrated on developing the business case part of the professional services packaging process.
3.6.2002	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Hallikainen, Ilkka (Sales Manager / Presales); Aura, Tuomo (Sales Director / Presales); Jantunen, Juhani (Sales Director / Presales)	<i>Framework</i> - Meeting concentrated on developing the professional services packaging approach from a sales perspective.
3.6.2002	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Asteljoki, Kaijus (Sales Manager / Presales); Varila, Ted (Sales Manager / Presales); Haavisto, Sami (Sales Manager / Presales)	<i>Framework</i> - Meeting concentrated on developing the professional services packaging approach from a sales perspective.
7.6.2002	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Tikkanen, Joni (Business Development Manager / Business Development)	<i>Framework</i> - Meeting concentrated on developing the professional services packaging approach from a sales perspective.
10.6.2002	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services)	<i>Review</i> - Meeting concentrated on reviewing the current progress made in the projects and lessons learned.
14.6.2002	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services)	<i>Review</i> - Meeting concentrated on reviewing the applicability of different packaging methods and tools.
24.6.2002	Workshop for commercializing the Mobile Logistics consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Linjamäki, Anu (Development Manager / Business Development)	<i>Project</i> - Meeting concentrated on Mobile Logistics consulting documentation.
2.7.2002	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services)	<i>Framework</i> - Meeting concentrated on developing the professional services packaging approach from a legal perspective.
12.8.2002	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services)	<i>Framework</i> - Meeting concentrated on developing the tools and methods used in professional services packaging process.

20.8.2002	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services)	<i>Project</i> - Meeting concentrated on reviewing the Mobile Care consulting service material.
20.9.2002	Workshop for prototyping the Mobile Care consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services); Kääriäinen, Riitta (Consultant / Professional Services); Otra- Aho, Ville (Consultant / Professional Services)	<i>Project</i> - Meeting concentrated on prototyping the Mobile Care consulting service.
25.9.2002	Workshop for piloting the Mobile Care consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kääriäinen, Riitta (Consultant / Professional Services)	<i>Customer</i> - Piloting the Mobile Care consulting service with a customer.
30.9.2002	Reviewing professional services commercialization process	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Tynjälä, Hannu (Vice President / Presales)	<i>Review</i> - Meeting concentrated on reviewing the packaging framework from a sales perspective.
7.10.2002	Workshop for commercializing the Mobile Logistics consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Puruskainen, Pia-Maritta (Program Manager / Professional Services)	<i>Project</i> - Meeting concentrated on Mobile Logistics consulting documentation.
10.10.2002	Workshop for commercializing the Mobile Logistics consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Puruskainen, Pia-Maritta (Program Manager / Professional Services)	<i>Project</i> - Meeting concentrated on Mobile Logistics consulting documentation.
11.10.2002	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services)	<i>Framework</i> - Meeting concentrated on developing the professional services packaging approach.
14.10.2002	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Tynjälä, Hannu (Vice President / Presales); Kalavainen, Petri (Director / Delivery)	<i>Review</i> - Meeting concentrated on reviewing the packaging framework from a sales perspective.
22.10.2002	Workshop for commercializing the Mobile Logistics consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Puruskainen, Pia-Maritta (Program Manager / Professional Services)	<i>Project</i> - Meeting concentrated on tuning the Mobile Logistics consulting service material.
24.10.2002	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Tynjälä, Hannu (Vice President / Presales); Kalavainen, Petri (Director / Delivery); Hanhijoki, Kari (Account	<i>Framework</i> - Meeting concentrated on reviewing the packaging framework tools and methods.

		Manager / Sales); Laivuori, Jarmo (Vice president / Consulting)	
30.10.2002	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Puirava, Minna (Group Manager / Product Management)	<i>Project</i> - Meeting concentrated on Mobile Logistics consulting documentation.
8.11.2002	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Karhu, Eero (Consultant / Consulting)	<i>Framework</i> - Meeting concentrated on reviewing the packaging framework templates.
14.11.2002	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Tynjälä, Hannu (Vice President / Presales); Kalavainen, Petri (Director / Delivery); Laivuori, Jarmo (Vice president / Consulting)	<i>Framework</i> - Meeting concentrated on reviewing the packaging process.
15.11.2002	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Kaitovaara, Petteri (Consultant / Professional Services)	<i>Reviewing</i> - Meeting concentrated on reviewing the packaging projects and lessons learned.
22.11.2002	Workshop for commercializing professional services	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Karhu, Eero (Consultant / Consulting)	<i>Framework</i> - Meeting concentrated on reviewing the packaging framework templates.
2.12.2002	Workshop for commercializing Mobile Logistics consulting service	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Puruskainen, Pia-Maritta (Program Manager / Professional Services)	<i>Project</i> - Meeting concentrated on tuning the Mobile Logistics consulting service material.
16.12.2002	Presentation of the professional services packaging model	Hyötyläinen, Mika (Methodology Expert / Professional Services Commercialization); Tynjälä, Hannu (Vice President / Presales); Kalavainen, Petri (Director / Delivery); Hanhijoki, Kari (Account Manager / Sales); Laivuori, Jarmo (Vice President / Consulting)	<i>Reviewing</i> - Meeting concentrated on reviewing the packaging framework.

Appendix III - Interviews and Meetings in Case III

The main purpose of the meetings is categorized into three different categories, which are framework, project and review. The logic of the categorization is as follows:

- 1. Framework
 - Framework meetings concentrate on discussing and developing the overall framework for packaging ICT services, or parts of it (process, methods & tools, templates, or approach).
- 2. Project
 - Project meetings concentrated on commercializing the individual services (Key Customer service, Technical Key Customer service, Quality Management, or Solution Design).
- 3. Review
 - Review meetings concentrated on getting feedback and acceptance for the Packaging framework. These meetings were mostly one-to-one interviews.

The Meeting Subject describes the general theme of the meeting and the Purpose explains the main content of the meeting in more detail.tähän

Date	Meeting Subject	Participants	Purpose
9.1.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Isomäki, Pekka (Director / Product Modularity)	<i>Framework</i> - Meeting concentrated on dicussing the idea of modular service architecture.
14.1.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager)	<i>Project</i> - The meeting concentrated on discussing a service architecture redesign project.
21.1.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager); Isomäki, Pekka (Director / Product Modularity);	<i>Framework</i> - Meeting concentrated on dicussing the idea of modular service architecture.
26.1.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager); Isomäki, Pekka (Director / Product Modularity)	<i>Framework</i> - Meeting concentrated on dicussing the idea of modular service architecture.
27.1.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager)	<i>Project</i> - The meeting concentrated on planning the service architecture redesign project.
5.2.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager)	<i>Project</i> - The meeting concentrated on planning the service architecture redesign project.

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12.2.2004	Reviewing the service architecture project	Hyötyläinen, Mika (Department manager / Service Architeccture); Nurmiranta Pekka (Vice President / Head of Service Solutions Product Management)	<i>Review</i> - The meeting concentrated on discussing the issues and set-up of the project.
13.2.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager)	<i>Project</i> - The meeting concentrated on planning the service architecture redesign project.
18.2.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager); Keskinen, Mikko (Department Manager / Business Solutions)	<i>Project</i> - The meeting concentrated on discussing the modularity approach in the service architecture project.
19.2.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager); Isomäki, Pekka (Director / Product Modularity)	<i>Project</i> - The meeting concentrated on discussing the different service packaging methods and tools to be used in the project.
25.2.2004	Workshop for product modularity	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager); Harjula Ari (Development Director / Product Modularity); Nousiainen Eero (Development Manager / Product Modularity); Lehtinen Anneli (Development Manager / Portfolio Development)	<i>Project</i> - The meeting concentrated on discussing the different service packaging methods and tools to be used in the project.
26.2.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager); Isomäki, Pekka (Director / Product Modularity); Mikkonen, Pekka (Department Manager / Back-end Systems Modularity); Ruottinen, Timo (Project Manager); Kultaranta, Petri (Consultant / Consulting)	<i>Project</i> - The meeting concentrated on discussing the modularity of the back-end system services.
3.3.2004	Workshop for backend system modularity	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager); Isomäki, Pekka (Director / Product Modularity); Mikkonen, Pekka (Department Manager / Back-end Systems Modularity); Ruottinen, Timo (Project Manager)	<i>Project</i> - The meeting concentrated on discussing the modularity of the backend system services.
15.3.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager); Salin, Juha (Unit Director /	<i>Project</i> - The meeting concentrated on defining the goals and objectives of the project.

