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"Improving service innovation in Aker Solutions –
How clients' knowledge, management and organisational structure can facilitate service innovation."

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Abstract

Services have long been perceived as non-innovative or technologically backward. It is only recently that innovation in services has attracted greater interest. However, service innovation is important for organisational competitive advantage and is of ever greater importance in the economic development through creating new business opportunities and employment. In our study we look into how application of service innovation theories can benefit Aker Solutions by investigating our research topic: "Improving service innovation in Aker Solutions – How clients' knowledge, management and organisational structure can facilitate service innovation." We test and analyse our proposed model of service innovation through applying it to Aker Solutions and this results in a revised model of service innovation. Management support, mass customisation, knowledge creation and sharing, amongst other, play an important part in this model, as well as understanding customer needs and involving and interacting with the customer. Our study shows how important it is for a knowledge intensive organisation, where knowledge plays a crucial role in generating value, to have a clear innovation focus and a relevant organisational culture.

Abbreviations

Atla	Oilfield in the North Sea
B2B	Business to Business
CSR	Corporate social responsibility
EPC	Engineering, procurement and construction
EBITDA	Earnings Before Interest, Taxes, Depreciation and Amortization
EU	European Union
HSE	Health, safety and environment
ICT	Information and communication technologies
IPR	Intellectual property right
IT	Information technology
KIBS	Knowledge intensive business services
MC	Mass customisation
NPD	New product development
OECD	Organisation for Economic Cooperation and Development
RTP	Rental Tool Pool
R&D	Research and development
SLS	Subsea lifecycle service
UK	United Kingdom
X-mas	Christmas

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1. Introduction

In this study, we will explore the theory of 'service innovation' within Aker Solutions. We will adopt a case study approach, using Aker Solutions as the selected case as it is amongst other a knowledge based company. Aker Solutions is a multinational company and trades in several sectors. Amongst them are: Energy (oil and gas), maritime and consulting. We will concentrate on the energy sector and several projects within this.

We will review Aker Solutions' adoption of service innovation theories and how the organisation is using theory in practice to maintain and/or increase its operational effectiveness in a competitive business environment. We will also look into how clients' knowledge, management and organisational structure affect service innovation. Through investigating and analysing the application of service innovation to Aker Solutions, we hope to find the strengths and weaknesses of these theories. As a result, we also hope to add suggestions for improvement or potentially making a new model. The objective of our thesis is to gain deeper insight on service innovation and how Aker Solutions uses service innovation to achieve success.

1.1 Background of studies

Innovation has become very important for today's organisations as it provides the energy for their growth and development in the ever more competitive environment. The focus is on innovation because of reputation effects, a short product life cycle, a short strategic cycle and performance improvement. Foster and Kaplan (2001) wrote that both the product life-cycle and the companies' life-cycle are becoming shorter. The S&P 500 companies' life-cycle was 50-60 years in 1950, it was down to 15-16 years in early 2000 and the average life expectancy of Japanese and European companies is now 12.5 years (Burns 2001). Due to this companies have to focus on innovation. If not, they could be out of the market or they might face serious competition from companies which innovate and quickly capture the rest of the market. For this reason, manufacturing industries and service industries have to concentrate on innovation. Freeman and Soete (1997, p. 266) wrote that "[…] not to innovate is to die".

Service has been neglected for a long time in the innovation department. It has also received little attention by innovation and technology policy makers. Preissl, Stanley and Miles (2000) said "Services' roles in technological change, in particular, were largely seen as so insubstantial as to be barely worth examination." Even though there has been a significant growth in service industries, especially in the knowledge-intensive business services, manufacturing industries have got most of the attention in terms of academic research. Service innovation has been ignored until recently. Miles (2000) stated that service innovation had, and still to a certain extent has, a "Cinderella status" which means it is marginal and being neglected.

There are several reasons for the ignorance of service innovation and service sectors. One of them is the intangible aspect of the services. Another one is people's perception of services. One used to think of services as a part of products. Rainy (2005, p. 5) mentioned "Product innovation is the overarching management framework for making incremental changes and improvements to products, services, and processes." Sundbo (1997) distinguished between manufacturing industries and service industries. This is important for managing product innovation and service innovation in different ways instead of thinking of services as part of products. This will also increase the awareness of service innovation. Sundbo (1997, p. 432) wrote "Manufacturing industries produce goods, while service industries produce non-material 'products'." In his article, he also claimed that service firms do innovate and do have research and development activities. Another important issue mentioned in his article is that service firms have close relations with their customers and that this gives an advantage to service firms over manufacturing firms. DISR (1999) referred to de Jong et al. (2003, p. 14) and wrote that service firms deliver "[…] help, utility or care, and experience, information and other intellectual content – and the majority of the value is intangible rather than residing in any physical help". Furthermore, Gardrey, Gallouj and Weinstein (1995) wrote "[…] to produce a service […] is to organise a solution to a problem (a treatment, an operation) which does not principally involve supplying a good. It is to place a bundle of capabilities and competences (human, technological, organisational) at the disposal of a client and to organise a solution, which may be given to varying degrees of precision". This

definition takes service innovation to the next level. It explains that organisational and human capabilities together with technological capabilities are necessary for providing services.

In recent years, service innovation has got recognition for its contribution to economic development. Skiba (2010, p. 25) mentioned that "Most of the growth in today's economics is in the field of services. We may also notice that mature economics are gradually shifting towards service-driven economics." Moreover, Gallouj and Djellal (2010, p. 2) said "Nobody any longer disputes the ability of services to create value." Customers are demanding more and more services to fulfill their requirements. Therefore companies have to put more and more importance on service innovation. Gallouj and Djellal (2010, p. 49) wrote "services have taken on an increasing economic role and today play an important role in the development of change; innovation in services can therefore be seen as a new factor in economics." In the developed countries service activities are today dominating over manufacturing activities. Andersen et al. (2000) stated "In 1996 the service sectors accounted for 73.3 per cent of employment and 72.9 per cent of gross domestic in the US, and 70.6 per cent and 61.3 per cent respectively in the UK (OECD 1998)." By 2005 the percent of employment in the service sectors had reached 80% in the US according to Fitzsimmons and Fitzsimmons (2005). This situation is influencing researchers to take service innovation more seriously. Service innovation has also become a growing research field, but still is very small. Küpper (2001, pp. 1-2) mentioned that "Facing the growing importance of the service sectors and new services, one can see that there are potential research gaps in the area of service innovations which are reflected by the share of 1,3% of articles about 'service innovation' in articles about 'innovation' and the share of 1,85% 'service innovation' –articles in 'service' –articles." Knowledge-intensive business services (KIBS) has received more attention from media, researchers and policy makers. KIBS have certain aspects in common which partially set them apart from the old types of services. People used to believe that knowledge could be created and exchanged by product innovation, but the growth of KIBS proved that not to be the case. Miozzo and Grimshaw (2006, p. 1) mentioned that "Knowledge intensive business services […] are considered important because they represent an important source of job growth and value-added."

1.2 Research question

Research is a systematic approach for investigating, planning and executing to find answers to our specific question. In general, research can deepen theories. It can create knowledge in order to strengthen the theories and form a basis for decisions through the collection of data. It can show practical implications of the theories. The purpose of the research is to identify the subject areas and describe a subject. It can aid to generate other factors and issues related to the research. The purpose of the research can be to explain a research question, for developing theories and methodology. The research question is one of the centre points in the research design and is surrounded by research purpose, conceptual context, methods and validity.

Our master thesis will elaborate on service innovation and how this concept has been adapted in the organisation of Aker Solutions. As mentioned earlier service innovation and service economy is very important for the development of the countries' economy. Moreover as we know from the above discussion, the service industries are facing a number of challenges with regards to innovation and innovation management, amongst them the previous lack of development within the service industries.

By discussing the purpose of our research and taking the challenges and problems of service innovation into consideration, our research problem can be defined as follows:

> **"Improving service innovation in Aker Solutions – How clients' knowledge, management and organisational structure can facilitate service innovation."**

1.3 The case

1.3.1 What is Aker Solutions?

The adopted case in our thesis on service innovation is the Norwegian company Aker Solutions. Aker Solutions is part of Aker (www.akerasa.com), which is a group of premier companies with a focus on energy, maritime and marine resource industries. The Aker companies share common values and a long tradition of

industrial innovation. Aker ASA as an industrial owner controlling 40.27 per cent of the shares in Aker Solutions through Aker Holding AS, takes an active role in the development of Aker Solutions (Aker Solutions' annual report 2010). Aker Solutions, through its subsidiaries and affiliates is a leading global oil services company that provides engineering services, technologies, product solutions and field-life solutions for the oil and gas industry. The Aker Solutions group is organised in a number of separate legal entities. Aker Solutions is used as the common brand/trademark for most of these entities.

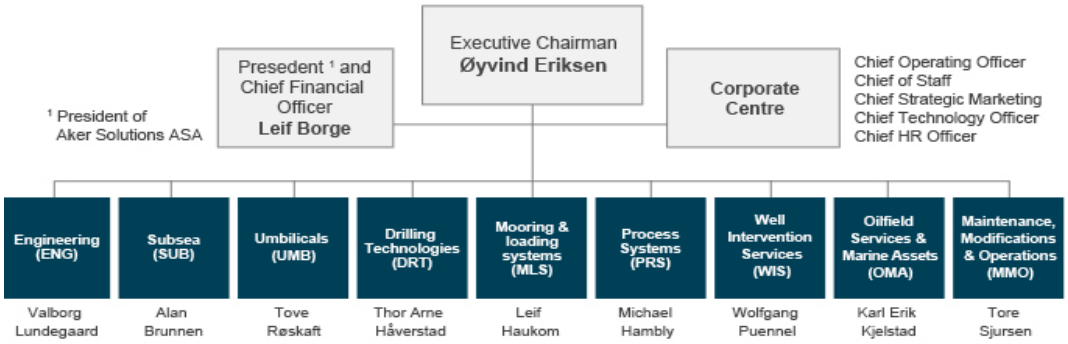

Figure 1: The corporate structure of Aker Solutions
(Source: Aker Solutions 2011a)

The annual report (2010, p. 16) shows that Aker Solutions has a long standing culture for innovation and technology development. This has developed through a broad and strong engineering community with hands on experience from project driven engineering and project management through procurement, construction, commissioning and operations. The ability to continuously develop and qualify new technology to meet customer's needs and secure the companies competitive advantage is fundamental to the group.

Aker Solutions annual report (2010) stated that the following four topics are on the top of the companies operational improvement agenda: 1. Customer focus or to build strong and lasting relationships to individual customers and develop regional and country strategies. 2. Quality and performance or to chase operational excellence (HSE; health, safety and environment, project management, cost efficiency), reduce quality costs and continue to strengthen performance culture. 3. People or to retain and attract the best and most competent people and ensure there are high quality programs in place for people and

leadership development. 4. Technology or to focus on existing technology processes and initiatives in the operating businesses and to identify and co-ordinate research and development initiatives.

1.3.2 How does Aker Solutions conduct their business?

According to Aker Solutions' executive chairman, Øyvind Eriksen (Annual report 2010) "Aker Solutions is cultivating its core businesses in separate companies with relatively new entities that focus on growth in their respective markets: Kværner as a specialised EPC (engineering, procurement and construction) company tailored to meet EPC market trends and client demands in the global market, and Aker Solutions as a fully-fledged provider of engineering, technologies, solutions and services for the upstream oil and gas industry," The company's range of services include deep water drilling technologies, subsea oil and gas production systems, well services, mooring and offloading systems, well stream processing technologies, as well as life-of-field solutions through its maintenance, modification and operations business. At the end of 2010 the group had 19 444 employees in continued businesses and activities in more than 25 countries. The number of subsidiaries and affiliates is over 150. (Annual Report 2010, p. 5).

Aker Solutions has many and diversified clients of various sizes. Other players in the industry are often cooperating with the same clients as Aker Solutions, so the competition is fierce and requires in-depth specialisation. The principal operations of Aker Solutions are mainly based on delivering services according to client's requirements. Every aspect of their projects in terms of e.g. knowledge, skills, management, operational activities, client requirements and their involvement is important for the organisation. Aker Solutions is a project based company were customer orientation is always a strategic concern.

In a study by Panesar, Markeset and Kumar (2008) based on the Norwegian Oil and Gas industry the focus is on the role of knowledge- and technology based industrial services in the capital intensive industries. They discuss that B2B industrial services can be based on knowledge, competence and skills (knowledge based services) and on specialised technology as a part of the service content

(technology based services). Technology can also be used as a tool in the service delivery process (technology enabled services). However, the study states that most often the service product is a combination of both knowledge and technology. Panesar, Markeset and Kumar (2008) refer to Kuusisto and Meyer (2003) and say that co-production of knowledge and joint problem solving processes are the key issues of service innovation and performance. From above it can be seen that the principal operations within Aker Solutions are extremely complex, involving high tech, heavy and intensive use of equipment, various software, IT systems and specialised employees. Thus Aker Solutions' co-production of services with clients is an interesting topic to look into when it comes to service innovation within the organisation.

In our case study we analyse three different service projects in the SLS service department of Aker Subsea. Aker Solutions' Subsea Lifecycle Services (SLS) and Rental Tool Pool (RTP) departments are based in Oslo and are part of Aker Solutions Subsea business area with focus on operational and Life of Field service support. From eight service bases around the world, SLS provides installation and operational support, offshore assistance, maintenance and repair of company owned equipment and rental tools to major fields and clients globally.

1.3.3 Which sector does Aker Solutions operate in?

According to Aker Solutions annual report 2010, market demand for Aker Solutions' technology, products and services is driven by the world's increasing consumption of oil and gas for transportation, energy production and industrial purposes. Market prospects are regarded as good. The world's energy consumption is expected to continue to rise. Combined with declining reserves and reduced oil and gas production in many parts of the world, this is expected to generate a persistent need for new development. For many years, the North-West European continental shelf has been the world's primary geographical market for offshore oil and gas activities. Historically, this was also Aker Solutions' home market and a breeding ground for new technologies and solutions. This region continues to play a key role for Aker Solutions, although the composition of this market is shifting. With the maturing of the oil and gas fields in the region, demand has grown for technologies and solutions required for increased oil and

gas recovery, satellite field developments and maintenance and modifications required to extend the lifespan of existing field infrastructure.

2. Critical literature review

Service innovation is a new emerging area for research disciplines. Hence it is important to understand innovation and product innovation and also see service innovation's similarities and differences to product innovation. This will help to understand the growing focus on service innovation. There is a number of patterns for different research studies. In these studies, critical literature review has been used for several different goals and purposes. In our study, the critical literature review will accomplish three main purposes. Firstly, the critical literature review will underline the specific assumptions of the research questions (Marshal and Rossman 1995) and provide further guidance and motivation, secondly, it will draw attention to the current study from previous research and intellectual traditions and finally, it will be of assistance for identifying the mechanism to interpret data.

The critical literature review will follow the deductive approach by outlining research on service innovation which will subsequently be tested using evidence. In order to effectively apply concepts of service innovation to Aker Solutions, it is necessary to outline the variables associated with corporate distress leading to decline, for instance employees engagement in the service innovation, organisational structure etc., and also the strategies and processes influencing the service innovation's success and failure.

The literature review will start by identifying the emergence, origin and constitution of service innovation and then go on to outline its principles. We will discuss how 'A layered model of innovation' as introduced by Barcet (2010) fits into Aker Solutions at present and how it could help to identify the company's further potential in service innovation. We will also investigate how this model can help organise the company's resources, amongst them knowledge and expertise, in order to develop their services. In addition we will look into 'A four dimensional model of service innovation' (Hertog and Bilderbeek 1999) and compare it to the above model.

The literature review will also introduce writings about open service innovation, knowledge, mass customisation and customer needs and look into the critic's

arguments on service innovation. Aker Solutions is a knowledge intensive company and thus a strong candidate to apply the theories of service innovation. Strambach (2008, p. 155) in his article 'Knowledge-Intensive Business Services (KIBS) as drivers of multilevel knowledge dynamics' says that "KIBS firms are organisations that are at the front line and are particularly representative for knowledge economies. Knowledge is both their main input and output [...] and their primary value-added activities consist of the creation, accumulation and dissemination of knowledge for the purpose of developing customized service solutions."

Moreover, the literature review will outline the role of the management and management contribution to service innovation. It will also review what will be the responsibility of the manager in order to introduce service innovation in the organisation. By reviewing the advantages and disadvantages of service innovation, it will be possible to determine how an organisation can use the model to their benefit, which in turn can be applied to Aker Solutions. It will also look into how service innovation can be used to facilitate the operational activities in the organisation of Aker solutions.

2.1 Services

In a report from the EU on issues and trends in service innovation Howells and Tether (2004) wrote that services have long been perceived as non-innovative or technologically backward. Until the 1990's services were perceived as passive adopters of technologies developed by manufacturers. Services are certainly major users of technologies, not the least information and communication technologies (ICTs), and services often use these in a creative way. Their need for new functionality is a major stimulus for innovation. Thus, even as users of technologies, services can be significant innovators.

Services as an activity can be found in almost every economic industry and their diversity and number are significant. They contribute to the global economy to a high extent and create added value. The service sector accounts for over 70% of total employment and value generated in OECD economies (OECD 2005). Several definitions of the word 'services' have been put forward, such as:

"services are a group of activities: trading, playing, driving and so on; and services are also the products or results of these activities: sales, concerts, journeys and so on" (Illeris, 2007, p. 19). And he continues to say that "the traditional definition is that service […] activities are those which do not produce or permanently modify material goods" (2007, p. 22). We would like to add that the role of a service is to produce and offer solutions to problems. For example when a company has a faulty copy machine, the company becomes a client of a service provider that repairs the copy machine. The role of services can also be a solution to a certain need in the market economy; i.e. the need to hire an employee or the need to use your mobile phone more effectively by buying apps. It is not an easy task to define what service really is, however, the most common description is that services are intangible as opposed to products.

Service activities have evolved into various industries where each service has its special role and function. The most common service industries or sectors are mentioned by Bettencourt (2010) and include types of services such as education, construction, health care, utilities, finance and insurance, hospitality, transportation, entertainment and other personal and professional services. The Handbook of service industries (Bryson and Daniels 2007) discusses five different types of service activities. The first service is consumer services that provide services for end-users, the second is producers and business services that provide intermediate inputs into the activities of private and public sector organisations. The third type of service is public services provided directly by the state or indirectly by the private sector and non profit organisations. The fourth type is non profit organisations working beyond the confines of the state and the fifth is informal services or unpaid service work that is often predominantly undertaken by women, and which is a vital element of people's daily lives. Bryson and Daniels (2007) mentioned that each of these types describe a heterogeneous collection of services and their functions. Howells and Tether (2004) classified service into four groups: services dealing with goods (such as transport and logistics), services dealing with information such as call centres, knowledge based services and services dealing with people such as healthcare.

2.2 Characteristics of services

The four main characteristics of services are discussed by Vermeulen and Aa (2003). First is the intangibility which is a key factor in affecting the development process of a service. The second is the simultaneous production and consumption, or the fact that when service is bought it is used and consumed at the same time. The third characteristic is heterogeneity and the fourth perishability or the fact that new services can be developed in advance. However services can not be stored. Elche-Hotelano (2011) referred to Hill (1977) and Miles (1994) when identifying features or characteristics which he claims are common to all service activities; First he mentions the close interaction phase of production and consumption (coterminality), secondly, the information–intensive content of services or the intangibility, thirdly he talks about the major importance of human resources for competitiveness and lastly the equally critical role of organisational processes.

Toivonen and Tuominen (2009) discussed the taxonomy presented by Soete and Miozzo (1989). Different technological trajectories are thought to reflect different kinds of innovation characteristics by dividing services into three groups. They are the supplier-dominated, production-intensive and science-based services. The supplier-dominated services include public services such as education, health care etc, personal services including hotels, restaurants, domestic services and some distributive services such as retail trade. The production-intensive services cover scale-intensive service productions which are client service, information processing etc. and services dependent on physical networks such as transport or wholesale or on information networks like finance, insurance and communications. Science-based services are those which have innovation activities of their own, or which use and develop new technologies like software and business services. Vermeulen and Aa (2003) referred to de Brentani (1991) who argued it is easier to develop new services than developing industrial products. They also referred to Shostack (1984) who argued this relative ease of developing new services is a result of the absence of patents, prototypes and major investments in raw material. However, these arguments are not applicable to all service industries. As an example, prototypes of various systems can be patented and also be costly. Vermeulen and Aa (2003) claimed that services are mostly easy

to imitate. They referred to Easingwood (1986) who says that this ease of imitation results in a casual approach to developing new services, even though they are often highly complex.

Kuusisto and Meyer (2003, p. 2) claimed that "[…] services are both complex processes that have technological, economic, social and cultural dimensions. They relate to processes and products and involve scientists, developers and marketers, as well as customers". They also discussed further that as for heterogeneity, services involve a great variety of activities, ranging from cleaning services to strategic business consulting. Intangibility in turn has two key dimensions. The first is absence of materiality which means that something intangible cannot be seen, felt, touched or tasted. The second is mental intangibility which refers to the fact that it can be difficult to have a clear and precise mental image of the intangible. Susman, Warren and Ding (2006) described several other characteristics of services such as 'Ownership' in the terms that a pure service does not transfer the ownership of a tangible item to the customer. They also discussed 'Imatability and opportunities for bundling'. They said that services can be more readily combined into customised packages, which differentiates products from services and makes them more difficult to imitate by competitors. Next they mentioned the 'Integration of an external factor', meaning that during the preparation of a service an external factor will be involved in the process, e.g. a car in a car rental contract were the car rental is the delivered service. Kuusisto and Meyer (2003) wrote that most companies that offer products also offer services.

2.3 Innovation

Innovation is an interesting phenomenon for academics, businesspeople and politicians. Innovation research started in the 1960s and is continuously moving forward because of its central role to economic growth and to create competitive advantage for firms (Schumpeter 1934). Innovation is to create something new. It involves development and implementation of new ideas to get benefits from the market place. It also involves understanding of market demands and uncertainty as well as understanding how to combine resources to achieve more attention. Wickham (2006, p. 447) wrote "Economically, innovation is the combining of

resources in a new and original way." Innovation is doing something differently or better than the existing method, product, services etc., but it has to focus on improvements which will increase profit. Innovation is very important for today's organisations because of increased market competition. According to Baregheh, Rowley and Sambrook.: "Innovation is the multi-stage process whereby organizations transform ideas into new/ improved products, service or processes, in order to advance, compete and differentiate themselves successfully in their marketplace"(Baregheh, Rowley and Sambrook 2009)

Fagerberg, Mowery and Nelson (2005, p. 6) in their book referred to Schumpeter who distinguish innovation into five different types: new products (and services), new methods of production, new source of supply, the exploitation of new markets and new ways to organise business. For creating something new we need to have knowledge about creating or improving products and services, producing them, getting supplies, locating market demand and serving that market. Innovation differs in terms of several factors: economic factors, social factors, political factors, legal factors and environmental factors. Hence, product and process innovation may have different impact on society and innovators have to take these factors into account. Fagerberg, Mowery and Nelson (2005, p. 7) wrote 'The focus on product and process innovations, while useful for the analysis of some issues, should not lead us to ignore other important aspects of innovation.' Freeman and Soete (1997) referred to Schumpeter's work and discussed that innovation has been classified according to the impact of technological change and how this change affects innovation. If innovation occurs in the process to improve products and services on a continuous basis, it is called incremental innovation. On the other side, if innovation happens in totally new ways and has a large impact, it is called radical innovation.

2.4 Emergence, origin and debates of service innovation

According to Drejer, the United States was the first economy to become a 'service economy' (2009, p. 3). Drejer (2009) drew on Fuchs (1965) writings and discussed that since the mid 1950's only a minority of the employed US population has been involved in the production of tangible goods. However, the studies of service innovation as a theory are still in a relatively early development

phase, where approaches of applying a traditional manufacturing logic to service innovation exist alongside those approaches that view services as distinctive activities (Drejer, 2009). Today, decades after services began dominating the economy, the majority of innovation studies are still focusing on technological innovation within manufacturing, reflecting that innovation theory has its roots in a time where manufacturing was still the major economic activity (Drejer, 2009). Analytical and detailed discussion about the nature of service innovations and their emergence is only at a beginning stage (Toivonen and Tuominen 2009).

According to Toivonen and Tuominen (2009) many theories of service innovation today start from the views which were first formulated by Schumpeter, and even though he concentrated on material goods, his thoughts are still useful today. According to the Oslo manual (2005) Schumpeter said that innovation was at the heart of economic change. Toivonen and Tuominen (2009) discussed further that recent theories that rely on Schumpeter, the classic writer in the field of innovation research, argue that service innovations are not necessarily linked to technology. Instead of extraordinary individuals or inventors, he put entrepreneurs in a central position as innovative players and by that laid the grounds for the studies which examine innovations emerging in everyday business activities (Toivonen and Tuominen 2009).

Another discussion on the origin and emergence of service innovation comes from Tether and Howells (2007) who wrote that between the 1980‘s and the present day, four perspectives on innovation in services can be identified. The first is ‘Neglect’, where little attention, was paid to innovation in services. Before the 1980´s the dominant view was that innovation evolved around technical advances in machinery, equipment and other goods, and the processes involved in their development and commercialisation. Thus services and other ‘low technology’ sectors were seen as uninteresting, adopters of technology, rather than as ‘real innovators’. The second phase or the ‘Assimilation’ occurred in the early 1980’s when the continued growth of services in advanced economies showed that it was increasingly hard to ignore services and a number of innovation researchers began to explore this field. In this phase the researches were characterised by the attempt to study innovation in services using the conceptual tools developed to understand

technological innovation in manufacturing, e.g. the role of R&D was seen as central. The third phase or the 'Distinction' phase emerged in the 1990's. This phase was more radical in its approach and tried to reject the centrality of 'technological innovation' that had been the main focus of innovation studies. The focus was on organisational innovation and innovation in knowledge-based services, where the role of formal R&D and 'hard' technologies was less prominent than in the technology-producing manufacturing sectors. Thus this phase drew on and emphasized the peculiarities of services' and how services, and their innovation activities, differ from innovation in manufacturing. The last phase or the 'Synthesis' approach began with an agreement that the study of innovation should combine analysis of both technological and non-technological forms of change. This broader vision of innovation has as much relevance for manufacturing and other sectors as it has for services. In essence, researchers adopting this approach recognise the importance of both technological and non-technological forms of innovation. In short, they seek to develop insights that are relevant to the whole economy, not just services. This last and newest phase has created debates between scholars on what to emphasize in research and activities on service innovation.

These phases relate to key issues and debates that have emerged and ruled in the literature of service innovation over the last twenty years. Gallouj and Windrum (2009) provided an overview and short description of the literature that is interesting to look into when analysing these theoretical debates. They first mentioned the Gallouj and Savona (2009) paper that begins with a core debate regarding the innovative potentials of services compared to manufacturing and the implication for economic growth and employment which dates back to Smith (1776). Smith´s concern was that personal services offered little or no opportunity for a division of labour and productivity growth. This concern was retrieved again during the 1960's in Baumol's discussion of the 'cost disease'. Baumol (1966) argued that this cost disease was due to the lack of innovation or in his words 'technological stagnancy' in services vis-à-vis manufacturing. His argument has been questioned mainly in terms of problems in empirically measuring outputs of services. His arguments have also been questioned with regards to the fact that a new exploration of types of innovation found in services is underway. This debate

concerns the issue of whether or not the innovation process in services is different to the manufacturing process. (Gallouj and Windrum 2009)

Another debate introduced by Gallouj and Windrum (2009) is the debate focusing on the Assimilation, Demarcation and Synthesis discussion (Gallouj 1994; Coombs and Miles 2000). The services and services innovation assimilation viewpoint, discussed earlier, can be traced back to Pavitt's sectoral taxonomy of innovation (Pavitt 1984). Like Baumol, Pavitt argued that services are innovation laggards. He continued arguing that it is a typical consequence of the diffusion of innovations that they are developed and first applied in manufacturing sectors. This argument proposes that service activities are generically the same as manufacturing activities and the theories and empirical indicators, originally developed with manufacturing in mind, are therefore equally applicable to services. These arguments are the foundation methodology of the assimilation approach (Gallouj and Windrum 2009). The 'demarcation' viewpoint is the reverse of the assimilation view. Demarcation scholars have introduced the proposition that service-specific forms of innovation exist. They have also emphasized the importance of organisational innovation, which seems to go hand-in-hand with product and process innovations in services along with the roles played by knowledge-intensive business service (KIBS) providers and ICTs within the wider innovation process. Today these areas have become key areas of research. Demarcation scholars argue that completely new, services-specific theories of innovation are required to understand the nature and the dynamics of innovation in services. They argue so because some forms of innovation are services-specific (Gadrey, Gallouj and Weinstein 1995; Sundbo 1998; Hertog 2000; Preißl 2000). DTI (2007, p. 15) discussed that The Council for Science and Technology in UK warns against adopting a separate model for service innovation:

> we are not convinced that it would be helpful to maintain a distinction between services and manufacturing innovation and to develop a separate model for service innovation [...] the growing interdependence of service provision and manufacturing suggests to us that it would be better to aim for models which look at how value is added without imposing a priori

> division between manufacturing and services. [...] Maintaining the divide may simply stall discussion.

On the other hand, more and more scholars are calling for the development of a synthesis approach that can integrate the assimilation and the demarcation approaches (Amara, Landry and Doloreux 2009; Drejer 2004; Gallouj and Weinstein 1997). Tether and Howells (2007) noted that we still know little about innovation in services, and that what is important when thinking about innovation is not which sector they belong to but which approach to innovation the sector uses. The debates on service innovation and how the relevant theoretical models should be put forward are still going strong.

2.5 Service innovation

Tether and Howells (2007) said that so far, many innovation studies concerns the source of new technologies. In essence they say that the focus is on the creation of new technologies, rather than their diffusion and use. Thus the technology producing sectors like biotechnology receive far more than their 'fair share' of attention, while technology-using sectors such as services and 'low technology' manufacturing are suffering neglect. Tether and Howells (2007) further claim that innovation here tends to be perceived rather narrowly, focusing on technical advances mainly in machinery, equipment and other goods (such as new drugs), and the processes involved in the development and commercial introduction of new, technologically advanced goods. It is only recently that innovations in services have received greater interest. They said also that innovation is the successful exploitation of new ideas and continue discussing that this definition applies to all firms in the economy and is equally relevant to services innovation. They continue saying that while innovations in tangible products may be more easily recognised, most likely due to their physical and 'codifiable' nature, there are a wealth of excellent examples of services innovation.

The definitions of the concept are several. Toivonen and Tuominen (2009, p. 11) mentioned that "A peculiar feature in the rapidly accumulating literature on service innovation is the limited effort that has been devoted to an exact definition of the concept". They continued to say that it is also typical that authors do not

make clear if they are using the concept of innovation when referring to the innovation process or to the outcome of this process. Aas (2010, p. 1) discussed the concept of service innovation and wrote "Service innovation is a complex and resource-demanding activity with potential long term benefits for firms in the service and manufacturing industries". The definition from the Oslo Manual is widely used and seems to be the definition that policy makers and public institutions use when defining service innovation. According to the Oslo Manual (2005) Innovation is a new or significantly improved service and new or significantly improved way of producing or delivering a service. Toivonen and Tuominen (2009, p. 14) presented the following definition for a service innovation:

> A service innovation is a new service or such a renewal of an existing service which is put into practice and which provides benefit to the organisation that has developed it; the benefit usually derives from the added value that the renewal provides to the customers. In addition, to be an innovation the renewal must be new not only to its developer, but in a broader context, and it must involve some element that can be repeated in new situations, i.e. it must show some generalisable feature(s). A service innovation process is the process through which the renewals described are achieved.

Here we see that the process plays a significant role in defining the concept of service innovation. Pavitt's (2005, p. 88) general framework on innovation processes encompass that "innovation processes involve the exploration and exploitation of opportunities for new or improved products, processes or services, based either on an advance in technical practice […], or a change in market demand, or a combination of the two". From our point of view it is crucial that the definition of the service innovation concept includes the innovation process. According to Toivonen and Tuominen (2009, p. 11) "the emphasis of the process is linked to the insight that innovations are not inventions emerging suddenly, but the results of a continuous and complex interaction between many actors".

2.6 Characteristics of service innovation

When it comes to discussion of the characteristics of service innovation the issues are complex, but more concrete and fewer debates exist. De Jong et al. (2003, p. 61) wrote "due to the nature of services (intangibility, heterogeneity), the impact of service innovations is harder to trace than in manufacturing". On this ground Toivonen and Tuominen (2009) discussed that when service firms are directly asked, they often cannot tell whether they have produced innovations, and often innovations are either underestimated, or every service act is regarded as an innovation due to its unique nature. Aas (2010) discussed further that service innovation may encompass both product and process innovation and de Jong et al. (2003, p. 17) mentioned "Because of the simultaneity of services, product- and process innovations usually coincide. New services often go together with new patterns of distribution, client interaction, quality control and assurance, etc." Thus several approaches towards the pursuit of service innovation and relevant processes inside firms exist.

From our point of view, co-creation between the client and the service provider is one of the most important characteristics of service innovation when it comes to succeeding and adding value to the firm and the customer. It emphasizes the need for the firm to be involved in the communication process with the co-creator. This characteristic is also one of many advantages of service innovation. Other characteristics which sustain the co-creation thesis are also worth mentioning. Berry et al. (2006) discussed that service innovation differs from product innovation in important ways. They mention first the differences in terms of labour-intensiveness, the interactive services, the actual providers and the service delivery staff. These players, they claim, are part of the customer experience and thus a part of the service innovation. Secondly, they discuss that services require the physical presence of the customer and necessitate the 'local' decentralised production capacity. Meaning that customers will drive only so far to eat at a restaurant, no matter how innovative it is. And thirdly, a known feature so far; service innovators usually do not have a tangible product to carry a brand name.

Toivonen and Tuominen (2009) referred to Sundbo and Gallouj (2000) and Preissl (2000) and brought up several features that are characteristic of innovation in services. Firstly, specific resources in the form of R&D departments are often missing in service companies and in many cases service innovations are not the results of a deliberate activity at all. They emerge in the process of service provision on the basis of clients' needs, and are recognised as innovations only a 'posteriori' or based on experience or existing knowledge. Secondly, Toivonen and Tuominen discussed that the common classification into product, process and organisational innovations is difficult to apply in services, since services are simultaneously both products and processes. And finally, the 'fuzzy' nature of the output of services makes it much more difficult to detect a change or improvement in a service than it is to recognise an industrial product as a new one. It is also common that service firms do not use innovation terminology, they rather speak about customer satisfaction and quality improvement when they are actually seeking to renew their products (Toivonen and Tuominen 2009). Many of these discussions encompass the difficulties of service innovation. In this perspective other difficulties are important to mention.

Tether and Howells (2007) discussed that firms in manufacturing industries are much more likely to use patents to protect their innovations than firms in service industries. They say that it is common that around half the innovating firms in the manufacturing industry use patents, but only a quarter of innovating service firms use patents. This reflects the nature of their activities, and the extent to which any inventions are patentable. Elche-Hotelano (2011) discussed that the patenting system grants property rights protection to inventors of novel products and processes, but given the intangible nature of services, it may not be effective. An OECD paper on Growth in Services (2005) inclined that IPR could become more important as competition increases and market fragmentation declines. IPR could help create a stronger measurability in service innovation. Although firms, governments and policy makers are constrained as service outputs are blurry and thus make the evaluation of the actual wealth creation of service innovation difficult.

Sundbo (1997) discussed another disadvantage of service innovation which is the relatively weak engagement of firms in external innovative activities. This is caused partly by the problem of imitation as it is simple for competitors to imitate service products within a very short space of time and hence service firms risk not getting a return on its innovation investments. Elche-Hotelano (2011) discussed the appropriablity of service outputs. He says that firms need to continuously coordinate resources and interests in order to benefit from innovation. Service firms face problems due to the intangibility and high performance content, but low appropriability of service outputs. These characteristics, advantages and disadvantages already suggest broad areas of importance for the study of innovation in services. They also bring up various challenges for innovative firms, especially the interactive role of consumers and clients with their service provider and the challenge of defining and measuring output in service innovation.

2.7 Critics on service innovation

There are also problems in relation to service innovation and these problems arise for several reasons. Most importantly, customer involvement and interaction could create problems as it can be hard to involve clients in the innovation process and this could also potentially decrease the success rate of the service innovation. Another factor is the unique characteristics of service innovation for example intangibility and inseparability. This makes it harder to grasp service innovation. Technology can also be a barrier for service innovation. Many authors have drawn attention to the barriers of service innovation. Amongst other Panesar, Markeset and Kumar (2008, pp. 184-185) wrote that the most important barrier for service innovation was customer conservativeness – not taking part in the service innovation process, second came financing, third was finding market, fourth-economy of scale. Lack of skilled employees and customer mindset are other important obstacles for service innovation. Panesar, Markeset and Kumar (2008, p. 186) mentioned that in their survey the participants identified additional barriers which can lead to problems in service innovation:

Service buyers:

Inefficient integration of external and internal resources

> Difficulties in finding services and products that helped in achieving production regularity goals
> Inability to define needs and order services from suppliers […]
> Service sellers:
> […]
> Inability to align with customer needs
> Inability to listen to customers' needs and identify what was important to the customers
> Inability to be alert and in front when customer was defining her or his needs […]
> Lack of integration of competence, technology and knowledge for solutions offerings
> Lack of resources (competent personnel, finances, etc) […]
> Lack of commitment from customers to implement new or improved services.

Hertog and Rubalcaba (2010, pp. 633-636) mentioned that service innovation can fail because of capability failures-lack of right knowledge, capabilities and skills and lack of capability to identify customers' needs; failures in institutions - failure to (re)organise or (re)structure organisations when necessary; network failures - inability to network and interact with other actors and framework failures - regulations which do not support service innovation. Moreover, Kuusisto and Meyer (2003, p. 29) summed up the main problems of service innovation "into three main categories: market-related obstacles, service development deficiencies and the general characteristics of services".

