EXECUTIVE SUMMARY

The research question focused on the strategic impact the adoption of enterprise mobility within SOS International A/S. The objective was to examine and elaborate on the strategic reshapement SOS was undergoing as a result of their ongoing development of B2B mobile applications.

In order to give a comprehensive answer to the research question, three assisting research objectives were formulated: (1) – *how* mobile ICT's could be utilized to support the organizational strategy; (2)- identifying *how* the development of a mobile application can benefit the organization's customers; and (3) – uncovering *how* an organization can benefit from the development process itself.

One of the main findings was that *strategic alignment* and *enterprise readiness* were essential components if organizations want to benefit from Enterprise Mobility. If the mobile applications under consideration did not fit with the long-term goals and objectives of the organization the organization could not benefit from its implementation. These were examined and analyzed throughout multiple layers of SOS' organization.

Early on it was evident that the currently available Enterprise Mobility literature was somewhat outdated in relation to this papers specific area of research. The literature did not address the very significant and relevant issue of the exponentially increasing use and proliferation of mobile applications amongst smartphone-users and corporations.

However the analysis showed that SOS did its best to ensure that the mobile applications developed by them supported their own business strategy. This was done by establishing a cross-organizational project group in order to increase the overall organizational readiness.

Furthermore the research showed that the benefits the mobile applications provided SOS International and their customers with, were a high level of informational and transformational benefits. These were evident in terms of increased efficiency, cost-savings, increased innovation and potentially opening up alternative markets for SOS International in the near future.

Keywords: *Enterprise Mobility; Mobile Applications; Corporate Applications, Smartphones, Strategic Alignment, Mobile ICT*

The Impact of Enterprise Mobility: A Case Study of SOS International A/S

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Table of Contents

CHAPTER 1: INTRODUCTION

1.1 Problem Field

The problem field presents a broad contextual description of the paper and identifies the associated research void at hand.

Most organizations are more than interested at the prospect of having a device which gives its workers access to relevant corporate information on the go, wherever and whenever they want. With the recent developments within both mobile communication devices as well as business intelligence applications, a new trend has risen amongst organizations, both large and small.

Enterprise Mobility, albeit not a new research area is a sparsely researched area and there is a distinct lack of up-to-date research pertaining specifically to Enterprise Mobility within organizations anno 2012 and specifically in relation to the proliferation of smartphone applications.

Mobile information and communication technologies (ICT) such as mobile applications (apps) have flourished and been on the rise with the exponential rise in smartphone users (Danmarks Statestik, 2012). The reasons for creating these applications are as varying as the different applications available, but most case studies support that the application of enterprise mobility within an organization will cause increased productivity and efficiency as well as process improvement (Basole R. C., 2008).

The process of creating a corporate mobile application is filled with pitfalls and caveats. The theory and basic underlying idea behind a mobile corporate application can at first glance seem both positive and beneficial for the organization, but it is imperative to note that some enterprises are not adequately prepared to embrace a mobile ICT or do not fully understand all the organizational implications of developing and adopting a new Enterprise Mobility Strategy.

This paper aims to objectively investigate the implications and possibilities the adoption and implementation of a mobile application can have on a present-day organization and is built upon a case study on one of the largest assistance organization in Scandinavia. The case-study itself focuses on the development and release of a variety of mobile applications as well uncovering the strategic impact the mobile applications have within the organization.

1.2 Research Question and Objectives

This leads to the following research question within the described research void: Up-to-date Enterprise Mobility Research, exploring the adoption, possibilities and implications it can have based on the aforementioned case-study of a large Scandinavian assistance organization.

What is the strategic impact of the adoption of enterprise mobility within an assistance organization in 2012?

The objective of the research question is to provide a qualified answer on how mobile applications can be implemented within an organization in 2012 and what measures should to be taken into account. This is done by a thorough analysis of the different tools and frameworks inherent in Enterprise Mobility Theory. Additionally it is important to explore how a mobile ICT can have an impact on the organizational strategy.

The target readers for this paper are organizations who are currently using or planning to implement a mobile ICT in a B2C context, instead of the classic B2E.

In order to give a comprehensive answer to the research question above, three assisting research objectives have been formulated to help narrow down the research field.