		Business Solutions product management); Keskinen, Mikko (Department Manager / Business Solutions); Makkonen, Tapani (Department Director / Business Solutions); Nurmiranta Pekka (Vice President / Head of Service Solutions Product Management); Mäkinen, Risto (Department Manager / Product Marketing)	
26.3.2004	Workshop for modularity methodologies	Hyötyläinen, Mika (Department manager / Service Architeccture); Kaitovaara Petteri (Development Manager / Production Modularity)	<i>Framework</i> - The meeting concentrated on discussing the packaging methods and tools and their application in the project.
1.4.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager); Kultaranta, Petri (Consultant / Consulting); Karkkila Sami (Director / Marketing & Offering); Nousiainen Eero (Development Manager / Product Modularity)	<i>Project</i> - The meeting concentrated on discussing the different service packaging methods and tools to be used in the project.
3.5.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager); Lindberg, Tom (Department Manager / Product Development); Salin, Juha (Unit Director / Business Solutions product management)	<i>Project</i> - The meeting concentrated on identifying different modules and functionalities of the services involved.
17.5.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager); Isomäki, Pekka (Director / Product Modularity)	<i>Project</i> - The meeting concentrated on identifying different modules and functionalities of the services involved.
19.5.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager); Lindberg, Tom (Department Manager / Product Development); Salin, Juha (Unit Director / Business Solutions product management)	<i>Project</i> - The meeting concentrated on identifying different modules and functionalities of the services involved.
31.5.2004	Workshop for service architecture philosophy	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager); Nurmiranta Pekka (Vice President / Head of Service Solutions Product Management)	<i>Framework</i> - The meeting concentrated on discussing the packaging methods and tools.

4.6.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager); Salin, Juha (Unit Director / Business Solutions product management); Lindberg, Tom (Department Manager / Product Development)	<i>Project</i> - The meeting concentrated on steering the architecture redesign project.
8.6.2004	Reviewing service architecture project issues	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager); Salin, Juha (Unit Director / Business Solutions product management); Keskinen, Mikko (Department Manager / Business Solutions) Makkonen, Tapani (Department Director / Business Solutions)	<i>Review</i> - The meeting concentrated on discussing the issues in the project.
8.6.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager); Lindberg, Tom (Department Manager / Product Development); Erälinna, Hannu (Department Director / Product Development); Holmala, Risto (Project Manager / Product Development)	<i>Project</i> - The meeting concentrated on identifying different modules and functionalities of the services involved.
10.6.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager); Lindberg, Tom (Department Manager / Product Development); Erälinna, Hannu (Department Director / Product Development); Salin, Juha (Unit Director / Business Solutions product management)	<i>Project</i> - The meeting concentrated on identifying different modules and functionalities of the services involved.
11.6.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager)	<i>Framework</i> - The meeting concentrated on discussing the service modularity framework.
15.6.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager)	<i>Framework</i> - The meeting concentrated on discussing the service modularity framework.
16.6.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager); Lindberg, Tom (Department Manager / Product Development); Salin, Juha (Unit Director / Business Solutions product management)	<i>Project</i> - The meeting concentrated on steering the architecture redesign project.

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28.6.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager); Lindberg, Tom (Department Manager / Product Development); Salin, Juha (Unit Director / Business Solutions product management); Nurmiranta Pekka (Vice President / Head of Service Solutions Product Management)	<i>Project</i> - The meeting concentrated on identifying different modules and functionalities of the services involved.
29.6.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager); Lindberg, Tom (Department Manager / Product Development); Salin, Juha (Unit Director / Business Solutions product management); Nurmiranta Pekka (Vice President / Head of Service Solutions Product Management)	<i>Project</i> - The meeting concentrated on steering the architecture redesign project.
30.6.2004	Reviewing service architecture project progress	Hyötyläinen, Mika (Department manager / Service Architeccture); Salin, Juha (Unit Director / Business Solutions product management)	<i>Review</i> - The meeting concentrated on discussing the current issues in the project.
1.7.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager); Lindberg, Tom (Department Manager / Product Development); Erälinna, Hannu (Department Director / Product Development)	<i>Project</i> - The meeting concentrated on discussing the role of back-end systems in service architecture.
2.7.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager); Salin, Juha (Unit Director / Business Solutions product management); Lindberg, Tom (Department Manager / Product Development)	<i>Project</i> - The meeting concentrated on identifying different modules and functionalities of the services involved.
5.7.2004	Reviewing service architecture project progress	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager)	<i>Review</i> - The meeting concentrated on discussing the project progress and packaging tools used in the project.
7.7.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Kinnunen, Kari (Project Manager / Product Development); Erälinna, Hannu (Department Director / Product Development); Lindberg, Tom (Department Manager / Product Development)	<i>Project</i> - The meeting concentrated on identifying different modules and functionalities of the services involved.

7.7.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager); Lindberg, Tom (Department Manager / Product Development)	<i>Review</i> - The meeting concentrated on discussing the current issues in the project.
25.8.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager)	<i>Framework</i> - The meeting concentrated on discussing the overall principles to be used in illustrating the modularity framework.
1.9.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager); Kultaranta, Petri (Consultant / Consulting); Salin, Juha (Unit Director / Business Solutions product management); Mäkinen, Risto (Department Manager / Product Marketing); Ahlqvist, Kimmo (Product Marketing Manager / Business Solutions); Forsten, Tapani (Product Marketing Manager / Business Solutions); Karkkila Sami (Director / Marketing & Offering)	<i>Project</i> - The meeting concentrated on identifying and summing up the common modules and functionalities.
3.9.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager); Kultaranta, Petri (Consultant / Consulting); Salin, Juha (Unit Director / Business Solutions product management); Mäkinen, Risto (Department Manager / Product Marketing); Ahlqvist, Kimmo (Product Marketing Manager / Business Solutions); Forsten, Tapani (Product Marketing Manager / Business Solutions); Karkkila Sami (Director / Marketing & Offering)	<i>Project</i> - The meeting concentrated on identifying and summing up the common modules and functionalities.
6.9.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager); Isomäki, Pekka (Director / Product Modularity); Harjula Ari (Development Director / Product Modularity)	<i>Framework</i> - The meeting concentrated on developing the overall framework.
22.9.2004	Reviewing service architecture project issues and challenges	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager); Isomäki, Pekka (Director / Product Modularity); Harjula Ari (Development Director / Product Modularity); Salin, Juha (Unit Director /	<i>Review</i> - The meeting concentrated on reviewing the progress and issues in the project.