From the above discussion we can see that the importance of innovation in services is unquestionable as services are dominant in terms of value creation in the economy. However, the creation of services is affected by the intangible, diverse, heterogeneous and perishable nature of services. There are many both challenges and opportunities connected to service creation. The intangibility, fear of being copied and the lack of tools for measuring real economic outputs are the main problems of innovation in the service industries. However, the co-creation with customers, the emphasis on customers' needs and the knowledge

intensiveness that does not exist in the manufacturing industries, are all advantages in service innovation and contribute to value-creation. The existing debates surrounding innovation in services in the literature today are many. The debates have, and will probably create even more opportunities in terms of future research in the field, and help develop new organisational practices that can support service innovation.

2.8 Service Innovation project

The word project comes from a Latin word 'Projectum' which is based on the Latin verb 'Proicere' – 'to through something forward' (Project Management Guide 2012). Turner and Muller (2003) referred to Turner (1993, p. 1) who wrote "an endeavour in which human, material and financial resources are organised in a novel way, to undertake a unique scope of work, of given specification, within constraints of cost and time, so as to achieve beneficial change defined by qualitative and quantitative objectives." From the Turner definition, it can be said that a project is unique as it is changing from start to end and every project uses an individual and different approach. A project creates unique products, services or results and also creates capabilities to perform a service. Organisations start a project for several reasons, amongst other market demand, customers' requests, a technological advance etc. Projects are temporary in nature, but this does not mean that a project is short lived. They can also be of long duration. Organisations that are built on projects are called project-based firms (Gann and Salter 2000). These kinds of organisations innovate complex integrated systems or knowledge-intensive services. The services are created based on their customers' specific needs and their clients are involved in the innovation projects. Project-based firms differ from other firms in terms of their level of collaboration and innovation strategy. Blindenbach-Driessen and Ende (2010, pp. 706-707) wrote that "project-based firms always deliver to customer order, their output has a strong service character, even if systems are their primary output." Project- based organisations also have to be adaptive to changes and search for alternatives instead of depending on one solution. Fagerberg, Mowery and Nelson (2005, p. 10) mentioned in their book that " "Openness" to new ideas and solutions is considered essential for innovation projects, especially in the early phases." All the above also apply for service innovation projects.

Service innovation projects seek to understand how services interact with the rest of the economy at a macro and micro level and search to find and understand the process in the project. The projects provide great attention to the industrial evolution at a firm level and also on a sectorial level to create better services or innovate new services. Because of the complexity of services and its unique characteristics as mentioned earlier, organisations have to create stronger ties with their clients, listen to them and adapt to their clients changing market and business. Bygstad and Lanestedt (2009, p. 234) said that "successful service innovation is found in projects with a strong integration with the service providing organization and external users of the services."

The service provider responsible for the service innovation projects, in our case Aker Solutions, needs to acquire information from team members and other actors involved in the project for example: Customers, other firms, suppliers, etc. This process is used to search new combinations of resources in order to reduce the uncertainty of the project and aid to deliver new or better services. This learning process will help project team members to choose an effective and efficient solution for developing a service. Client involvement could also make service innovation projects more unique and valuable. Therefore it is important to determine the concentration of the service innovation project in terms of customer groups, service category, market and so on. It is also crucial to determine goals for customers/clients engagement in the project, ensure resources and motivation for employees and clients to engage in a co-development project and detail for example what kind of services could be delivered and how. Melton (2007, p. viii) mentioned that "Service innovation project outcomes improve when customers and frontline employees participate in the process in ways that positively affect the project's service marketability, deliverability, launch preparation and launch effectiveness."

Service innovation projects can have relationship and capability effects, which in turn can stimulate project and technological learning. These effects could build up knowledge which will help to identify new service innovation opportunities. This knowledge can also help to explore the organisational learning which can support the management of projects. Ass (2010) stated that the total value of the service

innovation project is based on the value of capability effects, external effects, relationship effects, business process effects, project cost, operational cost and internal risk. Therefore people involved in the service innovation project should be selected carefully and involve a mixture of people with different skills and expertise. The abstract and in-concrete nature of the service innovation could affect the project communication and create uncertainty. By paying particular attention to this potential problem, the organisation can reduce the risk of miscommunication. Lee and Wu (2011, p. 85) said that "The successful factors for the service innovation project are top management support, technological readiness, knowledge management capabilities, external focus and internal focus."

2.9 A layered model of service innovation

André Barcet is an associate professor of economics in University of Lyon in France. Barcet (2010) introduced 'A layered model of innovation in services' in the book article 'Innovation in services: a new paradigm and innovation model'. (Barcet and Bonamy (1999) first wrote about this model in short in a summary of a collective study on innovation in services in France.) In the article, he wanted to show the importance of service innovation and that it cannot be ignored in the service industries. 'A layered model of service innovation' is based on a paradigm shift which corresponded with the emergence of service innovation, and which is in fact the main reason for the transformation of the service sector. The model identifies what service innovation is and illustrates the important characteristics of the service-based innovation. Barcet also said that innovation in services should be created explicitly. His model aids in recognising central issues to consider when innovating and designing service. To successfully innovate services, the conditions related to and unique characteristics of services have to be understood. It is crucial for a service provider to be able to offer new technology for the innovation process, and information and communication plays a vital role in this. Moreover, Barcet (2010, p. 51) said innovation in services could be defined by the result achieved by the users which introduces something new in the organisation or practical life. In this process, the supply of skills and service flows also has to be taken into account in order to deliver better services. He also mentioned that clients' or users' consumption process and their relationship with the service producer are becoming more and more important in the service innovation

concept. This means companies have to think of service innovation in a particular way. In his model, each of the four layers corresponds to a specific issue and it is crucial that all the layers are linked and they will form a coherent whole. Each layer has identifiable questions and related actors (Barcet 2010, pp. 54-58) which we will describe further:

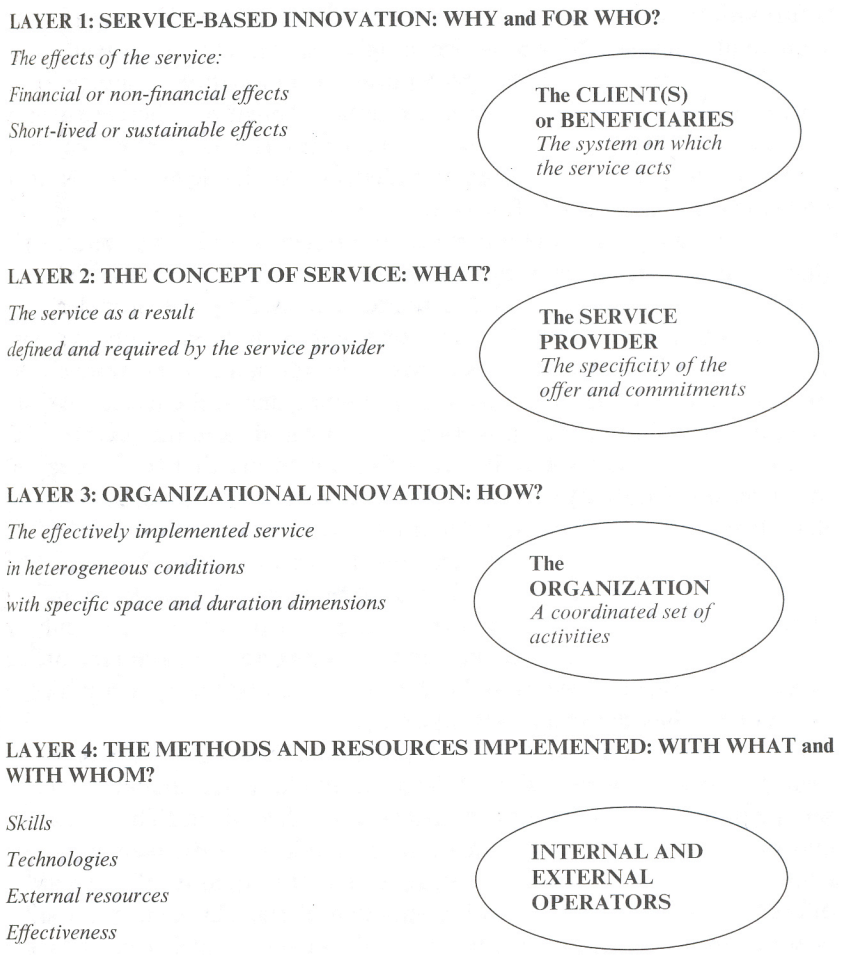

Figure 2: A layered model of service innovation

Layer 1

This layer provides the meaning of use and usefulness of services as a whole which are provided to a client, group of clients and users. In this layer, it is important to ask questions regarding the effects of the services, the question of learning while using and the question of clients being able to compare effects. These effects could be short-term, sustainable, financial and non-financial. Clients' or beneficiaries' behaviours are necessary to identify in this layer and also to specify who the clients or users are. Organisations need to make a certain

construction on this level: Clients' actions and behaviours that will construct their desired effects, learning processes related to the concept and generating and harnessing the information gathered from the clients. All of the above will aid service innovation. This layer involves a search for innovation opportunities and the clients' expectations of service innovation. At this stage, the important questions are 'why' and 'for who'.

Layer 2

Service descriptions will be defined in this layer. It is important for organisations to know what they are offering their clients or customers at this stage. Providers have to present their innovation to clients and show that it is a possible solution for the problem or constraints the clients are facing. The innovation has to be well defined and organisations can achieve this by applying their innovation to the client at the early stage of innovation. By gathering all these responses from the clients, providers can see that their innovation has a certain durability. At a design level, organisations have to ensure that their offerings are clearly differentiated from other services in the market. The questions asked in this layer regard offer identification, offer positioning in the market, clarification of the main features of the service, defining the concept in terms of the level of precision and commitment from providers towards clients. These are important issues to consider for successful development of service innovation, otherwise the development of service activities could be slowed down or diverted from the original plan. Artistic, social and psychological values of services and pricing are to be specified at this stage. The essential questions are regarding 'What' in this layer.

Layer 3

At this stage, organisations have to decide the specifications of the steps and phases for implementing the services successfully. The heterogeneous conditions with specific space and duration dimensions need to be clarified to implement the service effectively. To do so, organisations have to coordinate sets of activities among employees and team members in projects. There is high risk involved in the service innovation when it comes to variations in the locations of clients, providers, suppliers and the market. Moreover it is hard to control actors'

behaviours fully, especially clients' or customers' behaviours. Organisations need to pay attention to these issues and find out how to reduce risks. The crucial questions in this layer are regarding 'how at the organisational level'.

Layer 4

Essential means and resources are to be specified at this level. These resources are funds, information, materials, equipment, experience, skills and knowledge and can be acquired from internal and external environments. This shows that the resources could be of a financial, technological or human nature. In service innovation, information, skills and knowledge may come from clients. These clients can be internal or external. In some cases clients could even act as co-producers of the service. This can prompt intellectual property right issues. A partner's involvement with another company can also be good at this level, but project team members should identify the partners' skills. The personal relationship between employees in the companies gives particular attention to interpersonal skills and 'know-how', which can contribute to the development of the services. Technological development can play an important part at this level and it is necessary to ask questions regarding 'with what' and 'with whom'.

So, Barcet's 'A layered model of innovation in services' shows that companies have to organise their service innovation activities from the perspectives of service benefits and problems, customer involvement, collaboration if any, knowledge sharing and transfer and technological aspects. Organisations have to give great importance to customers in order to innovate new services. For doing this, companies should have an organisational structure and management which will help to harness and foster new service innovation. They must specify possibilities at each level for successful innovation. This model involves constant interaction, and linking the layers will help to design service innovation effectively. From the above discussion, we can also see that this model in addition can be applied in the service innovation projects.

From our point of view, the model does not take customer needs into account and also does not mention that every layer will be affected by management and organisational structure. Identifying customer needs is crucial for successful

service innovation. This also increases knowledge about customers and helps to customise services effectively. Therefore our proposed model will have six layers including Customer needs which will come in as a new layer number two. Layer number six, Support, will concern management support and organisational structure and will affect all other layers. We will call our proposed model 'Six layered interactive model of innovation in services'. This model can also be applied to projects.

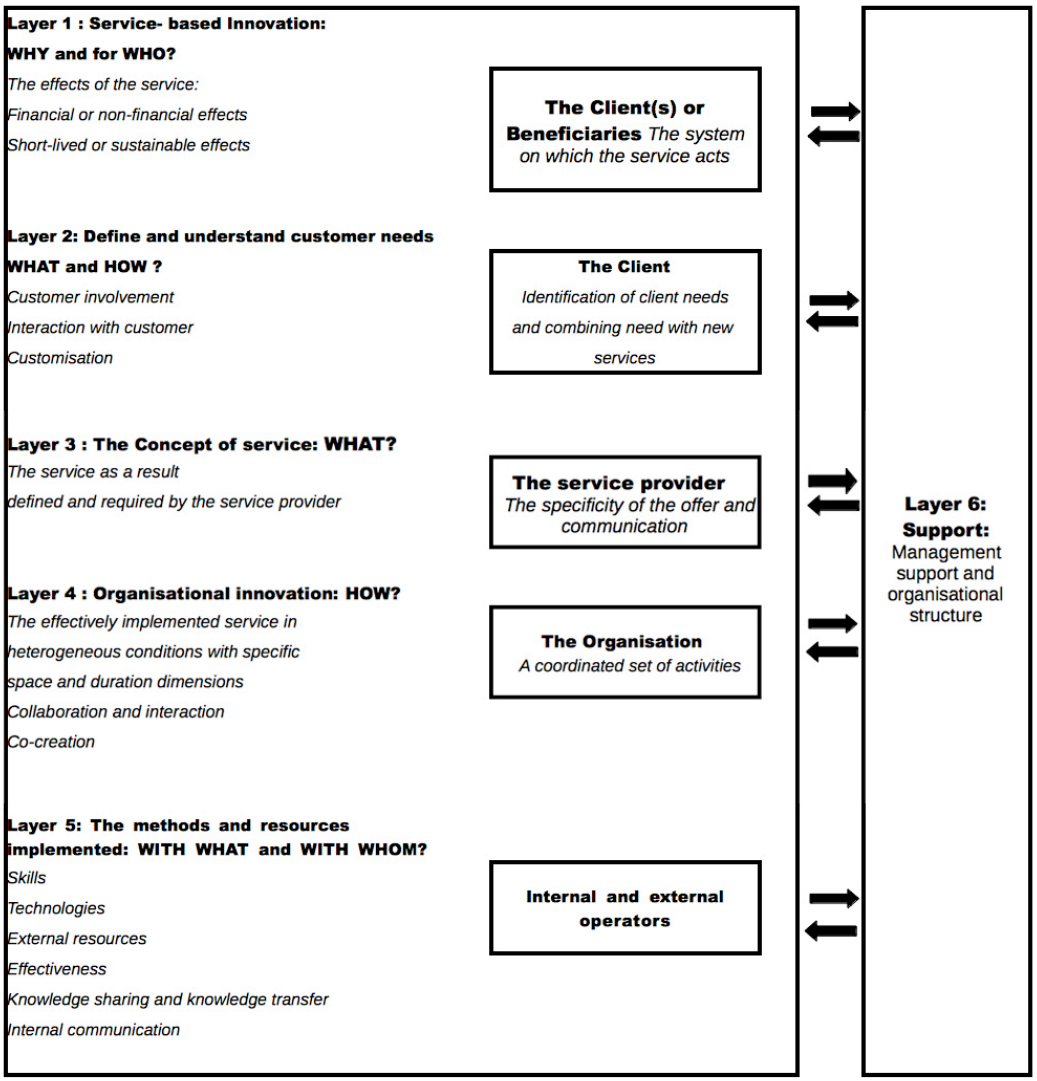

Figure 3: A proposed model: 'Six layered interactive model of innovation in services'

2.10 The four dimensional model of service innovation

Pim Den Hertog is a writer on innovation in services who worked with Dislogic innovatie & interactie consultancy company where Dialogic's four dimensional model of service innovation was developed. His work is largely in tune with Barcet's model. What these authors have in common is that they try to show, promote and explain how important the service innovation is for economic growth and development and how successfully companies will operate and organise services in the future. Hertog (2000) in the article 'Knowledge-Intensive Business Services as Co-producers of Innovation' presented 'the four dimensional model of services innovation' which highlights four dimensions of service innovation. These dimensions are technological and non-technological. Hertog (2000, pp. 494-499) described this model as below:

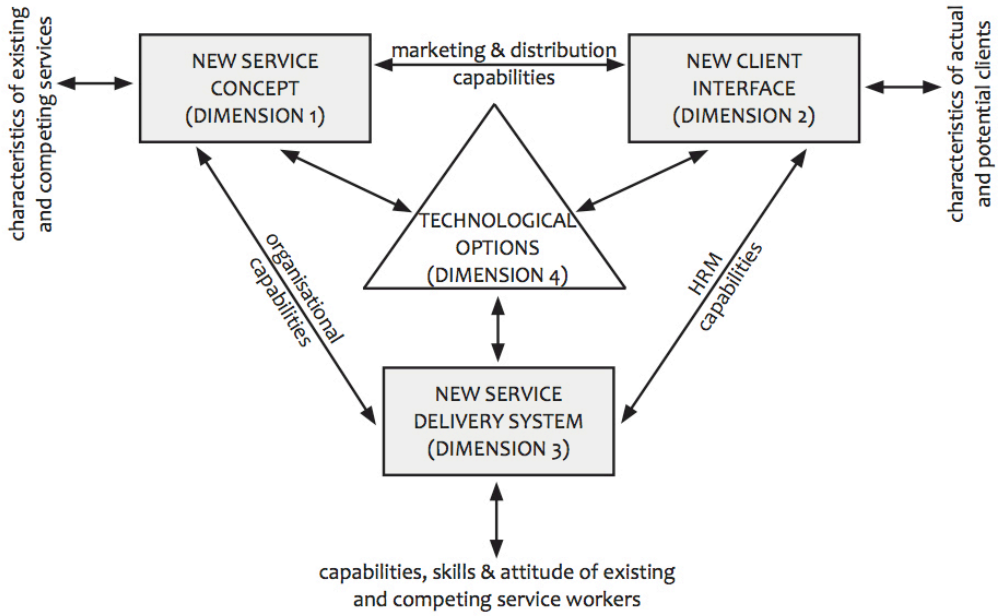

Figure 4: Four dimensional model of service innovation

Dimension 1

Dimension 1 is about the new service concept. As services are much more intangible in nature than manufacturing firms, it is important to find out the characteristics of existing and competing services before developing a new service concept. In service innovation problems can arise in terms of service concept newness. To avoid this, organisations should try to justify the newness of the concept. They could do so by asking questions: How new is the concept, does it

exist in another market, is it new to the clients, national market or global market and so on. In this dimension, it is also crucial to specify the new service characteristics. This dimension is similar to layer 2 of 'A layered model of innovation in services'.

Dimension 2

In this dimension, new client interfaces have to be developed to deliver better services. For this, it is necessary to define the characteristics of the potential and actual clients. The design of the interface between clients and service providers is accounted as a second element in service innovation, as clients play an important part in the process of developing services and interaction between clients and provider could help to innovate services. Interaction could take place in financial transactions, design input, service definition, etc. It could be beneficiary if one can identify when the service providers' activity finishes and when clients' activity starts. This dimension resembles layer 1 of Barcet's model.

Dimension 3

This dimension concerns new service delivery systems and organisations. It is related to the new client interface dimension and refers to internal organisational settings: How to organise innovation, how to structure the organisation to allow service workers to perform their job and facilitate service innovation, how to motivate and empower employees to take part in service innovation and develop better services and how to enhance and renew skills, knowledge, capabilities and attitudes in the organisation among workers. This dimension relates to layer 3 of 'A layered model of innovation in services'.

Dimension 4

This dimension concerns technological options and is at the centre of the model. It helps to analyse how service innovations involve and shape technological development and also shows that service innovation and technology are connected in practice. Technology works as an enabling factor and/or facilitator in service innovation, even though service innovation is not always about technological innovation. Users play an important role in service innovation, but providers provide the necessary technologies most of the time. It is also crucial for providers

to identify what kind of knowledge they have in relation to technology for developing services, how they can access necessary skills and knowledge and how to articulate their technological needs. Dimension 4 is similar to layer 4 of 'A layered model of innovation in services'

Linking the four dimensions

All of the dimensions are interlinked and interconnected with each other. These cross-linkages are very important in the development of new services. These linkages could be established by responsible employees in marketing, distribution and organisational development of the provider company. The linkages could also enhance market intelligence, business intelligence and the abilities of the HR management, as well as helping to identify what kind of marketing expertise is required and what kind of knowledge is required in the distribution and delivery of services. Change in one dimension will lead to changes in others (Tether and Howells 2007) .

From the above discussion, we can see that both models put great emphasis on amongst other clients' or customers' involvement in the service innovation, knowledge transfer and generation in the organisation, knowledge gathering from clients, organisational structure, technology and management. They also showed that defining services and identifying clients, necessary skills and capabilities are crucial in service innovation. We can see that Barcet's model starts with both customers and services whereas Hertog's model considers the service concept first. In terms of service innovation in general, the layered model of innovation brings together the client (what he wants, when, and how he will use the output and create value from it) and the organisation. The model enhances the ability of the organisation to find new ways of making use of internal and external resources and knowledge and by doing so create added sustainable value and competitive advantage in the long term (with the client and other players). These aspects occur when the layers in the model co-align. Barcet's model could be suited for mapping service innovation in different firms at a micro and macro level. It also can be applied in different industries or sectors. On the other hand, Hertog's model is mostly suitable for delineating service innovation for specific companies and it mainly concerns the micro level in the organisation or a particular sectorial level

(Gadrey and Gallouj 2002, p. 231). Therefore, we will test our proposed model which in addition to Barcet's model also concerns how to align customer needs and new service delivery, in addition to management support and organisational structure. We will see how this model could function as a tool in Aker Solutions' service innovation projects.

2.11 Open services innovation

Open innovation emerged in the place of closed innovation where information and knowledge were not shared and distributed between different companies, employees, customers and so on. Closed innovation is internally driven and knowledge and information flows in one direction. All of these were barriers for sustaining innovation. As customers have become very important in the process of innovation and provide valuable information for innovation, companies have to change their traditional closed innovation to a new paradigm of "open innovation". Chesbrough (2003a, p. xxiv) wrote that "Open innovation is a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and external and internal paths to market, as the firms look to advance their technology."

Open innovation generates and utilises ideas from outside environments in addition to the internal environment. Ideas can be created internally, externally or they can be generated in collaboration with clients or customers and other actors. In open innovation knowledge and information flows in and out of the organisation and can come from different actors, amongst other customers or clients. Open innovation challenges the traditional idea that firms should invest and conduct internal research and development in order to innovate new services or products. Open innovation claims that benefits from internal R&D is decreasing as companies like Cisco, Intel and Microsoft innovate in cooperation with others, even exploiting the research and knowledge of others (Chesbrough 2003a and Chesbrough 2003b). This also creates a new way of thinking about innovation among knowledge workers. Open innovation shows that ideas can be taken to the market through internal and external paths. Chesbrough, Vanhaverbeke, and West (2006, p. 2) mentioned that "Open innovation is the use

of purposive inflows and outflows of knowledge to accelerate internal innovation and expand the markets for external use of innovation, respectively."

Open services innovation is based on the concept of open innovation. For creating services, companies have to give attention to their external as well as internal environments. They should think about innovation in the eyes of clients or customers and even involve them in the process of service innovation as it will help to generate and transfer knowledge. In turn, this will aid to foster service innovation and increase growth in the service sectors. Open service innovation could help companies search for new opportunities internally and externally. It can be a challenge to understand customers' expectations and demands and this could also lead to a problem of meeting their expectations effectively. The intangible and non-storage nature of services raise problems of an effective response to clients' needs. Another challenge for service companies is to find and access internal knowledge and capabilities. Chesbrough (2011) described that open services innovation is becoming very important among companies. They are increasingly basing their innovation on open services innovation - knowledge transferring and sharing, clients' and other actors' involvement etc. The firms range from large size companies: Xerox, GE Aviation, Merrill Lynch, etc to smaller companies: The Olympic Circle Sailing Club, Netbase, etc. Open services innovation is also happening in emerging economies like: India, Brazil, China and Bangladesh. Many companies here have to do open services innovation to gain competitive advantage. Chesbrough (2011) claimed that this is the way forward for companies for future development. Chesbrough (2011, p. 17) also wrote that companies should establish four fundamental concepts that will aid to create an open services innovation framework or platform which in turn can increase the success rate of service innovation, company development and competitive advantage:

> 1. Think of your business […] as an open services business in order to create and sustain differentiation in a commodity trap world.
> 2. Invite customers to co-create innovation with you in order to generate the experiences they will value and reward.

3. Use Open Innovation to accelerate and deepen services innovation, making innovation less costly, less risky, and faster. […]
4. Transform your business model with Open Services Innovation, which will help you profit from your innovation activities. […]

2.12 Knowledge

In the business environment knowledge has become a very important factor to create competitive advantage. Companies need to be capable of acquiring, disseminating and utilising knowledge to succeed in the market. Knowledge can be gained amongst other through experience, study and practice, and is a result of perception, discovery and learning. It can be specialised or profound. Alavi, Kayworth and Leidner (2006, pp. 192-193) wrote "Knowledge can […] be defined as individual's experience and understanding […], or, alternatively as "a high value form information that is ready to apply to decisions and actions"." Companies have given great attention to the importance of knowledge and would not be able to innovate otherwise. Therefore companies have to develop and use new skills and knowledge. This increases integration and renewal capabilities. Service innovation is heavily relying on knowledge and skills, but these of course have to come from somewhere. It is important to identify how this knowledge can be gathered, used and put together with existing knowledge in a way that will promote the innovation of new services. Schilling (2011, p. 21) wrote that "Coming up with new ideas for services is to a large extent about the ability to acquire new knowledge and combine existing and new knowledge in a new way." Knowledge can come from inside the organisation and/or from the outside. One of the important sources of knowledge is the client and another is the employees' learning and accumulation of knowledge from work and personal experiences.

There are two types of knowledge: tacit and explicit knowledge. Explicit (cognitive/codified) knowledge can be learnt through training and certification, but emotional (tacit) knowledge is developed through experience and can not be taught (Smith 2001). It is important for organisations to use both types of knowledge and especially to make an environment where employees can share and transfer tacit knowledge. However, this is not easy. There is a tension between codified and emotional knowledge and the use of one without the other cannot be

successful. Landry, Amara and Doloreux (2010, p. 147) mentioned that "the effective exchange of knowledge with clients might sometimes rest on the exchange of tacit knowledge, rely at other times on the exchange of codified knowledge and, in some cases, it might require the transfer of mixed knowledge when the transfer of codified knowledge needs to be complimented by the transfer of tacit knowledge." Moreover, Powell and Grodal (2005, p. 74) wrote "The role of knowledge transfer is clearly central to the innovation".

Organisations should first identify their capabilities and then capture the knowledge of others, for instance customers through their involvement and collaboration. The organisation has to find out how to utilise it and this could be difficult as the customer is not part of the organisation and hence can not be controlled. Therefore, it is important for the organisation to balance existing and new knowledge in such a way that they will help foster innovation. Schilling (2011, p. 21) referred to Amara, Landry and Doloreux (2009) and Lawson and Samson (2001) and wrote that they "stress the ability to combine existing knowledge with new knowledge through bringing people together in collaborations as one important facilitator of service innovation."

In order to do so, companies could utilise knowledge management. Darroch and McNaughton (2002) said that knowledge management creates and locates knowledge, manages the flow of knowledge and assures that knowledge is used effectively and efficiently for long term benefits. To implement the above functions, firms could create an organisational culture which helps employees to develop and share knowledge. Yeh, Lai and Ho (2006, p. 794) mentioned "Knowledge management enablers are the mechanism for the organization to develop its knowledge and also stimulate the creation of knowledge within the organization as well as the sharing and protection of it." This creates competitive advantage through continuous learning. Companies should identify internal and external sources of knowledge, how to explore new knowledge opportunities and cover knowledge gaps. Interaction with customers, suppliers, employees and so on plays a vital role for knowledge creation and generating verities of learning processes: learning by doing and learning by interacting. Elche-Hotelano (2011, p. 222) said "internal and external knowledge sources [employees, providers and

customers] are expected to have an influence on innovation performance in service firms." Sharing knowledge through networking and collaboration between employees within departments and branches, with customers, suppliers and others helps to learn from different perspectives and gives a wide stock of knowledge. By enhancing knowledge and expertise, companies can increase the innovation rate. Plessis (2007, p. 20) wrote "Innovation is extremely dependent on the availability of knowledge".

2.13 Customer needs

Customers' involvement in the innovation and delivering of new services leads to success for many companies. Customers help the organisation to create value for its customers. The basic purpose of innovating new services is to create value for the firms and their clients or customers and by meeting clients' needs companies will be able to create a competitive advantage. Companies also have to provide exceptional benefits for their customers in order to create value for both. Customers want a new service to do a job for them and also want satisfaction through the use of that service. These are the customer needs which guide the service innovation. By aligning new services with these needs, producers will foster service innovation and gain a competitive position in the market. Bettencourt (2010, p. xxii) mentioned that "Services that provide distinctive value to customers have more than three times the success rate of me-too services. And services that clearly align with customer needs achieve more than five times the success rate of services that have a poor fit with customers' needs." Therefore it is important to understand customer needs as customers expect services which will offer better solutions for satisfying their demand and expectation or for solving their problems. It is easy to understand the primary needs (the need for milk and bread) but the secondary needs are much more complicated to understand. Rainey (2005, p.156) said that "Understanding customer needs is essential for identifying opportunities for new products [new services]." In service innovation, the focus is on gaining knowledge and understanding clients' needs and expectations in a better way, how clients generate value and when clients make use of producers'/providers' services. All of the above help to gain deep contextual knowledge about clients. This is the starting point for new service innovation. As

customer needs and wants are changing on a continuous basis, it becomes all the more difficult to identify customer needs.

Customers do not only have one need, but multiple needs which creates a problem in terms of identifying them. Customer involvement in a service innovation project can decrease the difficulties of understanding client needs. Customer involvement will also increase the learning effects, knowledge about customers, what information is necessary for customers, what information they use and ignore, and what kinds of difficulties or problems they face, where their problems lie and what they want to achieve with the services. It can also have a great impact on service innovation to observe and listen to the customer directly. Edvardsson et al. (2010, p. 301) mentioned that "By customer involvement, we mean being proactive and 'getting close to customers' in order to learn from and with them beyond what traditional focus groups, observations, questionnaires and interviews can provide." Customer involvement also occurs in terms of customers' direct participation in the providers' innovation process. In customer-driven innovation, customers play a very important part in the innovation process and set a direction for new innovation. Therefore satisfying customers is the most important task for companies and is the tool for firms' survival. Involving and interacting with customers provide valuable external information and knowledge which could lead to a successful innovation. Kaasinen et al. (2010, p. 48) referred to Füller and Matzler (2007) "Customer involvement serves as a means to identify future needs and leads to greater variety of ideas and broader decision basis". One of the reasons for engaging customers or users in the innovation activities is to make sure new services will be relevant to customers' needs. Without customer involvement, it could be very hard to specify customers' expectations and needs. Customer involvement also created various important focuses like: Co-production, co-creation, co-development, customer integration - service innovation with the customers. Edvardsson et al. (2010, p. 301) mentioned "The customer as a co-innovator or co-creator of new service is a growing concept". Customer involvement in a providers' innovation projects can have relationship effects. These effects are effects on customer's value, customer satisfaction effects, customer loyalty effects, lock-in effects, image effects, business partner relationship effects and service quality effects (Aas and Pedersen 2010, p. 772).

Customer involvement leads to a customisation of services. Koivisto et al. (2011, p. 190) wrote "Customisation requires increasing emphasis on user involvement, i.e. co-creation as a route to sustaining defensible competitive advantage through innovation." Customisation means tailoring a product or service to fit specific customer needs. The more specific the client needs, the higher the number of fits and the degree of customisation. Customised services create more benefits and more costs for both the client and provider. To create customised services, companies have to understand customer needs and customer value propositions or acquisitions. Companies might have to spend more money to develop customised services, but they will also be able to charge a higher price. By customising services companies will additionally be able to create competitive advantage. Roundtree et al. (2002, p. 116) said "Complex and customized solutions offer the best opportunity for the service provider to match its co-production management skills with client needs and, therefore, develop a competitive advantage." But customisation is not easy to put into practice due to the companies' employees' knowledge, skills and companies operational capabilities. It can be a difficult task for industrial firms as they are used to focus on technological advancement and R & D. Koivisto et al. (2011, p. 187) also mentioned that "In services, offerings and customer interaction largely deal with knowledge. The higher level of intangibility, abstraction and tailoring makes it more difficult to understand and communicate the content and value of the service compared with technology-based products." Moreover Kaasinen et al. (2010, p. 48) also referred to Füller and Matzler (2007) and Alam (2006): "the risk could be for example over-customisation of services resulting from listening to customers too closely; needs and ideas articulated by participating customers may be too niche".
Customisations also bears a high price which some customers can not afford, and customised products and services can not serve the mass market. Only standard service offerings can do so, but this can also reduce amongst other the authenticity of the services, differentiation and competitive advantage. Technological advancement and growing customer expectations shift the relationship between customisation and high price. 'Mass Customisation' can occur when an organisation achieves a good and profitable balance between the two. Bessant and Davies (2007, p. 89) said "MC [Mass Customisation] is the ability to offer highly configured bundles of non-price factors configured to suit different market

segments (with the ideal target of total customisation, i.e. a market size of 1) but to do this without incurring cost penalties and the setting up of a trade- off of agility vs. prices." This provides an advantage for firms as services are very difficult to protect and it is difficult for firms to create entry barriers for a longer period of time in services. Therefore, companies have to have some form of customisation in their service delivery, so customers can differentiate one's services from other companies. Mass customisation also has similar effects to relationship effects as mentioned earlier. Chesbrough (2011, p. 20) mentioned:

> The ability to customize the offering for the customers to deliver the most desired outcome to him or her requires treating each service transaction individually, so that the customer gets exactly what he or she wants. Yet in order to deliver services at very low cost, the business must aggregate individual transactions together to be processed in a single homogeneous way so that the process is as efficient as possible. This is not an easy trade-off to resolve, yet a business that wants to be effective in innovating services needs to manage both.

To do so, the organisation has to be structured in such a way that it will support mass customization and inspire customer engagement in the innovation process. Management support is a necessary element to be able to implement in the operational activities. Chesbrough (2011, p. 21) also wrote "To take service innovation to a higher level of performance and effectiveness requires inviting customers directly into the process."

2.14 Management

Lyons, Chatman and Joyce (2007) claimed that managers of many service businesses are finding little guidance in existing writing on innovation and that the central themes of R&D, intellectual property and breakthrough technologies usually lack content on how service businesses evolve. Competing within service innovation requires a more intensive set of organisational practices and according to Aas and Pedersen (2010), managers who consider alternative uses of their financial and managerial resources, need knowledge of the potential effects of using their resources on service innovation. The innovation process should be

subject to planning and management, however the management cannot plan the outcome of the process, but what they can do is increasing the odds of success by organising and managing the process well (Sundbo 1997).

Lyons, Chatman and Joyce (2007) mentioned that whether in manufacturing, technology, or services, management is considered to fundamentally be about steering and managing change. They said, however, that a systemic organisational approach to innovation in services goes beyond the core elements of leading a specific change. It anchors on the innovation vision as a process and as a culture. Lyons, Chatman and Joyce said that in this way, the systemic approach can provide more powerful strategic execution and business success in professional service firms. Lightfoot and Gebauer (2011) discussed that innovation culture and management is based on creating an organisational structure which supports innovation and learning and Bitner, Ostrom and Morgan (2007) said that all parts of the organisation should be focused on the common goal of creating an integrated, memorable and favourable customer experience. They also stated that those companies that approach customer experience management with a clear vision of the design and development process are more likely to achieve improved customer and organisational outcomes. According to Lyons, Chatman and Joyce (2007) there are various things managers must do if they want to succeed in service innovation. First they need to leverage organisational structures and processes to build a culture of innovation, secondly carefully attend to formal and informal incentives and open flows of information and thirdly manage the perception of risk in innovating. Lyon et al discussed further that a manager‘s role is the one of creating a vision, setting a clear direction and inspiring the organisation. The manager’s job is to align all resources and motivating employees to consistently execute their roles with a focus on realising this vision for the future. Managing through innovation is not about selling a grand strategic vision or steering the organisation towards its execution. However, it involves allowing the vision to emerge throughout the organisation by searching for insights and clues to the ever-changing needs and demands of clients. Managers must be problem-oriented, leveraging their employee’s client knowledge and creativity to find problems with unknown solutions and solve them. To do so,

managers have to empower employees and promote brainstorming, learning and flexibility in the organisation.

Santa et al. (2011) referred to Boer (2002) and wrote that leading organisations need to find configurations of processes, procedures, people, technologies and organisational arrangements that allow them to become continuously innovative. They said that continuous innovation is the ongoing interaction between operations, incremental improvement, learning and radical innovation aimed at effectively combining operational effectiveness and strategic flexibility, exploration and exploitation.

The number of project based organisations is growing and this creates new challenges and opportunities for their top level management. Blindenbach-Driessen and Ende (2010) discussed that the main activity of project-based organisations is innovation processes in their clients' companies. However, they point to that some authors have questioned the innovative capabilities of these project-based organisations (Christensen and Baird 1997; Davenport 2006; Gann and Salter 2000; Keegan and Turner 2002). Meaning that project based organisations mostly use their skill and resources for helping their clients improve their innovation and processes, whilst not equally keeping the same focus on their own organisation. For managers inside these organisations it is of importance to support and create a service innovation environment amongst all employees.