Using Enterprise Mobility Theory as developed by Basole, Barnes, Scornavacca and Sørensen, how can we understand the ways in which organizations utilize mobile ICT's to support the organizational strategy?

The objective is performed by examining the requirements, readiness, development strategy as well as possible strategic benefits of enterprise mobility using the available literature, which will be coupled with the case in order to examine if the theory is supported in praxis.

*How can the development of a **new** mobile application benefit the organization's customers?*

The objective is performed by analysis of the potential benefits of Enterprise Mobility based on the above scholars. The analysis is subsequently applied to the case-study and discussed from a B2C perspective in order to uncover the beneficial properties of enterprise mobility towards the customers.

Using the theories of Engeström, Nonaka and Baxter & Sommerville as a foundation, how can an organization benefit from the development process of a mobile ICT?

The objective is performed by examining the mobile application development process using classical Activity Theory and Socio-Technical Systems Design theory moving away from the mobile application as the focus of interest to understanding it as a part of the larger scope of human activities. The theories include the theory of the expansive learning cycle which will be examined and applied to the mobile applications development process as a tool to examining the learning process on a small-scale. Furthermore the first stage of the Socio-Technical Systems Design will be used as a supporting theory.

1.3 Delimitation

The paper will focus on Enterprise Mobility Theory based on the theories developed by the aforementioned scholars and specifically focusing on the process of planning and implementing a new mobile ICT within the organization in the case-study.

Albeit an important feature, the economic consequences and actual cost of adopting a new ICT will not be addressed due to the fact that these resources were not available for the case-study nor will the internal or external communications strategy be addressed.

1.4 Definition

For the purpose of the paper it is important to provide definitions to the below listed terms as they are used extensively throughout the paper.

Smartphones – Are defined as mobile phones capable of running and supporting additional software compared to a traditional cell phone. These include but are not limited to Internet browsers, e-mail clients, digital cameras and word processors to name a few (Merriam-Webster, 1997).

Mobile Applications (Apps) – Mobile applications (or *apps*) refers to software developed specifically for use with a smartphone. Mobile applications are available on various platforms and come in

numerous iterations. For the purpose of this paper, the focus is on mobile applications developed for the Apple and Android platforms as these make up most of the platforms supported by the applications examined in the case-study (Spears, 2007).

Mobile ICT – Mobile Information and Communication Technology is defined as mobile technology used to handle information and aid communications. It is not the be confused to mobile applications although they share the same traits, the term Mobile ICT's can also include laptops, tablets, software and other technologies which facilitate information and communications in one technology (Noss & Pachler, 1999).

B2E, B2B and B2E – In order to avoid any confusion it is necessary to define what is meant by these terms. *B2B* is an acronym for Business-to-business. *B2C* refers to Business-to-customer and finally *B2E* refers to Business-to-employee. It is important to note these differences, since these terms will be used extensively throughout the paper.