		Business Solutions product management); Mononen, Markku (Director / Product Development); Keskinen, Mikko (Department Manager / Business Solutions) Makkonen, Tapani (Department Director / Business Solutions)	
1.10.2004	Workshop for service architecture philosophy	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager); Nurmiranta Pekka (Vice President / Head of Service Solutions Product Management)	<i>Framework</i> - The meeeting concentrated on drafting and developing the overall modularity framework.
8.10.2004	Reviewing service architecture project issues and philosophy	Hyötyläinen, Mika (Department manager / Service Architeccture); Nurmiranta Pekka (Vice President / Head of Service Solutions Product Management)	<i>Review</i> - The meeting concentrated on discussing the benefits of the modularity framework.
20.10.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager); Nyroos, Marko (Director / Marketing & Offering); Kultaranta, Petri (Consultant / Consulting)	<i>Project</i> - The meeting concentrated on discussing the customer perspective in the architecture project.
29.10.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager)	<i>Project</i> - The meeting concentrated on developing the final modularity framework.
5.11.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager)	<i>Project</i> - The meeting concentrated on developing the final modularity framework.
12.11.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager)	<i>Project</i> - The meeting concentrated on developing the final modularity framework.
15.11.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Kinnunen, Kari (Project Manager / Product Development)	<i>Project</i> - The meeting concentrated on drafting out the final modularity framework.
19.11.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager)	<i>Project</i> - The meeting concentrated on developing the final modularity framework.
24.11.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager)	<i>Project</i> - The meeting concentrated on drafting out the final modularity framework.
29.11.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager)	<i>Project</i> - The meeting concentrated on drafting out the final modularity framework.

30.11.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Kinnunen, Kari (Project Manager / Product Development)	<i>Framework</i> - The meeting concentrated on drafting out the back- end system modules of the final framework.
30.11.2004	Workshop for pricing and billing development	Hyötyläinen, Mika (Department manager / Service Architeccture); Kinnunen, Kari (Project Manager / Product Development); Leskinen, Juhani (Department Manager / Billing systems); Rikkonen, Kirsi (Development Manager / Billing); Noroviita, Heli (System Manager / Billing); Cannavacciuolo, Minna (Project Manager / Billing systems)	<i>Project</i> - The meeting concentrated on identifying the different back-end modules of the final architecture model.
10.12.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager)	<i>Framework</i> - The meeting was about checking the draft framework against the project goals annd objectives.
30.12.2004	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager)	<i>Project</i> - The meeting concentrated on drafting out the final modularity framework.
3.1.2005	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager)	<i>Framework</i> - The meeting was about checking the first draft of the framework.
12.1.2005	Reviewing service architecture project issues and challenges	Hyötyläinen, Mika (Department manager / Service Architeccture); Salin, Juha (Unit Director / Business Solutions product management)	<i>Review</i> - The meeting was about reviewing the issues and lessons of building a modular service architecture.
14.1.2005	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager)	<i>Project</i> - The meeting concentrated on drafting out the final modularity framework.
20.1.2005	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager)	<i>Framework</i> - The meeting was about finishing the final modularity framework.
21.1.2005	Reviewing service architecture project issues and challenges	Hyötyläinen, Mika (Department manager / Service Architeccture); Nurmiranta Pekka (Vice President / Head of Service Solutions Product Management); Niiranen, Erno (Development Manager / Project Manager);Salin, Juha (Unit Director / Head of Business Solutions product management) Isomäki, Pekka (Director / Product Modularity); Bogomoloff, Patricia (Vice President / Production)	<i>Review</i> - The meeting was about reviewing the issues and lessons of building a modular service architecture.

26.1.2005	Workshop for service architecture development	Hyötyläinen, Mika (Department manager / Service Architeccture); Niiranen, Erno (Development Manager / Project Manager)	<i>Framework</i> - The meeting was about finishing the final modularity framework.
17.2.2005	Reviewing service architecture project issues and challenges	Hyötyläinen, Mika (Department manager / Service Architeccture); Kaitovaara Petteri (Development Manager / Production Modularity)	<i>Review</i> - The meeting was about reviewing the issues and lessons of building a modular service architecture after project closure.

Appendix IV – Interviews and Meetings in Case IV

The main purpose of the meetings is categorized into three different categories, which are framework, project and review. The logic of the categorization is as follows:

- 1. Framework
 - Framework meetings concentrate on discussing and developing the overall framework for packaging ICT services, or parts of it (process, methods & tools, templates, or approach).
- 2. Project
 - Project meetings concentrated on commercializing the individual services (Key Customer service, Technical Key Customer service, Quality Management, or Solution Design).
- 3. Review
 - Review meetings concentrated on getting feedback and acceptance for the Packaging framework. These meetings were mostly one-to-one interviews.

The Meeting Subject describes the general theme of the meeting and the Purpose explains the main content of the meeting in more detail.

Date	Meeting Subject	Participants	Purpose
2.5.2006	Workshop for commercializing professional services	Hyötyläinen, Mika (Senior group manager / Professional services commercialization); Pärnänen, Hannamari (Department manager / Process development); Hautamäki, Johanna (ICT specialist / Sales); Savilepo, Kati (Development Manager / Delivery processes); Rauhala, Varpu (Senior Manager / Sales); Tammi, Sami (Development Manager / Professional services commercialization); Jormanainen, Meri (Development Manager / Project deliveries)	<i>Framework</i> - Meeting concentrated on discussing the approach of how to commercialize professional services.
5.5.2006	Workshop for commercializing professional services	Hyötyläinen, Mika (Senior group manager / Professional services commercialization); Saarinen, Ainokaisa (Business Development Director / Sales); Lipasti, Jouni (Project Manager / Sales); Konkola, Marja (Senior Manager / Head of Quality Management); Kaipio, Krister (Senior Legal counsel / Legal department); Leporanta, Sarianna (Department manager / Key Customer services)	<i>Framework</i> - Meeting concentrated on discussing the methods of how to commercialize professional services.
8.5.2006	Workshop for the outsourcing model	Hyötyläinen, Mika (Senior group manager / Professional services commercialization); Pärnänen, Hannamari (Department manager / Process development); Tammi, Sami (Development Manager / Professional	Framework - Meeting concentrated on defining and developing methods for outsourcing professional services.

		services commercialization)	
10.5.2006	Presentation of the professional services packaging model	Hyötyläinen, Mika (Senior group manager / Professional services commercialization); Petteri Kaartinen (Department Director / Solution Design); Pyöriä, Keijo (Department Manager / Presales)	<i>Review</i> - Meeting concentrated on getting feedback on the current packaging model.
10.5.2006	Commercializing Key Customer services	Hyötyläinen, Mika (Senior group manager / Professional services commercialization); Leporanta, Sarianna (Department manager / Key Customer services)	<i>Project</i> - Meeting concentrated on defining the business case for the Key Customer service.
12.5.2006	Workshop for commercializing professional services	Hyötyläinen, Mika (Senior group manager / Professional services commercialization); Mikkonen Jarmo (Department manager / Service Production); Tammi, Sami (Development Manager / Professional services commercialization)	<i>Framework</i> - Meeting concentrated on developing the templates used in packaging professional services.
17.5.2006	Workshop for commercializing professional services	Hyötyläinen, Mika (Senior group manager / Professional services commercialization); Pietiäinen, Tuija (Development Specialist / Production); Hassi, Ilkka (Process Manager / Production)	<i>Framework</i> - Meeting concentrated on developing the templates used in packaging professional services.
19.5.2006	Commercializing Key Customer services	Hyötyläinen, Mika (Senior group manager / Professional services commercialization); Leporanta, Sarianna (Department manager / Key Customer services)	<i>Project</i> - Meeting concentrated on defining the business case for the Key Customer service.
22.5.2006	Reviewing the professional services commercialization process	Hyötyläinen, Mika (Senior group manager / Professional services commercialization); Pärnänen, Hannamari (Department manager / Process development); Tammi, Sami (Development Manager / Professional services commercialization)	<i>Review</i> - Meeting concentrated on reviewing the current packaging model.
5.6.2006	Workshop for commercializing professional services	Hyötyläinen, Mika (Senior group manager / Professional services commercialization); Saarinen, Ainokaisa (Business Development Director / Sales); Lipasti, Jouni (Project Manager / Sales); Leporanta, Sarianna (Department manager / Key Customer services); Rikkonen, Kirsi (Development Manager / Billing)	<i>Framework</i> - Meeting concentrated on developing the templates used in packaging professional services.
12.6.2006	Commercializing Key Customer services	Hyötyläinen, Mika (Senior group manager / Professional services commercialization); Leporanta, Sarianna (Department manager / Key Customer services); Tammi, Sami (Development Manager / Professional	<i>Project</i> - Meeting concentrated on defining the content of the Key Customer service.