How knowledge flows and is integrated in the organisation, how resources and skills are allocated within projects, how collaboration and learning processes inside and between projects are managed, and last, but not least how the corporate strategy focuses on managing projects are important factors for successfully implementing service innovation. Schilling (2011) stated that the role of the top management is first of all to formulate a service innovative strategy and to make service innovation a priority for the organisation. Schilling (2011) also said that service innovation should thus become a part of the overall strategy of the organisation.

2.15 Organisational structure

Organisational structure has a great impact on the generation of innovation. The organisational design should support learning, knowledge sharing and transferring, creativity and interaction in order to foster innovation. It will also affect how management and employees behave in the organisation. Burnes (2004, pp. 111-112) in his book 'Managing Change' referred to Peters and Waterman, Kanter and Handy's arguments that organisations are entering a new age where things take on new meanings and are expressed in a different language. The authors are contrasting and comparing the old, bureaucratic organisation based on muscle power with the new organisation where brain power is important. Brain power gives the ability to use intelligence information to create value added ideas. The new forms of organisations let their employees work independently and give them great responsibility for their tasks. This approach will create respect for the individual and provide autonomy which will help to foster innovation (Ellonen and Karhu 2006). The new organisation will be open, flexible and have a pragmatic culture. It will also maintain a learning organisation which promotes the creativity and entrepreneurship of all employees.

Burns and Stalkers (1996, pp. 96-122) discussed different forms of organisational structures. They undertook research on 20 industrial firms in the UK to decide the extent to which organisational structure was influenced by the environment. From their research, they came to the result that there are two dominant structures: The mechanistic structure and the organic structure. A mechanistic structure works more effectively in a stable environment and is not efficient in adjusting to change. Therefore the innovation rate is low and it could be less effective in long-run. The organic structure, on the other hand, works more effectively in a less predictable and uncertain environment. It is open and flexible, adapts to changes, supports innovation, learning focus and risk-taking. It has a high innovation rate and inspires interaction and networking with other actors and also has a fluid team-based structure. Knowledge and long-term perspectives are important (Lucey 1995). The organic structure is also beneficial for a project-based organisation even though there is no one best way of doing things, according to Mullins (2002) contingency theory. Hinrichs Consulting (2012) wrote that "The

changing/responsive aspect (of organic structure) involves project teams and networks to respond to strategic changes and spot opportunities". Moreover Mintzberg (1979) discussed the adhocracy structure which is also based on organic structure. This structure is highly flexible for a project-based organisation and designed to deal with uncertainty and complexity. Lam (2005, p. 128) wrote that "The adhocracy is an organic and adaptive form of organization that is able to fuse professional experts with varied skills and knowledge into adhoc project teams for solving complex and often highly uncertain problems." Another feature of the new organisation, is keeping a tight control of the operation whilst at the same time granting autonomy and encouraging flexibility and initiative. Daellenbach and Flood (2002, p. 117) said "Flexibility measures the ability to adapt to a wide range of possible environments. In today's dynamic, competitive and uncertain world, flexibility becomes an important requirement for long-term survival."

Handy (2002) argued that fundamental changes are taking place in organisational life. He suggests that companies are moving away from the past labour-intensive organisations towards a new-knowledge based structure. Companies will progressively receive added value from their knowledge and creativity. Handy also believed that the future organisations will be smaller, more flexible and less hierarchical. Handy (2002, p. 41) wrote "Fewer people, thinking better, helped by clever machines and computers, add more value than gangs or lines of unthinking 'human resources'." Different firms might need different structures to manage and organise innovation activities. Handy identifies three types of organisations which will dominate in the future and promote service innovation (Sundbo 1997). These organisations very much come into play in the project-based organisation when different skilled people from different backgrounds come together to complete a project. It is also necessary to network with different people and departments to acquire required resources and knowledge. Handy's theory of three types of organisations below is also applicable for a project-based organisation, and if applied, could also increase the success of the project amongst other by supporting project teams, effectively locating expertise and encouraging collaboration throughout the organisation. (Sundbo 1997 and Dawson and Horenkamp 2007):

1. The shamrock organisation

The shamrock organisation can produce a large output while they are small in terms of direct employees. It uses modern management practice and is un-bureaucratic. The shamrock organisation's employees are close to the customers and adapt to their demands. Handy compares these types of organisations with the plant which has three interlocking leaves. Organisations have three different groups: core workers, a contractual fringe and a flexible labour force. They are treated differently and have different expectations. The core workers are the first leaf. These are professionals and specialists workers. They are the brain of the organisation. The contractual fringe is the second leaf of the shamrock. The contractual fringe is contracted to carry out certain tasks. They will get fees paid on the base of a finished job rather than, based on time consumed. The flexible labour force is the third leaf. The companies take on part-time workers to carry out the companies' tasks. Handy (2002, p. 89) said "The shamrock organization, always there in embryo, has flourished because organizations have realized that you do not have to employ all of the people all of the time to get the work done."

2. The federal organisation

Modern organisations need not only achieve the flexibility that comes from being small, but also have to be able to command resources and powers like a big corporation. Federalism grants autonomy to the shamrock organisation. The federal organisation consists of groups of organisations which band together to achieve common goals and interests. It helps to maximise the innovation and creativity of its members by having a common platform of integrated activities. Handy (2002, p. 93) wrote "Federalism seeks to make it big by keeping it small, or at least independent, by combining autonomy with co-operation."

3. The Triple I organisation

Handy's ideas of the shamrock organisation and the federal organisation develop the Triple I organisation. It is based on Intelligence, Information and Ideas that create intellectual capital used by the core workers. The Triple I organisation requires a change in the manager's role; it is concerned with performance more than formalities and he or she acts as a coach or facilitator. Handy (2002, p. 93) says "In a competitive information society brains on their own are not enough,

they need good information to work with and ideas to build on if they are going to make value out of knowledge." From the above we gather that in order to facilitate an effective production of innovations, companies should have an organisational structure which will adapt to changes and create an environment for knowledge sharing and networking.

From the literature discussion, we can see that service innovation is important for organisational competitive advantage and is of ever greater importance in economic development. Knowledge sharing and transfer plays an important part, and customer involvement and interaction can also help to sustain and develop service innovation. We have seen that organisations, in order to differentiate and add value to their services, are focusing more on customisation. This demands higher customer involvement, adds more risk and cost more than mass production and standardised services. Therefore, organisations should try to customise their services in a rational way that will increase efficiency and effectiveness and, in turn, decrease the price to serve a mass market. Management and organisational structure could affect service innovation in terms of promoting and facilitating service innovation effectively. Thus, on the background of theoretical reasoning and empirical evidence, we will investigate our research topic:

> "Improving service innovation in Aker Solutions – How clients' knowledge, management and organisational structure can facilitate service innovation."

3. Research methodology

When it comes to researching our thesis, defining parameters has improved both the quality of and the time consumption of the research. By using a combination of primary and secondary data, we will look into the relevance, appropriateness and validity of service innovation and how it relates to Aker Solutions. Our research will be focusing on finding, formulating and clarifying the problems Aker Solutions is currently facing and it will also aid to uncover other issues related to the topic. We will explore relevant theories to discuss and define the challenges, adaptation and exploitation of service innovation in Aker Solutions.

Out of the quantitative and qualitative research methods, we have chosen the latter, which is a method of enquiry employed in many different academic disciplines, traditionally in the social science but also in market research and further context. The method also investigates the why and how of decision making, not just what, where and when. Hence, smaller but focused samples are more often needed, rather than large samples. Denzin and Lincoln (2003, p. 2) wrote:

> Qualitative research is multimethod in focus, involving an interpretative, naturalistic approach to its subject matter. This means that qualitative researchers study things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of meanings people bring to them. Qualitative research involves the studied use and collection of a variety of empirical materials-case study, personal experience, introspective life story, interview, observation, historical, interactional and visual texts- that describe routine and problematic moments and meanings in individuals' lives.

In qualitative research, the researchers' role has a great influence. There are some basic steps for doing qualitative analysis:

1. reducing data
2. displaying data
3. drawing conclusions

In contrast, quantitative research aims to concentrate on measuring or counting facts and data so that hypotheses can be tested. It includes standardised interviews, experimentations, observation and modelling. Measurement is an important issue in the quantitative analysis even though it is difficult to carry out. Quantitative research is based on statistical justification and it focuses on sign, data and symbols. It is not so easy to answer 'how' and 'why' questions by using quantitative method. In our study, we have chosen the qualitative method to be able to analyse our research problem and case in a systematic way. We have developed a proposed model: Six layered interactive model of innovation in services in our literature part which we have used in analysing our research problem and interviews.

3.1 Data collection

As mentioned before, our research involves a collection of both primary and secondary data. The selection of material for the study has generally been determined on the basis of the research and research question. We have chosen a case study approach for our research, where soft data i.e. interviews are used. As our research focus is on service innovation and its implication in Aker Solutions, we have tried to stick to the purpose of the research and research question; and we have tried to avoid irrelevant questions in the study. Aaker and Day (1990, p. 72) wrote that there are two general methods for gathering data: 1. Primary data: Gathered in the interest of explanation and illustration of research question or case. 2. Secondary data: Already existing data material from different sources. We have been concentrating on the service innovation and Aker Solutions for our research.

3.2 Primary Data

We have been collecting primary data by the use of communication and observation. There are different methods for collecting primary data and there are three primary qualitative techniques which can be used as part of the case study method. First is direct observation, second is documentation or recordings and finally interviews. These techniques are discussed below. We have used interviews to collect data. As mentioned, our research method is qualitative and our interviews are unstructured. Unstructured interviews include these approaches:

Ethnographic, in-depth and open interviews. Our primary data consists of interviews with two types of groups:

1. In-depth interviews amongst employees of Aker Solutions, within chosen departments.
2. In-depth interview with one of Aker Solutions' external subcontractors.

3.3 Secondary data

The advantage of secondary data is the prospect of saving both time and money. In our study the secondary data are used to find the related and existing theories, articles and philosophy of our research question and also to find the existing philosophy about the case 'Aker Solutions'. Secondary data also has been useful for us to find what has been done on the topic so far and to support the later use of primary data.

As mentioned, secondary research is the resources utilised in this paper. This has presented the challenge of filtering out noise due to the magnitude of data available, as well as determining the accuracy and reliability of the data. Two prospective issues envisaged are:

1. Misinformation: Where figures or data will be incorrectly cited, and;
2. Disinformation: Where information or data published is either misleading and/or only selected information is released in favour of the company.

To avoid misinformation, the source of information and data has been considered carefully and wherever possible, further information has been sought.

The primary source of information is academic books on Service Innovation which back up the views of relevant analysts, authors and theorists and also journals, newspapers and various analysts' reports. When dealing with information in this paper we have gathered data directly from Aker Solutions through internal publications such as: annual reports and press releases, in addition to Aker Solutions' webpage. This information has been carefully considered because of its nature and source. In short, our secondary data consists of corporate material from Aker Solutions along with books, journals, articles and other relevant material on the internet on service innovation.

3.4 Case study approach

Gerring (2007) defined a case study as a study that can be understood as an intensive study of a single case where the purpose of that study is to shed light on a larger category of cases, which then can be said to be a population. Gerring also discusses that a Case study research may include several cases; which is then a multiple case study. However, he continues, that at a certain point it will no longer be possible to investigate those cases intensively. At the point where the emphasis of a study shifts from the individual case to a sample of cases, one has to say that a study is a cross case, or a multiple case. Obviously, the distinction between case study and cross case study is a matter of degree. The fewer cases and more intense the study of the single one is, the more a work merits the meaning of a case study. Empirical work can be classified as either case study (comprising one or a few cases) or a cross case study (many cases). An additional meaning or implication of the term "case study" is that the unit(s), or the company in our case study, under special focus is not perfectly representative of the population, or at least it is questionable. The similarities across the sample (the company) and the population are not assured.

Stake (1995) discusses that it may be useful to try to select cases which are typical or representative of other cases, but a sample of one or a sample of just a few is unlikely to be a strong representation of others. He says also that a case study research is not a sampling research: one does not study a case primarily to understand other cases. The first obligation of a case study researcher is to understand the case in question. Stake (1995) continues and asks the question; how shall cases be selected? The first criterion should be to maximise what one can learn. Given the purposes, which cases are likely to lead the researcher to understandings, to assertions, perhaps even to modifying of generalisations.

Since Aker Solutions is a global, diversified company in an ever changing operational environment, dealing with the coordination and managing of projects and solutions through its many subsidiaries and affiliates it is a good case to adapt as a single case study. The case is an intensive case of a single company, which will later shed light on a larger category of cases and possibly other companies

which hold similar characteristics as Aker Solutions. Although without generalisation, it is a challenge to understand the case through our analytical interview process. If choosing a multi case study of companies of the same type as Aker Solutions, the task would simply be too large and complicated with a high possibility of unfocused output, of no use for further purposes. Stake (1995, p. 8) states that "the real business of case study is particularization, not generalization. We take particular case, and come to know it well, not primarily as to how it is different from others but what it is, what it does. There is emphasis on uniqueness, and that implies knowledge of others that the case is different from, but the first emphasis is on understanding the case itself ".

3.5 Interview process

Kvale (1996, p. 4) compares the interview process to a "route that leads to the goal". The meaning of this comparison is important and reveals much about the importance of knowing how to travel this route, or how to conduct an interview in a research project with special aim and given output.

The interviews for collecting data for our thesis have been in-depth. However it has been of importance to prepare interview guidelines which we have followed throughout the process. According to Kvale (1996, p. xvii) "Interviews are conversations where the outcome is a coproduction of the interviewer and the subject". Developing and structuring the interview as research is a challenge to renew, broaden and enrich the creation of knowledge and research in the social science. We used our proposed model of service innovation, as introduced in our literature review, with our research problem as a guideline and background when preparing and structuring our interviews. We will discuss further how we developed our interview guides.

3.6 The projects' description

We interviewed six employees in Aker Solutions in three different projects, one manager in Aker Solutions and one external player. In total there were eight interviews. The interview period was from May 7th to May 23rd 2012. The interviews lasted from 30 minutes up to one hour. We recorded each interview and transcribed them. The transcripts can be found in the Appendix. We started by

interviewing Stian Anders Solhaug Ødegaard, the Vice President of Global SLS (Subsea Lifecycle Services) - Operations Support in Aker Solutions. He is in charge of the Aker Subsea Rental Tool Pool (RTP) department and the SLS Norway project department. The fundamental core services the Global SLS – Operation support is providing are aimed at operational activities offshore.

Project number one in Aker Solutions is the Atla project. Atla is an oilfield in the North Sea. In the Atla project we interviewed employees in the Aker Subsea Rental Tool Pool department (RTP). The RTP department offers tools for rent for Subsea Systems to external and internal clients. The Atla project includes four interviewees. One of the interviewees has relations with internal clients, delivering services inside Aker Solutions. We consider him a separate project (Atla 2). The following employees in the Atla project were interviewed:

- Hans Petter Øvrevik, the RTP Technology & Execution Manager, in charge of the Atla project.
- Magne Lie, Service project manager – Atla,
- Hans Christen Søvik, Project lead RTP – Atla,
- Marta Durlej, Asset coordinator RTP – Atla,

Project number two (Atla 2) is a Delivery Project in the Wellhead department. From this project we interviewed Johan Røed, RTP Consultant, Aker Subsea. In the project, tools are defined, found, located, allocated, repaired if necessary and delivered to the premises.

Project number three is in the SLS Norway project department. The services provided are those of repairs, upgrades and modifications or recertification of equipment taken from the seabed. We interviewed, Frode Sirhaug, Manager of Project Execution and Services of Global SLS in Aker Solutions.

One external actor was interviewed. He works at company X in the oil and gas industry in Norway, providing services to and collaborating with Aker Solutions. The interviewee is a business development manager in company X. We did not get

permission to use the name in the paper by company X or the interviewee for confidential reasons and they will hence remain anonymous.

3.7 In-depth interview

As mentioned before, in-depth interviewing is a qualitative research method, which uses open ended questions in the aim of uncovering information about a topic. According to Webber and Byrd (2010) the method allows the interviewees to express themselves, their opinions and ideas in a free manner. Our in-depth interviews took place face-to-face between us and our interviewees. The interviews were carried out in meeting rooms at the companies or the respondent's office. Each respondent gave approval for the interview to be audio taped, in order to facilitate record keeping. Our in-depth interviews enabled us to explore complex topics, allowing for ideas to emerge that had not been predetermined by us. Two of our in-depth interviews were conducted over the telephone and recorded since respondents were geographically dispersed.

Webber and Byrd (2010) continue to say that prior to conducting interviews, it is common for the researcher to construct an interview guide. The guide includes specific questions, topics of interest, or a combination of these that helps to focus on the interview without locking the interviewer into a fixed set of questions in a rigid order with specific wording. This flexible approach allowed us to guide the interaction and helped shape the structure of the interviews. We used follow-up questions, which often is referred to as probes. The primary goal of using an interview guide is to balance the systematic collection of data with the flexibility needed to tap respondent's understandings. We did not follow the guide rigidly in conducting the interviews, but rather adapted the questions during the interview process. This sometimes required changing of both the phrasing and the order of questions during the interviews based on participant responses. The benefit of this approach is that it helped us to combine predetermined questions and special topics. We tried to make our interview guide comprehensive, in order for the data to be collected systematically, but it should not be so rigid as to prevent additional themes to emerge. When time constraints occurred, we gently tried to put the respondent back on track. If during the interview process, relevant research topics

were not covered, we directly asked the respondent about these topics prior to the conclusion of the interview.

It is important to pay attention to the question phrasing and the order of the questions. We also tried to avoid some common problems that can arise including asking questions that can create antagonisms (e.g., asking why instead of how); asking about two different topics in the same question; and asking complex and long questions that the respondent may not be able to answer effectively. Our interview questions were open-ended and not easily answered by yes or no answers. We avoided leading questions that could influence the answers. We tried to formulate questions that made sense to participants and the questions were also appropriate for the respondents' educational and social backgrounds. In the interview, we asked both general and specific questions which are important for the data gathering. We asked general questions first, especially the easier and less threatening ones and left the more controversial or sensitive questions for the middle or the end of the interviews. We tried to ask questions that encourage respondents to emphasize on specific experiences rather than general opinions. We allowed the interviewees to move at their own pace, while also maintaining a comfortable conversational tone.

Webber and Byrd (2010) emphasize that pretesting of the interview guide is recommended. Pretesting gives the researchers the opportunity to check the quality of their questions for eliciting the in-depth information they are seeking. By pretesting, we refined and improved our questions. Additionally, conducting these test interviews increased our familiarity with the interview guide, which encouraged a more conversational tone and better data outcome, later in the real interview process. Since our interviews were in-depth and thus unstructured, it is important in this context to elaborate on arguments retrieved from Jones (1995, p. 258):

> There is no such thing as a totally unstructured interview and the term is over–used and often carelessly used.... The crucial point is that there is no such thing as presuppositionless research… The process of interviewing is one in which researchers are continually making choices, based on their

> research interests and prior theories, about which data they want to pick up and explore further with respondents and those which they do not. The making of these choices is the imposition of some structure.

Based on this we know that our interviews are structured up to a certain point.

3.8 Direct observation

In the process of conducting our in-depth interviews, the face-to-face interviews allowed us to grasp expressive or emotive nonverbal responses that indicated the importance of particular questions or topics. Seeing people's reactions influenced us to probe further or ask additional questions. We captured the ways respondents described and explained their decisions, actions and interactions with others. Our in-depth interviews also grasped important experiences or behaviours, opinions or values and feelings of the respondents. Collecting data with these methods has given us the opportunity to identify the various constraints they face. (Webber and Byrd 2010)

3.9 Documentation and analysis

Once the interviews were conducted and completed, the managing and organising of the gathered data were a critical first step in our analysis. We completed transcripts or write-ups of the interviews after all interviews were conducted. As we started to get more acquainted with the interviewees we made brief notes identifying key issues that arose in the interviews. When similar facts and experiences were mentioned in multiple interviews, we took notes describing recurring themes and patterns that emerged.

In our case study we used a framework based on our proposed six layered model of service innovation, originated from Barcet's 'A layered model of innovation in services', to analyse the content of the interviews. In addition we used our research problem throughout the analytical process. We listened to and studied the content of the interviews from printed transcripts thoroughly and then allocated them in a sequence based on the role of each layer in our proposed service innovation model. The final stage of our data analysis was the writing stage. Themes and facts were revised as the analysis was refined when writing the

findings of the research. During the analysis, we found positive and negative assessments of the same social phenomena by the same participant. We have tried to exhibit clearly the perceptions, feelings, and experiences of the respondents. Our analysis relies on our interpretation of the interview data.

3.10 Research design quality

Uoguelph (2011a) defines reliability as: "The extent to which results are consistent over time and an accurate representation of the total population under study is referred to as reliability and if the results of a study can be reproduced under a similar methodology, then the research instrument is considered to be reliable". Uoguelph (2011b) defines validity accordingly: "Validity determines whether the research truly measures that which it was intended to measure or how truthful the research results are. In other words, does the research instrument allow you to hit "the bull's eye" of your research object? Researchers generally determine validity by asking a series of questions, and will often look for the answers in the research of others". We have tried to ensure that the fundamentals in these important issues, the reliability and validity, have been our primary goal in order to enhance and strengthen the quality of our thesis.

According to Perakyla (2004, p. 285) "The aim of all conversation analytic studies (both on ordinary conversation and on institutional interaction) is to produce descriptions of recurrent patterns of social interaction and language use. Conversational analysis is particularly rigorous in its requirements of an empirical grounding for any descriptions to be accepted as valid". For us this entailed that through our interview process within Aker Solutions we needed clear indications to make our assumption valid. Perakyla (2004, p. 289) continues "…reliability of observation in conversation analytic research (as in any other empirical method) can only be achieved through serious efforts. The method itself does not guarantee reliability. In conversation analytic studies, proper attention needs to be paid to the selection and technical quality of recording as well as to the adequacy of the transcripts". We used two laptops and one mobile phone, both with internal audio recording programmes, to record the interviews. The reason for this was to secure the recording of the interviews and to ensure satisfactory sound quality.

With regards to internal validity, participants in the interviews were selected while keeping their role in Aker Solutions in mind. They all play important roles within each of the three projects when it comes to processes relevant to our thesis. We chose one external subcontractor to further enhance our results. In terms of external validity of case studies we know that the critical issue is to what extent the results can be generalised to suit a broader context. In our single case study we are not able to statistically generalise the results due to a lack of quantitative research and as our research was conducted only on one company. However, by illustrating, representing and generalising to theory in our single case study we believe that as far as the question of analytical generalisation is in place, our study serves the purpose.

3.11 Limitations

The main limitation of our study is that the writers are not part of the Aker Solutions organisation. It is of outmost difficulty for an outsider to gain the trust of the company to gather sensitive inside information and to observe their daily operations. The amount of primary data collected from Aker Solutions could also be regarded as a limitation, although due to time constraints the number of interviews had to be restricted. The interviewees involvement in Aker Solutions could also mean information given and opinions expressed during the interviews could be biased. Since the study is solely based on the case of Aker Solutions it may not be universally applicable.

4. Empirical analysis

In this chapter, we will look at how service innovation can help develop and deliver better services in an effective way in the case of Aker Solutions. We will do so by testing our proposed model on Aker Solutions. Based on this, we will provide a recommendation for improvement for Aker Solutions. As we have seen, service industries have faced challenges in terms of service innovation and service development concepts, hence it is interesting to investigate the theories of service innovation's capabilities to strengthen Aker Solutions in today's economic climate. The intangibility and non-storage characteristics of services demand a close collaboration between producers and consumers. As a result, consumers have usually been included in the production and consumption phases. Their ideas and close cooperation are the most valuable contributions for the companies` service innovation processes, customisation of their services and the effective and efficient delivery of services. In addition, the service sector relies a great deal on clients and other companies for both knowledge as well as technology. In the realisation of these challenges, we have defined our main research problem:

> **"Improving service innovation in Aker Solutions – How clients' knowledge, management and organisational structure can facilitate service innovation."**

We will look into this problem and answer it based on our findings in this chapter.

4.1 Theme 1 – Service based innovation

As discussed in the literature review, service activities can be found in almost every economic industry, and service sectors account for over 70% of the total employment and value generated in the OECD economies in 2005. The benefits and effects of services in the knowledge intensive industries have gained more attention and accordingly, so has service innovation. Van Riel (2005) says that once a service is launched the most important question for service managers is; how can we attract more customers, how can we satisfy them and keep them? Or phrased differently; how can we best improve our service offer while optimally using our limited resources? Layer one in our proposed six layered model is identical to the first layer in Barcet's 'A layered model of innovation in services'

and deals with questions related to service based innovation – why a service based innovation, for whom is the service and what is the usefulness of the service?

From our case description we know that Aker Solutions, through its subsidiaries and affiliates is a leading global oil services company that provides engineering services, technologies, product solutions and field-life solutions for the oil and gas industry. In the interviews we found out that the fundamental core services of the Global SLS – Operation support in Aker Solutions are operational activities offshore. The main element in the projects is to deliver the end results, which are embedded in a contract, on time and within budget. The services are mainly provided to various oil companies globally and Aker Solutions needs to have available equipment that is to be installed in oil fields and which aids production of oil in an effective and environmentally friendly way. As Hans Petter Øvrevik, the RTP Technology & Execution Manager and in charge of the Atla project, says when he describes the usefulness of their services: "It is obviously to have the tools available to install the equipment subsea". He continues and says that "we take care of everything related to this tooling so they [the client] don't have to worry about that part, we make sure that they get the right tools they need to make sure they are prepared for offshore, have the necessary spare parts and work offshore to install their permanent equipment". On a similar note Hans Christen Søvik, Project lead RTP – Atla, describes the service and the usefulness for the client to be that they have rental equipment available, so companies [Aker Solutions' clients] don't need to buy the equipment. The usefulness he says is that they save money since they don't need to buy the equipment. Johan Røed who works in the Wellhead department states in the interview: "If they [the clients] are going to start from scratch they would not have anything, so that is basically the advantages".

The benefits or the aim of the provided services is that clients of various sizes have the opportunity to perform their job by renting the right tools for the job offshore and thus manage their operations effectively and on time without heavy investments which would often be the case in the industry. The financial effects of the service are thus considerable for each client. The activities and processes inside the frame of layer one link to the other layers and can aid towards

sustainable and effective innovation performances in the other layers in our model. They also aid to pursue the following statement from Øyvind Eriksen, Executive Chairman, to Aker Solutions shareholders "we will continue to develop our company's performance. Our vision is to be the preferred partner for solutions in the oil and gas industry. To achieve this we need to continually improve our customer focus, our technologies, our people and teams and our ability to deliver consistently top quality." (Aker Solutions' Annual report 2011, p. 4). This message answers the main questions in layer one, why a service based innovation and for who?

4.2 Theme 2 – Define and understand customer needs

As we discussed in our literature review, it is very important for companies to identify customer needs to successfully deliver services. Understanding customer needs will also make companies better able to cope with changes in the market. To define customer needs precisely, companies have to involve customers in their operations and interact with them regularly. This will also help companies customise their services.

Aker Solutions (2012a) writes that "Building customer trust is key to our business. After all, without customer trust and satisfaction, the rest does not matter." Aker Solutions works closely with their customers and emphasizes their choices and priorities. Interaction with the customers takes place regularly in order to understand their needs and demands. Assessing and understanding market demands and customers' expectations has been the most important part of Aker Solutions' new service development and the delivery of services in the projects. In Aker Solutions, some departments are the clients of other departments. The SLS service department, for instance, is the internal client of the RTP department. This helps to understand customers' needs and requirements better. Aker Solutions (2012a) also mentions that "We find new ways, always linked to real customer needs and business priorities."

The environment Aker Solutions operates in is unpredictable, uncertain and dynamic. Aker Solutions scans the environment continuously in order to respond and adapt to changes in customer needs and market demands. This helps create

long-term success and sustain continuous innovation as well as generating new knowledge. Brand (1999, p. 53) mentioned that "Continuity and perpetual renewal go together." To keep up with competitors Aker Solutions has to adapt to changes and understand customers' expectations and needs. This aspect is missing in Barcet's 'A layered model of innovation in services'. We have therefore proposed 'Define and understand customer needs' as our layer number two.

Stian Anders Solhaug Ødegaard, the Vice President of Global SLS - Operations Support in Aker Solutions, says that by involving clients in their projects AS gains much knowledge. They learn by gathering feedback from the clients about how the projects were executed, what worked and what did not. He gives an example of a large project called Oscar gas compression where the task was to compress gas from the reservoirs in order to transport it to an onshore gas plant. Aker Solutions developed the technology needed in collaboration with Statoil. This was beneficial cost-wise for AS and ensured the new technology was based on concrete customer needs. The learning outcome from this project will help Aker Solutions deliver other services successfully. Ødegaard also says that Aker Solutions has been developing new services before, but in order to do this they need very strong belief in that it will work and that there is a need for the new services. It is hard to develop new services without involving clients and knowing customers' needs, but it can also be hard to involve customers in the projects. If Aker Solutions does not understand customers' needs and expectations, they would not be able to deliver a project successfully and do good business, so interaction with the client helps Aker Solutions to achieve their goals. Ødegaard said that in some projects they struggle and work in the dark without knowing what they are doing and what the consequences will be. Then clients will come in and help them to overcome those difficulties. They also try to reuse the experiences, lessons learned and best practices gained by working with clients in other projects. Ødegaard said that they do have some knowledge management tools, like the 'Lesson learned database'.

Stian Ødegaard says that Aker Solutions develops new technology and services based on client preferences for the future and this increases the success rate of Aker Solutions' innovations. Stian Ødegaard in the interview states that "we know

that for us to grow the service business we need to be smart to develop things that will actually give us more service." In order to do so, he says, it is important to observe and listen to customers because they are the ones who will pay for the new services. Therefore, it is important to provide services that they need and want. To make sure Aker Solutions understands their needs and requirements, they have regular meetings with the clients. It is also very important to specify and identify clients' wants, needs, expectations, types of services in a specific region, service reliability and so on. This can lead them to new opportunities in terms of new services and new regions. Stian Ødegaard in the interview says:

> I think that it is always the client need that will be in the focus. I mean we are not developing as I said with respect to R&D, we are not developing things because we think they are called [for], or, we think that somebody will buy them, we are developing something that the client wants, so by default in a way it is based on customer need, we would not make any subsea equipment that nobody will buy, and then try to sell it, we would have a need from a client.

Ødegaard says that it is expensive to customise services for each client and that a client will not be happy to pay a high price for services all the time. In order to respond to this Aker Solutions standardises services or products with a flexibility to add extra features or configure the existing services according to client specifications and needs. Kodzi and Gazo (2010, p. 91) mentioned that "The organization is more receptive to customer involvement, and the inherent learning is leverage to foster long-term competitive resilience, through developing responsiveness, flexibility and adaptability." This means tailoring services in a rational way so that the clients will be able to afford the new services which are based on their specifications. Stian Ødegaard discussed that they will be able to take some extra revenue for example by adding onto or modifying existing services or equipment even though it does not cost Aker Solutions anything. As previously discussed in our literature review, this is mass customisation put into practise. Stian Ødegaard in the interview mentions that "However, to survive in this business, to keep the cost low and keeping some kind of market share, you have to standardise, so what we have done is that we are trying to standardise but

having the flexibility [to add extras]". By standardising services with the flexibility to add new features or services different for each client, Aker Solutions will be able to cut cost and this will in term increase their EBITDA.

Six other interviewees from three different projects in Aker Solutions also say that working with clients increases Aker Solutions' learning and knowledge about the clients on many levels: Technological, commercial, types of services, types of products and so on. It also gives a high line in terms of making services and finishing projects successfully. Some clients have very high technical knowledge and by involving them Aker Solutions can see things from different angles and gain new skills. This helps them to improve their services for the next projects. Aker Solutions interacts with clients on a weekly and monthly basis, reports progress back to clients through direct dialogue and discusses possibilities through brainstorming. The six interviewees also agree that by interacting with the clients, they understand what clients want and what their expectations are. It also increases their understanding about clients and their drivers. It is a mutual process. Frode Sirhaug, Manager of Project Execution and Services of Global SLS in Aker Solutions says in the interview "If we do not meet the client need, we are out of business." Based on customer needs they can suggest additional services. They identify the customer needs by working closely with clients' operational department. Sandén, Gustafsson and Witell (2006, p. 36) wrote "In a development project where the customer is involved to a high degree, value is created interactively among the parties. This implies a refined role distribution, a longer relationship and the possibility of acquiring new knowledge." (Wikström1996).

The six interviewees discuss that it is necessary to also interact with external actors or sub-contractors to understand the client needs and market trends. This helps to customise or tailor their services based on specific customer needs and demands. Moreover this relates to open service innovation which we discussed in our literature part. Hans Petter Øvrevik, the RTP Technology & Execution Manager and in charge of the Atla project, says "[...] by better understanding the whole chain of the service that all the contractors provide to the oil company we can tailor our service better, so that is an important part." The six interviewees also mention that tailoring services gives them competitive advantage and gives

extra satisfaction to customers, but it is not possible to tailor everything as this will be costly. Tailoring services only slightly or adding extras to a standard service will save time. Therefore, they modify Aker Solutions existing services based on customer needs and international standards. Johan Røed who works in the Wellhead department states in the interview:

> What we have done now is that we have tried a strategy obviously to serve as many clients as possible, as often as possible, [in order] to have as much [as possible] of our assets capitalised at Ågotnes at any given time. However, five years ago Aker served tools for specific projects, it was not that much customised, so that means when they finished, the tools had to maybe be rebuilt completely at a huge cost and then we just scrapped [them] because the solutions [could] not [be used] in other [projects]. What we are trying to do now is to customise all the tools, so that maybe we can use them again in other projects just with a small twist. I mean if it is a pipe we can just add on an extension and use it in other projects again.

This interaction and involvement with customers bring new ideas and constant feedback, help improving current products and services, customise services and increase the development of new service innovations or new service delivery. By tailoring the services with customer specifications, Aker Solutions could gain competitive advantage and it could help deliver better services.

4.3 Theme 3 – The concept of service

It is important to define and describe the service in terms of what the company is offering and how that offering can be a possible solution to a problem or constraints that the clients are facing. Defined needs of the customers also need to be in place as discussed before. We can discuss this theme from what job can be accomplished by or what problem can be solved by the service for the client. Bettencourt and Ulwick (2008, p. 2) wrote "By thoroughly mapping the job a customer is trying to get done, a company can discover opportunities for breakthrough products and services". Layer three in our proposed model is identical to layer two in the Barcet's 'A layered model of innovation in services'.

As discussed in the literature part and also in the interviews, services often come with a product. Here in the case of Aker Solutions (SLS) the service attributes or what the company is delivering, is built around equipment or products installed, often permanently, where technology and software come strongly into play. To define a general service concept for layer three of our proposed model we can say that it is for Aker Solutions to identify a suitable solution to a client problem and to deliver this solution according to contract agreements and most importantly on time and within budget. Hans Petter Øvrevik the RTP Technology & Execution Manager – Atla says "the bottom line is that we are a service company and we always need to try to see all the time how we can make money of it [the services], we need to see all the time the best possible services we can provide". Stian Anders Solhaug Ødegaard, the Vice President of Global SLS - Operations Support in Aker Solutions, discusses that the SLS department, is constantly trying to improve the way they are doing services. However, the service industry is special because it is driven by the fact that when you have sold one item, then you get the service, "so we are not selling on the services, it is impossible in this industry just to sell services".

The concept of the services and their definition is mostly embedded in the contracts made between Aker Solutions and their clients. Magne Lie, Service project manager – Atla, says that employees need to know all the issues described in and regarding the contract - "you need to know the contract and you need to know the business in general, and also you need to be aware of the quality and also the expectancies from the customer, you need to be professional in all manners". When projects start, new issues which have not been defined in the contract sometimes appear. For example a need for new or different tools. Johan Røed who works in the Wellhead department discusses that an important part of the service is to define the tools needed, find, locate and allocate them and get them to the premises. There also has to be employees giving updates on different stages of the tools; do they need to be repaired in terms of small maintenance or is a complete strip down and rebuilding necessary? What type of spare parts are needed etc. Often it includes a search for other possibilities as to purchasing new tools or renting from other players. However, he continues, this is part of the service specifications. Magne Lie, Service project manager – Atla, also mentions

the importance of understanding the contract elements. It is not only the project manager who needs to know the contract; everybody in the project needs to know their part of the contract very well. In that way the contract is actually the recipe on how Aker Solutions will work with the client and deliver the service to them. Often the contract is not completely clear. This opens for discussions and means time is spent on resolving unsettled issues.

From above it can be seen that the definition of the service and the service as a result have open and rather flexible attributes, created by Aker Solutions and their client together. This is done according to various specifications and requests on the client's behalf, but also according to mutual agreements. Or as Hans Christen Søvik, Project lead RTP – Atla, says they give a service based on the clients' requirements. In that way the company knows what advantages and what effect the service will have for the client.

4.4 Theme 4 - Organisational innovation

From layer three in our proposed model we see that the processes Aker Solutions executes to deliver services are embedded in projects, based on contracts with constraints of cost and time. These processes are heavy when it comes to implementation.

As discussed in the literature review, organisations that are built on projects are called project based firms. They tend to innovate knowledge intensive services that are created based on a customer's specific needs and the customers are involved in the innovation projects. The firms need to acquire information from team members, customers and other actors involved in the project such as other companies and suppliers. Aker Solutions (2012b) writes that "We apply our knowledge to deliver better solutions. Our expertise is the result of our long track record in the industry, our involvement with a wide range of ambitious and professional customers and the challenges that we have faced and solved together".