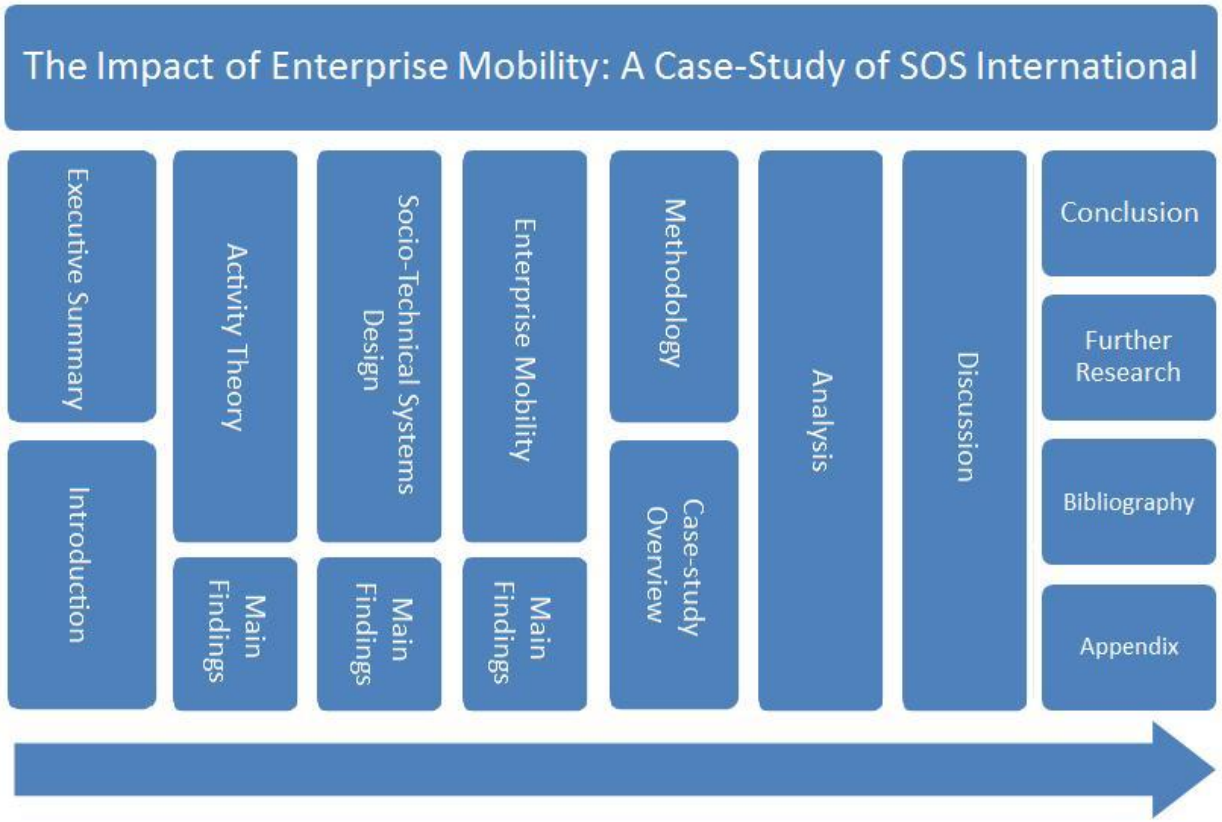
Enterprise Mobility & enterprise mobility – The two terms are used throughout the paper differing only from the capital lettering. When *Enterprise Mobility* is used, it refers to the theory and processes involved in the management of the mobile applications or devices. When *enterprise mobility* is used it refers to the technology itself, such as the aforementioned mobile applications and devices themselves.

1.5 Structure

The basic structure of the paper is conducted in a qualitative approach of research based on a deductive method; starting of broadly and ultimately narrowing down to selected research areas.

The three assisting research questions are also incorporated into the structure as separate entities and the main findings are then elaborated upon and applied to the case-study in the discussion chapter in order to answer the main research question. Each theory will be reviewed and followed by a resume highlighting the main findings of each theory respectively. After the theories have been reviewed the methodology and case-study will be elaborated upon, which includes the methodological approach to the data obtained from the case-study. Finally the gathered literature will be analyzed and discussed in relation to the case-study and ultimately providing a conclusion and ideas for further research within the chosen areas (Bryman & Bell, 2007). Throughout the paper there will be numerous references to various figures and diagrams which are all labeled and contained within Appendix A.

Below the above structure is visualized.



CHAPTER 2: ACTIVITY THEORY

2.1 Chapter Objective

The objective of this chapter is to provide an historical perspective Activity Theory (AT). This entails an brief examination of the evolving AT models from the early simple conceptualizations of AT models by Vygotsky and Leont'ev to Engeströms "Scandinavian" AT models.

Engeströms AT model as well as the concept of innovative learning will be explored in connection with AT. This is done in order to provide a theoretical foundation over the mobile application development process which will be explored in the analysis and discussion later on.

2.2 Activity Theory

Modern day Activity Theory (AT) can be traced back almost seven decades to the former Soviet Russia to Lev S. Vygotsky, A. N. Leont'ev and Luria who developed the framework for Cultural-Historical Activity Theory (Engeström, 1999; Roth & Lee, 2007).

Since its inception Activity Theory has developed into a international and multidisciplinary theory. Virtually an unknown concept outside of Soviet Russia until the late 80s, Yrjö Engeström from the University of Helsinki in Finland has been one of the key researchers responsible for modernizing and adapting AT to what it is today. AT focuses on multivoicedness and monism, this is defined as the ability for a theory and its multiple concepts to develop consistently based of one single idea. The AT itself is thus described as *"object oriented, collective and culturally mediated human activity."* (Engeström, 1999, pp. 19-20).