		services commercialization)	
12.6.2006	Commercializing Technical Key Customer services	Hyötyläinen, Mika (Senior group manager / Professional services commercialization); Leporanta, Sarianna (Department manager / Key Customer services)	<i>Project</i> - Meeting concentrated on defining the business case for the Technical Key Customer service.
19.6.2006	Workshop for commercializing professional services	Hyötyläinen, Mika (Senior group manager / Professional services commercialization); Leporanta, Sarianna (Department manager / Key Customer services); Tammi, Sami (Development Manager / Professional services commercialization); Kaurijoki, Juha (Group Manager / Service desk)	<i>Project</i> - Meeting concentrated on defining the content of the Key Customer service.
22.6.2006	Reviewing the professional services commercialization process	Hyötyläinen, Mika (Senior group manager / Professional services commercialization); Tammi, Sami (Development Manager / Professional services commercialization)	<i>Review</i> - Meeting concentrated on reviewing and futher developing the current packaging model.
26.6.2006	Reviewing the professional services commercialization process	Hyötyläinen, Mika (Senior group manager / Professional services commercialization); Tammi, Sami (Development Manager / Professional services commercialization)	<i>Framework</i> - Meeting concentrated on developing process for packaging professional services.
27.6.2006	Commercializing Solution Design services	Hyötyläinen, Mika (Senior group manager / Professional services commercialization); Tammi, Sami (Development Manager / Professional services commercialization)	<i>Project</i> - Meeting concentrated on defining the content of the Solution Design service.
28.6.2006	Commercializing Solution Design services	Hyötyläinen, Mika (Senior group manager / Professional services commercialization); Tammi, Sami (Development Manager / Professional services commercialization)	<i>Framework</i> - Meeting concentrated on developing the framework for packaging professional services.
29.6.2006	Reviewing commercialization tools and methods	Hyötyläinen, Mika (Senior group manager / Professional services commercialization); Tammi, Sami (Development Manager / Professional services commercialization)	<i>Framework</i> - Meeting concentrated on discussing the usage of different methods in commercializing professional services.
29.6.2006	Workshop for commercializing professional services	Hyötyläinen, Mika (Senior group manager / Professional services commercialization); Leporanta, Sarianna (Department manager / Key Customer services); Tammi, Sami (Development Manager / Professional services commercialization); Häyrinen, Tanja (Specialist / Key Customer Services); Puroranta, Anu (Specialist / Key Customer Services)	<i>Project</i> - Meeting concentrated on defining the content of the Key Customer service.
5.7.2006	Reviewing commercialization tools	Hyötyläinen, Mika (Senior group manager / Professional services commercialization);	<i>Framework</i> - Meeting concentrated on discussing the methods and tools

	and methods	Leporanta, Sarianna (Department manager / Key Customer services)	used in commercializing professional services.
18.8.2006	Commercializing Technical Key Customer services	Hyötyläinen, Mika (Senior group manager / Professional services commercialization); Leporanta, Sarianna (Department manager / Key Customer services); Tammi, Sami (Development Manager / Professional services commercialization)	<i>Project</i> - Meeting concentrated on defining the content of the Technical Key Customer service.
31.8.2006	Workshop for commercializing professional services	Hyötyläinen, Mika (Senior group manager / Professional services commercialization); Kaurijoki, Juha (Group Manager / Service desk); Tammi, Sami (Development Manager / Professional services commercialization)	<i>Framework</i> - Meeting concentrated on developing the templates used in packaging professional services.
7.9.2006	Reviewing commercialization tools and methods	Hyötyläinen, Mika (Senior group manager / Professional services commercialization); Pärnänen, Hannamari (Department manager / Process development)	<i>Review</i> - Meeting concentrated on getting feedback for the framework for packaging professional services.
7.9.2006	Workshop for commercializing professional services	Hyötyläinen, Mika (Senior group manager / Professional services commercialization); Pärnänen, Hannamari (Department manager / Process development); Tammi, Sami (Development Manager / Professional services commercialization)	<i>Framework</i> - Meeting concentrated on developing the framework for packaging professional services.
21.9.2006	Workshop for commercializing professional services	Hyötyläinen, Mika (Senior group manager / Professional services commercialization); Huovinen Hannele (Product manager / Process development); Tammi, Sami (Development Manager / Professional services commercialization)	<i>Framework</i> - Meeting concentrated on developing the process for packaging professional services.
22.9.2006	Reviewing commercialization tools and methods	Hyötyläinen, Mika (Senior group manager / Professional services commercialization); Sutinen Juha (Director / Product Management)	<i>Review</i> - Meeting concentrated on getting feedback for the framework for packaging professional services.
2.10.2006	Commercializing Quality Management services	Lehtinen, Matti (Department manager / Project management); Konkola, Marja (Senior Manager / Quality Management); Moijanen, Arto (Director / Service Management); Leporanta, Sarianna (Department manager / Key Customer services); Kokkonen, Hannu (Delivery Manager / Billing); Tammi, Sami (Development Manager / Professional services commercialization)	<i>Project</i> - Meeting concentrated on defining the content of the Quality Management service.
27.10.2006	Workshop for commercializing	Hyötyläinen, Mika (Senior group manager / Professional services commercialization);	<i>Framework</i> - Meeting concentrated on developing the templates used in

	professional services	Mikkonen Jarmo (Department manager / Service Production); Tammi, Sami (Development Manager / Professional services commercialization)	packaging professional services.
6.11.2006	Reviewing commercialization tools and methods	Hyötyläinen, Mika (Senior group manager / Professional services commercialization); Tammi, Sami (Development Manager / Professional services commercialization)	<i>Framework</i> - Meeting concentrated on developing the tools and methods for packaging professional services.
6.11.2006	Reviewing commercialization tools and methods	Hyötyläinen, Mika (Senior group manager / Professional services commercialization); Savola, Jussi (Development Manager / Technical Architectures); Huovinen, Hannele (Product Manager / Process Development)	<i>Framework</i> - Meeting concentrated on developing the tools and methods for packaging professional services.
1.2.2007	Reviewing professional services commercialization process	Hyötyläinen, Mika (Senior group manager / Professional services commercialization); Leinonen, Jukka (Senior Vice President / Enterprise product management)	<i>Review</i> - Meeting concentrated on getting feedback for the framework for packaging professional services.
21.2.2007	Reviewing commercialization tools and methods	Hyötyläinen, Mika (Senior group manager / Professional services commercialization); Flinta, Gunnar (Vice President / Product Management)	<i>Review</i> - Meeting concentrated on getting feedback for the framework for packaging professional services.
13.3.2007	Workshop for commercializing professional services	Hyötyläinen, Mika (Senior group manager / Professional services commercialization); Tammi, Sami (Development Manager / Professional services commercialization); Kärnä Heidi (Product manager / Product management)	<i>Framework</i> - Meeting concentrated on developing the templates used in packaging professional services.
20.3.2007	Reviewing commercialization tools and methods	Hyötyläinen, Mika (Senior group manager / Professional services commercialization); Flinta, Gunnar (Vice President / Product Management)	<i>Framework</i> - Meeting concentrated on developing the framework for packaging professional services.
8.5.2007	Reviewing the professional services commercialization process	Hyötyläinen, Mika (Senior group manager / Professional services commercialization); Flinta, Gunnar (Vice President / Product Management); Miettinen, Paula (Senior group manager / Marketing & Offering)	<i>Framework</i> - Meeting concentrated on developing the framework for packaging professional services.
22.5.2007	Reviewing commercialization tools and methods	Hyötyläinen, Mika (Senior group manager / Professional services commercialization); Mattila, Helena (Director / Process Development)	<i>Review</i> - Meeting concentrated on getting feedback for the framework for packaging professional services.
6.6.2007	Workshop for commercializing professional services	Hyötyläinen, Mika (Senior group manager / Professional services commercialization); Teppo, Tapio (Business Control / Finance); Kosonen, Kari (Director / Process	<i>Framework</i> - Meeting concentrated on developing the process for packaging professional services.