Aker Solutions has to decide the specifications of the steps and phases for implementing the service solutions successfully, and coordinate sets of activities

among employees and team members in projects. In this way they can effectively implement services in heterogeneous conditions with specific space and duration dimensions. How Aker Solutions implements and delivers successful and sophisticated projects is the focus of layer four in our proposed model. The focus is also on collaboration and interaction internally and co-creation with clients as a specific issue in terms of successful implementation of services. These aspects were missing in layer three in Barcet's 'A layered model of innovation in services'. Apart from this, our proposed layer four is identical to Barcet's third layer.

According to Stian Ødegard the Vice president of Global SLS – Operations Support in Aker Solutions, the tender part is executed with the client. Aker Solutions has regular meetings with the clients, where the client specifies what they want, what type of products they want, what type of lifetime they expect, what type of reliability they expect and what type of services they would like to have in the specific region. Hans Petter Øvrevik the RTP Technology & Execution Manager – Atla says Aker Solutions is never a sole supplier of services to their clients. Aker Solutions provides its part, while other actors in the industry provide other necessary parts of the supply chain to the oil producing clients. According to Hans Petter, working with clients and their third party contractors helps Aker Solutions learn what makes the difference for the client offshore, for example in terms of how the client uses the RTP equipment offshore, what is time-saving for them and how Aker Solutions can make the provided services more efficient for the client's offshore work. Øvrevik adds: "We learn what kind of products they want to have, what kind of services they want to have from our products, and obviously also the commercial part [...] for whether or not they want to go with the rental or purchase".

The interviewees in the three projects mention that it is very important to involve the client from the beginning of the project when preparing for the operational issues and plan accordingly. Often Aker Solutions has a representative of the client located at the operational premises. Magne Lie, Service project manager – Atla, discusses especially that it is very helpful to do teamwork with customers. They then work in closer collaboration and solve problems together in an early

phase. Magne Lie says "we have a customer represented frequently here at Ågotnes which we cooperate a lot with and also we have one person in the office of the customer. That engineer communicates with him [the client] daily, so we have a person who is inside the customer offices and that is very helpful".

Johan Røed who works in the Wellhead department says that constant communication often makes him safe in his Delivery Project. He has up-date meetings with the clients where engineers fill in on the technical details. Johan Røed says "it is important to listen to [the customer], to communicate all the time, as long as you communicate and being honest, you are often safe". These client interactions help Aker Solutions to implement the heavy processes better and thus enhance the delivery of the services. Bettencourt et al. (2005) discuss that client's contribution to the service delivery process is integral to the service success. They say that the service success affects both the quality of the service outcome and ultimately the client's satisfaction with the service solution provided.

Frode Sirhaug, Manager of Project Execution and Services of Global SLS in Aker Solutions says that when they set up a project, there are people from all departments collaborating; finance, document, supply chain, etc. When collaborating with clients he says that all the project managers, group managers and department managers are sitting in on meetings. Johan Røed mentions that he is spending a lot of time with the employees out in the field because they need to know how employees in the headquarters work and he needs to know how the employees in the field work so they can work together as whole team.

When the interviewees were asked about the success criteria of their service project, almost all answered that it is to deliver on time and on budget. All the interviewees in the different projects mention a lack of time and hectic schedules when delivering projects and services, although Magne Lie says that if Aker Solutions is going to survive they need to deliver much faster than the company does today. Johan Røed says "the success is based on first of all the delivery time and quality of the delivery time". Customer satisfaction is taken into account in order to measure the success of a service project. This happens via direct dialogue between the management team and the client. Bettencourt et al. (2005) wrote

regarding client co-production roles in knowledge intensive business services, that the clients themselves often possess much of the knowledge and competences needed to successfully deliver the service solutions. This is often the case for Aker Solutions. Hans Christen Søvik, Project lead RTP – Atla, says that when Aker Solutions has a client with a very high technical level of knowledge, that it helps the company to improve the delivery of the service. Layer four in our proposed model emphasize how effectively delivered services in heterogeneous conditions with specific space and duration dimensions are implemented.

4.5 Theme 5 – The methods and resources implemented

As discussed earlier, in the competitive business environment knowledge has become a very important factor to create competitive advantage. Companies need to be capable of acquiring, sharing and transferring knowledge from outsiders as well as insiders to be successful in the market. One of the outsiders is the client or customer. By sharing and gathering knowledge from clients, companies can build more skills and competences in the organisation. This will help them to develop and deliver new services and increase effectiveness. Internal communication is also crucial in this matter. Aker Solutions is implementing a knowledge management program globally to enhance knowledge-creation. Aker Solutions also arranges seminars, meetings and training-programs to prepare employees and increase their knowledge in order to adapt to the changing demands and threats. Aker Solutions (2012c) wrote that we offer "An environment where you are encouraged to develop your skills and share your knowledge with your colleagues" (EuroEngineerJobs 2012). Aker Solutions emphasizes having employees with the latest knowledge on technology and markets who will help them deliver new and on time quality services. Aker Solutions (2012d) stated that "Aker Solutions is committed to building on local capabilities and sharing our technology with the markets we enter. We believe that we benefit from drawing on local resources to create jobs, customise product strategies, and work with local governments." This relates to open service innovation that we discussed in our literature review. This theme is layer five in our proposed model. In Barcet's 'A layered model of innovation in services' this layer is number four.

Stian Anders Solhaug Ødegaard in the interview says that it is very important to share and gather knowledge to deliver new services. Ødegaard explains that Aker Solutions is running a large project called 'Knowledge Arena'. This is supposed to help them to gather and share knowledge in a more effective way. Today Aker Solutions gathers and shares knowledge using tools like: The Share-point digital platform, various communication tools (for instance Link), via project documentation and e-mail. 'Knowledge Arena', which can be called a knowledge management project, will be applied throughout Aker Solutions. Ødegaard says they are sharing knowledge by having meetings or Share-point online database sites or creating collaborating communities inside Aker Solutions. They have a separate organisation which consists of the key account managers whom are in charge of regional relationships and client specific relationships. Their job is to utilise and nurture the relationships with clients and other actors. They meet and discuss with clients as often as possible to capture knowledge about upcoming opportunities in terms of technology development, product development, future plans, marketing, sales and so on. They also visit Aker Solutions' clients' companies and gather feedback. Stian Ødegaard in the interview mentions that "there are different levels of communication with the clients, and through those channels we are trying to harvest […] knowledge [...] about everything from information to technology knowhow."

Ødegaard also discusses that interaction between employees is crucial for knowledge creation and generation. It is important to have a culture and environment where people can share knowledge and ask questions at all levels of the organisation. Aker Solutions has regular meeting places where employees discuss issues and provide feedback to the R&D department. Ødegaard says that "Aker Solutions is the people [the employees], because people are the ones who know the technology. Without the people we would have nothing to sell. We could sell hardware, but the hardware and how that works is actually [...] the knowledge of the company, so what you are selling is in a way knowledge." Renzl (2008, p. 206) wrote that "Knowledge sharing within and between teams is of vital importance for organizations."

The six interviewees also agrees that knowledge gathering and knowledge sharing help them to deliver new services successfully. By sharing and gathering knowledge, they learn from both their mistakes and tool failures. It will also help them to see how they can use the tools differently, review service performance, contract set-up, project modification and so on. Hans Christen Søvik, Project lead RTP – Atla, states in the interview that "Knowledge sharing is very important, because sometimes equipment needs to be modified or adjusted to be fit for purpose. And then you must have knowledge about [...] interface, how it shall be worked and to provide the right equipment that is fit for service." Gurteen (1999) mentioned that "Increasingly the only sustainable competitive advantage is continuous innovation. In other words the application of new knowledge." The six interviewees describes that they sometimes have to get a pass from their client to enter a new market. For example, through working with Statoil they have managed to enter the Brazilian market as Statoil was already drilling there.

The six interviewees mention that they try to capture the knowledge of their clients by doing projects with them continuously, mastering the specification of the service and building-up their experiences on projects. They also have Technology Conferences with their clients where they discuss different issues, amongst other technical. The teams in Aker Solutions also have frequent project meetings where they discuss issues regarding their clients and project progress. Hans Christen Søvik also says "You cannot capture an interesting spiral [new knowledge] by working alone. You need to have interaction to see things from a different side and to pick up knowledge that people have got from previous experience." Alves, Saur-Amaral and Marques (2006, p. 229) wrote that "The interaction between the various actors [employees, customers, etc ...] allows for the sharing of knowledge, and this, in turn, results in increased productivity and efficiency." The six interviewees explain that they use a daily log where they write down everything about daily activities in operations, so they can go back and learn from their notes. They have to be open minded and have open discussions in order to share knowledge. Frode Sirhaug mentions in the interview "If you do not invite all the employees into sharing knowledge, if that guy or girl is quitting the company, knowledge is gone. So, we have to share."

We can see that knowledge gathering and sharing with both customers and employees help Aker Solutions to deliver their services and execute their projects successfully. It also helps them to develop new services, learn from mistakes, improve their existing services and maintain quality. This could increase their competitive advantage.

4.6 Theme 6 – Management support and organisational structure

As mentioned earlier in our literature review, it is important that management encourages and involves people to share and generate knowledge at all times across the whole organisation. They also have to motivate and inspire employees to interact between themselves, with clients and other actors and collaborate with other departments. Without management support, it will not be possible to develop or deliver new services successfully. Aker Solutions (2012e) stated "In the end, it comes down to the talent and motivation of you and me. Delivering strong results is impossible without a highly capable workforce. We learn on the job, through challenging tasks, coaching and training." Schwalbe (2011, p. 54) mentioned that "A very important factor in helping project managers successfully lead projects is the level of commitment and support they receive from top management. Without top management commitment, many projects will fail." Moreover the organisational structure has to be open and flexible for promoting learning, bringing and renewing knowledge in the organisation and adapting to change. It will also affect how people work and interact in the organisation. This will help sustain their competitive advantage. Aker Solutions (2012f) mentioned that "We stimulate entrepreneurship and challenge bureaucracy, complicated hierarchies and "silo" mentalities. We are one Aker Solutions." The management support and organisational structure will also affect how the project is executed and its end result. The management gives responsibilities to employees, so employees can work without any red tape rules and regulations which will be a hindrance for delivering services effectively. Aker Solutions (2012f) stated that "We are accountable and solutions-oriented, focusing on the right details at the right time. We follow through and ensure accountability. We believe in empowering the people close to the action to take responsibility." This relates to organic organisational structure which we discussed in our literature review. Therefore, to develop and deliver new services effectively the management in

Aker Solutions has to support their employees to promote knowledge, interaction, communication and so on. Aker Solutions also has to create an organisational structure where learning and innovation are in focus. This theme is the layer six in our proposed model which is missing in Barcet's 'A layered model of innovation in services'. This is called the support layer in our proposed model.

Ødegaard in the interview says there is always a close cooperation with clients and they also try to collaborate with other departments, teams or employees if they see that other departments have specific skills. They also discuss good suggestions that come up, so employees can see that their ideas have been taken into account when creating new services or adding to existing services. The service departments are constantly looking for new opportunities. The organisational structure they have today is supposed to handle and promote sharing and seeking knowledge in a better way than before, and it is more open and flexible than before. Ødegaard in the interview mentions that "I think the organisation is quite open and flexible and you are allowed to go and talk to everybody and sharing your thoughts with everybody". Ødegaard also discusses that as a manager he promotes sharing and transferring knowledge and customer involvement in different ways. Some employees have the responsibility to know about certain products and services and share it with the group. He also encourages them to be in touch with the other groups in the organisation, give feedback on operational experience each month and hold seminars to share know-how. In the e-field department, they are always trying to figure out new ways of doing services or delivering and developing new services which will solve clients' problems and meet client needs. Aker Solutions gives responsibility to employees, so they can be flexible in doing their tasks which in turn will increase performance. Stian Ødegaard says "I think that myself is a good example, I am a pretty young guy, […] given a lot of opportunities in this company and I think that it is one of the biggest strengths in Aker Solutions. They are really good at giving people responsibility."

The six interviewees mention that they collaborate a lot with the product groups or the centre of excellence for various products and services on the technical side. There is strong support from Aker Solutions to invest and develop Aker services.

They motivate employees to make business plans for their ideas, so they can take them further. The management inspires to use the lessons learned and past experience in the project as a way of sharing knowledge. There is a very strong drive from the top management to secure customer satisfaction and being close to the customer. The six interviewees also state that the key is to have management support all the time for delivering better services or developing new services successfully. The management have to set the standards, convey what is important and make sure everybody complies. It is crucial for projects to have management support from the beginning to the end. The management has to see to that required resources and funds are available as well as assist in solving problems and giving general support. Magne Lie, Service project manager – Atla, in the interview says that "me myself as a project manager I need to know that I have support from the top management from the day one until I have finished. I need to actually know they have confidence in what I am doing, and also, I need to know that if I need to make some decisions on different issues, I need to know where to go to get some advice. That is very important." Hans Christen Søvik also says "As we talked about, if you don't have the right support it is very hard to deliver in the right time and the right quality." Moreover the six interviewees mention that Aker Solutions also support open communication and listening to colleagues' suggestions and ideas. It is important to have the right organisational structure to deliver services successfully. Marta Durlej, Asset coordinator RTP – Atla, mentions in the interview that "As I said it is really easy to get help from different departments and people. I am new here. Every time I have a problem, I find somebody who wants to help me. It is really important to work in a proper way: Open communication, being flexible and open and having open conversations."

Therefore, management support and organisational structure are very important to adapt with the changes and to successfully deliver better services or develop new services. They will affect the organisational goals and objectives. A flexible organisational structure will also sustain management success. Arnold et al. (2010, p. 41) mentioned that "the existence of resilient and flexible organizational structures is indispensable for sustainable management and control."

5. Discussion

From the above discussion we can see that coordination and collaboration between internal departments and with clients is very important because it helps develop and deliver better services through understanding client needs. Interaction with clients also increases the knowledge about market demands and helps rational customising. However, knowledge has to be shared between employees and transferred to other departments to keep delivering projects successfully. The major sources of ideas for service providers come from the external environment like clients and sub-contractors. This is in line with the "open innovation" perspective (Chesbrough 2003a). It is also important to share the learning outcome from projects across the whole organisation in order to create more and better services and enhance the delivery of future services.

Companies also have to incorporate best practices in their innovation management models. Without management support it would not be possible to deliver or develop services successfully, but this support has to be there from the start of the project. The management has to create an environment where everyone can share knowledge and communicate freely. However, the management and organisational structure can not be applied as a permanent mechanism to manage innovation. Rather, it has to remain subject to change according to the external environment or internal capabilities of the companies. Aker Solutions (2011b, p. 4) wrote in the annual report that "In Aker Solutions we bring together engineering capacity and knowledge, and we create and use the best of technologies to provide the customers' solutions."

One of Aker Solutions' external actors agrees that it is very important to share knowledge. This helps them to understand Aker Solutions' specifications and requirements and to deliver services based on customer needs. Therefore, they collaborate and communicate with Aker Solutions regularly. They also visit their clients' offices on a regular basis. By collaborating with clients, they learn from a different angle and it helps them deliver services in a better way.

Our inquiry shows that in Aker Solutions there is close cooperation with clients when defining the client needs, although the collaboration between departments

and employees is somehow limited. The collaboration happens in isolated pockets and most of the knowledge created is likely to stay within a project. Employees are mainly concerned about the project they are involved in. From our analysis, we find that information-sharing is more on an informal basis. They can communicate with others if there is a need, but the person seeking information has to know who to go to for knowledge regarding specific issues. There is not a strong drive for communication between departments. Some people do not either have a clear conception about who the other members in their project are and are very much tied to their own tasks. Most importantly the R&D department also works in isolation and there is not enough communication with surrounding departments. This could lead them to lose the spiral of knowledge. Customers come on the top of Aker Solutions' priority list when accessing/developing new services. Aker Solutions has established strong ties with the customers and their ideas have been valuable in the past in the development of new services. Our study also shows that there is an attention to collaborate with other external actors like SAP organisations to manage Aker Solutions' projects more effectively. This inclusion of external experts could provide the companies with supplemental resources, since labour force inside the organisation has become a big concern for service companies.

From our analysis we learn that Aker Solutions could be better at gathering feedback from clients in order to tailor packages and improve their services. Aker Solutions does not have a good way of capturing the client's knowledge for other use than keeping continuity in doing tenders with their clients. Though there is a strong drive from the management in Aker Solutions to maximize the use of the Rental tool pool, there is not such drive in seeking or sharing knowledge. They promote knowledge sharing up to a certain extent and there is a push from the management to use lesson learned, but the process should be more efficacious and active. We also find that Aker Solutions is trying to utilise both internal and external resources for innovating new services. They have established the Share point and other knowledge systems where people can share their ideas. Here everyone can contribute by presenting an idea or suggestion, but it is still very much an ad-hoc process. These systems could also be more visible in the

organisation and there should be an organisational or cultural change to create a knowledge oriented organisation.

Most of the engineers are tied up with their tasks and responsibilities and do not to the same extent take into consideration issues like externally oriented communication, developing new services and so on. They should to a larger extent be encouraged to share knowledge of their specific project with the organisation and consider it in terms of service innovation. There are numerous knowledge sharing platforms and much interaction that take place in Aker Solutions. The amount of knowledge inside the company is thus enormous, but is not stored systematically and very seldom used for the purpose of seeing opportunities to create new services that possibly can match new technology or new equipment.

As we discussed, the push from the management in terms of using lesson learned, the system is not very actively used. The reason for that is that there is no drive to use available systems or the best practices and the employees do not know what happens to knowledge they forward, or if it is used. Information and various knowledge from past projects are put into systems, however we have the intuition that there is little time to use it nor people in place to make use of it in an effective systematic way. The effects are that valuable knowledge is not used or it is lost, because there are no resources to make use of it across the company on an organisational level with relevant interaction between various projects.

Managers display a greater interest in innovation and innovative thinking than most project members, whereas project members have different and varying attitudes towards innovation. Differing perspectives are good to bring more discussion to the table when undertaking development or delivery of new services, although some interviewees do not take innovation or service development into consideration as part of their role. The interviewees are all dealing with operational aspects, which mean that they are at the heart of the service delivery to clients of Aker Solutions. We see that the focus in the project is on delivering the core of the service and that the scarce resources are spent here and not on development of new services. However, by using learning effects from previous

projects they are often adding additional services to the next project, but their focus on delivery is so strong that they do not regard this as a development or focus consciously on this. Furthermore the drive from top management to use information from projects in the SLS in the aim of finding new service opportunities, seems to be weak. Aker Solutions is losing development opportunities by not emphasising innovation or encouraging new thinking for alternative ways of delivering services. Several smaller competing companies, which see opportunities to develop new services and are very much focused on innovation, are taking parts of Aker Solutions' market share. An important point to consider here is that most of the interviewees do not regard themselves to be delivering services, but think mainly about products and product development, even though they are in fact delivering services to their clients.

In a service based organisation that is delivering services, the organisation should have a goal to make use of valuable interactions and knowledge to create new services. As known, services often come with a product. However, as seen, the timeframe of each project and also the lack of sharing of experience and knowledge between various projects is a barrier towards effectively spending resources on creating services around the products. The focus amongst employees is more on delivering already existing equipment rather than to develop services in Aker Solutions, and this implies that there is maybe a barrier between the service side and EPC and R&D. We think it would be beneficial if these actors could work more closely in the pursuit of doing innovation and also could get the resources to do so. Here we touch upon the main weakness of Aker Solution, especially because they claim to be a service company. Aker Solutions (2011b, p. 6) in the annual report stated that:

> Strategic priorities: Growth and further development of the quality of Aker Solutions' performance are the two key elements in the company's strategy. Aker Solutions enjoys a prominent position in several of its key markets. Its long tenure in the oil service industry has left it with business relations and experience which are embedded in individuals and in organisational structures. A growing installed base of products and

solutions represents opportunity for service deliveries and repeat sales. These are foundations for growth.

Aker Solutions presents themselves both as an operator in the service industry and as a supplier of services and in the 98 page 2011 annual report, the word service/ services has been used 132 times, but in practicality the drive towards creating services is lacking.

Improving technology and equipment and to be the best partner in the market is important for Aker Solutions. However, there is too much product and technology focused innovation inside the company and still a long way to go to reach a level where they use their knowledge and valuable information towards creating new services around the equipment. There are product groups inside Aker Solutions which are often talked about in the interviews. However our question to the company is why does no one talk about service groups?

As can be seen from the discussion on themes, there is plenty of interaction inside the projects, and also outside, in order to deliver successfully. The projects have their own individual existence and when putting them in the metaphor of a person, the person is a lonely one, even though there are a number of other persons around. What we mean by saying that the projects of the interviewees are isolated and lonely, is that they are not communicating effectively in the pursuit of making use of accumulated knowledge. The projects have all the aspects of a good project; in terms of e.g. delivering on time, deliver quality results, lessons learned and registering best practices. The projects and the employees within are focusing first and foremost on the delivery inside the project, being on time and within budget. That is of course their main role and a very important factor in Aker Solutions.

Our finding is that there is a problem in Aker Solutions when it comes to sharing knowledge between departments. Employees in one project exclude other departments and projects and do not communicate their experiences as mentioned earlier. Employees can share and search knowledge in project documentation from previous projects when there is a necessity, but this still happens within the

projects most of the time. All the interviewees said that knowledge sharing and collaboration between departments could be better. The lack of integration between departments decreases the transferral of knowledge from employee to employee, old employees to new employees and new employees to old employees. When employees leave their jobs, they take crucial tacit knowledge with them. Our research also highlights that they only share their ideas when they perceive there to be a common opportunity or benefit. More interestingly, the R&D department has its privileged position for creating new services and new ways of thinking for innovation. Aker Solutions' system for knowledge sharing and information coordination has not grown at the same pace as their business activities and the size of the organisation. In most cases innovation has remained an "in-house" process locked to the internal R&D department and SLS department. Nonetheless, they have wanted to keep possession of and develop internal skills and capabilities as the main source of creating new services.

Moreover our study discloses that the management in Aker Solutions struggles to promote a culture of sharing knowledge, ideas and creating new services. There is no eagerness for curiosity and interest-driven projects amongst the staff. They have not been motivated to take the ownership of creating and developing new services and ideas, and there is not enough support in terms of resources and moral support for the pursuit of their own ideas. Employees have to have an approval from management for working on new ideas, and there has to be a viable business case for their ideas before they could be taken into consideration. In some successful companies, there is a certain amount of working hours booked for innovation and new ways of thinking. An innovative and learning corporate culture minimises the negative impression of failure and accentuates the learning curve. This encourages employees to explore new ways of creating and develop innovative solutions. The employees can not create new services or ideas by just following orders and instructions given by a specific department or manager.

We have seen in this research that out of seven interviewees, only one of them is from a business background and the rest from an engineering background. From observing the vacant position webpage of Aker Solutions over seven days from July 2nd 2012 to July 8th 2012, we found that nearly 67% of advertised jobs

required education in engineering and approximately half of the remaining vacant positions also required technical experience. One can therefore say there is a lack of diversity in the project teams. Aker Solutions (2011b) in their 2011 annual report discussed diversity only in terms of male and female workers in the company. This will reduce the richness of thinking in the projects. Diversity is an internal resource which helps companies cultivate knowledge. Diversity is about variety and can come in terms of sex, age, cultural background, race, mental capability, personalities and perceptions, education, demographic status etc. Streater (1999, p. 1) wrote that ‘‘[…] diversity is a word that describes the ways in which each individual is unique.’’ It is important to understand these differences to foster innovation and serve customers better. Diversity brings more creative ideas into the innovation process or delivering process and can help make quality decisions for innovations, delivering new services and their design. Bason (2010, p. 124) wrote ‘‘Diversity powers innovation.’’ By sharing knowledge between diversified and talented employees, Aker Solutions could gain a competitive advantage.

Our research shows that Aker Solutions delivers services which require a close interaction with employees, clients and other actors. Their organisational structure and culture have not created an environment where knowledge sharing, creating new ideas and promoting breakthrough and challenging thinking are in focus. Even though knowledge is gained from working with clients and working with projects, this has not been used and utilised throughout the organisation. Employees do not revise lessons learned from projects or take previous project’s mistakes systematically into account when delivering new services. Departments are not aware of what kind of new knowledge is obtained by other departments. This is a worrying fact in the sense that this could lead Aker Solutions to trouble in the future in a highly competitive and changing market. Gurteen (1999) wrote that “Our problem as an organisation is that we don’t know what we know”. Large global or even small geographically dispersed organisations do not know what they know. Expertise learnt and applied in one part of the organisation is not leveraged in another.”

Aker Solutions' organisational structure has not been strictly hierarchical, but it could be more flexible and open for promoting and sharing knowledge. Nonetheless, they have established reasonable paths for open communication where everyone within the company is listened to, regardless of one's professional position. By sharing and transferring knowledge, Aker Solutions would be able to increase performance and deliver quality solutions to their clients. For this, people at all levels have to be motivated and inspired to share ideas and knowledge and have open communication. Aker Solutions (2011b, p. 6) in the annual report also wrote that:

> The strategic reviews conducted in 2010 and 2011 have pointed to four key areas, which will need further development in 2012 and beyond. They are performance quality, customer focus and positioning in the market, technology development and people. Performance quality is of special concern to the Board. In 2011 Aker Solutions again had to recognise financial losses and loss of customer trust related to some specific regions and projects.

They have to create an environment where employees can and should share their ideas and knowledge across the whole organisation. They not only need to gather knowledge and store it in a database, but also have to use and utilise the gathered knowledge before delivering new projects. The use of this knowledge in the organisation could be compared to the journey of light through a diamond. BBC2 (2000) in their Science and Nature programme called 'The Diamond Makers', explained that when light hits the surface of the diamond, it is absorbed and starts travelling inside it, reflecting off each facetted surface, until the diamond is glowing as the light exits (Green et al. 2003; Bhatnagar 2006; Tolkowsky 2001; and Vicki Cobb and Josh Cobb 2005). See illustrations below:

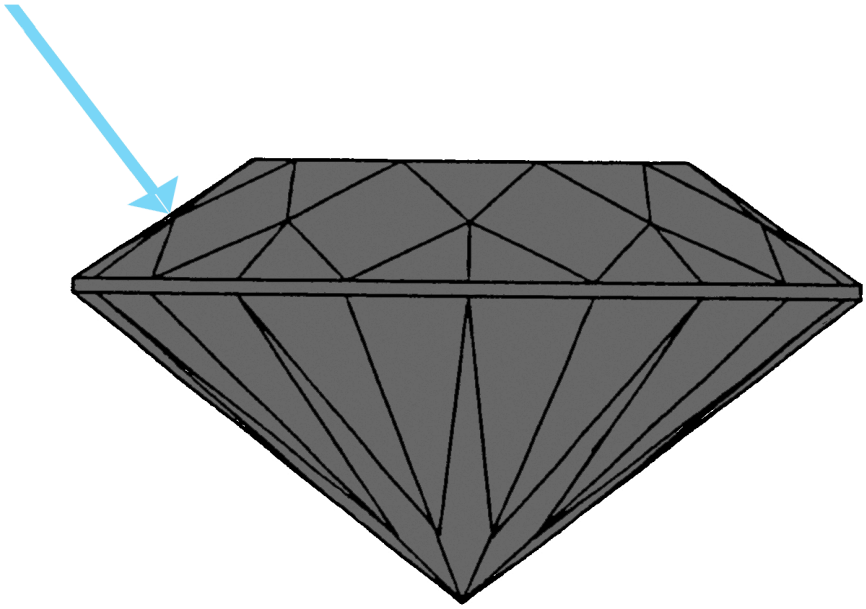

Figure 5: Light hitting the surface of the diamond

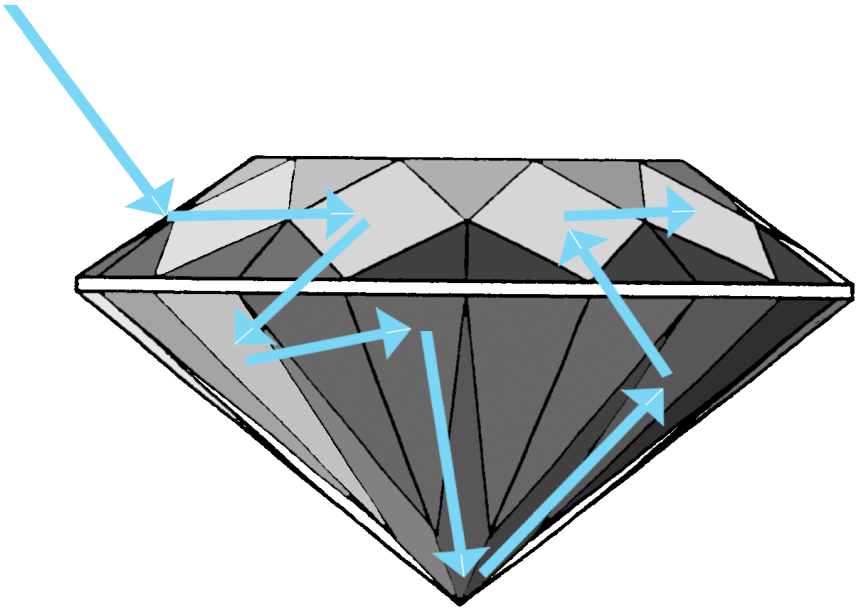

Figure 6: Light travelling inside the diamond

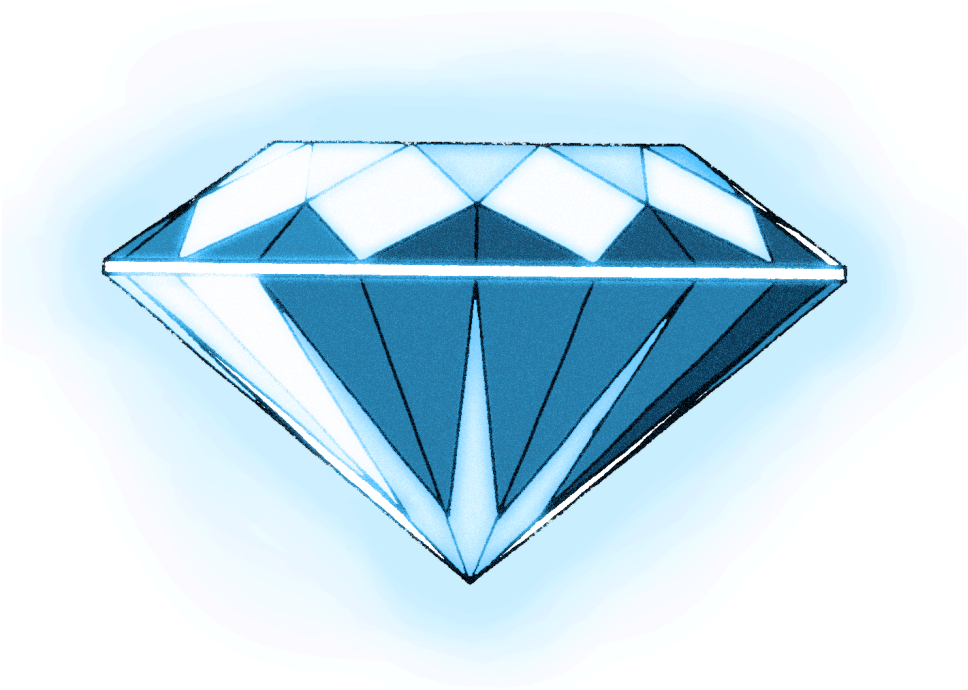

Figure 7: Light leaving the diamond glowing

5.1 New revised model

In the light of our findings and discussions presented in our research, we have seen that there is a great need for interaction with clients. It is also important to define client needs for successfully customised services with flexibility and to develop viable service concepts. In order to achieve this, there has to be a close cooperation with clients and close coordination and collaboration between employees within projects and across the organisation for sharing and generating knowledge. The organisation should have a diversified work force to coordinate sets of activities and complete activities successfully. Organisational effectiveness can be achieved by integrating and combining people, systems, knowledge and skills and other resources. This helps achieve goals and objectives for sustaining a long-term vision. Lewis et al. (1998) wrote "Effectiveness is achieved when the organisation pursues appropriate goals." Gold, Malhotra and Segars (2001, p. 186) said "To COMPETE EFFECTIVELY, FIRMS MUST LEVERAGE their existing knowledge and create new knowledge that favorably positions them in their chosen market." Firms in a competitive and ever-changing environment require intensive knowledge sharing, transferring, absorbing and retaining and the

creation of new knowledge. McLaughlin and Paton (2008, p.126) wrote that "Managing knowledge capture, creation and transfer is vitally important to a successful innovative organization." There has to be an environment where knowledge can come from the outside environment, or come from an internal environment, and the knowledge will be shared and utilised within the organisation in the same way we have seen light travel inside a diamond and make it glow. The organisational structure should be open and flexible for creating new service ideas and developing new services. It should encourage open communication and interaction with clients, between departments and other actors like higher education and research institutions, professionals and subcontractors which play an important role in service innovations. Therefore, the role of the top management in a service based organisation is first to formulate a service innovation strategy and make service innovation a priority for the organisation. The purpose of the new service is not only to fulfil the needs and demands of the customers, but also to create or explore new market opportunities. For this to happen the top management needs to have routines that support both informed and pragmatic decision making at all times and also from the very beginning of the projects. It is necessary with an innovative management that incorporates both elements of open innovation as well as supporting gathering and sharing knowledge across whole organisation. Therefore, we have developed a new revised model based on Barcet's 'A layered model of innovation in services', open service innovation and an interactive approach to service innovation called the **'Interactive diamond model of service innovation':**

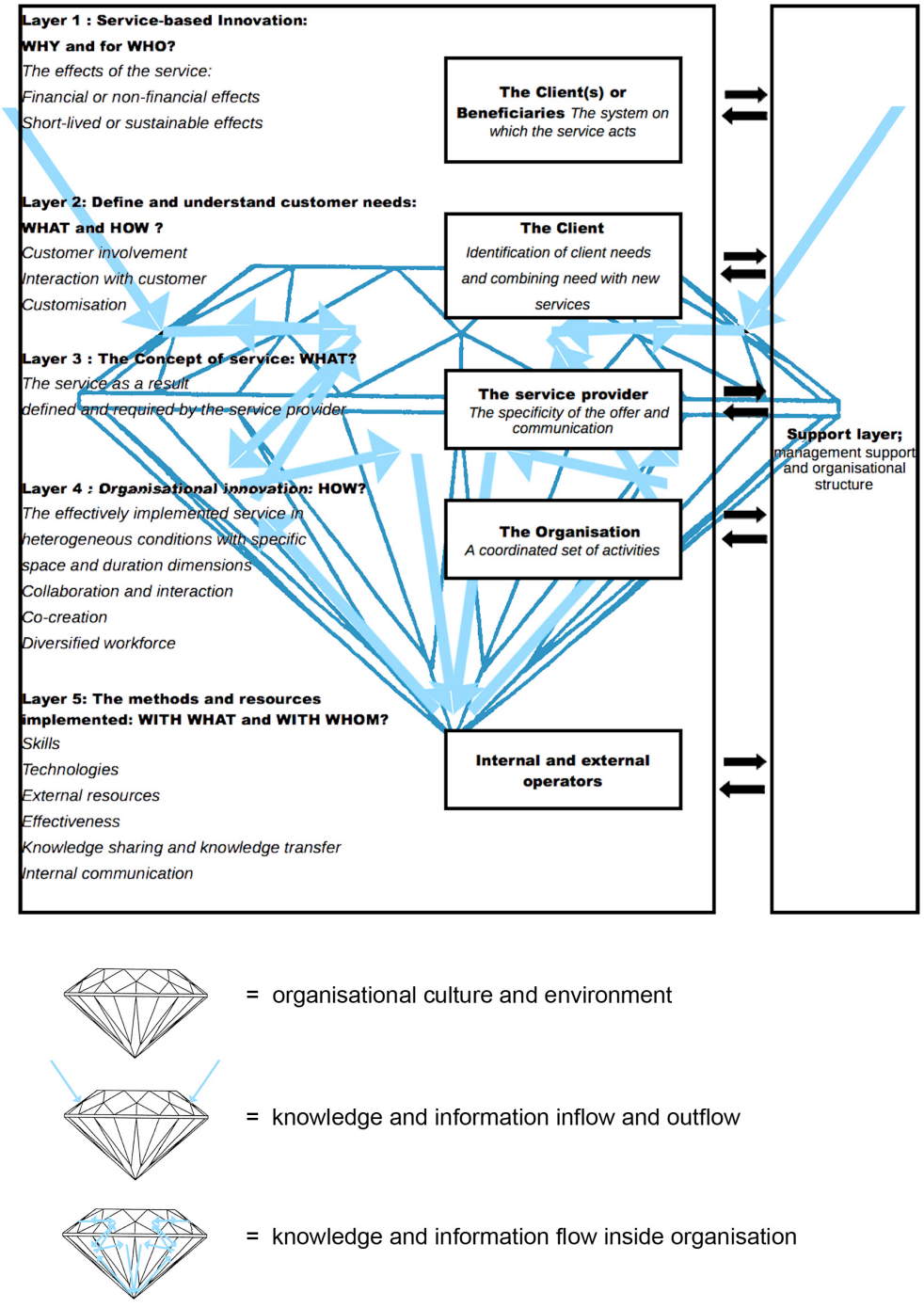

Figure 8: Interactive diamond model of service innovation

6. Conclusion

On the basis of our research and the empirical findings in this study, we can conclude that Aker Solutions' approach to running their organisation bears a very close resemblance to "open service innovation" and our proposed model based on "Barcet's 'A layered model of innovation in services". This to the extent one can say that Aker Solutions is already largely following principles of service innovation.

Knowledge intensive service companies have been utilising both internal and external resources like ideas, knowledge and technology to achieve the broader goals of innovation. There has been a realisation that the strategic processes of idea generation and collection should increasingly be embedded in the organisational culture. The significance and importance of tacit knowledge has gained greater attention by researchers and managers alike.

As we have seen, lack of time and resources to develop new services is a problem. This means Aker Solutions is losing opportunities and contracts, so mass customisation could help to customise and improve services in a rational way. Absorbing and using clients' knowledge also aid Aker Solutions to innovate and enhance delivery of services. Gathering and sharing knowledge with clients and between employees across the organisation will improve the use of existing capabilities, motivate employees and help innovate and deliver new services. To achieve this, an open and flexible organisational structure and management support are necessary. Our revised model, the 'Interactive diamond model of service innovation', will help Aker Solutions to create and deliver service effectively and efficiently in an ever-changing competitive business environment and it will also help gain competitive advantages. Just like light and its journey inside a diamond is the essential prerequisite for a diamond to glow and shine, knowledge and its journey inside the organisation is the core requirement for excellence and accomplishment in service innovation and delivery for a service-based company like Aker Solutions.

6.1 Recommendations for Aker Solutions

- There has to be a strong focus on services and service based innovation.
- Managers should develop the right conditions to promote creativity and breakthrough ideas.
- A culture of innovation should be created where everybody should be valued on an equal basis. Furthermore, a reward scheme could be introduced in order to encourage employees to contribute new ideas.
- Collaboration between departments and employees has to be more strongly encouraged.
- There has to be an organisational culture of gathering and sharing knowledge between employees and with clients. The knowledge should be utilised for developing and delivering services across whole organisation. Time and resources must be allocated for this purpose and a lack of this cannot be barrier.
- Resources must be allocated to review selected past projects inside the organisation in order to absorb knowledge and learning effects within the projects. This must be done systematically to see opportunities for creating new services.
- A long term collaboration plan with clients, subcontractors, other companies, higher education and research institutions could be materialised. This collaboration should not only be restricted to research and accessing a trained work force, but should also be used for creating new ideas and developing and delivering new services.
- Aker Solutions should store ideas that have not been fully developed or immediately put into use for potential future use. All ideas should be given consideration although they may turn out not to be feasible for the company.
- Aker Solutions could allow employees a certain amount of working-time to play with projects of personal and professional interest. This could promote creative thinking amongst employees and create an instinct motivation that results in curiosity driven projects.

- A well defined innovation management framework or model for both product and service innovation should be built to fit the organisation's requirements.

6.2 Further research

Organisational strategies have a great impact on achieving goals and objectives and also affect how employees think while accomplishing their tasks. Hence there could be a more in-depth study on 'How can organisational strategy affect service innovation?' and also on 'How can organisational strategy affect our 'Interactive diamond model of service innovation'?

It would be interesting to conduct a quantitative survey amongst the management and middle management of Aker Solutions on their perception of creating new services and knowledge creation and sharing. This survey could help to improve the overall service innovation strategy for Aker Solutions and possibly also within other knowledge intensive organisations.

Moreover, corporate social responsibility (CSR) has become increasingly important and firms today show more social responsibility for the environment and stakeholders. Firms do not only have an organised corporate internal decision structure, but also manifest a set of beliefs and values of what is generally regarded as right or wrong in the corporation (Crane and Matten 2010). Bocquet and Mothe (2010) quoted the Commission of the European Community (2001, p. 6) and said that the literature on CSR provides an understanding of the innovation process by which "companies integrate social and environmental concerns to their business operations and in their interactions with stakeholders on a voluntary basis". Firms are not only managed in the interests of their shareholders alone, but also in the interest of various groups or stakeholders that have legitimate interests in the firm (Stakeholder Theory by Crane and Matten 2010). Thus it is possible to say that when firms are managing their innovation it is necessary to reflect on aspects of stakeholders in the firms' environment and to consider environmental issues, not just economic factors in their decisions. Furthermore, the issue of environmental pollution and damage is more and more on the agenda and emphasis on sustainability is increased. Especially in the oil and gas sectors, CSR

is receiving much attention and most oil and gas firms are focusing on renewable energy. We have seen that Aker Solutions have a great emphasis on the health, safety and environmental issues. Some interviewees from Aker solution also mentioned that it is important to use environmental standards for their operations. Therefore, further research could be made into 'What implication could CSR have on service innovation?' and also 'How can CSR affect our 'Interactive diamond model of service innovation'?'

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9. Appendix

9.1 Interview guides

Interview Guide for management in Aker Solutions:

1. Is knowledge gathering and knowledge sharing important for delivering new services?
2. Does sharing knowledge help you to learn from different perspectives about services and clients?
3. How do you capture the knowledge of your client?
4. Do you think interaction between employees plays a vital role for knowledge creation and generation?
5. How do you explore new knowledge opportunities?
6. How does interaction with clients affect the success rate of service innovation projects?
7. How does Aker Solutions identify customer needs before developing new services?
8. How does customer needs guide you towards new service innovation?
9. Do you think it is important to observe and listen to customers directly and why?
10. Do you think customising services to fit specific customer needs is necessary?
11. Do you think it is important to understand customer needs to customise services effectively?
12. As customisation is costly, do you customise services in such a way that you can serve the mass market and how?
13. Do you adjust your existing customised services based on new client needs?
14. Are there any barriers for customisation inside Aker Solutions?
15. Do you ensure that you are providing differentiated services (or services that are different from those of the competitor)?
16. Do employees or teams from different departments collaborate when delivering the service?
17. Do employees or teams collaborate with clients when delivering services and how?

18. Is it difficult to cooperate with clients (if yes, then why, if no why)?
19. Do you support your team to create new services and how?
20. Do you think the organisational structure in Aker Solutions is open and flexible to share and seek knowledge?
21. Do you acquire knowledge from external environment (clients, ...) and what knowledge?
22. Do you think customer involvement is necessary when creating new services?
23. How do you promote knowledge sharing, knowledge transfer and customer involvement?
24. How do you support innovation and learning?
25. Does the organisation (Aker Solutions) have a common goal of creating a memorable and favourable customer experience?
26. How do you measure the success rate of your service projects?
27. Does management promote open flow of all information?
28. Do you think organisational structure impact on the generation of innovation and how?
29. Does Aker Solutions give great responsibility to employees in their tasks?
30. Does Aker Solutions inspire employees to be close to the customer and adapt to clients demands?
31. Do you think it is important to have diversity in project in terms of employees and why?
32. Do you work with other external actors apart from your customer when creating new services?

Interview Guide for projects' members in Aker Solutions:

1. Can you explain the services that your project provides ?
2. What is the usefulness of the services for clients and why?
3. Is knowledge gathering and knowledge sharing important for delivering new services?
4. Does sharing knowledge help you to learn from different perspectives about services and clients?
5. How do you capture the knowledge of your client?
6. Do you think that client involvement increases the learning effects and the knowledge about the client?
7. Do you think interaction between employees plays a vital role for knowledge creation?
8. How does interaction with clients affect the success of service innovation projects?
9. How do you identify customer needs before developing new services?
10. How does customer needs guide you towards new service innovation?
11. Do you think it is important to observe and listen to customers directly and why?
12. Do you think customising services to fit specific customer needs is necessary?
13. As customisation is costly, do you try to customise services in such a way that you can serve the mass market and how?
14 Are there any barriers for customisation inside Aker Solutions?
15 Do you collaborate with employees or teams from different departments when delivering the service?
16. Do you collaborate with clients when delivering services and how?
17. Is it difficult to cooperate with clients (if yes, then why, if no why)?
18. Do you have support from the management to create new services and how?
19. Do you think the organisational structure in Aker Solutions is open and flexible to share and seek knowledge?
20. Do you identify client skills and use them for delivering better services?
21. Does management promote knowledge sharing, knowledge transfer and customer involvement and how?
22. Does the organisation (Aker Solutions) have a common goal of creating a memorable and favourable customer experience?

23. How do you measure the success rate of your service projects?

24. Do you think organisational structure impact on the generation of innovation and how?

25. Does Aker Solutions inspire employees to be close to the customer and adapt to clients demands?

26. How important do you think it is to have management support in the project from beginning to end?

Interview Guide for external actor of Aker Solutions in company X.

1. Is knowledge gathering and knowledge sharing important for delivering new services?

2. Does sharing knowledge help you to learn from different perspectives about services and clients?

3. How does interaction with AS affect the success of service innovation projects?

4. How does customer needs guide you towards new service innovation?

5. Do you think it is important to understand customer needs to customise services effectively?

6. Do you collaborate with AS when delivering services and how?

7. Is it difficult to cooperate with clients (if yes, then why, if no why)?

8. How do you measure the success rate of your service projects?

9. How important do you think it is to have management support in the project from beginning to end?

9.2 Interview transcripts

First Interview, 10/05/2012

Interviewee: Stian Anders Solhaug Ødegaard, the Vice President of Global SLS (Subsea Lifecycle Services) - Operations Support in Aker Solutions (Stian)

Interviewers: Faysal Ahmed Dhali-Lund (*Faysal*) and Signý Jóna Hreinsdóttir (*Signy*)

Faysal: Is knowledge gathering and knowledge sharing important for delivering new services, from your point of view?

Stian: Yes definitely we are doing a big project now in my corporate called knowledge Arena. It is little secret it as a big project were we are rolling out a complete new set of tools that are supposed to help us gather knowledge in a more effective ways and share knowledge.

Faysal; But how do you share knowledge?

Stian: Today? That is the thing I think we are missing. We do, I mean the way it is done today is that knowledge is either kept in project documentation which is searchable and stored in SAP however the not written knowledge is in the head of the guys working, right, so it is all about catching that knowledge which is in each person head and share that with the rest of the company, that is difficult. So today we are using tools today such as Share-point, commutation tools like link, and all those type of things and emails and of course and projects drives however that is only accessible if you know what to look for so that is the problem, so you very kind of tight up to knowing something about what project have that type of problem or have that type of solutions rather than being able to go somewhere and search and then fins whatever information you have. So that is knowledge Arena is going to give us some tools. I will not go deep into that.

Signý: Is the name knowledge Arena? Ok, good to know the name!

Stian: Yes it is knowledge Arena but you can call it Knowledge management project instead of Knowledge Arena.

Signý: Is it only in this department or is it all over AS?

Stian: No it is Aker Solutions in total it is drive from Corporate they have a core team there and then all the business areas which Subsea is a part of that is one business area and SLS is a part of Subsea.

Faysal: Does sharing knowledge help you to learn from different perspectives about services and clients?

Faysal: What we mean by different perspectives for example you learn about market, different market, in different countries or you learn about different culture or how people work by sharing knowledge does help about that and engineering as well?

Stian: I think that knowledge and or knowledge management systems or knowledge management culture is two different things because knowledge management in many companies today is about having systems and tools in place and you can build as many tools and system as you like unless you can get people to use it in an effective ways so I think that what we need to do is you need to deliver several thing at the same time, we need to make the tools available for people but we also need to use a cultural change or a cultural behaviour which makes people use it and that it would be maybe up to certain extent and maybe measured on how good you are at sharing knowledge because then you will get it on your R or you will get it on your personal conversation with your manager etc. however that is something that is very hard to drive.

Stian: And your question was again?

Faysal: Does sharing knowledge help you to learn from different perspectives about services and clients?

Stian: It would if you would do it in a good way, I think that we have different [???] or discussed each other, you are trying to compensate for lacking of tools by having meetings or share-point sides or type of collaborating communities but I think that people will say that we are doing it very well if they come from outside however we think ourselves that we are not that good so we are maybe to judgemental on our selves , however we are not that bad as it seems but we could be much, much better.

Signý: So you see that you can do better?

Stian: Yes, especially when we are stuck in this project now it appears to you more clearly that there is a huge potential.

Faysal: As you were saying, you know that you can do better, but you are not 100% happy with the total collaboration thing and sharing knowledge but do you think the company Aker Solutions as a whole working with it how to improve that in the future?

Stian: Yes we are, (ok), so this knowledge management project that we are running is trying to deliver several things meaning tools and things that will help us enabling that but also maybe most importantly the cultural behavioural change that people will be encourage to share more knowledge rather than being an mechanical engineer sitting at your desk solving a specific problem he should also be encourage to share that knowledge with others

Faysal: How do you capture the knowledge of your client today?

Stian: Client knowledge? or you mean the client view on how we are doing things?

Faysal: Client knowledge! f. e. if they have a special knowledge about for ex you have engineering knowledge in AS and maybe the client have a marketing knowledge maybe if you can fill the gap in AS how will you capture that knowledge of specialized knowledge?

Stian: That is a good question, you know that....how I shall put this.....we try to... We have a separate organisation which consist of several people that are key account managers, these key account a manager have both the regional and the client specific relationship that they have to kind of nurture, so the way we are set up today is that we have a big or several key account managers trying to meet and discuss with the clients as often as possible both to get knowledge about what is coming up of opportunities what which way are they going in respect to technology development and product development and also even earlier maybe on a planning stage what will they do in the future and what will they be looking for, so the way they are doing that today is much more based on an organisation that has the responsibility for getting or gathering that type of Information so this is the kind of sales and marketing part of it. And then also these guys kind of getting that information and they are also getting the feedback of course on how well did we do the projects that we have executed with them because they are the key account and they are kind of the single point of contact so everything that goes on in the earlier stage type of new developments going on etc. goes through them but also the feedback on the operations are often channelled through them

and then of course you have the much higher level focus which is about how Øyvind Ericsson goes around visiting the big oil companies like Total and Helgelund in Statoil and those guys that are trying to.....(something happened to the computer....).

Stian: So I think there are like everything else there are different levels of communications with the clients and through those channels we are trying to harvest that type of knowledge but then you put knowledge in a very broad perspective, knowledge is then everything like from information to technology knowhow.

Faysal: Do you think that client involvement increases the learning effects?

Stian: Meaning that learn from the client?

Faysal: Yes.

Stian: Yes and no. With respect to the feedback that the client gives us on how we executed or what did work and what did not work, yes we are learning a lot from them, however often when it comes to technology they are coming to us to actually make things happen or develop the technology, you can have example like we have a big project now is called Oscar gas compression it is a huge effort that we are doing together with Statoil, it compresses gas from the reservoirs so it can be transported onshore to a gas plant. That technology is something we developed together with Statoil however there are IP rights, intellectual property rights that governs who owns the actual technology but at the end of the day I would say that Statoil would claim that they developed the technology but if you talk to us we would say that we developed the technology. So it is kind of hard to say.

Faysal: But still working with for example Statoil doing the Project together?

Stian: Yes I mean we wouldn‘t start doing R&D just on our own unless we knew they were a client that were right, we have tried that in the past then the question is then, then you need to have very strong believe or something, that you know, there has to be a, in the [?????] from someone if you are going to develop something.

Faysal: How do you explore new knowledge opportunities?

Faysal: We skipped this question.

Faysal: Do you think interaction between employees plays a vital role for knowledge creation and generation?

Stian: Of course, I mean the actual sales argument in a company like AS is the People because the People is the one that knows the technology. Without the People we would have nothing to sell, we could sell hardware but the hardware and how that works is actually. I mean that is more the knowledge of the company so what you are selling is in a way knowledge.

Faysal: But do you kind of in Aker Solutions as a company do you kind of empower people to interact for example engineers to empower with your R&D dept. people or marketing department people, do they always interact between each other when they develop project?

Stain: They do interact, and it varies because this is also type of, relates also to the type of person you are, some people are very good at communicating and are very keen on sharing and going and asking question or sharing what they know with somebody but then you have people that are very knowledgeable but really keep things to themselves, so this is a personal thing in many ways so that is why we are needing to have this cultural [????] in our business. We do have meeting places, type of regular meetings etc. were we are trying to capture all this and feeding it back to the client or feeding it back to the R&D dept. etc. and R&D effort is driven by an organisation that is responsible for driving the R&D efforts however they use the resources that are actually the product owners, right, so the R&D department is not a department on its own that is doing R&D they are just facilitating the R&D efforts by using the people in the various product groups so it is actually then doing it.

Faysal: How does interaction with clients affect the success rate of service innovation projects?

Stian: Ahhh. Say the question again...success rate of service execution! I think we have various examples, sometimes the interaction with the client helps us getting were we want to be and sometimes their effort or involvement stops us getting were we are, meaning that maybe the clients expectations and needs are really not either not understood by ourselves or sometimes also the client doesn‘t exactly know when he is imposing specific regimes or specific requirement, they don‘t really comprehend the extend of what they are saying, let’s say sometimes like the refurbishment product of that type of Equipment (pointing at it) that is called the bell control Equipment that stand on the well and controls the well flow when you are completing a well. That thing needs to be recertified each five year to be

operational, and that is NPD requirements, so how do you interpret that, is that meaning that this whole thing needs to be certified each five years or is it just the parts that has come kind of either failures or were and there....that needs to be refurbished or is it the whole thing. So can you say that the whole equipment should be refurbished meaning that you would need a new one eventually or could you say that this part has not been put into that much use so we can actually skip it. If the company then say you are supposed to refurbish this thing and we certify it. They say that and then they expect that everything should be changed up to date, however we would on our hand say, well that is not actually what you need and what you want, because that would cost you a fortune, what you want is to make sure that the safety critical component in that equipment is refurbished so it can actually execute the purposed efforts, so the safety that is a critical thing and that has been used [?????] but it does need to change the yellow steel here, so it is about the requirements that they put on us. Sometime they are very good at helping us and being pragmatic and challenging the international standards by saying that of course we understand, that it is to comprehensive but what we are actually meaning is that you need to do this, but that is also a contractual things, you need to be good in the contractual and really understand so, what is the scope of what we are going to do, is it the whole thing or is it just this part, so I think that varies from project to project, and sometimes we are kind of fumbling in the dark, we don't really know what to do and then the client is really good at helping us, so I think it is both ways.

Signý: When you are discussing like this with the client, do you use these requirement maybe later for some other purposes?

Stian: Of course we try to reuse and usually hopefully then sometimes it is the same people that maybe will be on the next project as well. So they will remember what we agreed and we try to then to build that into what we call best practises so we make best practises of what we have done, and lesson learned and we do have some knowledge management tools today, called lessons learned databases etc. however they are maybe not as good as we would like them to be.

Faysal: How does Aker Solutions identify customer needs before developing new services?

Stian: Now you are talking just about services, well the service segment is a little special, I think you have to, let's put it like this. The service business in Subseas is

relatively new. And the reason for that is that it is not that many years since some of the first subsea equipment was installed and that type of equipment that we sell is usually something that is designed for being operational in twenty years so they are designed to be subsea in twenty years and work. So we can say that it started with this business in the eighties nineties maybe the nineties are more correct and therefore the service business developed out of the need that happened when things started to go wrong with that equipment, happened after that, so in a way you can say it is quite new and if you compare that for instance to the car industry it is completely different thing, because the car industry has a very good service segment were they know that if you buy they car they will have to service it for you, and in the same ways that we have set it up it is only Aker Solutions that can service Aker Solutions equipments, so, and your question was ?

Stian; Yes, so I mean we know in advance that when we are selling some equipment that there will be a need for service, and then it is a matter of, ok, so how well are you going to, you have an standard service thing that you know the client will have to have in these twenty years, something brakes and you need to fix it, that is nothing you need to be invent, however there are certain things that we know that the client would like to have in the future, like e-field, meaning condition monitoring, always being able to say something about the condition of that particular item standing subsea, and this is something that they are not requiring yet, however there is something that we know that will eventually come, so that is something that we are developing because we have a client that doesn‘t necessary have bought it yet. But we know that it will come because we know that for us to grow the service business we need to be smart to develop things that will actually give us more service.

So and also there is another way of putting it and that is to kind of maximise the EBITDA of each service sector, right, so it is about constantly improving the way you do things, saying that you are selling something for 1000 kroner and it cost you 800 to refurbish it, and what we are doing is do get it down to 500, so we are constantly trying to improve the way we are doing service, so we can take more of the cake. But the service industry is kind of a little special, it is kind of driven by, have you sold one item, well, then you get the service, so we are not selling on the services, it is impossible in this industry just to sell services.

Faysal: It comes with the product?

Stian: Yes exactly.

Faysal: How does customer needs guide you towards new service innovation?

Stian: Well, I think that it is always the client need that will be in the focus, I mean we are not developing as I said with respect to R&D, we are not developing things because we think they are called, or ,we think that somebody will buy them, we are developing something that the client want, so by default in a way it is based on customer need, we would not make any subsea equipment that nobody will buy, and then try to sell it, we would have a need from a client. Meaning that if a client goes to the Arctic and we know the challenges that is in the Arctic, meaning that you are not having access to your subsea equipment because of ice, we together with a client develop that type of technology, that will actually meet their requirements, so I think that the oil industry as such, is so that it is the operators in a way that is more a final fields and the different regions and the different environment that they found the oil fields in, and drives the technology and the service and it drives the R&D efforts and that gives future possibilities for service, so, also for instance it is not just new type of services but also expanding the service business, so let's say they go into a new region, then you are expanding your services because you need to establish yourself in that region.

Faysal; So it is based on customer needs?

Stian Yes!

Faysal: Do you think it is important to observe and listen to customers directly?

Stain: Yes!

Faysal: And why?

Stian: (haha) Why? I think that I mean eventually they are the ones that have to pay for it so they have to in a way feel that what you are giving them is something that they want and something that they need. But sometimes also it is important for us to give them a flavour of what we actually can achieve, because, that is not always the case. You have the smaller oil companies that cannot be compared to Statoil, were there may be 20 people, and most of those people are people that are good at finding oil or gas meaning that they are geo scientist. So then they come to us and ask, so how can I get this oil out of the ground.

Stian: What was the question again?

Stian: Yes, because they will give me the input of how they want things to be done.

Signý: But do you do it?

Stian: Yes definitely, I mean all tenders, that we are doing, is, you are not sitting here just writing a tender, not speaking to them, you have regular meetings all the time, so you are making sure that what you are proposing to them is something that they want, and also they have, i mean the oil industry is quite special in a way that you see the ITT question for a tender, they specify very specifically what they want, what type of products do they want, what type of lifetime do they expect, what type of reliability they expect, what type of services would they like in the region, so it very, very stringent, so it not much room to play with, to be honest, you can be a little clever about the type of systems solutions you have but I mean what they want is something that could grow up to...[.????]

Faysal: Do you think customising services to fit specific customer needs is necessary?

Faysal: Yyou kind of answered it...!

Stian: Do you mean necessary to win a job or necessary to be successful?

Faysal: Necessary to be successful in the business and also to win the job as well.

Stian; Well, yes and no, it is not black and white, some clients have special needs like I told you about the regions, so you need to, let's say you want to go into Azerbaijan, then you need to be in Azerbaijan. So then there is a question about that you need to be present, but that is not necessary specializing for the client, you are setting up a base there is quite standard you have your setup standard bases that you put up, you need to do this and you need to do this... so you can be quite standard but you need to accommodate the regional needs, but, I would say, to be successful you have to try to standardise as much as possible, meaning that you could do the same operation several times and you don't need to, because if you are going to tailor make service jobs for everybody you wouldn't be very successful with new service, I don't think the client would accept the cost of that either.

Faysal: Do you think it is important to understand customer needs to customise services effectively?

Stian: I think it is the same question.

Faysal: As you already said customisation it is costly so you want to standardise products as much as possible or services, but, so, you trying to say that you are customising in such a way that you can reach the mass market?

Stian: Well there is no such thing as mass market in subsea, it is, it has been for a long time very customised, meaning that Total as a client would like this and Statoil as a client would like this. They are based on the same standard principles and the same type of standard international requirement; however each client has their own project specific needs or kind of regional needs. However, we, to survive in this business to keep the cost low and keeping some kind of market share you have to standardise, so what we have done is that we are trying to standardise but having the flexibility and here I think again the car concept comes again. Like if you buy an Audi today, you have the standard Audi and you have a long list of extra equipment that you can put out. So what the client said if you want like a cruise controller on that car you just put on the ladder, but the rest of the equipment is in the car by default, so meaning if you have a Christmas tree or some product that we have it is possible to make whatever you can out of it or configure it into something that is client specific, however you have all the parts of the things necessary by default in the standard product but you will take a little extra by adding something on even though it does not cost you that much, so it is all about standardisation with a configurability.

Faysal: Flexibility to add new things on?

Stian: Yes like everybody else is doing like apple is doing the same thing.

Faysal;Yes that is actually what you call mass customisation in the literature, so you are adjust a little bit here and there, so it is kind of customised, so the next question is answered [Do you adjust your existing customised services based on new client needs?],and you said yes.

Faysal: Are there any barriers for customisation inside Aker Solutions?

Stian: I think you will have a certain barriers were ever you have engineers involved, meaning that it is the nature of an engineer to explore new opportunities, to find out better ways of doing things all the time, which is very good to a certain extent, as long as it commercial viable, so in a way you have a barrier, meaning, that some people would probably say, that you have gone into a very boring business, were everything is the same thing, and maybe, that would kind of limit their ability to be the clever guys.

S*igny: Finding new solutions?*

Stian: Yes exactly, but that should be normal in R&D projects, however there is some kind of flexibility, but I think I mean in all engineering or technology driven business is like that , you do have a lot people that are eager to develop new things and want to by nature develop things and make things better, I think you do that all the time, by having improvements projects etc., and every time you do build a new thing you try to improve a little bit, however you have to box that into kind of some commercial viable solution, so if it cost you that much it is not viable, but if it cost you this much, it will grow operational revenue, and then of course it is good stuff.

Faysal: Do employees or teams from different departments collaborate when delivering the service?

Stian: Yes and no I mean, sometimes it is the, usually the way it is done it is that it is the service bases or the service organisation responsibility to do service, however if they need help from a product group they have to ask for it and then they will get the detailed knowledge or the detailed engineering capabilities that they process, but usually we try do all the service within the service or by the service organisation.

Faysal: Do employees or teams collaborate with clients when delivering services?

Stian: Yes, all the time it is in close cooperation with the clients.

Faysal: Do you think it is difficult to cooperate with clients?

Stian: I think it is the same as you asked before I think it is very, it depends on the client, and what their expectations are so here again it comes to the contract again, and also the expectations and of how you sell the service in a way.

Faysal: Do you support your team to create new services?

Stian: Yes, I think we try to.

Faysal: And how do you that?

Stian: Well, I mean to sell new services...I mean every good suggestion is taken up and we discuss it.

Faysal; Or to create new services as well?

Signý: Adding something new maybe?

Stian: Yes, I am not sure that, I don‘t think we are too good at that, meaning that, you know in a way that we are sitting here as a global function, we have more

responsibility for making sure that what we do is done correctly, however the services bases are constantly looking for new opportunities, so if you look at the services as a whole I think the answer is yes.

Faysal: Do you think the organisational structure in Aker Solutions is open and flexible to share and seek knowledge?

Faysal: We kind of touch on it…

Stian: I think the organisational structure should not be a limitation in that perspective, well what you can, that it is always a possibility and negative things about the way things are organised in a way, if you say that regions are responsible for the profit and loss of course they will, the manager of that region will always think first for the profit and loss in that region, so anything that comes from outside and that would disturb that picture, would kind of maybe be second priority, and then again you also have the products groups that are quite regionally organised, even though we are trying to have them globalised in a way. I think that the new organisation structure that we have today is supposed to handle that in a better way that we were organised before. Meaning that we have several global functions, that are supposed to make sure that regional best practises are shared across the regions through the global hubs, in a way.

Faysal: Next question we kind of also touched up on it, so you can answer it short.

Faysal: Do you think customer involvement is necessary when creating new services?

Stian, Yes!

Faysal: How do you promote knowledge sharing, knowledge transfer and customer involvement?

Stian: Well, different ways, number one, I have, my guys have separate disciplinary responsibilities, meaning that they are, have responsibility to know something about the product and share that with the group. And also they have a contact with the product group each month trying to feed back the operational experience that you get from service back to the product group meaning the guys that develop the product, so they are trying to kind of to close that circle by feeding information back through my guys, and then I encourage them to hold small seminar were they share whatever they know, but that is on a very local bases, [????] figured structure to get that to lean in to the whole business.

Signý: So they are not sharing it outside their team?

Stian: Sharing outside the team is a different story.

Signy: But they are not doing it in way?

Stian: But, well, they are trying to by having these monthly meetings with the product groups and feedback the information, but, however, that is kind of, everything then relies on these meetings and of that type of structure and I think the knowledge management project that they are running at least is trying to do something about that.

Faysal: How do you support innovation and learning?

Stian: Finding out new ways of doing stuff? I mean we are not doing very much innovation in the service department.

Fasyal: But products, for example?

Stian: The products groups? I think they are constantly trying to do that by improving the products to also R&D products, but then again R&D projects are very much based on clients' needs and strategic goals. So if you think that Arctic is a good way to go a lot of your R&D efforts and then also the product development will be kind of headed in that direction so it is based eventually on the client needs.

Faysal: I just would then like to ask you another question because this innovation and learning, we know some companies, for example, they have for example for engineers, even, 70 % time engineers do their daily routine tasks, and 20% of their time they , do, try to work with new things and play, create their own ideas, do you have that?

Stian: No, I think what we are trying to do here is to make sure and help out the regional service bases to give the best service to their client so I think that service in a way to make sure that we are doing the best thing for the client and not maybe finding out new ways of doing service but if you are talking about e-field which is part of the same group they are more in the playing ground trying to figure out new ways of doing stuff and that is a specific and strategic decision, that we have taken that we need to develop this and then they are in a much more developing mode.

Faysal: So you kind of have it in the organisation?

Stian: Yes and the R&D departments and also the engineers that are working in a different product groups when they are asked to come up with a suggestion for a new a product / project, I mean Innovation is then an integrating part of the

development of a new system it is putting standardised components into a new configuration so it solves the problem and client needs

Faysal: Does the organisation [Aker Solutions] have a common goal of creating a memorable and favourable customer experience?

Stian: That is a big question, I would say yes.

Faysal: Can you give us an example of you kind of experiencing you did to your clients?

Stian: We have several, dependent on the client, we have several, with Statoil, we have every year a seminar which we call the Technology seminar were we try to feedback information to them and they give feedback to us, so that is a good example.

Faysal: How do you measure the success rate of your service projects?

Stian: Money!

Faysal: Money, but do you also measure in terms of customer satisfaction?

Stian: I mean I think that is something, usually it is customer satisfaction is usually reflected in the money, because if you don't deliver on time a service on time they don't pay the full amount so it is a contractual things that drives that and related to damages if you don't deliver a refurbished christmas tree or a service I mean you don't get a complete project or a profit of that work, so in a way the best measure that we have is how much do we earn, how much is the revenue, I mean if you measure those two things, but client satisfaction that is very soft thing, one thing is to say that yes we appreciated all the guys and they were very kind and helpful but we did not get the service on the right time, then what is client satisfaction, well it is, or the guys that worked on the project they were very happy however the project manager was not happy, so I think client satisfaction is all about getting the service done when they wanted it to be done.

Faysal: So you think that the money is kind of main dependent of the success rate?

Stian: With respect to the client?

Faysal: Yes with respect to the client and also the delivery and the satisfaction comes kind of as a variables….

Stian. But then we have a lot of stuff that measuring internally of how well did we actually execute the service, meaning the difference between the revenue and

the EBITDA which is how good did you actually do the service, did we waste a lot of money of doing that service or did we actually make a good money of it.
Signý: Do you think these measures we have been talking will go into the knowledge management Arena project?
Stian: No the Knowledge Arena project will have a focus of sharing knowledge and giving the tools and cultural change, but it will be measurement there about how well we are in sharing knowledge and how good we are etc. but it will not take any commercial, and I think it is important to distinguish between those two aspects.
Faysal: Do you think organisational structure impact on the generation of innovation?
Stian; It is the same as we talked about for knowledge...in a way.....
Faysal: For example being open and flexible?
Stian; I think the organisation is quite open and flexible and you are allowed to go and talk to everybody and sharing your thoughts with everybody, but I think we have changed as well, because if you go some years back we were probably more interested in satisfying our own need to develop new stuff and be clever engineers than we are today, today we are much more focused on delivering what the client needs, and that is it. Meaning we do have room for that, but I mean we cannot just be a company that thinks it is fun to develop things
Faysal: It has to viable?
Stian; Yes and somebody will have to buy it and then, you can always build something in gold, and then it will never grow in subsea, but then nobody will buy it.
Faysal: Does Aker Solutions give great responsibility to employees in their tasks?
Stian: Yes very much, I think that myself is a good example, I am a pretty young guy, sitting in a....being giving a lot of opportunities in this company and I think that it is one of the biggest strength in Aker Solutions and they are really good at giving people responsibility.
Faysal: Does Aker Solutions inspire employees to be close to the customer?
Stian: Yes we do, there is a lot of customer drive, we have four no six core values, it is customer drive, HSC mind set people and teams, open and direct dialogue, hands on management and delivering results, those are the core things that we have in Aker Solutions, I have a folder somewhere about this, [Stian looking for

the folder, and talking about the folder].

Stian: Our core values, It is on everything, it is on my screen and on every material we deliver.

Signý: It is a part of the company culture?

Stian: Yes exactly

Faysal; And there was a tail on last question in terms of how AS adapts to clients demands and you have answered that.

Stian: It is delivering results.

Faysal: Do you think it is important to have diversity in projects in terms of employees?

Faysal: For example engineers, marketing background people, etc.?

Stian: Yes definitely and we put together big, a quite, large teams, now again, it depends on if it is a service projects, service projects are usually smaller than EPC projects and construction projects and of course they have everything from engineers to lawyers to financial people, and you have the project manager which of course focuses on delivering on time, and, then you have the commercial manager which takes of that and then you have an engineering manager and I think those three complete each other. And then you have a lot of other managers.

Faysal: But do you think that diversity increases your kind of the success of delivering the project?

Stian: Yes definitely, but you are not always in a position to select who you will get in your project so you can look at in a different way that is the background of the people. But then you have other dimension, what type of persons do you need in a project to be successful, everybody have taking a different kind of personality checks either you are, and you can classify them meaning you can be a starter, you can be a driver, you can be a finisher, you can be the light-ball, speaker, so to put all those, if you could select of course you would put that type of people together to maximum out of the output of the projects, however you do not always have that luxury, and I think that usually it is about, ok I need a christmas tree engineers, I need a control engineers, I need a local system engineer etc. etc. and you put that team together and you ask the manager for someone and then you get someone. Everybody get this training so they should try to do it but in day to day work it is kind of hard.

Faysal: Do you work with other external actors apart from your customer when creating new services for example your subcontractor?

Stian: Yes I mean defiantly, you know we have a huge number of sub-suppliers that if we want to change a type of service or if we want to do things differently of course that would have an impact on how they are executing things so yes we do that and we also use external companies that come in and evaluate and measure what we are doing and come up with suggestions for example consultancy agencies, and because we are using SAP, we do a lot of communication with the SAP guys that have a very broad perspective because they serve a variety of branches, so yes.

Faysal: Because of the company value HSE, health, safety and environment, I would like to ask another question do you think that HSE does it affect new services when deliver service or when you are creating new services?

Stian: Yes it does definitely.

Faysal: In what way?

Stian: I would say, for instance when you are entering new region HSE standards are completely different from those who are used here in Norway. So of course by going into a contract with a client for example in Java they have a completely different picture of what HSE is and what they say and for us going into that type of region you would carry with you your HSE way of doing things into that region teaching them different things or working in a different way.

Second Interview, 11/05/2012

Interviewee: Hans Petter Øvrevik, the RTP Technology & Execution Manager, in charge of the Atla project (Hans Petter)

Interviewers: Faysal Ahmed Dhali-Lund (*Faysal*) and Signý Jóna Hreinsdóttir (*Signy*)

Faysal: Can you explain the services that your project provides?

Hans Petter: The service we provide is basically to make available all the tools that are to be rented out to the clients so it is basically preparing and making them ready for offshore.

Faysal: What is the usefulness of the services for clients and why?

Hans Petter: Well it is obviously to have the tools available to install the equipment subsea, so that is the purpose of our service.

Signy: or to produce oil!

Hans Petter: Yes obviously in the end.

Faysal; And that advantage of your service increases the success rate of new service or, new, finish the service properly?

Hans Petter: Basically what we do and they will solve the company to focus on, what they should focus on, which is pumping up oil, so we take care of everything related to this tooling so they don‘t have to worry about that part, so we make sure that they get the right tools they need to make sure they are prepared for offshore have the necessary spare part and work offshore to install their permanent equipment. Especially for smaller oil companies that don‘t have big organisation that can manage everything themselves so they come to us for the turnkeys with us....

Faysal: Is knowledge gathering and knowledge sharing important for delivering new services?

Hans Petter: For delivering the service, or?

Faysal: Or your projects?

Hans Petter: Definitely, I mean it is important to know from another project if a tool have failed for example, during preparation, testing offshore, if the tool failed and we have the same tool in Norway or Malaysia, or in Africa , we need to know about that so we can either guarantee that tool, or modify it or use it differently so we are very dependent on knowledge sharing of various equipment in various places of the world. And yes

Faysal: Does sharing knowledge help you to learn from different perspectives about client (services and clients)?

Hans Petter: What do you mean?

Faysal; Or find out new information about the client, for example?

Hans Petter: Definitely, we can learn a lot from various clients on how they would like the service performed or how they would like the contract setup, but normally obviously the companies might have different takes on what they prefer to do but yes in general I guess, It is probably much more, we could have done in terms of

time to gather feedback from our various clients to kind of tailoring packages, to do it better.

Faysal; I would like to ask you a tail question, that different perspective; when I said different perspective I meant do you learn from the client by involving them, about their market, selling their product for example or their country?

Hans Petter: About how to do the service in the country?

Faysal: Yes for example how to do the service in the country or how to deliver the new service to the client so they will be able to reach their market, so you learn about their market by kind of sharing knowledge with them?

Hans Petter: It is a little bit difficult to answer, but obviously the oil companies is in queues, are always the end client, and that we don't do anything further down in the food chain or further up the food chain…

Fasyal: To make the question more precise, for example, you said, you have, your main client, you said that in the oil and gas companies in the oil industry, a typical client would be Statoil f.e. so if Statoil would like go to different markets, to another country to explore the oil, so by sharing knowledge with Statoil do you learn about that market?