		development); Miettinen, Paula (Senior group manager / Marketing & Offering); Sandberg, Robert (Program Manager / Professional services)	
11.6.2007	Workshop for commercializing professional services	Hyötyläinen, Mika (Senior group manager / Professional services commercialization); Teppo, Tapio (Business Control / Finance); Kosonen, Kari (Director / Process development); Miettinen, Paula (Senior group manager / Marketing & Offering); Sandberg, Robert J. (Program Manager / Professional services)	Framework - Meeting concentrated on developing the methods and tools in the process of packaging professional services.
19.6.2007	Reviewing the professional services commercialization process	Hyötyläinen, Mika (Senior group manager / Professional services commercialization); Teppo, Tapio (Business Control / Finance); Kosonen, Kari (Director / Process development)	<i>Review</i> - Meeting concentrated on discussing the framework of packaging professional services.

Appendix V – Case I final documentation

In this appendix selected documentation of Case I is presented. Three different documents are included here: an Internal service description, sales slides as well as workshop material. The internal service description document was mainly used in internal training sessions as well as the main internal document to be distributed within the organization. Sales slides were the main sales material to be used in the actual sales situation. Workshop material was used in the actual customer workshops as a structural guidance to travel through the workshop shop. All documentation is in Finnish.

1. Internal service description

sone	ra	SISAINEN PALVE	LU- 1 (3)
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			Sisäinen
ESIKARTO	ITUS		
	Yleiskuvaus Konsultoinnin asiakasyritykselle tekemä	esikartoitus toimii apur	ia ratkaisusuunnittelua, tar-
	jouksen laatimista ja konsultoinnin aloit osa Juxton Professional Services toimit kartoituksesta, konsultoinnista sekä pal toituksesta prosessina.	tamista varten. Esikarto usmenetelmää, joka koo veluiden implementoinni	itus on siis kiinteä ja tärkeä stuu kokonaisuudessaan esi ista. Alla on kuvaus esikar-
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	Workshopiin kutsutaan kaikki ne osapu osaamista tarvitaan kyseisen asiakkaan kalla tulisi henkilöt joiden asiantuntem esimerkiksi IT- osaston, tuotannon, log tai johdon edustajia). Juxton puolelta wo	olet asiakasyrityksestä, tarpeiden kartoittamise usta ja päätösvaltaa tar istiikan, myynnin & mau orkshoppiin osallistuu ka	joiden näkemystä, tietoa ja sen Asiakkaan puolelta pai- vitaan. (tilanteesta riippuen kkinoinnin, asiakaspalvelun ksi konsulttia.
	Tarkoitus		
	Konsultoinnin tekemää esikartoitusta kä	ytetään seuraavissa tilar	iteissa
	- kun asiakasyrityksen tarve Juxton ta	irjoamia palvel <mark>uita</mark> kohta	aan täytyy kartoittaa
	 kun halutaan tietää, mitä Juxton pa dollisuudet) 	lveluita asiakkaalle tarji	otaan (myös lisämyyntimah-
	 halutaan varmistaa asiakkaan tode vastaa asiakkaan tarvetta mahdollis 	llinen tarve, jotta Juxto imman hyvin	m tarjoama palveluratkaisu

Mika Hyötyläinen, Aalto University School of Economics

soner	a	SISÄINEN PALVELU- KUVAUS	2 (3)
		15.5.2001	Vers. o.2
			Sisäinen
	- tarvitaan tietoa asiakasyrityksell (miten kompleksinen asiakasyrity	e tehtävää konsultointia ja sen ksen toimintaympäristö, tilanne	suunnittelemista varten jne. on)
	- kun täytyy tutkia palvelun soveltu	vuutta asiakkaalle	
	Lisäksi Esikartoitus toimii arvokkaar teista saadaan tuoretta tietoa asiak kohtaan.	a rajapintana tuotekehitystä va kaiden todellisista tarpeista ja	rten, koska näistä tilan- toiveista palvelujamme
	Hyödyt asiakkaalle		
	Esikartoituksen ja myöhemmin suor saamaan mahdollisimman suuri hyöty saa varmuuden siitä, että asiakkaalle su.	itettavan konsultoinnin tarkoit / Juxton palveluista. Ostamalla pystytään tarjoamaan tarpeita	us on auttaa asiakasta Esikartoituksen asiakas vastaava palveluratkai-
	Hyödyt Juxtolle		
	Esikartoitus antaa mahdollisuuden k kaasti Tämä tilanne luo erinomaiset mikäli asiakas ei ole vielä osannut avulla pystytään varmistamaan maho en ja aikataulun paikkansa pitävyys.	Juxtolle toteuttaa esikartoitusv puitteet myös lisämyyntimahdo paikantaa kaikkia tarpeitaan. Jollisesta konsultoinnista tehtävi	aihe nopeasti ja tehok- Ilisuuksien löytämiselle, Lisäksi esikartoituksen än tarjouksen työmääri-
	Sopivuus Juxton strategiaan		
	Tarkoitus on auttaa asiakasta saan Asiakastarpeeseen pystytään vastaan tetty nykytilanne ja tavoitetila perust pohja onnistuneelle palveluratkaisul tukee siis ajatusta ylläpitää ja luoda p	naan mahdollisimman suuri hy naan parhaiten, jos asiakkaan k eellisesti ja sovittu yhteisistä ta le ja asiakastyytyväisyydelle. T pitkiä asiakassuhteita.	õty Juxton palveluista. kanssa on yhdessä selvi- voitteista. Näin luodaan amä palvelumenetelmä
	Talla toimintatavalla pyritään myös hyvä kuva koko ASP-konseptin toimi tavuudelle pitkällä tähtäimellä.	varmistamaan, että <mark>a</mark> siakkaal vuudesta. Tämä taas on välttär	lle jää mahdollisimman nätöntä Juxton kannat-
	Toimitusaika		
	Workshopille varataan yksi työpäivä toksille varataan aikaa seuraavasti ((per jokainen osallistuja). Wor vrt. kaavio sivulla 1):	kshopista saaduille tuo-
	1. Palveluratkaisun suunnittelu: no	in kolme työpäivää (workshop-p	aivästa lukien).
	 Esitys asiakkaalle nykytilanteesta ta: yksi viikko 	a, tavoitetilasta ja suositus tarv	ittavasta konsultoinnis-
	э. Tarjouksen tekeminen: yksi viikko	5	