Hans Petter: That other market?

Faysal: Yes, the other market!

Hans Petter: Well, we don't necessary learn about it, but we get a pass into that market, like we are doing, obviously, we are involved in Brazil already, but we have a few instances where the technology we have developed together with Statoil, for welling system, might give us a starting point to Brazil, Statoil is doing drilling there, so in that perspective, yes, we could use that relation to kind of penetrate a new region.....Petrogras

Faysal: How do you capture the knowledge of your client?

Hans Petter: I don't think we have any very good way of capturing that other than we have a continuity of doing tenders with them or when we are doing project we obviously have the same people involved, then we people knew the project of that client, so we can obviously based on that experience we build up, with the client preferences we can tailor the next service, so we have done that, with Statoil also, we have had some, experiences on one project in terms of where we didn't end up with the rental packaged, they ended up with buying the tools instead and after going into dialogue with the people and the decision we were able to

understand what was behind them not going for rent, so we have used that and now we are doing a new bid for the new stage of the next project and we are trying to kind of to build in to the new tender the experiences we made in terms of what the reason was for not going with that service.

Faysal: So from that I understand, you used your existing experience as a way of capturing client knowledge?

Hans Petter: We don‘t have any systems to capturing that.

Faysal: No, so you don‘t have any other systems f.e we know that some companies they have mentor programs or they have customer conference with customers or meeting once a week….

Hans Petter; We have a technology conference with Statoil every year, it is more on the technical level to rely on the development of products versus what Statoil wants so in relation to that we have many [?????] in terms of services as well, but we don‘t have any kind of fixed framework for capture that kind of information.

Faysal: So it is more kind of, in whatever way you can have it you have it?

Hans Petter: As soon as we get the contract with the client, it is obviously, we get closer to them and we can find out what they want.

Faysal: Do you think that client involvement increases the learning effects (and the knowledge about the client)?

Hans Petter. Yes I think so, you mean in the project, or?

Faysal: Yes!

Hans Petter: Yes definitely, because you know often the client is the kind of end user of our equipment offshore even they are the third party contractor, so working with client and working with their third party contractors is a, gives a high line *in terms* of making of projects and also services, but [????] What makes the difference for them even offshore, what can save them time, how can we make our service more efficient for them during their offshore work.

Faysal: Do you think that client involvement increases the knowledge about the client? (We kind of touched upon that)

Hans Petter: Weather the involvement increases our learning of them?

Faysal: Yes, the knowledge about the client?

Hans Petter: Yes of course it does, there is in many levels, definitely yes.

Faysal: And what are the levels?

Hans Petter: I mean you have on the technical obviously, we learn, what kind of products they want to have, what kind of services they want to have from our products, and obviously also the commercial part, [???] mechanism for weather or not they want to go with the rental or purchase [????) stakeholders and making all kinds of decision of these budgets is it operational budget or is it capital expenditure budget, so it is several levels to increase our understandings for sure.

Faysal: Do you think interaction between employees plays a vital role for knowledge creation?

Hans Petter: Meaning internally?

Faysal: Yes internally

Hans Petter: Can you repeat the question?

Hans Petter: Knowledge creation, yes sure it does, knowledge creation.....yes I think so, it is a very general question, yes!

Faysal: How does interaction with clients affect the success of service innovation projects you are involved now?

Hans Petter: You mean, service innovation projects? what do you mean by that?

Faysal: Or delivering new services?

Hans Petter: Ok, yes that is the key obviously, without understanding what they are after, it is difficult to offer them new services obviously, you can maybe look at what has been provided to other clients, but still you need to get into their skin and understand their needs.

Faysal: How do you interact with your clients on a daily or monthly or weekly bases, what kind of tool do you use normally, do you go face to face, or?

Hans Petter: I mean, it is obviously when we are on a project the focus is on delivering the core of the service it is not the developing of new services, we do that in a weekly or monthly meetings with the client and reporting progress on that part.

Signý: These interactions with the client, the possible knowledge you get from the client, do you do something with it, do you use it in a special way, or just…?

Hans Petter: I guess it is more, let say increasing, I guess the people, who are involved in the project, increases their understanding of the client and what he wants, and I guess the way we would use it in an example, obviously after interacting and understanding exactly what the drivers are we can honestly offer them a additional equipment or services if you like and that we actively use in

terms of suggesting to them additional services, and we also take it on board for the next, bid or tender or project that we know we kind of maybe understand, ok, previously we gave him this service or this equipment and now we see after working with it, we see that if they had this equipment also, they could be even better according to plan so next time we can say that this is kind of the best case so then you have some optional more equipment that deliver better service and which you can hire, So in this respect we use it like that.

Faysal: this was a really good insight you gave us!

Faysal : How do you identify that, this extra service they need?

Hans Petter: Basically by working closely with their operational people on the details of how they use our equipment offshore basically shall we say it is in close interaction with the rig contractor or the vessel contractor people, what kind of operators for our equipment some work with offshore [?????].

Fasyal: So you come up with a suggestion before you start developing the service or start delivering the service?

Hans Petter: I think we learn after a project, we learn it and then in the next project we may go in and upfront of it as an additional service, because what often happens in a project when it pops up a need for more equipment and then it is maybe too late or, you have to make a quick fix which is not optimal, once when you have gone through the understanding of what the needs are really you can kind of offer them next time additional service and I think we have several example and also this Atla project.

Faysal: So it is kind of that customer needs you talked about is guide you to deliver next service in a better way?

Hans Petter: Yes

Hans Petter: Also I think as I said the interaction with the third parties, because, you know, we are never a sole supplier of a service to other companies to do everything, so we provide our part and then you have maybe a third rig contractor or a vessel contractor or another part of the service which link in with our service so by better understanding the whole chain of the service that all the contractors provide to the oil company we can tailor our service better, so that is an important part.

Faysal: So from what I understood that, tailoring service is very important to survive in the oil and gas industry because there are so many competitors in the market so it give you extra kind of satisfaction to your customers?

Hans Petter: Yes I mean, it is, many consider it as kind of a captive market, that we are doing, but it is not totally, we do a standalone rental pool services as well, and it is definitely in the end of a project when everything goes ok offshore, and that is kind of what our client is left with, if you are doing it good service which increase their efficiency and allows them to do a, complete the work faster and without mistakes it is.....the key.

Faysal: And you think it is necessary to customise services based on client needs or tailoring the services based on client's needs?

Hans Petter; Yes definitely, we always have a lot of conservativeness in our industry but I think the understanding that we need to, it is [???] that we are, the bottom line is that we are a service company and we always need to, try to see, all the time how we can make money of it we need to see all the time the best possible services we can provide

Signý: And maybe doing something new?

Hans Petter: Yes definitely

Faysal: Do you think it is important to observe and listen to customers directly (and why)?

Hans Petter: Yes and no, I think, of course, yes, the problem is, often, is that different people even in the same company can have a different opinions of about for example, what the best technical solution is and I think we have seen a lot of examples from trying to do more products, there is one guy who wants this something blue and this wants something yellow, and maybe, if you listen to the other guy that came up whit this solution it is not optimal, it is important to have a balance, you are not swallowing everything that the client says because they are not necessary the best people to guide you into the direction of every service.

Faysal: And now comes another question out of this discussions; you can't listen to everyone, and it is not possible to just make services based on each customer, so do you try to, for example you develop one product and then you add extra things, based on the client need kind of adjust that product based on their need ?

Hans Petter: Yes, I guess, up to an extend we do, and but it is like it is less on the product side, it is not always easy to please everybody [???]

Faysal; But in the service side, do you think you do it?

Hans Petter; Yes on the service side we tailor what the various clients want it is obviously important for us to have a standardised portfolio of the equipment that we are renting out, but there are you know for some clients prefer a lot of backup equipment so and for some client we only want to do everything [???] as a rental package and some are kind of more price concerned and go with more re used packaged weather it additional spare parts available in case something brakes down so it is obviously being tailored towards what mechanism are driving the clients.

Faysal: Are there any barriers for tailoring services inside Aker Solutions, do they support or inspire employees or the departments or the project manager to do that?

Hans Petter: Obviously there are barriers for services we provide but I think it is often tied back to either you know insufficient investment funds and also technology, technology [????] and resources, we have you know areas were we know are lucrative in terms of businesses such as planning stream for example, experience [???] kind of monopoly in the well and that is kind of a project which, that could have been in our portfolio as well, and we have already have some of those inside our portfolio, we see that due to resource situation in the company it is from the technology side not enough centre of excellence in that area not enough resource to back that kind of service.

Faysal: Do you collaborate with employees or teams from different departments when delivering the service?

Hans Petter; Yes, very much so, we collaborate a lot with the product groups or the centre of excellence for the various products in terms of the technical side so we release a lot to them on technical things related to our service and products that we are renting out.

Faysal: Do you collaborate with clients when delivering services and how? (We can skip this)

Faysal: But a question I would like to ask; how do you collaborate with client? (We have also touched upon this so we can skip this also)

Faysal: Is it difficult to cooperate with clients? (if yes, then why, if no why?)

Hans Petter: It is always difficult work with a client, it is, I mean it is always somebody in a difficult, it is always somebody challenging to work with in a

client team, that is my experience, regardless what to do, I think it usually ties back to the commercial side or the service that obviously, that pops up need for more services and sometimes the clients are reluctant to pay for it.

Faysal: Do you have support from the management to create new services (and how)?

Hans Petter; We do, we do, we have a strong interest from AS to invest and developing Aker services in terms of expanding our number of tools we rent out, so in that perspective we have a strong support, obviously backed by that, we can provide sound business cases for that, that this is a good business for them to put the money in.

Faysal: Kind of the management help you to share knowledge, talk to different people, try to...

Hans Petter: Yes they do, it is a strong drive from the management in Aker subsea to maximise the use of the rental tool pool so it is a strong push from management now to all the regions.

Faysal: And also for seeking knowledge?

Hans Petter: I don‘t know, hmmmmm.....seeking knowledge....

Faysal: Or sharing knowledge?

Hans Petter: I guess that is not a strong push for that from the management.

Faysal: but the organisation Aker Solutions as a company has that in their culture?

Hans Petter: Yes I mean I would say that it is not a strong push up down from that.

Signý: I have one question in terms of how you are locating your time in terms of completely new service like we have been discussing, do you have special frame about that, does is just happen or maybe not happen?

Hans Petter: We have obviously on the agenda all the time, I guess to develop our self in terms of the services we provide, so we, I have goals for the air to kind of develop our service offering within parts of our product lines that are providing services in, but beyond that.....

Faysal: You think that internal knowledge and skill is important to deliver service, but do you also think that client skills also help you to deliver better service?

Hans Petter: Yes for sure, I mean, well I think it is difficult to work with a very picky client who knows what he is talking about but then it is also difficult to work with a client who does not know what he is talking about because then you need to all the time explain to him why this is better than the other, I think we learn all the time from our client so I would say, I mean the back side of a knowledgeable client, is that he is going to hold you to everything, specifications and, but the good thing is that we understand the nature of the service he is receiving which makes it easier to analyse and heir to that !

Faysal: Does management promote knowledge sharing, knowledge transfer and customer involvement (and how)?

Hans Petter: Yes , I think, we promote knowledge sharing up to a certain extent, but I think it is not very actively though I would say, but obviously we have the lesson learned [????] and all those things and there is a push to use that parts of a project, but I can‘t really think of any active process.

Signý: What is your view about how the knowledge and information are used in terms of these push from the management, is it used, or?

Hans Petter: Lesson learned then?

Signý: Yes.

Hans Petter: It is not very active used I wouldn‘t say so.

Faysal: Does the organisation (AS) have a common goal of creating a memorable and favourable customer experience?

Hans Petter: Yes, definitely, I mean that is our first and foremost objective to be the preferred partner, there is a very strong drive top down to secure customer satisfaction, definitely.

Faysal: How do you measure the success rate of your service projects?

Hans Petter: Well I think our top goal is to deliver on time, that we have to use the available for offshore [????] when they need it that they work and that they function, and obviously that we make a healthy profit on a project, that is the key driver.

Faysal: Do you think the way people work in AS or the way people behave in Aker Solutions, have an impact on generating new service or creating new service?

Hans Petter: I don‘t think Aker Solutions as a company at least Aker subsea, I don’t know about Aker Solutions, I don’t think Aker subsea at least SLS or the

service part of Aker subsea have a very active drive towards developing new service, I think it is more coming as a request from a client.

Signý: But do you see opportunity, in that you could be better in terms of making new services?

Hans Petter: Yes definitely and we have a lot of competitors that are maybe smaller guys who are taking a lot of our work, because we are not, work that we should have had, because we are not, I mean we have so much to do.

Signý: So you are maybe loosing opportunities?

Hans Petter: Yes definitely, we are losing opportunities, but I think that is general in the market now, there is so much to do and too little people, and it is kind of an automatic action in terms of that.

Faysal: Does Aker Solution inspire employees to be close to the customer and adapt to clients demands?

Hans Petter: Yes I mean there is a very strong, our core values are obviously, outmost drive and kind of being, making sure that the client are happy, that is one of the core values that everybody are giving.

Faysal: How important do you think it is to have management support in the project from beginning to end, for example you are a manager of the project of Atla how important is that you support your team members from the beginning to end to deliver better service to deliver your service successfully?

Hans Petter: It is quite obvious it is key, I think as a project manager you are kind of responsible for setting the standards, delegating down kind of what is important and making sure that everybody understands what is important for the client.

Faysal: So you think that the way for example you and your team members work and think and yet it also has effect in the service delivery from the beginning?

Hans Petter: Yes definitely.

Faysal: What way, do you think is, you have experience in delivering service now, from your past experience, what is the best way of working and thinking when you are delivering service?

Hans Petter: I guess it is the balance between the clients as always so it is right and.....

Faysal: Being more precise; do you try to be open and flexible in your working environment and listen to your team members what they have to say what suggestion they have do you take these things into account?

Hans Pettter: Yes definitely, I don‘t know anything and I am not an expert in everything so...yes for sure.

Signý: How important is it for you to have management support?

Hans Petter: It is very important obviously I always will try to resolve what I can but in instance when we can‘t solve something and, we need attention for more resources or funding, or that kind of things and we cannot manage without having that possibility but it is not something we normal daily or weekly rely on, but every once in a while when things are stuck and to get the wheels start moving again it is key to have that support from the manager to raise it up above his level and give it attention.

Third Interview, 23/05/2012

Interviewee: Johan Roed, RTP Consultant, Subsea at Aker Solutions (Johan)

Interviewers: Faysal Ahmed Dhali-Lund (*Faysal*) and Signý Jóna Hreinsdóttir (*Signy*)

Faysal: Can you explain the services that your projects provide or what you do in the project?

Johan: Like I said I am in the Wellhead department basically or most in the promises so it is a delivery projects. The services, they come over after they are delivered to the actual projects, so I am, my responsibility is basically...when a tender is approved I have to find and locate the tools and obviously that can be difficult if you don‘t have enough...first you need to allocate them, you need to get them to the base, and have people give us update of the stage on the different tools, do they need to be repaired in terms of small maintenance or if it is a completely strip down and build up again, what kind of parts they need, etc, that is taking care of by the guys on the base, they have to kind of report back to me and I need to source, I mean, different, if they need spare part or if they need to be tested ,everything have to go through me and I have to report again to Hans Petter f.e. if we are short of tools, and we have a deadline to reach and we know that we will not be able to make it in time, because we don’t have anything then maybe

we will have to see other possibilities, buying new one, renting from others so it is kind of make the puzzle complete, you know, in time, so it is a delivery project.
Faysal: What are the advantages of the service you are providing or the project for clients (and why)?
Johan: I mean the advantages for the projects from our point of view or the way we explain to client why they should use us, is obviously to rent the tooling, because this is for exploration wells and that it is only operation in few weeks, maybe three weeks for one well, if they are going to invest in the same kind of tools that would be a huge investment, they would have to pay for us, we have already the signed and tests. If they are going to start from scratch they would not have anything, so that are basically the advantages.
Faysal: Is knowledge gathering and knowledge sharing important for delivering new services?
Johan: Yes definitely, I mean not only between us and the external clients but also in terms of knowledge, knowledge is great here, but, yes different people with different type of knowledge, so for me for example, I am not engineer from before, I need to have people under me to ask for questions, I have developed specialist department, I believe, I use them frequently, to , for example if clients have any questions, can I use this and that , size, dimensions whatever, I am not really into that so much, so I just ask them, and if they want to know something from me when it comes to the project or whatever, I give back to them, I think it is a good flow.
Faysal; I just want to ask you a quick question; your background is not engineering?
Johan: No it is not it is economics and shipping.
Faysal: Does knowledge sharing help you to learn from different perspectives?
Johan: Well, I think the mind set of business student compared to engineer student makes you better at some things and of course worse in other things, I think from what I have seen now, I see that lot of engineers are very good at the engineering stuff, but when it comes to projects, I mean to keep many balls up at the same time, you understand what I mean, and coordinate, that is not their best skills so I think they have need for both of us to deliver.
Faysal: How do you capture the knowledge of your client?

Johan: My clients as I said, it is, I see my clients as internal clients and external clients, and basically we have to relate to what they want us to do, however they can say that they want specific this and that, and we can say to them, this is not possible for us now, that is not matching at all, so we kind of deliver our things, because it is so much about what they need because the speck is already filled out from the tender, so the tender guys are putting up the speck and from that I am just basically delivering, so most questions are coming to me and not the other way. It could be if it is pushing the deadlines or if we have heard some rumours that we might not have to deliver that date or maybe postponed for one or two months, then the question go to them, mostly in terms of the customer it is coming from this way.

Faysal: Do you think that client involvement increases the learning effects?

Johan: Obviously, in many ways, it is different, now we are talking about the Goliat project, that is ELY client found in Atla, but I am delivering this to the guys in Ågotnes, Bergen, that is basically the people that I am related to. They have been doing this, they are the most experienced team maybe in the world when it comes to these types of projects, so I can fully relate to them with that.

Faysal: Do you think interaction between employees plays a vital role for developing new services?

Johan: Yes definitely.

Faysal: Why?

Johan: We have, the department handling all this tools, were in Aberdeen when I started here, we had very bad communication I would say, between the RTP based in Norway and the guys handling the tools in Aberdeen, there were no good communication at all, I went over there , and tried to, and when I was there things happened but when I went back again things stopped, so after six months almost we just moved everything to Ågotnes in Bergen, and I am spending a lot of time there also, obviously they need to know how we work and we need to know how they work, so we can almost sit together and work as a team and that is obviously an advantages, and makes, I was not aware of this and he was not aware of that so, Oh it makes it simple, so definitely...

Faysal: How do you identify customer needs before delivering new services, do you have any specific tools you use to find out what customer requirements?

Johan: Mostly this is all taking care of by the tendering, the tendering decides what when and how much basically so you obviously, you can also have some additional needs but that is really, and mostly everything is in contracts before it comes to my desk.

Faysal: So before you develop any service the tender department, who, find out what where when and how and then it comes to you and then you develop it and then you kind of match with client need and then you deliver?

Johan: Yes, but then you, it waits, the tender department when the tender is accepted, this is, ok, what you have to and do to fulfil the client needs, and, so that is what we are trying to do

Signý: Yes exactly and you always have to do what the client wants you to do according to the tender!

Johan: Yes

Faysal: Do you think that customer needs guide you to deliver new services or creating new services or develop even new services?

Johan: Well, yes and I would say that the need obviously now is, understood in the gas industry, the subsea is quite high tech, and you see now that different [???] depths and the ground and everything creates new needs, so I kind of, if people from different projects have experiences from this and that, maybe this was not as good as it could be with this tool, I forward this information to the engineers, I think it is helping us, in what way, it is difficult for me to say, since I am not dealing with the actual engineer.

Signý: Do you think you are lacking time to maybe concentrate on things that could possibly create something new?

Johan: Well it is not really my decision, or task to do since I am not the engineering and we have project development groups that take care of this, I forward if the customer has any special need. I forward that to the project groups, I don‘t think they want economic business person to start, and also I would not have time to speculate on that

Faysal: Do you think it is important observe and listen to the customer directly when you are delivering projects?

Johan: Yes I mean, it is always important, things can happen in this business, it is not going like this all the time, it can be a little bit delays, there are lot of aspects to be fulfilled before we can start drilling it could be customs, f.e. shipping to

other places, and it can be stuck in customs, f.e. the rig coming up for Goliat I think it was from Asia via [xxx] and technically something happened and it had to stay for repair, and, for three months maybe, and that also can affect the delivery time, so it is important to listen to, communicate all the time, as long as you communicate and being honest, and, you are often safe.

Faysal: Do you think customising services to fit specific needs is necessary?

Johan: Yes since we kind of the being one of the best in the world, it is important to us to do the services, even though it might seem obvious to us the clients can be, I mean, when it is a Statoil project we normally don‘t have to but when it is new clients then they don‘t know how we work, they don‘t know the tools they don‘t know anything about that, they just want to bring on the oil, things that can seem obvious in itself, might not be obvious to them, so, in order to not making any mistakes, we found the routines to keep them updated, even though for some it could be just a natural.[???].

Faysal: Do you think as you said your Aker solutions is one of the best in the world by customising your services as you said you do that, is increase your competitive advantage ?

Johan; Well yes of course the thing is technology in Aker is very high level, and in the North Sea the level of competence is extremely high and the demand is also very high and we are kind of developing a lot towards the North Sea, and we see that the need in other places in the world is not yet that high as in the North Sea so developing this we kind of keep the advantage because we still have the old technology to serve the other places and we know that these technology will be used I mean maybe in ten years in other places, so I think just kind of keep developing will always keep us as one the top in the industry.

Faysal: So do you think for customising your services, is it important to understand customer needs?

Johan: Yes it is definitely, f.e. few years back if we found oil or gas you could only take up a percentages because some layers or whatever, was unreachable, and they were not customised [???] , instead of going straight forward to go down, you could drill from the side and also reach what you could before and we could do it, so definitely, being creative and customise is, because this is not, it is very strict if you go from one platform to another reveal secrets from other places so yes.

Faysal: Do you customise your service in such a way that you can deliver same products or same service but add just a little bit here and there and deliver to new clients?

Johan: What we have done now is that we have tried a strategy obviously to serve as many clients as possible as often as possible to have as much of our assets capitalised at Ågotnes at any given time however from five years ago Aker served tools for projects, specific projects it was not that much customised, so that means when they finished the tools had to may be rebuilt completely at a huge cost and then we just scrapped because the solutions would not take place in other, we are trying to do now is to customise all the tools, so that maybe we can use them again in other projects just with a small twist, maybe I mean if it is a pipe we can just add on an extension and to use it in another projects again that is what we are trying to do now, at the same time we still have the old tools lying there. So we obviously need to try to capitalise these also, but our goal now strategy is to make standards, so that everyone will be relying on Aker, because the more they use our standard products and the more they integrate with Aker the better.

Faysal: Are there any barriers for customisation inside Aker Solutions?

Johan: No, not that I know of. I don't think so.

Faysal: Do you collaborate with employees or teams from different department when delivering services or creating new services?

Johan: Yes I have my own team in Ågotnes in Bergen so we kind of for each project we need to define the tool so this is basically me on other projects and I have one person in Bergen called ATE he is found the execution person in Ågotnes takes care of for everything from ordering spare parts, things like that, takes care of the work packages, that, in the, what you can just pick up what you have done in the workshop, he just makes all this, and he also go down to the workshop to work with the mechanics, so he is an mechanic, he is ATE and it is new. We use also logistic and coordination control, that is kind of their overall, so they are not now to assess the service we use, so it is definitely a teamwork.

Faysal: Do you collaborate with client when developing or delivering services?

Johan : No, I mean if they have special requirements they go via other projects so they don‘t go contact me personally , they don‘t but I forward message from it, that can happen.

Faysal: Do you have any experience that it is difficult to collaborate with clients?

Johan: No.....

Faysal: Or not?

Johan: I mean as I said clients are not experts in what we are doing, so they have a believe that they can imagine it, it should be like this because they heard that, or, they have experience in similar things, I think that is right, but, I don‘t have any problems really, as long as you communicate, as long as I can tell them it is this and like that, instead of they are expecting something and reach a point when they find out it is not like that then they get confused, we have meetings with them just to tell them about the process which I do, and the engineers kind of fill in the technical points.

Faysal: Do you have support from management to create new service or services?

Johan: Yes, I mean I have a support to create any functions needed I mean but it is kind of limited what the needs is since the tendering is already done, if I am working with tendering then of course then I have to serve all the needs but the needs are more or less defined when it comes to my desk.

Faysal: Rest of the questions I am going to ask you, or we will ask you is, all the questions we have asked so far they are related to your project specific, rest of the questions are about the project and also Aker solutions as a whole, so just think about Aker solutions as a whole and you.

Faysal: Do you think the organisational structure in AS is open and flexible to share and seek knowledge?

Johan: Yes definitely I mean if you have any questions, you can easily find out via, you can search on the intranet, you can find out which department you often have a contact persons you often have a service person, contact them, and they can mostly, I mean, let say they can take 60%, within that they have the same questions all the time, if some specialised personnel is needed to answer some specific questions, then they can forward it to the right party, so compared to, past experience in another company it is very good here, I think that is the key to success also, otherwise you would be banging your head against the wall.

Faysal: But how Aker Solutions promote knowledge sharing, knowledge gathering?

Johan : We have different sessions, I know the RTP often have sessions not only here in Fornebu, but also worldwide, trying to explain and teach about what we do, when you hear the RTP from Aker in the rest of the world they think , oh! they

are serving tools, so they have unlimited amount of tools and that is not true so we try to explain to them and other departments are continuously just updating, we have this auditorium in Aker sometime you go there when something is happening. And Also the intranet is also very good for updating, if we f.e. have a new tools coming in or some new equipment then it is up on the intranet very quickly, so people can go in and read about it and , so it is not lack of sharing.

Faysal: Does Aker Solutions have a common goal of creating a memorable and favourable customer experience?

Johan: Yes I would say so, I mean, I am just representing just a small part of it so I can only speak for my department. So yes definitely.

Faysal: How do you measure the success rate of your service projects?

Johan: The success is based on first of all the delivery time and quality of the delivery time, so far I mean we, as long as it going to the standards here, it has been delivered from me, to and the department called SSL department and the service that takes care of the actual work for the customer, so when we deliver and to see the quality controls from tool to tools and accepted and everything and that is kind of success factor for me but also obviously feedback from the client, that the tools worked out well etc, that is also an important factor as long as it is according to the Aker standards when it leaves then that is the most important thing. In most cases then that means that the clients will be happy.

Faysal: Does Aker Solutions inspire employees to be close to the client?

Johan: Well I mean we always say listen to the client and about the client but from my job now most of my client relations are with internal client, so that comes natural, if you like we are doing it all together so, and also if we have any external contact then, it is good to give a good impression and to be open and honest.

Faysal: Do you have meetings with your clients every now and then on weekly bases or monthly bases?

Johan: I mean with my clients my external clients, I meet them quite regularly, regarding, it could be going forward, I mean it could be like kind of setting up something together, if there are some installations we can relate, if it is any contract issues that is also, I mean if we have a tender issues it is ok, then the contract has to be set up, if the contract is huge I only take part of maybe 10% of this but it is also important that we all agree on how it is going forward, so..

Faysal: I would like to ask you another question; you mention earlier that it is really important to be creative, thinking in new ways, so in AS do you have any kind of like structure that you can spend 10 % of your time for thinking about new things and 90% you do work with your projects or 20 % or something like that?

Johan: No, not really, at least, the last, I mean since I started here it has been quite hectic, obviously at time to time you think oh! Maybe that would be a good idea but to kind of measure it in percentages it would be zero, I would say, because there are lots of things to do, and not only on the project side but also on the asset side and everything, so and if we have any ideas we just forward it to the managers and that be a possibility to do this and that way but to kind of put of time to sit and just brainstorm we don‘t have time for that.

Signý: But when you forward do the others do you follow up what happens to that idea?

Johan: I mean we have weekly meetings, and we normally take up in this weekly meetings when we report from the projects and I must say the management they follow up if they have any good things but then and I feel I can, I mean I can speak for the whole group if you have any ideas of just how to structure things to make things easier then they listen and often they actually do something about that, so…

Faysal: You mentioned about that you are involved with six projects right now?

Johan: Yes five, six one is already done, but it is still...

Faysal: And the current one is Goliat, so all of this projects including Goliat do you think it is very important to have management support from the project from beginning to end?

Johan; Yes definitely, it is, and not only management support bus also technical support, from my point of view because I mean even though we have our tools, things can pop up and suddenly some new information comes from the clients and they were not aware about that this leek had this and that dimension or whatever and obviously some client might try to say that we already agreed on that didn‘t we and they can try to come to me and say but you said this and that or try to make me promise something, and in that way send it to my management and they will always support me [??????] I mean it does not matter really, they will always support and, that is important, they can always try to put me up against the wall with some technical fixed facts and yes say something that just can sounds

reasonable, but in my perspective it also can sound reasonable but I need to seek support from the management. So this support is very good.

Faysal: Do you think in terms organisational structure, the way people works, or work in Aker Solutions and the way people interact or think also affects the projects in each step, or like in the first phase second phase or the final phase?

Johan: I mean as I said I can only speak for myself but you see that projects end up in different ways with different persons not for the bad but very good in many ways but people have their own ways of doing things, and use past experience maybe from other companies that have worked out well. And sometime you can maybe adapt to one of my experience, so you see the outcome is different with different people, but up until now it has not been any problem at all.

Fourth Interview, 23/05/2012

Interviewers: Faysal Ahmed Dhali-Lund (*Faysal*) and Signý Jóna Hreinsdóttir (*Signy*)

Interviewee: Frode Sirhaug, Manager of Project Execution and Services of Global SLS in Aker Solutions (Frode)

Faysal: Can you explain the services that your project provides?

Frode: Very briefly: everything that you are taking up from the seabed, doing a repair, upgrade, modification or an recertification of it.

Signy: Does your project have a name?

Frode: It called SLS Norway project departments. Not the project but the department.

Faysal: But the project like Atla, is a name for that project. Do you have any name like that?

Frode: I have several and all. Kind of... Atla is just one field. I have everything in the North Sea.

Faysal: What is the usefulness of the services for clients and why? What are the advantages your client will get from the service you providing?

Frode: You have to do a service when the oil and gas production stops or are reduced because they have to upgrade it or just modified it. Sometimes just a

small part. Just benefit to keep their oil and gas production as high as possible. So you need a maintenance of your car, if you don't change your oil in your engine then it works fine very long and suddenly then you ruin your engine and that's the same type of service we do or similar.

Faysal: Is knowledge gathering and knowledge sharing important for delivering new services?

Frode: Very.

Faysal: Why?

Frode: Because this is a technology driven and upgrade and modification. If you do not take into account the newest technology, we are stuck. Because all things... well, we can't take up all the oil and gas today, but with better technology, newer technology we can all keep up the production and take up more and more. Today we can take up 60%. May be tomorrow with new technology we can take up 65%.

Faysal: Does sharing knowledge help you to learn from different perspectives about services and clients? For example, if you share knowledge with employees and clients and after sharing knowledge, do you learn about marketing sides or production side or operational side?

Frode: Yes

Faysal: For example, Aker Solutions have lots of engineering knowledge, so do you learn from other side as well when you interact with employees and clients?

Frode: Yes, we interact not only with the client, but we also interact with the EPC project very much or the R&D: That's a new technology to develop, so as a service base we have to interact both the R&D, the major projects and the client directly. So, we are learning from everyone and we try to have a lesson learnt back to the EPC project. So, when we have this equipment in operational department for year or two. We sometime bring engineers from these environments with us, so they can take lesson learnt back to develop new products.

Faysal: As you said you do learn from different perspectives, but how do you capture the knowledge of your client? For example, your clients have a knowledge about marketing or a specific operational issue, but Aker Solutions do not have that, so how would you capture that knowledge from the client and bring back to Aker Solutions?

Frode: We have sometimes a knowledge sharing conference, not very often, but we invite the EPC, well if you take the major product we have, we have X-mas

tree, we have Tie In, we have Work Over Systems, so when we are doing X-mas tree intervention at the sea bed, we give the X-mas tree department manager feedback: What happened? What kind of experience do we perceive? So, we try to keep the department manager and his department updated for X-mas tree and same for the other groups. So, and every time we do an operation we write an daily offshore log (and we use that equipment, so and so on, that went wrong, that went good) and we store that, so we can bring that up again. Daily log: Everyday.

Faysal: Do you think that client involvement increases the learning effects and the knowledge about the client?

Frode: Yes, of course because we see for instance when we do an operation at the Troll, we just look at Troll, but, the client, he also has knowledge about as you said Atla, Resun and he brings that knowledge with him when he do the operation at Troll. Directly he will teach us.

Signy: Do you see new things coming up which you can gain from like new services out of etc from those?

Frode: Yes, we do that when we are doing some operation at another field we see that well none of the fields are same because oil is in different shapes, in different fields, so what we are learning from one field, we can just bring that to another field and try to bring the equipment up to that standard. So, always do minor changes for that equipment

Signy: So then in a way you are making something new every time.

Frode: Not every time, but

Signy: Then you can

Frode: Yes, we can because that's not always economically benefiting the company to just do it.

Faysal: Do you think interaction between employees plays a vital role for knowledge creation?

Frode: Yes. If you not invite all the employees into that sharing knowledge, if that guy or girl quieting the company, knowledge is gone. So, we have to share.

Faysal: How does interaction with clients affect the success of service innovation projects?

Frode: Affect directly that the client said ok we have some thoughts, could you just make a study for that, if it's possible? So, directly they give us money to do some studies that could you see if it's possible to do fibre optic from top and into

the wall. Well, it is possible, but it was quite difficult, but they gave us money to do that. So, they directly gave us money to do some R&D plan.

Faysal: How do you identify customer needs before delivering or developing new services?

Frode: Directly dialog and when we are monitoring how the oil and gas production develops, we see that ok if it's decreasing, we are in dialog with the client directly. That's the operational part. We have one operational department and we have one project department, so this operational department talks directly with the operational department of the client. They discuss ok is this possible or is it not possible? And they have lot of engineers sitting here, so these engineers also talks to this one and discuss back to the client. So, more or less a brainstorming on the engineering side.

Faysal: How does customer needs guide you towards new service innovation?

Frode: That depends if you take Atla or Troll, the operation manager for Troll, he, could have one- he has a KPI, keeps all the overhead down and so on. For Atla for instance could be that this is a new ok, you are entitle to use more money, so it's up to the operational manager also. So, how experienced are they? Ok, if he is very experienced, you can say we really need this one. So, it's really depends on the operation manager.

Faysal: So, here do you have both way communications?

Frode: Yes

Faysal: Do you think it is important to observe and listen to customers directly and why?

Frode: If we do not meet the client need, we are out of business.

Faysal: Do you think customising services to fit specific customer needs is necessary? For example, is it important to meet the customer's requirements?

Frode: Yes, but we also have to meet the national requirements and sometimes we have standardised some equipments to keep the cost down, so if we need the national standard and we have standardised it, it will not always meet the customer standard 100%.

Faysal: But do you adapt?

Frode: Yes, we adapt some of them, not all of them

Faysal: So, you adjust little bit, change little bit here and there.

Frode: Yes, we can not adapt everything. Then it takes long time and cost more money.

Signy: But can you choose? Does it sometime choose that spend more money?

Frode: Yes, we have done that. New boats for instance one field we spend a lot of money to develop a new boat, subsea boats.

Faysal: Are there any barriers for customisation inside Aker Solutions?

Frode: Yes, experienced engineers and total amount of engineers and to be safer or truthful standard what we have actually said because if a new engineer is starting and doing some underground, not reading the governing documents, they do not know the governing documents. So, they do changes directly and that comes back to always.... I thought about experienced engineers, but experienced engineers do also lot of errors. Depends.

Faysal: Do you collaborate with employees or teams from different departments when delivering the service?

Frode: Yes, we could have always done that more, but when we are setting up a project, that's people from all the departments: Finance, document, supply chain.

Faysal: How do you collaborate with different departments?

Frode: Directly into the projects' meeting: Weekly or bi-weekly.

Signy: One question in terms of barriers came to my mind. You mentioned that engineers are mainly the barriers, but do you think it would help to have more business related people that could maybe help?

Frode: Yes, we have client manager and we have operation manager directly for that reason. So, of course if we had another guy, we always could collaborate more.

Faysal: But when you said barrier in terms of engineer, do you mean if you have more engineer, it would be better?

Frode: Yes, because the amount of work is so huge for the time being

Signy: so, it's not the mindset of the engineer.

Frode: Sometimes. For instance, if we have an iPhone and I want to order an new iPhone and I want the same one and if you sitting as an engineer, ok you sitting in UK, then you also need that old type of iPhone and they do some changes on the material specification directly. So, I go into my system and order new one, but you as an engineer sitting in another country have already changed it. So, doesn't

fit .... So, we have engineers doing changes directly on all our existing equipments.

Faysal: Do you collaborate with clients when delivering services?

Frode: Yes, all the project managers, group managers and department managers are sitting with the client.

Faysal: Is it difficult to collaborate with clients?

Frode: Specially, when there are difference between the operational needs and the people sitting in the projects in the client, then it's hard because you want to meet the client's need and you know that this will not function at all.

Faysal: Do you have support from the management to create new services?

Frode: Yes.

Faysal: and how do they support?

Frode: Oh, I was sitting directly in the management team. So, some of the cases would be add on the agenda and talking with business manager directly. Ok, what kind of business are we actually going to do this year, next year? We can't do everything, so we just decide what and the business manager, well, some of the teams are in monthly meeting with the management team with the client. So, we also bring up some stuff there.

Faysal: Do you think the organisational structure in AS is open and flexible to share and seek knowledge?

Frode: Could be more open.

Faysal: Why do you say that?

Frode: Because it's little bit region bounded. We have a control as a centre of excellence for the controls in UK. We have a control department in USA, one in Malaysia, one in Norway and I am not convinced that they are collaborating good enough.