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soner	a	SISÄINEN PALVELU KUVAUS	- 3 (3)
		15.5.2001	Vers. o.2
			Sisäinen
	Yhteensä Esikartoituksen toimit koa.	us kestää siis workshopin järjestäm	iisestä lähtien kaksi viik
	Palvelun rakenne		
	Palvelu sisāltāā aina:		
	- valmistavien kysymysten läh	ettämisen asiakkaan edust <mark>aj</mark> ille ja v	astausten analysoimisen
	 workshop –järjestelyt ja koo 	rdinoinnin	
	 workshopista saadun tiedon ja suositus tarvittavasta kon: 	pohjalta: esitys asiakkaan nykytilan sultoinnista	iteesta, tavoitetilanteesta
	Palvelun viestiminen asiakkaalle	n	
	Tästä palvelusta on tehty erilline	n, asiakkaalle tarkoitettu palveluku	vaus ja myyntikalvo.
	Viestittäessä asiakkaalle Esikari asiakas saa vakuuden siitä, että ratkaisun. Ulkopuolisina konsul van tiedon etenemistään varten. osallistumiseen.	oituksesta, on korostettava että, os hän saa mahdollisinnman hyvin tar tteina Juxton business-konsultit tai Tähän tarvitaan asiakkaan sitout	tamalla Esikartoituksen peita vastaavan palvelu rvitsevat kaiken tarvitta uminen esikartoitukseen
	Referenssiasiakkaita		
	(Julkaistaan myöhemmin.)		
	Palveluun liitettävät muut Sone	an tai Sonera Juxton palvelut	
	Kun Esikartoitusta harkitaan ja palvelussa on asiakkaalle suo palveluiden myymiseen.	rjestettävän asiakkaalle, on oletuk: ritettava konsultointi. Tämä taa:	sena että seuraava vaih s tähtää Juxton ASP
	Hinnoittelu ja laskutus		
	Asiakasyritykselle järjestettäväs mk. Palvelun laskutus alkaa viik	tä Esikartoituksesta veloitetaan ki on kuluessa workshop-päivästä lukio	iinteä kertamaksu 6000 en.
	Palvelun <mark>ke</mark> hittäminen ja jatkoto	imet	
	Esikartoitusta k <mark>ehitetään asiaka</mark> osapuolilta ("asianosaiset") saa tuussa Juxto International.	istapauksissa saatujen kokemusten daan oleellista tietoa jatkoa ajatelli	myötä. Alla luetelluilt en. Kehityksestä on vas
	Asianosaiset		
	Juxto International / PS Konsult	oinnin kehitys	

Mika Hyötyläinen, Aalto University School of Economics

19.7.2010

sonera	SISÄINEN PALVELU- KUVAUS	4	(3)
	15.5.2001	Vers. o.2	
		Sisäinen	
PS Business Konsultointi			
PS Toimituksien Projektipäälliköt			
Myynti			
Tuotepäälliköt			
Tuotekehitys			
Tuotanto			

2. Sales slides



4. Work-shop material

sonera	
	Sonera [®] Juxto
	Esikartoitus-workshop-päivä
	[KOHDEYRITYS, PP.KK.2001]
	[Workshopin vetäjät] Sonera Juxto Oy / Professional Services
sonera	Workshop-päivän alustava runko
	09.00 - 09.15 Workshopin esittely ja tarkoitus 09.15 - 10.30 Nykytilan kartoitus liiketoimintanäkökulmasta 10.30 - 10.45 Tauko 10.45 - 12.00 Nykytilan kartoitus tietojärjestelmänäkökulmasta 12.00 - 13.00 Lounastauko 13.00 - 14.30 Tarpeiden kartoitus 14.30 - 14.45 Tauko 14.45 - 16.00 Tavoitetilan kartoitus 16.00 - 16.30 Workshopin yhteenveto
	Sonera [®] Juxto





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sonera

sonera

Sonera[®] Juxto







Appendix VI – Fieldwork pricing structure and pricing development principles

The purpose of this pricing structure is just to illustrate the complexity of the situation before the SARDIN project. Basically every product had a similarly complex rating structure, but in addition they were all different from one another. Fieldwork as an example had a mixture of different kinds of initiation fees as well as variable fees. From a customer's perspective there were no similarities among the different individual products in the Business Process Networking group. To change this situation the SARDIN project defined clear goals and priciples for pricing and billing development.

Purpose of Service Blueprinting

The overall objective is to define the interface between Pricing & Billing organization and Product Management so that the change requests are handled in a coordinated fashion, pre-evaluated (is this really necessary?) and in an agreed schedule, in an agreed form and sent to a predefined contact person.

Product Management would also need some guidelines for designing pricing and billing structures for new products. Also as a kind of service catalog containing prices, estimated delivery times and work-estimates of different kinds of change requests concerning pricing and billing elements is needed.

Practical output

The output of service blueprinting is a description of the mode of operation which includes a couple of documents that will be used for communications and as templates for the actual orders of the development work.

For communicating the way of working:

- Guidelines for designing new pricing and billing structures
- List of tasks that can be ordered
 - o Changes
 - o New products
 - o etc.

- Process description
 - o Description of the different phases and how the work is ordered
 - Responsible persons

For ordering the development work:

- Price list for the tasks that can be ordered
 - At least some estimates for tasks in different categories. Tasks belonging to category 1 take 2 weeks maximum no external work required, tasks in category 2 take 4 weeks maximum, of which 1 week is external work and so on.
 - o Response time
 - estimates on the time requires to perform work belonging to different categories
- Order-forms for the different tasks
 - o Needs to be defined what preliminary information is always required

What is not the purpose of Service Blueprinting

Documentation is not the end in itself. The most important thing in service blueprinting is to develop a common way of working, and describing it in a way that it can be communicated to people who are involved in that process. In addition, order forms are an important method to make sure that both parties share a common understanding of what can be delivered and what information is needed in order to do this properly. Documentation is just a way to describe all this.



Appendix VII – Service Catalog Logic and Structure Description

The Service Catolog Logic and Structure Description document describes the principles for the target modular structure and the logic how service elements should be built on common ground and how their amount should greatly be reduced. The document also presents a four-level structure for the service catalogue: group, category, element and task. According to the target service architecture there will be five main group level common services: Service Desk, Monitoring and Service Management, Reporting, Rating and Billing, and Design and Delivery. Each of these groups will then further be divided into categories, elements and tasks.





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ELEMENT NAME				
. General				
Version				
Responsible	alas			
Group: Grou	arug o where the element belongs in Service Catalogissa	,		
Category: Ca	itegory in which the element belongs to in the Servi	ce Catalog		
Appendixies				
 Element Descrip 2.1 Limitations 	tion			
2.2 Delivery 2.3 Delivery co	ntent			
2.4 Service tim 2.5 Elements n	e envired			
2.6 Security	admian			
2.7 KPI's 2.8 Costs				
2.9 Recomend	ations		1	
1.2005	nternal/Relation/Identifier/Version		8	TeliaSon
service Ca	nternal/Relation/Identifier/Version	ementin si	⁸ sältö	TeliaSon
Service Ca 3. Element Com	nternal/Relation/Identifier/Version	ementin si	⁸ sältö	TeliaSon
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S.1.2005 Service Ca 3. Element Com TASKS AND RES (INSTALLATION	nterna l/Relation/Identifier/Version talog rakenne —ele ponents sponsibilities TEInTAVA TEIntAVA Teintava genitaria postrana. Accredutors definition mortanizione ficializzatione ficializzati	ementin si	8 Sältö	TeliaSon
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Appendix VIII – Principles for new pricing and billing structures