Signy: You don't have any tools which you use more than... Not even to web, internal

Frode: Well, we have some share point. There are some share point, but different culture, that's a barrier.

Faysal: Do you identify client skills and use them for delivering better services?

Frode: We try to take out so much as you can from the client.

Faysal: Does management promote knowledge sharing, knowledge transfer and customer involvement?

Frode: In some degree. We try to have a conference or two, but we could have more interaction. Because it's lack of time basically.

Faysal: But how do they promote sharing knowledge and this?

Frode: You met Aske Salang who came with you. He is not an Aker employee. He is from outside from small company. They have developed a small box that we can put on the sea bed. This is a new technology and we have in-cooperated that into Aker system and we are promoting that system, so we can actually instead of taking the X-mas tree up, modify it and setting it down again. Then we have more information from the wall. We can put a small box at the sea bed connected with the X-mas tree and have the same information, so the management team is promoting that and this is some new staff. We have brought this into production and we are going to deliver the first 4-5 equipments now the next year, I think. So, some degree we try to promote it in a way.

Faysal: How do you measure the success rate of your service projects?

Frode: Deliver on time or deliver ahead of time because if you deliver on time then it's always late to do the service. Then it's too late, so little bit ahead of time.

Faysal: But do you take customer satisfaction into consideration when you measure success?

Frode: Of course. We have a dialogue directly with the management team and with the client. What do they need next month, next year, next two years? So, we have not been able to deliver on time on all the projects because we have lack of space.

Faysal: Does Aker Solutions inspire employees to think about innovation, do innovation, create new service?

Frode: More focus on delivering already existing equipment rather to develop new in the service. So, there is maybe a barrier between the service side; and EPC and R&D. So, the focus on new products is on the R&D and new services not so much because it's too much to do anyway.

Signy: So, lack of time is a main barrier maybe for those guys to work more together in the pursuit of making something new

Frode: Yes.

Signy: So, they could do that if they have time

Frode: Yes, they could do that

Faysal: Does Aker Solutions inspire employees to be close to the customer?

Frode: Yes, we also want to have some distance. For instance, we don't want clients to directly be in the workshop, talking to the mechanics directly all the time. Because then it's going back: Ok, why did you do that and; so on. So, it's simple.

Faysal: How important do you think it is to have management support in the project from beginning to end?

Frode: Yes.

Faysal: And why?

Frode: Because then we have prioritise these and these projects, these and these type of equipments. We have to make some decision what kind of equipments are we going to deliver, are we going to buy another company just to have enough steal for instance. So, yes, top management, they have to be aware of these.

Fifth Interview, 11/05/2012

Interviewee: Magne Lie, Service project manager – Atla (Magne)

Interviewers: Faysal Ahmed Dhali-Lund (*Faysal*) and Signý Jóna Hreinsdóttir (*Signy*)

Faysal: Can you explain the services that your project provides?

Magne: Yes my project is operational we are installing christmas trees and tubing hangers.

Faysal: I would like to ask you, are you an engineer, or do you have a different background ? Are you from Marketing background or sales background?

Magne: I have over 25 years' experience in the oil business, and I am not an engineer, I have worked mostly on an operational issues, like core tubing, MWD, completion, subsea, I worked for some years at FMC as project manager, so I have many years' experience.

Faysal: What are the usefulness of the services you are providing for clients (and why)?

Magne: Yes the client we communicate with the client, we have all the preparedness meetings and of course the equipment so we actually installing the clients property that is actually what we are doing.

Faysal; So the advantage of your service for your client is that you are installing different properties or different solutions for your clients so you are solving problem for your clients, that is the advantage they get from you?

Magne: Hopefully, it should not be a problem, we just deploy the equipment and install it.

Faysal: Is knowledge gathering and knowledge sharing important for delivering new services?

Magne: Yes definitely, that is very important.

Faysal: And why?

Magne: It is the complexity of actually the installation job it is the understanding of the whole system and the process.

Faysal: Does sharing knowledge help you to learn from different perspectives about services and clients?

Magne: Yes.

Faysal: Which perspective, do you learn from for example, engineering, or marketing or sales or do you learn from all perspectives?

Magne: In my job as a project manager it is of course, it is all.

Faysal : It is all?

Magne: Yes.

Faysal: Do you think this learning from different perspective help you to deliver better services to your client?

Magne: Yes because you need actually to know all the different kind of issues actually regarding specially the contract, you need to know the contract and you need to know the business in general, and also you need to beware of the quality and also the expectedness from the customer, you need to professional in all manner.

Signý: Do you share this knowledge with others in your team?

Magne: Yes we have frequently project meetings, of course and it is very difficult to share everything, because in the operational, when you start work with the mobilisation of the equipment it is very rushy, things are going very fast, and you do not have too much time to share all the knowledge, but you need, of course to be open minded and also we need to have open discussion about things.

Faysal: How do you capture the knowledge of your client?

Faysal: For example if you have, if your client have marketing knowledge about specific market but if you don't have that knowledge how do you capture that knowledge and use that it in your project?

Magne: It is not that...the client we have now in my project….we definitely know that they are very very high skilled people. But how we capture it? It is a part of the process in the preparedness for the operational issues, doing all the meetings, and the day to day communication with the customer.

Faysal: Do you think that client involvement increases the learning effects (and the knowledge about the client)?

Magne: Yes I believe so, especially in this project the client is very very high skilled, and he have yes, sometimes he knows more than we about everything

Signý: What do you then do with that knowledge maybe later, do you use it?

Magne: Yes we try to use that in our lesson learned system we have, but we could certainly be better to use that.

Faysal: Do you think that client involvement increase the knowledge about the client?

Magne: Yes because it is a mutual process, actually so definitely yes.

Faysal: Do you think interaction between employees plays a vital role for knowledge creation?

Magne: Yes everything is about commutation, as long as people talk together and talk the business and yes I think that is advantage for the whole project.

Faysal: How does interaction with clients affect the success of service innovation projects?

Magne: I don't know what to answer here.

Faysal: How do you identify customer needs before delivering (developing) new services?

Magne: That is normally, that is not part of my job actually, because we get the project and it is delegated to us and then most of the issues are already in place.

Faysal: Ok, so it is someone else in the organisation who identifies the customer needs, then give to you specific projects?

Magne: Yes that is right, but within, when the project has started, it is also, sometime, new issues coming up, of course that is a part of the process if they need some new tools, or whatever and that is actually an on-going process, but that is not the main process, this is the secondary issues.

Faysal: But do know, do you use any kind of tools to identify customer needs?

Magne: No I don't know about that.

Faysal: How does customer needs guide you towards new service innovation?

Faysal / Signý: We will skip this!

Magne: I will skip that.

Faysal: Do you think it is important to observe and listen to customers directly (and why)?

Magne: Yes that is very important, customer needs and the customer is our, that is what we make our living on of course we need to be professional and be alert on all those kind of issues.

Faysal Do you think customising services to fit specific customer needs is necessary?

Magne: Yes.

Faysal: And why?

Magne: It is hard to explain, go to the next...

Faysal: As we think customisation is very costly, it cost money if you want to customise each product individually, so do you actually try to customise services in such a way that you can serve lot of people?

Magne: In an operational issues it is very difficult to do that, so everything is going so fast, and specially with this project, this is my first project in Aker and as a matter of fact what we are doing actually is we are struggling to get the equipment ready for the offshore operation, so it is not much time to deal with that kind of stuff.

Faysal: Are there any barriers for customisation inside Aker Solutions?

Magne: I am not sure it could be I am not sure.

Signý: Maybe just what you were saying, that sometimes it is difficult to.....

Magne: Yes when you are working in the operational phases or….it is not much time actually to be too creative to, yes, so it is a matter of fact just to get the tools ready in time.

Faysal: Do you collaborate with employees or teams from different departments when delivering the service?

Magne: Yes we have a project organisation, I have actually all the support I actually need but of course the different like sales, and logistic and things like that they have also other things to do so we need to share on the support, I think that is

going quite well, because it is very important to collect the whole project and have frequently meetings together and keep everybody updated and also communicate within those meeting of course so it is normal project to be done.

Faysal: Do you collaborate with clients when delivering services and how?

Magne: Yes

Faysal: And how you collaborate?

Magne: It is, by email and by phone and of course at the moment we have a customer represented frequently here at Ågotnes which we cooperate a lot with and also we have one person in the office to the customer and that engineers communicate with him daily so we have a person which is inside the customer offices and that is very very helpful.

Signý: In these communications when the customer is so near you, do you sometime see opportunities to...for new services or of doing something new for the customer?

Magne: Yes certainly, but that is small issues, not, because we have already started operation, but in a way you are building up your confident and also the good communication with the customer so that is very valuable.

Signý: And the small issues can sometimes be something big?

Magne: Yes I believe so, but, yes everything which we contribute with the... I believe the customer will take seriously and maybe in the next project we will do some better things, like, because the project we have with Total, before there was a hill project there where lot if issues there and we have made some adjustments for this Atla project and we see the advantage, but of course it is still a long way to come up were want to be.

Faysal: Is it difficult to cooperate with clients?

Magne: I would say so, I would say fifty, fifty %, it could be much better

Signý: Without going into details, what kind of difficulties is it?

Magne: After my opinion, my experience from former project is that it is very helpful to work with a customer like a team, we work much closer together and together try to solve the problems in an early phase and get the understanding for what processes we have and try to communicate the processes we have in Aker to the customer and also let him see and then maybe he will understand more what the resources we have and also, changes, if there come up change late in the project it is very difficult actually for us actually to handle it and also we have, we

like to a plan and of course there is a lot of people involved in different stages, and to change f.e. how we are going to test a Christmas tree that will get a high impact on the time and also on the resources, so it is very important for us to let the customer know about those things.

Faysal: I would like to make a follow question, is it is very important to involve customer from the beginning of the project?

Magne: Yes that is very important.

Faysal: And all the way down to finish the project?

Magne: Yes

Faysal: Do you have support from the management to create new services and how?

Magne: Can you say it again?

Signý: Support!

Magne: Yes I believe so, but I have not too much experience in that yet, we need to come to that later maybe.

Faysal: Do you think the organisational structure in Aker Solutions is open and flexible to share and seek knowledge?

Magne: My opinion is that it could be more flexible.

Faysal: Do you identify client skills and use them for delivering better services?

Magne: Yes that is for sure we see advantage from the last project Atla, and specially the commercial issues are very important to understand the contract, and not only the project manager but everybody in the project need to know their part of the contract very well so the contract is actually the recipe on how we want to work and sometime we see that the contract is not clear enough, actually and open for a lot of discussion on some items and that also we spend a lot of time on that, because the customer is very into the contract he knows the contract in detail they have actually made the contract, and we have added the service part of the contract, which we know quite well, but, it is very important to have a lesson learned after the project and go through the contract issues and also sit together with the contract team and the next job, we need to do some adjustment really

Signý: And then you can maybe discover that you can add extra services in terms of getting more revenues etc?

Magne: Yes of course.

Signý; Is that maybe their main purpose of going through it afterwards in terms of lesson learned and create new services?

Magne: Can you say it again?

Faysal: Or improve it?

Magne: It is improvement and also if we can improve it I think the business will be better for both parties.

Faysal: And also maybe add extra things on to the existing project or the existing services, so people can have extra satisfaction, specially the customer?

Magne: Yes.

Faysal: *Does management promote knowledge sharing, knowledge transfer and customer involvement (in Aker Solutions) and how?*

Magne: Hmmmm.

Faysal: And as a manger, you are a manager yourself what do you think?

Magne: It could be better , but as i said my experience is just from august last year, so, but I think things are moving in to right directions and also we in the operational in Ågotnes we are going to we already have some changes now, so I think that will be advantages for us.

Faysal: Do you know in Aker Solutions, do you use any kind of tools for sharing knowledge, for example some companies they use mentoring program to share knowledge in the organisations or monthly meetings or daily meetings to share information between departments and between employees, do you have any kind of tools like that in Aker Solutions?

Magne: It is probably a system for it, but it is not used too much, we have weekly meeting the project managers and weekly meeting were go through more like the operational and the operational experience and we share that experience within in the project manager team so that is quite good, but of course like a forum for it, I have not been in that so much but anyway there must be a system, but anyway I think it could be more visible, actually.

Faysal: Does the organisation, Aker Solution have a common goal of creating a memorable and favourable customer experience?

Magne: I don't know about that.

Faysal: No, ok we skip that

Signý: That is an answer!

Faysal: How do you measure the success rate of your service projects?

Magne: We are using the SAM system, that is an service execution model, that is a tool we actually going to use for all the mobilisation and all the offshore operational issues and also for it is a tool we use...

Faysal: For measuring success?

Magne: I don‘t think it is much measuring, but it is, I am not sure about the measuring.

Faysal: Kind of controlling?

Magne: Yes controlling it is an execution model.

Faysal: But...when you measure success in general you said you don‘t know but still I like to ask you again, do you use for example financial aspects for measuring your project or do you use customer satisfaction aspects?

Magne: I am not sure actually.

Faysal: Ok

Faysal: Do you think organisational structure impact on the generation of innovation (and how)?

Magne: I don‘t understand that question.

Faysal: Ok, we mean the, Aker Solutions as a company, the structure of Aker Solution in terms of management and how people work, does it affect the generation of innovation or creating new services?

Magne: Yes I think so, yes.

Signy: Can you tell us in short, how or why you think that, or how the company does that?

Magne: Just go to the next question please.

Faysal: Does Aker Solutions inspire employees to be close to the customer and adapt to clients demands?

Magne: Yes.

Faysal: Do you want to elaborate on that?

Magne: The customer is the most important [?????] for us, and of course if you do not do what customers wants, and also we need to know what customer also want that is the whole business actually it is about that we need to know the customer needs.

Faysal: How important do you think it is to have management support in the project from beginning to end?

Magne: It is quite important, you see how we work is actually, especially in this project is that we work with SPS [???] in Fornebu, and we have a representative like SLS coordinator in the project and that is from the beginning, and he cooperates with them and build up experience in the project which is taken back to SLS and of course that is including the management and the whole project actually and I think that is very important.

Faysal: I want to ask you another question. It is already related to the question I asked. Do you think management support and the way people work in Aker Solution will affect the service delivery success?

Magne: Of course it will affect, what we see is that sometime we have some very heavy processes, when you work in a operational issues, what we do sometime, thing have to go very fast and for example you need to order some extra equipment and the process to get, or just to create the order and to just to get the equipment offshore is far too heavy and is taking too much time, so if we are going to survive we need to deliver much faster than we do today.

Faysal: And then a tail question: do you think management support have a very important impact from the beginning of the project to the end?

Magne: Yes I believe so, to get that, me myself as a project manager I need to know that I have support from the top management from the day one until I have finished, I need to actually to know they have confident in what I am doing, and also, I need to know that if I need to take some decisions on different issues, I need to know where to go actually to get some advices that is very important.

Signy: And do you think those procedures are good or bad inside Aker Solutions?

Magne: I think they could be better, it is not bad, but it is not worse, but I think they could do something better

Sixth Interview, 11/05/2012

Interviewers: Faysal Ahmed Dhali-Lund (*Faysal*) and Signý Jóna Hreinsdóttir (*Signy*)

Interviewee: Hans Christen Søvik, Project lead RTP – Atla (Søvik)

Faysal: Can you explain the services that your project provides?

Søvik: We have equipment, existing equipment that we rent out, so the company, like Total, don't need to buy the equipment, but can rent it.

Faysal: OK. The next question: What is the usefulness of the services for clients?

Søvik: The useful is that they save money when they don't need to buy the equipment, but can rent it and save money, but they can also get equipment moments after, because we have already existing equipment and don't need to produce it.

Faysal: Is knowledge gathering and knowledge sharing important for delivering new services?

Søvik: Yes. Knowledge sharing is very important, because sometimes equipment need to be modified or adjusted to be fit for purpose. And then you must have knowledge about what it sound interface, how it shall be worked and to provide the right equipment that is fit for service.

Faysal: Does sharing knowledge help you to learn from different perspectives about services and clients?

Søvik: Yes, because sometimes you learn how to improve the services, the project modification that need to begin, and what you have learned from previous projects you know how to improve the modifications and documentation that need to be provided to give a good operation.

Faysal: But do you think the different perspectives, are they from marketing, sales, product development, engineering, is it all different backgrounds come into play?

Søvik: No, it's mostly engineering background we are talking about here, but marketing would be in a different level. From my point of view it would be engineering technical level.

Faysal: We would like to ask you another question: Are you engineer or are you work with operational issues?

Søvik: No, I am an engineer, but also I also work with operational issues as a part of my engineer tasks I need to know how equipment shall be used to be able to do the modification and deliver the right equipment.

Faysal: How do you capture the knowledge of your client?

Søvik: We capture it first of all when we receive a specification from the client. That can be sometimes a vague specification and sometimes a very detailed specification. Then we need to map the need of the client with the right equipment

that we have available to be able to deliver equipment that they can use for their project.

Faysal: Do you think that client involvement increases the learning effects?

Søvik: Yes. We see that sometimes we have a client with a very high technical level of knowledge and that helps us to improve our delivery because we catch new tasks, we see things from a different angle and make us improve the service for the next project.

Faysal: Do you think that client involvement increases the knowledge about the client?

Søvik: Can you explain?

Faysal: For example if you in a project, if you also work with the clients do you think that increases the knowledge so you learn more about the client?

Søvik: Yes, we know about the expectations of different clients, but sometimes you also see that clients also want to make..... have a kind of request that makes things more difficult sometimes. They have requests that not all the time were relevant. Sometimes you just need to do things to get a satisfactory delivery to the client.

Faysal: Do you think interaction between employees plays a vital role for knowledge creation?

Søvik: Yes. That is crucial. You cannot capture interesting spiral by working alone. You need to have interaction to see things from a different side and to pick up knowledge that people have done in previous experience.

Signy: And do you view it that way that you here in Aker Solutions are doing that well?

Søvik: If we have done that very good at the moment … I don't say it's a systematic approach, it's more at the moment... you don't have any database you can look into, you only need to know which person you can ask. You can't go to a share port, you can not go into the computer to search for items so much, you need to have knowledge about which person who has the right knowledge.

Faysal: Yes, interesting.

Faysal: How does interaction with clients affect the success of service innovation projects?

Søvik: Well, as I said, interacting with clients is crucial because you need to capture the ideas of the client and develop or modify the product so it can fit the

purpose and so you have the feeling you have the competence to deliver so we can have a satisfactory product.

Faysal: How do you identify customer needs before developing new services?

Søvik: Customer need are caught by sometimes you get a quote from a customer, they send a request for a quotes, sometimes you, that's the normal thing, you receive an offer for a quotation.

Faysal: But do you try to for example kind of find out new customer needs, for example talking to customers, meeting with customers or going to a conference, and...

Søvik: Not so much at the moment, not in my position, but I know that other positions are doing this.

Faysal: OK, so you have other departments which are very much focused on identifying customer needs.

Søvik: Yes, correct. That's more in the tendering department and studying department, not in my role.

Faysal: No, not in your role. OK.

Faysal: How does customer needs guide you towards new service innovation?

Søvik: Customer needs provide us with new products you means, new deliveries?

Faysal: Yes. New service

Søvik: Well, we see that if they have a request that is something that you can make benefits of and then can send to and deliver to other clients, then we'll look into if we can develop such a product, if we don't have an existing product. That we have done on previous projects. We receive a quotation and you see that this project needs to be developed to meet the demands of the client.

Faysal: Do you think it is important to observe and listen to customers directly?

Søvik: Yes, of course interaction is very important. Then you can pick up client needs and get explanations for they need it and why it is important to have exactly this kind of product. And you also sometimes can, when you have interaction and dialogue then you maybe can also explain to the person why you can use a different product than he asked for.

Faysal: Yes, that is interesting.

Faysal: Do you think customising services to fit specific customer needs is necessary?

Søvik: How do you mean?

Faysal: For example if you want to deliver a service, the customer gives you a requirement so you are going to deliver a service based on their requirements.

Søvik: Yes, we give the service based on their requirements to the customer, or sometimes we say we deliver something which is similar which will do the job.

Faysal: OK

Søvik: And then we need to get an acceptance.

Faysal: OK. So you adapt with the customer needs.

Søvik: Yes, we had a successful need and we always try to read the specifications and at least know what they want and state what we have, so that we don't get any show stoppers in the project so we take that upfront. Sometimes we are not delivering exactly what they asked for, but we know that they have an understanding of what we are delivering and accepting this upfront.

Faysal: As customisation is costly, do you try to customise services in such a way that you can serve the mass market and how?

Søvik: Yes, that's what we have. We have our standard portfolio of equipment in Aker Solutions and we are tailoring this to the project to fit the project. Of course so we don't need to do a full qualification, we can just modify it slightly. Because if you shall develop a complete new project within a project you don't have time.

Faysal: No, but how?

Søvik: So we try to do all development outside a project.

Faysal: Mmm, that's interesting. But how do you actually do that? How do you standardise products and modify them slightly?

Søvik: We do it based on what we see in the market demands and also what are mostly the customers needs and also according to international standards. So when we come up with a product we do it according to standards and we also try to use our experience to see how it can give a good and reliable product and it is safe and fit for purpose.

Faysal: OK. So you use your past experience to deliver better services?

Søvik: Yes.

Faysal: Are there any barriers for customisation inside Aker Solutions?

Søvik: Barriers for customisation are time and resources of course and you often because you have a time frame and a cost and you need funding to do things and you try to minimise changes. That's if you can so, but sometimes you need to

come up with quite new, but you can see that this can give improved time and service to the client. That gives a better decision for both Aker and the customer.

Faysal: Do you collaborate with employees or teams?

Søvik: Yes, we have meetings with the other departments so we can give our experience from the usage of products back to the designers so they can that into consideration when making new products.

Faysal: Mmm. OK, but how do you collaborate with employees and teams?

Søvik: We have some meetings with the products departments, but this can also of course be improved, but we try to collaborate into a standard forum.

Faysal: Do you collaborate with clients when delivering services?

Søvik: Not on a regular basis, not in my role, other roles maybe but, we collaborate only in projects. In projects we have project meetings and dialogue with the client to make sure we meet the demands of the client.

Faysal: So you have a dialogue with the client on a regular basis with the client from the beginning of the project to the end.

Søvik: Yes, in the project, yes. We have weekly meetings, monthly meetings, and so on with the client to make sure we are delivering the right kind of product.

Faysal: Is it difficult to cooperate with clients?

Søvik: Sometimes, it can be difficult when we have a challenging client. Sometimes the client can have very challenging points of view that you want to spend much energy on them to focus on and to answer.

Faysal: OK. Interesting

Søvik: Other clients are more easier, you have more confidence and accepting what you are delivering.

Faysal: Do you have support from the management to create new services and how?

Søvik: Yes, it depends because when creating new services, we are not creating so much new services, because we are... you are talking about new services, not new equipment, I get it you are more into the service view than new equipment

Faysal: New equipment as well because new equipment come with new services, so...

Søvik: Yes, OK. Because we are more in the offer end, we are not in the development end. We are kind of only ehm... other departments deliver services to

clients, and our service is consisting in renting out equipment and people to do things.

Faysal: Yes, so you think you have support for doing that, for delivering new services to the client?

Søvik: Ehh... I don't have so much experience in delivering new services and this process so... yes, of course if you have a good idea your management will listen to you, but you must have a business case. You must provide it's a good business case. But of course you can provide it's a good business case then you will get support.

Faysal: Yes, that's true, yes.

Signy: I have one question: Do you think you have support for spending time for example then on this business case if you think that it will deliver something new to the company?

Søvik: I would say the moment we have limited resources to develop new things at the moment because we are struggling enough with delivering in the project.

Faysal: But the rest of the questions we are going to ask you, is just a quick intro, I would like to ask you to think not only you, definitely you have to think in terms of your role, but I also would like to let you think in terms of the whole organisation or the whole project, so it would be great if you can also take into consideration Aker Solutions as a company and your team and also you for the rest of the questions.

Faysal: Do you think the organisational structure in AS is open and flexible to share and seek knowledge?

Søvik: Yes.

Faysal: Do you identify client skills and use them for delivering better services?

Søvik: If the client is skilled?

Faysal: Yes

Søvik. Yes, when the client has skills, then we pick up and then transfer it back to our organisation.

Faysal: Does management promote knowledge sharing, knowledge transfer and customer involvement and how?

Søvik: At the moment knowledge sharing is not... it's more like a person to person knowledge, it's not that kind of big database that you can get into and look. That must be a bigger project. I know that they have started something, but it is a

difficult task to get into. But yes, it would be good to get knowledge into a database, but it's not easy to … I don't know anyone who are using such databases at the moment. One needs to ask colleagues.

Faysal: Yes, that's your answer then, that's fine. So you have kind of meetings with your colleagues' monthly meeting or weekly meeting or that kind of things?

Søvik: It's more on an informal basis. To get new knowledge is normally kind of, you get into a problem then you know people who have similar experience and you ask them.

Faysal: Does the organisation (Aker Solutions) have a common goal of creating a memorable and favourable customer experience?

Søvik: Yes, the common goal is to make it a successful delivery and get satisfaction to the client.

Faysal: How do you measure the success rate of your service projects?

Søvik: That's … success rate is to deliver on time and within the budget.

Faysal: Mmm, within the budget.

Søvik: And with the right quality.

Faysal: Do you think organisational structure impact on the generation of innovation?

Søvik: If the structure is more and more strict?

Faysal: I am asking if the structure is more flexible towards innovating new services. Or supporting the creation of new services. Or delivering new services?

Søvik: Well, sometimes you have kind of more integration between the people who deliver the projects and the people who develop new projects. Sometimes it can be kind of little business between these two organisations and different departments. Maybe it should be tied more together.

Faysal. OK, yes.

Faysal: Does Aker Solutions inspire employees to be close to the customer?

Søvik: Yes, obviously yes.

Faysal: and adapt to clients demands, you answered that before as well.

Faysal: How important do you think it is to have management support in the project from beginning to end?

Søvik: It is crucial. Without management support you will not feel very successful. You will be fighting both with internal projects and struggle to deliver.

Signy: Do you always have support from your point of view?

Søvik: I will say that not always. It depends on the department and the management in each department. Because sometimes you have two different level managements. You have the management in the project and you have the management within your line organisation.

Faysal: Yes, definitely, but the question I would like to ask you now: Do you think that to deliver the service to the clients successfully, the management support and the organisational structure, the way people work and communicate is very important?

Søvik: Yes, of course and the support is very important. As we talked about, if you don't have the right support it is very hard to deliver in the right time and the right quality.

Seventh Interview, 11/05/2012

Interviewers: Faysal Ahmed Dhali-Lund (*Faysal*) and
Signý Jóna Hreinsdóttir (*Signy*)

Interviewee: Marta Durlej, Asset coordinator RTP – Atla (Marta)

Faysal: Can you explain the service that your project provides?

Marta: Atla project. This is a project for which we will provide our tools, so we have X-mas trees where cover systems, maybe I will mix something here, and rest of our joining groups, so the plan is to provide everything contained

Faysal : What is your background?

Marta: I am educated as an engineer. I finished statistics and management in Europe and transport.

Faysal: So you have also management education.

Faysal: What is the usefulness of the services for clients?

Marta: Can you repeat?

Faysal: What is the usefulness – advantages: client will get from your service?

Marta: I think everything will be on time. We have lot of technical specialist here, so they can answer all the questions and provide more information for example if you want to change something if we are telling or not. Support from every side.

Faysal: So you think this will help your client to finish their job successfully?

Marta: Yes.

Faysal: OK.

Faysal: Is knowledge gathering and knowledge sharing important for delivering new services?

Marta: Yes, for sure. It's really important to have good communication with everybody.

Faysal: Why do you think so?

Marta: Because if you don't have communication and you will not success. Communication is the first thing which is the most important thing if you want to win something or finish something.

Faysal: Does sharing knowledge help you to learn from different perspectives about services and your clients?

Marta: Yes, because I am actually new here and it was really important to get so much information from others, from different people. My colleagues are really experienced, so it was really important and it was very good.

Faysal: I know you said you are new, but if you just give information whatever you know

Faysal: How do you capture the knowledge of your client?

Marta: Capture the knowledge ehm... what you mean actually?

Faysal: For example, your client is very experienced marketing part, but you do not have. How would you capture that skill from your clients?

Signy: Ehm... Ya

Marta: I don't know how to answer it sorry :)

Signy: Just don't do it.

Faysal: Yes, just leave it.

Signy: It's alright

Faysal: Do you think that client involvement increases the learning effects (learning in terms of engineering, how you can develop your product or how you can deliver the service)?

Marta: Yes, for sure. Do you think that client involvement increases the learning effects and the knowledge about the client?

Faysal: If you work with your client together

Marta: If they are involved in our things, is it better or not? Is it more efficient? Maybe it could be more stressful, but yes, I think it's good because it's also communication and it's good to communicate on different sides.

Faysal: Do you think interaction between employees plays a vital role for knowledge creation for learning new things?

Marta: Yes, for sure. As I said before its communication, everything is communication.

Signy: And also in terms of just creating new knowledge here inside the company?

Marta: Yes.

Faysal: Another question I would like to ask you regarding that you said you are new and did not have enough knowledge, but you learnt a lot by talking to other people in your department?

Marta: Yes

Faysal: so, you think that you are using this knowledge?

Marta: Yes.

Faysal: and is it helping you to do your jobs more effectively?

Marta: Yes. Actually it was my first project. It is my first project here. I started one year ago, but maybe I am not so new, but it was my first project, so I am working here as a asset coordinator, so I started from the first place, from planning and everything and I am going for this project from the beginning to the end, so that's why I had lots of questions and I got those answers and I think I feel better right now.

Faysal: How does interaction with clients affect the success of service innovation projects?

Marta: I don't have contact with our clients, so....

Faysal: How do you identify customer needs before developing new services?

Marta: I am also not responsible for that

Faysal: But if you have anything

Marta: But what I can say that usually we have some scope and we have to identify what we have available in rental tool pool and if Hans Petter or somebody else decides this is ok and we can have this project, so we are checking availability of everything and start planning, planning and plan. It's like that.

Faysal: How does customer needs guide you towards new service innovation – Finding out new services or new opportunities?

Marta: Ehm....

Faysal: For example one of your clients had Christmas trees before, but now they want to establish an Easter tree. By knowing that do you think it helps you (your

team) to develop new service or think about it or may be how you can fill that gap?

Marta: Yes, I think it's good to know something like that because then we can think in different way. We can learn something new.

Faysal: Do you think it is important to observe and listen to customers directly?

Marta: I don't do that.

Signy: You don't have connection to the client

Marta: No

Faysal: Do you think it would help you more if you had connection?

Marta: No, I think we have responsible people for doing this.

Faysal: Do you think customising services to fit specific customer needs is necessary for example: do you think tailoring your products based on your customer requirements is necessary?

Marta: Yes, I think it is very important because we should do everything what we can and if we signed a contract, it (customer requirements) should also be in the contract.

Faysal: Do you think it is good to add new extra services with your new services?

Marta: It's complicated. I don't know.

Signy: Something extra or new for your customer which your customer can buy. Do you need to think about that in your role?

Marta: No.

Signy: If you see some opportunities which can add extra and new and create revenue, would you do something about it?

Marta: I hope I can and will be able to do something like that soon, but now I don't have these kinds of knowledge and experiences.

Faysal: Are there any barriers for tailoring services in Aker Solutions?

Marta: No.

Faysal: Do they support for customisation?

Marta: Yes.

Faysal: Do you collaborate with employees or teams from different departments when delivering the service?

Marta: Yes, we have to cooperate with other department also for example with tieing tools because we also ask them for procurement for our project, so that's way. And Every time you need some help for something else that's way. It's not

only rental tool pool. You have to cooperate and be in touch with other people. And actually this company is really helpful and it's really easy to get this help. (for creating cooperation and collaboration between departments, teams and employees)

Faysal: Do you collaborate with clients when delivering services and how?

Marta: No

Faysal: Is it difficult to cooperate with clients?

Marta: Don't have any experience

Faysal: Do you have support from the management to create new services or deliver better services?

Marta: Yes. Hans Petter is my manager and he gives me lots of support all the time.

Faysal: How does he support you?

Marta: If I have any problem, I can ask him and he will answer.

Faysal: He also appreciates for the job you have done and motivates you?

Marta: Yes.

Faysal: Do you think the organisational structure in Aker Solutions is open and flexible to share and seek knowledge?

Marta: Yes.

Faysal: Does management promote knowledge sharing, knowledge transfer and customer involvement?

Marta: Yes and I know that it works in these ways in Aker Solutions.

Signy: How do they do this?

Marta: There are lot of meetings regarding different departments and fields. I have been here for one year now and we had five meetings already.

Faysal: Does the organisation (Aker Solutions) have a common goal of creating a memorable and favourable customer experience?

Marta: Yes.

Faysal: How do you measure the success rate of your service projects? Do you measure in terms of money or customer satisfaction or time?

Marta: The most important is how much we can earn. I think it is important to know how much the project value is.

Faysal: Do you think organisational structure impact on the generation of innovation?

Marta: Yes. It's very good. As I said it is really easy to get help from different departments and people. I am new here. Every time I have problem. I find somebody who wants to help me.

Signy: Have you experienced that company can collect information from employees and share knowledge in better way to do something new?

Marta: Every time we would find something that we can improve. For example sometimes there can be some people who are not easy to communicate and contact. Sometime you would find people who are hard to communicate, but in general it is good here.

Faysal: Does Aker Solutions inspire employees to be close to the customer and adapt to clients demands?

Marta: Yes, I think so.

Faysal: How important do you think it is to have management support in the project from beginning to end?

Marta: I think it is very important, but I think also that it does not work in this way in other departments because for example we have six people here and it is easy to communicate and easy to talk to Hans Petter, but if you have bigger department, it is not easy to catch your manager.

Faysal: Do you still think that it is important to have the support?

Marta: Yes.

Faysal: Can the way people work have an effect in your project for delivering better services?

Marta: Yes, for sure. It is really important to work in proper way: open communication, being flexible and open and having open conversation.

Eighth Interview, 29/05/2012

Interviewee: External actor of Aker Solutions working in the Oil and gas industry (X)

Interviewers: Faysal Ahmed Dhali-Lund (*Faysal)* and Signý Jóna Hreinsdóttir (*Signy*)

Faysal: Is knowledge gathering and knowledge sharing important for delivering new services?

X: Yes it is!

Faysal: Why?

X: It is important to understand what the clients really want so I need to know what he knows and if he knows the product I want to sell him and show me that he knows how to use it, and when and where to use it.

Faysal: Does sharing knowledge help you to learn from different perspectives about services and clients?

X: Both yes and no, it helps me sometimes and other time it won't, it depends what is the start point of the client, I mean if he is only focused on price there is no use but if he focused on solution and maybe better solution often I get a [????]

Faysal: When I said from different perspective, f.e. you have engineering perspective about pipeline or piping, but your customer from AS maybe have other perspectives, different engineering knowledge, so do you sometimes see that you can take that knowledge to you and learn from it?

X: Sometimes, but I think I have to clarify that we are not doing any piping, we only do what connects the pipes, so we do not do any piping but from our knowhow and from our technology about the connection we develop, I think we can use that technology not only to connect pipes but also in other..

Signý: But do you see, you use skills from you and skills from Aker Solutions in terms of…?

X: Ah! you mean working together in terms of developing something, yes we have done that, yes.

Signý: And with a positive output?

X: Yes, we are now to tailor make the connections, and often we have discussed that with the engineers [????] or the appliance what kind of environment it isn't what are the claims they have for this special connector so yes

Faysal: So would you say that by having connection or working with Aker Solutions help you to increase the success of your project?

X: Yes, it is, what we are doing what we are selling is all over the world actually , it is not only Aker Solutions of course, but we had a specific project that helped us open doors that had been closed to us before and we had never been in there, in certain markets that Aker lead.

Faysal; Does customer needs guide you towards new service innovation?

Faysal; You have already said it did!

X: In some way it does of course.

Faysal: How did you find that new needs? By?

X: I visit them, talk to them about projects, or what they need for the future and sometime I have a presentation and they always end with what can I do for you, first I present what we can do, and then, is it something that you can use here, we also have a database that we also search for new projects and find out new projects; who's got the EPC contract, who got the feed end first, feed is very important for us, to get or connect, to get into the project and if we are successful with that it is easier on the way towards ...

Faysal: Do you think it is important to understand customer needs to deliver your service to your customer or client?

X: Of course it is if we don't understand the needs of the customer we won't be able to serve them with the correct connector so yes obviously.

Faysal; So these customer's needs help you to customise?

X: Yes sometime of course but otherwise all the time it is quite simple because it is straight forward standard products but when it comes to specials of course the customer need to tell us.

Faysal: You have kind of answered the next question, but still I am going to ask you. Do you collaborate with Aker Solutions when delivering services?

X: Yes

Faysal: And how do you collaborate, do you collaborate via project or do you collaborate in terms of having conference ones in a week or every days when you are doing project together?

X: When we are doing project together we have certain meetings to inform about the progress and so on, but not as often as every day, no maybe every second week or something.

Faysal: But do you have any platform which you and your clients also can have kind of access to?

X: Do you think computers or...any kind of that?

Faysal: Yes any kind of like or share point, or?

Signý: I have one question; you have maybe seven companies that are delivering to Statoil, something; f.e. Aker Solutions, X and maybe five others, do you those

seven companies meet?, (now I am only metaphorical), do you meet sometimes together, in terms of thinking about what can we do better for Statoil together?

X; No, because you know it is competition, I mean…..

Signý; I know it is a competition, but it is a very specialised field....

X: We meet Statoil, but not together with Aker Solutions, FMC or whatever but we meet Statoil on regular bases, they are the end client.

Faysal: Because you also have project with Statoil directly as well as with Aker Solutions?

X: No, no Statoil, does not work that way, because they always have company like Aker Solutions to do the projects for them, it is really, really rare that AS does its procurement itself, really, really rare.

Faysal; But, you said that it is difficult to cooperate with clients?

X: No! we don‘t have any problem with them, it could be, sometimes they challenges us because the technical solution is a difficult one, but not a problem, it is more like a challenge, and I think the challenges makes us better, you need challenges all the time.

Faysal: How do you measure the success rate of your projects?

X: We always have a delivering meeting after the project is handed we like to have one together with the client and one internal. So when we see that we have reached all the delivery plan, if we earned enough money that is internal of course and what we can do better.

Faysal; Do you take customer satisfaction into account?

X: Of course, we, if the customer is not so happy about things it is important for us to let them be happy because we need to sell to them again.

Faysal: How important do you think it is to have management support in the project from beginning to end?

X; I am not sure what you mean about that!

Faysal: F.e. if you start a project, to finish that project successfully do you think it is very important to have management support in the project from beginning of the project to the finish.

X: I think that all the project managers in house are so good and independent that they don‘t need any management. Of course sometime it is needed because it could be complexity or political issues coming up, but we all have frames to work

inside these frames and it is not that often that we have to involve the management.

Faysal: But do you think manager, when we say management support, we mean the company as your company, do they have policy that, the problem with management will inspire people in the projects to do their job?

X: Of course they always will do that, because then again we will earn more money. So of course.

Faysal: So this is very important from the beginning?

X: Yes of course

Faysal; So that were all the questions but still we like to ask you, what is your job role, if you could quickly give a brief?

X: The title is business development manager, and that is actually what i am doing, I try to find new markets and new kind of doing business and all that , and of course I also take care of lot of existing business, and customers, but finding new markets is maybe the most important at the moment and, yes.

Fasyal; And also you have lots of, I don't know, do you have lots of interaction with different clients and manage the relationship with them?

X: Yes sometimes I have interaction with clients but mostly I have it with my colleagues all over the world, I mean we are located all over the world, we have sales offices all around and, we have agents around so we, I often talk with them, we have a weekly phone call or phone conference with my colleagues in the central office and we have also annual meetings were we come together an discuss the business.

Faysal: Thank you that were all the questions we had, thank you for your help.

Name and ID number: Signý Jóna Hreinsdóttir and 0917687
Name and ID number: Faysal Ahmed and 0909602

Preliminary Thesis Report

"Innovation within knowledge-intensive business services (KIBS) – How the theory of service innovation can benefit Aker Solutions."

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Supervisor:
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Campus:
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GRA 19002 Preliminary thesis report

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Master of Science in Innovation and Entrepreneurship

'BI Norwegian Business School – Preliminary Thesis Report'

Content

Summary

Our preliminary report begins with an introduction to our chosen research topic along with a description of our adopted case study and research question. The aims and objectives and an outline of how we are going to conduct our data collection follows. Our thesis progression is also an important part of this report.

Innovation has become very important for today's organisations as it provides the energy for their growth and development in the ever more competitive environment. However, service has been neglected for a long time in the innovation department. It also has received little attention by innovation and technology policy makers. Thus, we will explore the theory of 'service innovation' within Aker Solutions as our adopted case study. Since service innovation is a broad topic, we will concentrate on knowledge intensive business services (KIBS) innovation.

In our thesis, the critical literature review will accomplish three main purposes. Firstly, the critical literature review will underline the specific assumptions of the research question and provide further guidance and motivation, secondly, it will draw attention to the current study from previous research and intellectual traditions and finally, it will be of assistance for identifying the mechanism to interpret data.

The research topic is as follows: "Innovation within knowledge-intensive business services (KIBS) - How the theory of service innovation can benefit Aker Solutions." We will emphasise on the following focus points within the company: management, organisational structure, corporate social responsibility (CSR) and customer needs.

We conclude this report by describing our research design and methodology for which we will use the qualitative method with in-depth interviews.

Introduction

In this study, we will explore the theory of 'service innovation' within Aker Solutions. Service innovation is a broad topic and we will concentrate on knowledge-intensive business services (KIBS) innovation. We will adopt a case study approach, using Aker Solutions as the selected case as it is amongst other a knowledge based company. Aker Solutions is a multinational company and trades in several sectors. Amongst them are: Energy (oil and gas), maritime and consulting. We will concentrate on the energy sector and several projects within this.

We will review Aker Solutions' adaption of the service innovation theory and how the organisation is using the theory in practice to maintain and/or increase its operational effectiveness in an increasingly hostile and uncertain economic climate. Through analysing and investigating the application of service innovation to Aker Solutions, we hope to find the strengths and weaknesses of this theory. As a result, we are also hoping to add suggestions for improvement of this model or potentially making a new model.

Background of studies

Innovation has become very important for today's organisations as it provides the energy for their growth and development in the ever more competitive environment. The focus is on innovation because of reputation effects, a short product life cycle, a short strategic cycle and performance improvement. Foster and Kaplan (2001) wrote that both the product life-cycle and the companies' life-cycle are becoming shorter. The S&P 500 companies' life-cycle was 50-60 years in 1950, it was down to 15-16 years in early 2000 and the average life expectancy of Japanese and European companies is now 12.5 years (Burns, 2001). Due to this companies have to focus on innovation. If not, they could be out of the market or they might face serious competition from companies which innovate and quickly capture the rest of the market. For this reason, manufacturing industries and service industries have to concentrate on innovation. Freeman and Soete (1997, p. 266) wrote in their book 'The Economics of Industrial Innovation' that "[…] not to innovate is to die"

Service has been neglected for a long time in the innovation department. It has also received little attention by innovation and technology policy makers. Preissl et all (2000) said in their article 'Service Innovation: What Makes It Different? Empirical Evidence from Germany' that "Services' roles in technological change, in particular, were largely seen as so insubstantial as to be barely worth examination." Even though there has been a significant growth in service industries, especially in the knowledge-intensive business services, manufacturing industries has got most of the attention in terms of academic research. Service innovation has been ignored until recently. Miles (2000) in his article 'Service innovation: coming of age in the knowledge based economy' stated that service innovation had, and still to a certain extent has, a "Clinderella status" which means it is marginal and being neglected.

There are several reasons for the ignorance of service innovation and service sectors. One of them is the intangible aspect of the services. Another one is people's perception of services. They used to think of services as a part of products. David Rainy (2005, p. 5) in his book 'Product Innovation: Leading Change through Integrated Product Development' mentioned "Product innovation is the overarching management framework for making incremental changes and improvements to products, services, and processes." Sundbo (1997) in his article 'Management of Innovation in Services' distinguished between manufacturing industries and service industries which is important for managing product innovation and service innovation in different ways instead of thinking of services as part of products. It will increase the awareness of service innovation. Sundbo (1997, p. 432) wrote "Manufacturing industries produce goods, while service industries produce non-material 'products'." In his article, he also claimed that service firms do innovate and do have research and development activities. Another important issue is mentioned in his article that service firms have close relations with their customers and that this gives an advantage to service firms over manufacturing firms. DISR (1999) referred to de Jong et al (2003, p. 14) and wrote that service firms deliver "[…] help, utility or care, and experience, information and other intellectual content – and the majority of the value is intangible rather than residing in any physical help". Furthermore, Gardrey (1995) in the article 'New modes of innovation. How services benefits industry' wrote "[…] to produce a service […] is to organise a solution to a problem (a treatment,

an operation) which does not principally involve supplying a good. It is to place a bundle of capabilities and competences (human, technological, organisational) at the disposal of a client and to organise a solution, which may be given to varying degrees of precision". This definition takes service innovation to the next level. It explains that organisational and human capabilities together with technological capabilities are necessary for providing services.

In the recent years, service innovation has got recognition for its contribution to economic development. Florian Skiba (2010, p. 25) in the book 'Service Users as Sources for Innovation: An Empirical Study in the German Services Industry' mentioned that "Most of the growth in today's economics is in the field of services. We may also notice that mature economics are gradually shifting towards service-driven economics." Moreover, Gallouj and Djellal (2010, p. 2) in the book 'The Handbook of Innovation and Services: A Multi-disciplinary Perspective' said "Nobody any longer disputes the ability of services to create value." Customers are demanding more and more services to fulfill their requirements. Therefore companies have to put more and more importance on service innovation. Gallouj and Djellal (2010, p. 49) wrote "services have taken on an increasing economic role and today play an important role in the development of change; innovation in services can therefore be seen as a new factor in economics." In the developed countries service activities are today dominating over manufacturing activities. Andersen et al (2000) in their book 'Knowledge and innovation in the new service economy' stated "In 1996 the service sectors accounted for 73.3 per cent of employment and 72.9 per cent of gross domestic in the US, and 70.6 per cent and 61.3 per cent respectively in the UK (OECD 1998)." By 2005 the percent of employment in the service sectors had reached 80% in the US according to Fitzsimmons and Fitzsimons (2005). This situation is influencing researchers to take service innovation more seriously and service innovation has become a growing research field, but still is very small. Claudia Küpper (September 2001, pp. 1-2) mentioned in the article 'Service Innovation – A review of the state of the art' that "Facing the growing importance of the service sectors and new services, one can see that there are potential research gaps in the area of service innovations which are reflected by the share of 1,3% of articles about 'service innovation' in articles about 'innovation' and the share of 1,85% 'service innovation' –articles in 'service' –articles." Knowledge-intensive business services (KIBS) has received

more attention from media, researchers and policy makers. KIBS have certain aspects in common which partially set them apart from the old types of services. People used to believe that knowledge could be created and exchanged by product innovation, but the growth of KIBS proved that not to be the case. Miozzo and Grimshaw (2006, p. 1) in the book 'Knowledge Intensive Business Services: Organizational Forms and National Institutions' mentioned that "Knowledge intensive business services […] are considered important because they represent an important source of job growth and value-added."

Research question

Research is a systematic approach for planning, investigating and executing to find answers to our specific question. In general, research can deepen theories. It can create knowledge in order to strengthen the theories and form a basis for decisions through the collection of data. It can show practical implications of the theories. The purpose of the research is to identify the subject areas and describe a subject. It can aid to generate other factors and issues related to the research. The purpose of the research can be to explain a research question, for developing theories and methodology. The research question is one of the centre points in the research design. It is surrounded by research purpose, conceptual context, methods and validity.

Our master thesis will elaborate on service innovation and how this concept has been adapted in the organisation of Aker Solutions. As mentioned earlier service innovation and service economy is very important for the development of the countries' economy. Moreover as we know from the above discussion, the service industries are facing a number of challenges with regards to innovation and innovation management, amongst them the previous lack of development within the service industries.

By discussing the purpose of our research and taking the challenges and problems of service innovation and KIBS into consideration, our research problem can be defined as follows:

"Innovation within knowledge-intensive business services (KIBS) - How the theory of service innovation can benefit Aker Solutions."

The thesis will have the following focus points:

- The paper will investigate how Aker Solutions manages and organises their service innovation and client relations.
- We will also look into how organisational structure, corporate social responsibility, networks and customers` needs can affect service innovation and how these factors can be driving forces to make a service innovation strategy.
- This study will investigate how the management implements and could potentially implement service innovation in the pursuit of gaining profit and competitive edge, and keeping and extending the position of the company in its target market.
- We will explore the relevance of using the service innovation model and KIBS in the strategic development of the company.
- The paper will review how Aker Solutions uses and could potentially use the service innovation model in a hostile and fiercely competitive business environment.

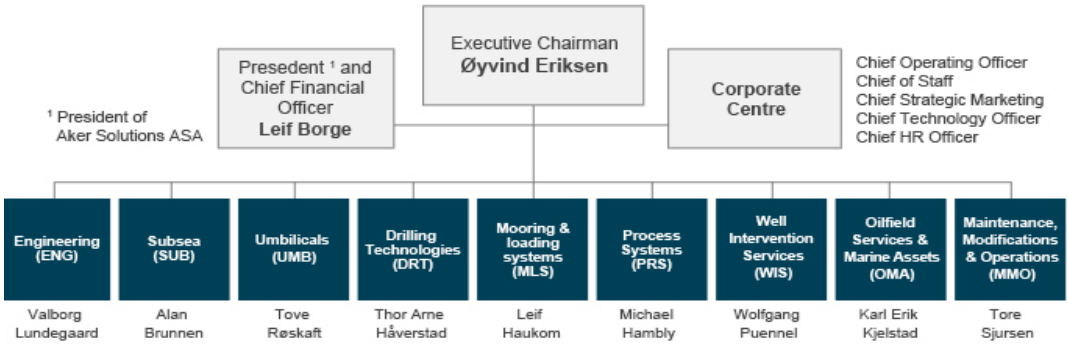
The case

The adopted case in our thesis on service innovation is the Norwegian company Aker Solutions. Since the company is a large global operational entity, it is of importance to describe as many aspects as possible of its operational activities to shed light on how the company conducts its business.

The corporate environment

Aker Solutions is part of Aker (www.akerasa.com), which is a group of premier companies with a focus on energy, maritime and marine resource industries. The Aker companies share common values and a long tradition of industrial innovation. Aker ASA as an industrial owner controlling 40.27 per cent of the shares in Aker Solutions through Aker Holding AS, takes an active role in the development of Aker Solutions. (Aker Solutions 2011) Aker Solutions, through its subsidiaries and affiliates is a leading global oil services company that provides engineering services, technologies, product solutions and field-life solutions for the oil and gas industry. The Aker Solutions group is organised in a number of separate legal entities. Aker Solutions is used as the common brand/trademark for most of these entities.

The corporate structure of Aker Solutions:



(Source: http://www.akersolutions.com/en/Utility-menu/About-us1/Corporate-structure/)

As can be seen from the corporate structure of Aker Solutions, the company can be defined as a large global and diversified, delivering a wide range of services in the oil and gas industry. How these entities communicate and network internally and externally respectively in the aim of creating knowledge and improve innovation is the concern of KIBS (Knowledge-intensive Business services). We will look especially into how the Engineering (ENG) entity of Aker Solutions is creating knowledge by cooperating and networking with other entities inside and outside the company. However, it can be said that it is of importance to look at the whole company with respect to KIBS and its type of nature. A further introduction to KIBS can be found in the literature review chapter.

Principal operations

Aker Solutions has its main operational activities in the oil and gas industry. It provides technological solutions to its clients. According to Aker Solutions' executive chairman, Øyvind Eriksen (2011) "Aker Solutions is cultivating its core businesses in separate companies with relatively new entities that focus on growth in their respective markets: Kværner as a specialised EPC (engineering, procurement and construction) company tailored to meet EPC market trends and client demands in the global market, and Aker Solutions as a fully-fledged provider of engineering, technologies, solutions and services for the upstream oil and gas industry," The companies range of services include deep water drilling technologies, subsea oil and gas production systems, well services, mooring and offloading systems, well stream processing technologies, as well as life-of-field solutions through its maintenance, modification and operations business. The company is also a dedicated EPC contractor for onshore and offshore oil and gas

facilities. In short it can be said that Aker Solutions provides engineering solutions, product solutions, field life solutions and executes large and complex field development projects for the oil and gas industry. At the end of 2010 the group had 19 444 employees in continued businesses and activities in more than 25 countries. The number of subsidiaries and affiliates is over 150. (Annual Report 2010, p.5)

The Industry

According to Aker Solutions annual report 2010, market demand for Aker Solutions' technology, products and services is driven by the world's increasing consumption of oil and gas for transportation, energy production and industrial purposes. Market prospects are regarded as good. The world's energy consumption is expected to continue to rise. Combined with declining reserves and reduced oil and gas production in many parts of the world, this is expected to generate a persistent need for new development. For many years, the North-West European continental shelf has been the world's primary geographical market for offshore oil and gas activities. Historically, this was also Aker Solutions' home market and a breeding ground for new technologies and solutions. This region continues to play a key role for Aker Solutions, although the composition of this market is shifting. With the maturing of the oil and gas fields in the region, demand has grown for technologies and solutions required for increased oil and gas recovery, satellite field developments and maintenance and modifications required to extend the lifespan of existing field infrastructure.

Aker Solutions' research and development

The annual report (2010, p.16) shows that Aker Solutions has a long standing culture for innovation and technology development. This has developed through a broad and strong engineering community with hands on experience from project driven engineering and project management through procurement, construction, commissioning and operations. The ability to continuously develop and qualify new technology to meet customer's needs and secure the companies competitive advantage is fundamental to the group. The technology development in Aker Solutions is market driven and cost effective. It is often pursued in close cooperation with business partners and customers worldwide. The skilled engineering teams of the company around the world are focused on understanding the local and global market challenges and translate these into cost effective

technical solutions with focus on quality and safety. Aker Solutions' long standing track record and experience from developing and qualifying solutions for the North Sea will continue to be exploited, developed and exported to global markets.

Aker Solutions' near future

Aker Solutions annual report says that the following four topics are on the top of the companies operational improvement agenda: The first topic is customer focus or to build strong and lasting relationships to individual customers and develop regional and country strategies. Topic number two is quality and performance or to chase operational excellence (HSE; *health, safety and environment*, project management, cost efficiency), reduce quality costs and continue to strengthen performance culture. Topic three is people or to retain and attract the best and most competent people and ensure there are high quality programs in place for people and leadership development. And the fourth and last topic is technology or to focus on existing technology processes and initiatives in the operating businesses and to identify and co-ordinate research and development initiatives. Furthermore, Mr.Eriksen (2010, p.4) states that:

> *with the structural changes and the operational improvement initiatives outlined above, we believe Aker Solutions and the new EPC company are well prepared to face the challenges and opportunities that lie ahead. It is our intention to see both Aker Solutions and the new EPC company grow. The world needs more oil and gas, and our people and teams have the technology, competence and experience required to produce hydrocarbons in a safe and environmentally careful way. We believe the fundamentals are in place, for a lot of hard work that still remains.*

When improving its innovation processes Aker Solutions has enormous responsibility. This stems from the fact that the company influences the economic position, environment and lives of people and their communities in many parts of the world. This calls for solid governance and risk management within all areas of the company's operation. Environmental, social responsibility and governance issues are deeply rooted in the activity of operating entities as well as the functional resources. (Annual report, 2010). The company's CSR factors must be closely linked to the knowledge creation internally and externally especially in

terms of the company's operational improvement agenda mentioned above. In a letter the Executive Chairman (2011) states the following: "As a supplier to the oil and gas industry, it is important that we stay abreast with the ongoing developments in environmental standards. Aker Solutions will continue to invest in research that will lead our products and services and thus, our industry towards a more sustainable future."

Critical literature review

Service innovation is a new emerging area for research disciplines. Hence it is important to understand innovation and product innovation and also see service innovation's similarities and differences to product innovation. This will help to understand the growing focus on service innovation. There is a number of patterns for different research studies. In these studies, critical literature review has been used for several different goals and purposes. In our study, the critical literature review will accomplish three main purposes. Firstly, the critical literature review will underline the specific assumptions of the research questions (Marshal & Rossman, 1995) and provide further guidance and motivation, secondly, it will draw attention to the current study from previous research and intellectual traditions and finally, it will be of assistance for identifying the mechanism to interpret data. We will also look into how networks can affect service innovation in the case of Aker Solutions.

The critical literature review will follow the deductive approach by outlining research on service innovation which will subsequently be tested using evidence. In order to effectively apply concepts of service innovation to Aker Solutions, it is necessary to outline the variables associated with corporate distress leading to decline, for instance employees engagement in the service innovation, organizational structure etc., and also the strategies and processes influencing the service innovation's success and failure.

The literature review will start by identifying the emergence, origin and constitution of service innovation and then go on to outline its principles. We will discuss how 'A layered model of innovation' as introduced by Gallouj and Djellal (2010) fits into Aker Solutions at present and how it could help to identify the company's further potential in service innovation. We will also investigate how this model can help organise the company's resources, amongst them knowledge,

expertise and networks, in order to develop their services. In addition we will look into 'A four dimensional model of service innovation' (Hertog and Bilderbeek, 1999) and compare it to the above model.

The literature review will also introduce writings about open service innovation and knowledge-intensive business service (KIBS) innovation and look into the critic's arguments on service innovation. Aker Solutions is a knowledge intensive company and thus a strong candidate to apply the theories of service innovation. Strambach (2008, p. 155) in his article 'Knowledge-Intensive Business Services (KIBS) as drivers of multilevel knowledge dynamics' says that

> *KIBS firms are organisations that are at the front line and are particularly representative for knowledge economies. Knowledge is both their main input and output (Gallouj, 2002; Miles, 2001) and their primary value-added activities consist of the creation, accumulation and dissemination of knowledge for the purpose of developing customized service solutions (Bettencourt et al., 2002). The knowledge markets in which KIBS act are highly fluid, rapidly changing and characterized by a high degree of uncertainty resulting from ambiguity with regards to performance, quality and appropriateness. The definition of KIBS is therefore a task that research has been dealing with for decades and KIBS research is usually confronted with the problem of grasping this heterogeneous segment of service activities.*

Furthermore, Strambach (2008) continues to say that in functional terms, KIBS are provided not only by service firms; they are also organised within industrial firms. Large firms have in-house service providers, organised as separate departments or firm units, which provide services to the firm's different business units, their so-called internal clients.

The enormous flow of heterogeneous knowledge that flows in and out of various departments and entities inside Aker Solutions *globally* is of our interest. From that it is necessary to explore the ways KIBS contribute to knowledge dynamics in multilevel contexts and a general understanding of this term is thus necessary. (Strambach, 2008). According to Strambach (2008) the visible results of knowledge dynamics are innovations in products, services or processes and even

though the term, knowledge dynamic is an elusive one that has not yet been properly defined, it is used in recent literature focusing on knowledge economics.

The networking dynamics and KIBS can both be found internally and externally in the operational environment of Aker Solutions. It is a challenge determining how to use its knowledge dynamics and how to manage the many, globally, different and dispersed projects, *related to energy production* as well as delivering expected services to their customers around the world. How the company can use KIBS to improve its service innovation *in energy production* is an interesting and challenging issue to look into.

Moreover, the literature review will outline the role of the management and management contribution to service innovation. It will also review what will be the responsibility of the manager in order to introduce service innovation in the organisation. By reviewing the advantages and disadvantages of service innovation, it will be possible to determine how an organisation can use the model to their benefit, which in turn can be applied to Aker Solutions. It will also look into how the service innovation can be used to facilitate the operational activities in the organisation of Aker solutions.

Research design

Research design helps to discuss and describe interesting research problems and questions. The purpose of the research design is to discuss the aims and objectives of the research project. It helps to identify which research method to use and the proposed strategy of the research project. The research design also brings the attention to sample, sample size and limitation of the research. An effective research design has three steps:

1. Problem formulation
2. Design methods
3. Design procedures

Malhotra and Brinks (2007, p. 9) in their book ‘Marketing Research: An Applied Approach’ wrote the purpose of research design is to “establish a study design that will either test the hypotheses of interest or determine possible answers to set research question, and ultimately provide the information needed for decision making”. The general objective with our thesis is to gain deeper insight on service

innovation and how Aker Solutions uses service innovation to achieve success. Thus, the main objectives are to increase the understanding of service innovation and to highlight its importance for achieving success.

Research methodology

When it comes to researching our thesis, defining parameters will improve both the quality of and the time consumption of the research. By using a combination of primary and secondary data, we will look into the relevance, appropriateness and validity of service innovation and how it relates to Aker Solutions. Our research will be focusing on finding, formulating and clarifying the problems Aker Solutions is currently facing and it will also aid to uncover other issues related to the topic. We will explore relevant theories to discuss and define the challenges, adaptation and exploitation of service innovation in Aker Solutions.

Out of the quantitative and qualitative research methods, we have chosen the latter, which is a method of enquiry employed in many different academic disciplines, traditionally in the social science but also in market research and further context. The method also investigates the why and how of decision making, not just what, where and when. Hence, smaller but focused samples are more often needed, rather than large samples. Denzin and Lincoln (2003) wrote

> *Qualitative research is multimethod in focus, involving an interpretative, naturalistic approach to its subject matter. This means that qualitative researchers study things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of meanings people bring to them. Qualitative research involves the studied use and collection of a variety of empirical materials- case study, personal experience, introspective life story, interview, observation, historical, interactional and visual texts- that describe routine and problematic moments and meanings in individuals' lives.*

In qualitative research, the researchers' role has a great influence. There are some basic steps for doing qualitative analysis:

1. reducing data
2. displaying data
3. drawing conclusions

In contrast, quantitative research aims to concentrate on measuring or counting facts and data so that hypotheses can be tested. It includes standardised interviews, experimentations, observation and modeling. Measurement is an important issue in the quantitative analysis even though it is difficult to do. Quantitative research is based on statistical justification and it focuses on sign, data and symbols. It is not so easy to answer 'how' and 'why' questions by using quantitative method.

Data collection

As mentioned before, our research will involve collection of both primary and secondary data. The selection of material for the study has generally been determined on the basis of the research and research question, whether quantitative or qualitative. We will use a case study approach for our research, where soft data i.e. interviews will be used. As our research focus is on service innovation and its implication in Aker Solutions, we will try to stick to the purpose of the research and research question; and irrelevant questions will be avoided in the study. Aker and Day (1990, p.72) wrote that there are two general methods for gathering data: 1. Primary data: Gathered in the interest of explanation and illustration of research question or case. 2. Secondary data: Already existing data material from different sources. Before collecting the data the sample should be decided. Population is important in sample design. Population is a large sample in the sample design. In our study, innovation in companies is a large sample. We will concentrate on the service innovation and Aker Solutions as sub-samples for our research.

Primary Data

Primary data can be collected by the use of communication and observation. There are different methods for collecting primary data and there are three primary qualitative techniques which can be used as part of the case study method. First is direct observation, second is documentation or recordings and finally interviews. These techniques will be discussed below. We will use interviews to collect data. As mentioned, our research method is qualitative therefore our interviews will be unstructured. Unstructured interviews include these approaches: Ethnographic, in-depth and open interviews. Our primary data will consist of interviewing two types of groups:

- In-depth interviews amongst customers of Aker Solutions, within the chosen industry.
- In-depth interviews amongst Aker Solutions' employees in different levels who are working in the field of the chosen industry

Secondary data

The advantage of secondary data is the prospect of saving both time and money. In this study the secondary data will be used to find the related and existing theories, articles and philosophy of our research question and also to find the existing philosophy about the case 'Aker Solutions'. Secondary data also can be useful to find what have been done on the topic so far and to support the later use of primary data.

Secondary research will be one of the resources utilised in this paper. This will present the challenge of filtering out noise due to the magnitude of data available, as well as determining the accuracy and reliability of the data.
Two prospective issues envisaged are:

1. Misinformation: Where figures or data will be incorrectly cited, and;
2. Disinformation: Where information or data published is either misleading and/or only selected information is released in favour of the company.

To avoid misinformation, the source of information and data will be considered carefully and wherever possible, further information will be searched.

The primary source of information will be academic books in Service Innovation which will back up the views of relevant analysts, authors and theorists and also journals, newspapers and various analysts' reports. When dealing with information, this paper will gather data directly from Aker Solutions through internal publications such as: annual reports and press releases, in addition to Aker Solutions' webpage. This information will be carefully considered because of its nature and source.

In short, our secondary data will consist of corporate material from Aker Solutions along with books, journals, articles and other relevant material on the internet on service innovation.

Case study approach

According to Gerring (2007) in his book 'Case Study research: principles and practices' he defines a case study as a study that can be understood as an intensive study of a single case where the purpose of that study is to shed light on a larger category of cases, which then can be said to be a population. Gerring (2007) discusses also that a Case study research may include several cases; which is then a multiple case study. However, he continues, that at a certain point it will no longer be possible to investigate those cases intensively. At the point where the emphasis of a study shifts from the individual case to a sample of cases, one has to say that a study is a cross case, or a multiple case. Obviously, the distinction between case study and cross case study is a matter of degree. The fewer cases and more intense the study of the single one is, the more a work merits the meaning of a case study. Empirical work can be classified as either case study (comprising one or a few cases) or a cross case study (many cases). An additional meaning or implication of the term "case study" is that the unit(s) or the company in our case study, under special focus is not perfectly representative of the population, or at least it is questionable. The similarities across the sample (the company) and the population are not assured.

Robert E. Stake (1995) in his book 'The art of case study research' discusses that it may be useful to try to select cases which are typical or representative of other cases, but a sample of one or a sample of just a few is unlikely to be a strong representation of others. He says also that a case study research is not a sampling research: one does not study a case primarily to understand other cases. The first obligation of a case study researcher is to understand the one case at stake. Stake (1995) continues and asks the question; how shall cases be selected? The first criterion should be to maximise what one can learn. Given the purposes, which cases are likely to lead the researcher to understandings, to assertions, perhaps even to modifying of generalizations.

Since Aker Solutions is a global, diversified company in an ever changing operational environment, dealing with the coordination and managing of projects and solutions through its many subsidiaries and affiliates it is a good case to adopt as a single case study. The case is an intensive case of a single company, which will later shed light on a larger category of cases and possibly other companies

which hold similar characteristics as Aker Solutions. Although without generalisation, it is a challenge to understand the case through our analytical interview process. If choosing a multi case study of companies of the same type as Aker Solutions, the task would simply be too large and complicated with a high possibility of unfocused output, of no use for further purposes. Stake (1995, p. 8) states that "the real business of case study is particularization, not generalization. We take particular case and come to know it well, not primarily as to how it is different from others but what it is, what it does. There is emphasis on uniqueness, and that implies knowledge of others that the case is different from, but the first emphasis is on understanding the case itself".

Interview process

Steinar Kvale (1996, p. 4) in his book 'Interviews: An introduction to qualitative research interviewing' compares the interview process to a "route that leads to the goal". The meaning of this comparison is important and reveals much about the importance of knowing how to travel this route, or how to conduct an interview in a research project with special aim and given output.

The interviews for collecting data for our thesis will be in-depth and thus unstructured. However it is of importance to prepare interview guidelines which will be followed throughout the process. According to Kvale (1996, p. xvii) "Interviews are conversations where the outcome is a coproduction of the interviewer and the subject". Developing and structuring the interview as a research is a challenge to renew, broaden and enrich the creation of knowledge and research in the social science ". We will discuss further how we will develop our interview research in the following text.

In- depth interview

As mentioned before, In-depth interviewing is a qualitative research method, which uses open ended questions in the aim of uncovering information about a topic. According to Webber and Byrd (2010) the method allows the interviewees to express themselves, their opinions and ideas in a free manner. In dept. interviews take place face-to-face between an individual researcher and his/her interview respondent. The respondent has to give approval that the interview is audio taped, and may even be video-taped, in order to facilitate record keeping. In-depth interviews enable the researcher to explore complex topics, allowing for

ideas to emerge that have not been predetermined by the researcher. In-depth interviews may be conducted over the telephone which is an alternative when researchers do not have direct access to individuals (e.g., when respondents are geographically dispersed).

Webber and Byrd (2010) continue to say that prior to conducting interviews, it is common for the researcher to construct an interview guide. The guide includes specific questions, topics of interest, or a combination of these that helps to focus on the interview without locking the interviewer into a fixed set of questions in a rigid order with specific wording. This flexible approach allows for guiding the interaction and helps shape the order and structure of the interview. The use of follow-up questions, which often is referred to as probes, is also common. The primary goal of using an interview guide is to balance the systematic collection of data with the flexibility needed to tap respondent's understandings. Constructing an interview guide helps to focus the interview and create comparable data across interviews. Researchers do not necessarily have to follow the guide rigidly in conducting interviews, but rather adapt questions during the interview process. This may require the changing of both the phrasing and the order of questions during the interview based on participant responses. The benefit of this approach is that it combines predetermined questions and special topics. The interview guide needs to be comprehensive, in order for the data to be collected systematically, but not so rigid as to prevent additional themes to emerge. If time constraints happen, the interviewer can gently put the respondent back on track. If during the interview process, relevant research topics are not covered, the researcher should directly ask the respondent about these topics prior to the conclusion of the interview.

It is important to pay attention to question phrasing and the order of questions. Some common problems that can arise include asking questions that can create antagonisms (e.g., asking why instead of how); asking about two different topics in the same question; and asking complex and long questions that the respondent may not be able to answer effectively. Interview questions should be open-ended and not easily answered by yes or no answers. Interviewers should avoid leading questions that can influence the answers and an appropriate wording should be used. It is of importance that the researcher asks questions that make sense to

participants and that the questions are formulated in a language that is familiar and comfortable to participants. The questions have to be appropriate for respondents' educational, social, and ethnic backgrounds. In the interview, both general and specific questions are important for the data gathering. It is recommend that general questions should be asked first, especially easier and less threatening questions, and that more controversial or sensitive questions should be left for the middle or the end of the interview. It is important to ask questions that encourage respondents to emphasise on specific experiences rather than general opinions. Question order may change from interview to interview as the conversation develops. Time pressure nearly always exists in interviews, however it is important to allow the interviewees to move at their own pace, while also maintaining a comfortable conversational tone.

Webber and Byrd (2010) emphasise that pretesting of the interview guide is recommended. Pretesting gives the researchers the opportunity to check the quality of their questions for eliciting the in-depth information they are seeking. By pretesting, the researcher can refine, improve, and reorder questions as needed. Additionally, conducting these test interviews increases the researcher's familiarity with the interview guide, which will encourage a more conversational tone and better data outcome, later in the real interview process.

As discussed earlier our interviews will be in-depth and thus unstructured. It is important in this context to elaborate on arguments retrieved from Sue Jones in 'Depth Interviewing'. According to Jones (1995, p. 258)

> *There is no such thing as a totally unstructured interview and the term is over – used and often carelessly used.... The crucial point is that there is no such thing as presuppositionless research… The process of interviewing is one in which researchers are continually making choices, based on their research interests and prior theories, about which data they want to pick up and explore further with respondents and those which they do not. The making of these choices is the imposition of some structure.*

Based on this we know that our interviews will be structured up to a certain point.

Direct observation

In the process of conducting in-depth interviews, face-to-face interviews allows the researchers to grasp expressive or emotive nonverbal responses that may indicate the importance of particular questions or topics. Seeing people's reactions may also influence the researcher to probe further or ask additional questions. With in-depth interviews, the researcher can secure the participants' point of view on why they do and what they do. The researcher can capture the ways respondents describe and explain their decisions, actions, and interactions with others. In-depth interviews are useful to grasp important experiences or behaviors, opinions or values, feelings, factual knowledge, and personal backgrounds. By collecting data with these methods can give the opportunity to examine and interpret the motivations behind the respondents' actions and identify the various constraints they face. (Webber and Byrd, 2010). From the above one can see that direct observation during the interview is an essential skill to develop and practice in order to get closer to the appropriate outcome.

Documentation

Once the interviews have been conducted, the managing and organising of the gathered data is a critical first step in analysis. All files (electronic, tape and paper) must be labeled and interviews transcribed. Often, at the beginning stages of the interview process the researcher makes detailed notes after each interview, or they may write memos or field notes that reflect additional information and insights that arise from the actual interview. An example is that a researcher might describe their overall assessment of each respondent's situation. He/ she might also describe how reflective or introspective the participant was regarding interview questions, etc. As researchers get more acquainted with the interviewee they can make only brief notes identifying key issues that arise in the interview. It is likely that similar facts and experiences arise in multiple interviews; it is recommended maintaining a notebook or electronic file describing recurring themes and patterns that emerge. Transcripts or write-ups of the interview can be completed after all interviews are conducted or during the process of data collection.

The final stage of data analysis happens often during the writing stage. Themes and facts will likely be revisited and revised as the analysis is refined when

writing the results of the research. During analysis, researchers may find positive and negative assessments of the same social phenomena by the same participant, so it is the responsibility of the researcher to reveal contradictions, unclear matters, and structural constraints, faced by people. Researchers should exhibit clearly the perceptions, feelings, and experiences of the respondents. However, it is also the case that a critical analysis of all available information does not always match with participants' views of their situation. In the end, analysis relies on the researcher's interpretation of the interview data.

Research design quality

Uoguelph (2011 a) defines reliability as: "The extent to which results are consistent over time and an accurate representation of the total population under study is referred to as reliability and if the results of a study can be reproduced under a similar methodology, then the research instrument is considered to be reliable". Uoguelph (2011 b) defines validity accordingly: "Validity determines whether the research truly measures that which it was intended to measure or how truthful the research results are. In other words, does the research instrument allow you to hit "the bull's eye" of your research object? Researchers generally determine validity by asking a series of questions, and will often look for the answers in the research of others". We will ensure that the fundamentals in these important issues, the reliability and validity, will be our primary goal in order to enhance and strengthen the quality of our thesis.

According to Perakyla (2004, p. 285) "The aim of all conversation analytic studies (both on ordinary conversation and on institutional interaction) is to produce descriptions of recurrent patterns of social interaction and language use. Conversational analysis is particularly rigorous in its requirements of an empirical grounding for any descriptions to be accepted as valid". For us this entails that through our interview process within Aker Solutions we will need clear indications to make our assumption valid. Perakyla (2004, p. 289) continues "… reliability of observation in conversation analytic research (as in any other empirical method) can only be achieved through serious efforts. The method itself does not guarantee reliability. In conversation analytic studies, proper attention needs to be paid to the selection and technical quality of recording as well as to the adequacy of the transcripts"

Action Plan

We have chosen the following structure as our guideline towards handing in our thesis in late August 2012.

Month	Tasks
January	Gathering of secondary data. Reading of relevant theoritical books and articles
February	Make interview plan; who to interview in which subsidiaries and affilitates of Aker Solutions. Contact customers of Aker Solutions Deadline for the booking of interview
Mars	Conduct in-dept interviews Make transcripts and evaluate the gathered data
April	Conduct in-dept interviews Make transcripts and evaluate the gathered data
May	Bring data into context Complete the structure of the thesis Finishing of the first draft of thesis
June	Re-evaluation of the gathered data Rewrite the dirst draft
July	Define weaknesses Rewrite the second draft Finish the writing of the thesis
August	Handing in of the thesis

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