	TDI		Meeting Memo	
sonera	Mika Hyötyläinen	1.12,2004	Internal	1(2)
Guidelines fo	or designing new pricing a	and billing st	ructures	
Date:	1.12.2004			
Place:	Kumpu 3			
Participants:	Leskinen Juhani Cannavacciuolo Minna Mika Hyötyläinen Kari M. Kinnunen			
Fixed princing -	Billing tariff (monthly fees, one	time fees, termi	nation fees)	
	Use list prices as much as possible	8		
	 If customer specific pricit pricitien percentages 	ng is used, discou	ints need to be given in gra	duated
	 If the discount is customer specific 	given as a price, a prices needs to b	and the original price list i be changed manually.	s changed, all
(3 - 2)	Same works need to be priced sin	ularly		
	 For example back-ups needed. 	ed to be priced th	e same <mark>i</mark> n each package	
	Then these need of	only one element		
	Service structure needs to be the s	ame in different	packages -light - extende	d and premiun
	 Only one structure is created prices 	ted, which is app	lied in all packages, but w	ith different
9 4 78	The depth of the pricing tree shou	ld not be too long	8	
6 - 26	Pricing structure and logic should	not be complex		
	o Amount of errors is increa	asing with comple	ex design	
	Dependencies should be avoided			
	o For example			
	 Premium package selected also com 	always includes	component X, If compor o be selected.	ient Y is
	Customer needs t	o select module)	K in order to be able to cho	xose premium
	 System does not a can order a config 	automatically che zuration that is no	ck for configurations orde st possible to deliver.	red. So one
	This will be corre	cted in the next v	resion.	
34 - 27	Discounts for graduated prices			

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	TTM		Meeting Memo	
sonera	Mika Hyötyläinen	1.12.2004	Internal	2(2)
i	 Graduated prices are handle 	ed as discounts,	so discounts cannot be give	en to them
	 If a customer is giv created their own p 	en a discount fo rice lists	or graduated prices, they ne	ed to be
	 Tariffs cannot be defined 	eleted		
 Prici 	ng needs to be done correctly i	n the first place		
	Old tariffs cannot be delete	d		
- No c	n-demand bill			
â	 All billing needs to be bille following day, a separate re 	d the same day. in is needed.	If something additional is	billed the
- It ne	eds to be thought where discou	nts are given? I	n billing or in pricing	
	Which are given in the pric	ing system		
	 Service specific dis 	count		
â	Which are given in the billi	ng system		
	 In the billing system 	n, discount is g	iven from the end sum	
	 If the disco double disc 	unt is given in count.	both systems, the customer	receives a

Appendix IX – Case IV final documentation

1. Scope of Work – Technical Key Customer Service

TeliaSo	onera	Service Confider	Descripti ntial	on
		Date 2006-07-06		Page 1 (3)
TeliaSon	era Technical Key C	ustomer Service		
	Table of content			
	2 Description of services			
	2.1 Assessment of the Ser	rvice		1
	3 Requirements for service	e implementation		2
	4 Service Completition			2
	5 Other matters 6 Changes in the service.			3 3
4.0	f the energies			
1 Purpose o	TolioSenero Finland Ovi's	(haraoftar TaliaCapara) T	oppingt Kow	Customer Penvise provide
	the customer's designated services provided by Telia tion of the customer's pro support.	d contact persons with a cor aSonera. The service includ blem, and the related custo	es the receipt	solve faults and problems in , documentation and defini on and first-stage technica
	In the Technical Key Cus customer-specific solution tance in fault and problem	tomer Service, customer se as, whereby they are well po situations.	ervice agents repared to giv	familiarize themselves with e fast and individual assis
	If necessary, the Technic cialists in the field in quest	al Key Customer Service f	orwards the o	customer's problem to spe
2 Descriptio	on of services			
	The operation of the Tecl process according to ITIL. mitted by the customer's vice), identifies the custor system for analysis, follow	hnical Key Customer Servic . The Technical Key Custom designated contact person mer and any problem point, /-up monitoring, communica	ce is based o ner Service re (for example and enters th tion and repo	n an incident managemen ceives service request sub , the main user of the ser e details in the information rting.
	The customer service age covery from fault and prob	ents are familiar with custon elem situations efficiently for	ner-specific so example by r	olutions and support the re remote management.
	The Technical Key Custor	mer Service includes the foll	lowing compo	nents
2.1 Assess	ment of the Service			
	In the starting meeting wit TeliaSonera's services, p tomer Service. The results	th key IT staff and Service roducts and service levels s will be presented via a forr	stakeholders, that are inclu nal document	TeliaSonera will define the ded to Technical Key Cus
2.2 The Ser	vice			
	The incident management following groups:	t tasks included in the servic	ce and their p	rogress are divided into the
	Receiving and recording a	an incident		
	Each customer of the customer-specific PIN	Technical Key Customer Se I code for submitting inciden	ervice is giver Its.	a telephone number and a
6				
TeliaSonera Fin	land Oyj			
Teolisuuskatu 1 Registered offic	15, 00510 Halsinki e: Helsinki			
Business ID 147	5607-9, VAT No. FI14756079			

TeliaSonera		Service Desc Confidential	ription
		Date 2006-07-06	Page 1 (1)
The cu formati	istomer service agent en on system in order for the	ters the details of the inc incident to be analyzed a	ident by the customer in the in- and solved.
The cu with th	stomer can also send in e customer in the assessr	idents by e-mail or throu nent phase.	gh a web channel as agreed or
First-line te	chnical support		
The se the inc	rvice agent provides initia ident as quickly as possib	al assessment of an incid le and/or according to the	ent, makes first attempt to solve service level agreement (SLA).
Second-lin	e technical support		
If the in the cu area.	ncident is not solved at the stomer service agent tra	e Technical Key Custome nsfers the incident solvi	r Service during the first contact ng to specialists in the inciden
The cu for info	stomer service agent follo rming the customer of the	ws the progress of the in status.	cident solving and is responsible
Informing t	he customer of the status	of incident	
The custor	ner receives two notificati	ons of incident:	
•	A notification on the rece	aipt of incident	
	A notification on the solv	ring of the incident	
Service ho	urs		
	weekdays 8am-5pm: in	cident reseption and incid	ent resolution.
	service level agreement	(SLA).	adent resolution according to the
The Techn	ical Key Customer Servic	e produces the following o	deliverables
•	deployment documentat	ion	
	a telephone number of PIN code	Technical Key Customer	Service and a customer-specific
	the Technical Key Cust tomer's ICT-environmen	omer agent team that kr t	nows the customer and the cus
3 Requirements for serv	rice implementation		
TeliaSoner	a and the customer enter	into a written agreement	concerning the service.
The custor	ner is responsible for		
•	seeing to it that the deta	ils of the designated cont	act persons are up-to-date
•	providing (a) contact pe vices provided by TeliaS	erson(s) with information Conera	and training related to the ser
•	provide incident informa	tion as agreed on assess	ment phase
4 Service Completition			
The service	e is considered to be deliv	ered, according to the fol	lowing criteria:
•	The customer has received	ved the deployment docur	mentation
•	The customer has a tele specific PIN code	phone number of Key Cu	stomer Service and a customer
Company data TeliaSonara Finland Oyj Teollisuuskatu 15, 00510 Helsinki Rogistored office: Helsinki Business ID 1475607-9, VAT No. I	F14756079		



2. Statement of Work – Service Manager

The information contained in this document represents the current view of TeliaSopera on
the issues discussed as of the date of publication. Because TeliaSonera must respond to
changing market conditions, it should not be interpreted to be a commitment on the part of
TeliaSonera, and TeliaSonera cannot guarantee the accuracy of any information presented
after the date of publication.
This document is for informational purposes only. TeliaSonera MAKES NO WARRANTIES.
EXPRESS OR IMPLIED, IN THIS DOCUMENT.
House Disclaimer:
The example companies, organizations, products, domain names, e-mail addresses, logos,
people, places, and events depicted herein are fictitious. No association with any real
company, organization, product, domain name, email address, logo, person, places, or
events is intended or should be interred.

Table of Contents 1. Purpose	Table of Contents 1. Purpose		
1. Purpose	1. Purpose	Table	e of Contents
2. Service Description 3 3. Scope 3 4. Goals and Objectives 3 5. Implementation 3 6. Deliverables 4 7. Schedule 5 8. Roles and Responsibilities 5 9. Assumptions 6 10. Constraints 6	2. Service Description 3 3. Scope 3 4. Goals and Objectives 3 5. Implementation 3 6. Deliverables 4 7. Schedule 5 8. Roles and Responsibilities 5 9. Assumptions 6 10. Constraints 6 11. Acceptance 6	1.	Purpose
3. Scope 3 4. Goals and Objectives 3 5. Implementation 3 6. Deliverables 4 7. Schedule 5 8. Roles and Responsibilities 5 9. Assumptions 6 10. Constraints 6 11. Acceptance 6	3. Scope	2.	Service Description
 4. Goals and Objectives 5. Implementation 6. Deliverables 7. Schedule 7. Schedule 5 8. Roles and Responsibilities 5 9. Assumptions 6 10. Constraints 6 11. Acceptance 6 	4. Goals and Objectives 3 5. Implementation 3 6. Deliverables 4 7. Schedule 5 8. Roles and Responsibilities 5 9. Assumptions 6 10. Constraints 6 11. Acceptance 6	3.	Scope
5. Implementation 3 6. Deliverables 4 7. Schedule 5 8. Roles and Responsibilities 5 9. Assumptions 6 10. Constraints 6 11. Acceptance 6	5. Implementation 3 6. Deliverables 4 7. Schedule 5 8. Roles and Responsibilities 5 9. Assumptions 6 10. Constraints 6 11. Acceptance 6	4.	Goals and Objectives
6. Deliverables 4 7. Schedule 5 8. Roles and Responsibilities 5 9. Assumptions 6 10. Constraints 6 11. Acceptance 6	6. Deliverables 4 7. Schedule 5 8. Roles and Responsibilities 5 9. Assumptions 6 10. Constraints 6 11. Acceptance 6	5.	Implementation
7. Schedule	7. Schedule	6.	Deliverables4
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9. Assumptions	9. Assumptions	8.	Roles and Responsibilities5
10. Constraints 6 11. Acceptance	10. Constraints 6 11. Acceptance 6	9.	Assumptions
11. Acceptance	11. Acceptance	10.	Constraints6
•		11.	Acceptance



Service Deployment

The customer is given a telephone number and a customer-specific PIN code for contacting the team of Technical Key Customer Service agents. Only the contact persons agreed on assessment stage can contact the Technical Key Customer Service.

The incident management tasks included in the service and their progress are divided into the following groups:

R	 eceiving and recording of an incident Based on a customer-specific PIN code, the customer service agent identifies the customer in order to take into account, for example, customer-specific special features in a service situation. The customer service agent enters the details of the incident in the information system in order for the incident to be analyzed and solved. The customer can also file service request by e-mail or through a web channel as agreed on with the customer.
Fi	rst-line technical support The service agent provides initial assessment of an incident, makes first attempt to solve the incident as quickly as possible and/or according to the service level agreement (SLA). The aim is to locate the problem by examining the information related to the customer solution and by testing the technical components involved in the service production.
Si	econd line technical support If the incident is not solved at the Technical Key Customer Service during the first contact, the customer service agent transfers the problem solving to specialists in the problem area. If necessary, a virtual team consisting of specialists is set up to solve the problem as a solution project. The customer service agent follows the progress of the problem solving and is responsible for informing the customer of the status.
In	 forming the customer of the status of incident or problem In normal cases, the customer receives two notifications of a fault situation: A notification on the receipt of incident: the notification states that the incident has been entered in the information systems of incident management and that a person has been designated to deal with the incident. A notification on the solving of the incident: the notification states that the problem has been removed and the service has been restored.
	The notifications are sent to the person who reported the incident and to the addresses included in the distribution list agreed on with the customer in advance.
	If it is necessary to resort to special arrangements in the fault repair, the information practices are agreed on with the customer on a case-by-case basis.
6. Te	 Deliverables echnical Key Customer Service deliverables includes: deployment documentation a telephone number of Key Customer Service and a customer-specific PIN code the Technical Key Customer agent team that knows the customer and the customer's ICT-environment customized incident management

7. Schedule

The schedule is agreed on at the assessment stage.

8. Roles and Responsibilities

The core roles and responsibilities are enumerated in the table below.

Role/Feature Team	Responsibilities
Customer ICT-manager /	Sign off responsibility for the deliverables, change
Agreement contact person	requests, and final deliverables acceptance.
Customer ICT-specialist	Acquires the background information needed in
	assessment phase. Operative contact and co-
	operation responsibility. Ensures, that the details of
	the designated contact persons are up-to-date.
	Provides contact persons with information and
	training related to the services provided by
	TeliaSonera.
Customer contact person	Provides incident information as required*
TeliaSonera Technical Key	Implementation of the assessment.
Customer Service Agent	Communications and interaction with the customer
	representatives. Providing technical support for the
	customer's contact persons in matters concerning
	TeliaSonera services
TeliaSonera Account	Point of contact for all escalation issues that go
manager	beyond the locus of control of the Technical Key
	Customer Service team

- *The Customer contact person's responsibilities as regards incidents and service requests
 To describe the service request, the fault or the problem (what the problem is)
 - · To also provide identification information on the user, location or service in the fault report
 - To state the extent of the fault or problem and its effect on business operations (the whole solution, part of the service, users)
 - To state the start time of the fault or when the service last worked

 - To designate a contact person (name, phone, e-mail)
 To designate a person who can provide further information
 To enable those who take part in the fault repair to access any necessary premises, if required
 - To assist in testing the functionality of the solution
 - To acknowledge the removal of the fault or problem
 - To obligate other suppliers involved in the provision of the service (e.g. application suppliers) to commit themselves to operating as part of TeliaSonera's service as regards, for example, coordination of faults through the Technical Key Customer Service and the fault repair process.

19.7.2010

3. Modular Product Structure – Service Manager Service

TeliaSonera	Product Structure
Tendooriera	Confidential
	Date Page 2007-06-06 1 (6)
	Creator Mika Hyothylainen +358407178807 mika.hyodylainen@teliasonera.com
Service Manager Product Structure	
Owner TeliaSonera IES PS&P SMPD Serv&Qual Mgmt Finland N.N.	Product manager TeliaSonera IES PS&P SMPD Serv&Qual Mgmt Finland N.N.
Checked by TeliaSonera IES PS&P SMPD Serv&Qual Mgmt Finland N.N.	
<yyyy-mm-dd> <signature></signature></yyyy-mm-dd>	
Approved by «Corporation» «Unit» «Name»	
<yyyy-mm-dd> <signature></signature></yyyy-mm-dd>	
Company data TelsSonara Feland Oyi Teolinuunkatu 15, 00510 Halainki Ragiaturad officar Halainki Businaas ID 1475607-0, VAT No. F114756079	

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TeliaSoner	а	Product Structure Confidential Date 2007-08-06 Service Manager	Siru 2 (6)
Reference Document name Product structure	Document identifier	Version 	
1 Functions			
The se	ervice manager service has five diff	ferent elements. These elem	ents are:
•	Ensuring the functioning of efficie	ency of the customers solution	n
•	Reporting		
•	Customer solution development		
•	Harroung of customer reedback		
• The m the the	ore detailed structure of each of t ir separate chapters.	these five elements is broke	n down in more detail in







TeliaSonera		Product Structu Confidential	re
		Date 2007-06-06	Sivu 6 (6)
		Service Manager	
	Quality follow-up meetings		
	The quality follow-up function has o (whether silver, gold or platinum) the t three months. This is also shown in figu	ne alternative element. I follow-up meeting occur e ire 4.	Depending on the category ither once a month or every
	Quality follow-up moetings		
	etiemethe Once a month		
	Four times a year		
Figure 4 Element structure of the Quality follow-up meeting function.			

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