This describes one of the core reasons for using AT for this case-study. AT is a used as a descriptive tool rather than a predictive theory. AT has developed a framework called the Activity System. The Activity Systems, which will be elaborated on later in this chapter refers to a *community* or a group of individuals who share a common *object* (or problem space) and who use *tools* to act on that space transforming it. Relationships in the system are driven by *rules* which both afford and constrain behavior. The *division of labor* within the system describes how tasks are divided horizontally between community members as well referring to any vertical division of power and status (Engeström, 1999).

The Activity System can thus provide a framework to review and benchmark the process of an ICT implementation in different system models or iterations.

AT focuses on understanding the social context of the behavior as well as the motivation of social pressure on the people involved in the activity, meaning that AT utilizes the whole work activity as the unit of analysis, breaking the activity into analytical components. It is the "culturally mediated human activity" which makes up the components of an AT system, this means the entire activity system – including environment, history, culture, artifact roles, motivations and the complexity of real life activities is bridging the gap between the individual subject and the social reality (Nardi, 1996).

Utilizing AT when conducting case-studies based on qualitative data it is possible to analyze find patterns across interactions and even present phenomena through a built-in language and rhetoric. Additionally AT allows for the general perspective to move away from a technocratic one but focus more on the human activities. *"AT allows us to move away from the computer as the focus of interest to understanding technology as part of the larger scope of human activities."* (Kaptelinin & Nardi, 2006, p. 5).

In AT artifacts are mediators of human thought and behavior and it postulates that any activity cannot be understood without understanding the role of the artifacts within the system (Fjeld, Lauche, Bichsel, Voorhorst, Krueger, & Rauterberg, 2002). This means that in order to understand an activity it is imperative to understand *why* the activity is taking place in the first place and *who* is involved in the activity.

2.3 Historical Perspective on Activity Theory

AT has undergone three evolutionary stages or generations (Engeström, 2001). It is important to briefly elaborate on these three generations of AT in order to gain an historical understanding of both AT and how it has developed throughout the years (Mwanza & Engeström, 2005).

The first generation of the AT model (See Figure 1 in Appendix A) represents activity on an individual level drawing from Vygotsky's concept of mediation (1978), bringing cultural artifacts together with human actions in order to dispense with the individual/social dualism. It is based on the assumption

that tools (artifacts) mediate between the subject and the object. These tools (artifacts) are created and/or transformed in the course of an activity.

Fig. 1 represents how the activity between the subject(s) and object/motive is mediated through tools as depicted in the simple triangular figure. The activity is dynamic and contextually bound as well as the basic unit of analysis. The activities distinctive characteristics are based on the tangible or intangible object/motive one wants to achieve. The tools (mediating artifacts) mediate between the subject(s) and object/motive. Vygotsky's concept of mediation of actions is limited by the fact that the unit of analysis is individually focused (Engeström, 1999).

This leads naturally to the second generation of AT models focused on the difference between individual action and collective activity based on Leont'ev (1981). According to (Engeström, 2001, p. 134) Leont'ev never visualized the second generation model, but Engeström illustrated it using Vygotsky's model as only the "tip of the iceberg" changing the paradigm of activity theory. (See Figures 2 in Appendix A)

The second generation activity theory represents activity at a collective level. Engeström argues that the study of mediation should be shifted towards its relationships with the other components of an activity system (Engeström, 1999, p. 25).

The second generation AT model outlines the different components of an activity system as a unified whole. Participants in an activity are represented as subject(s) interacting with objects to achieve a desired outcome. Tools, rules and division of labor represent human interaction amongst both humans and objects. Furthermore the second generation AT model emphasizes the importance of analyzing said interactions with each other as well as representing the object-oriented actions with an oval and underlining that they are always, explicitly or implicitly characterized by ambiguity, surprise, interpretation, sense making and potential for change (Engeström, 1999).

From the second generation AT system there are eight questions, based on the components of the system, which need to be addressed when examining an activity in order to identify tensions and contradictions within a single system.

The third generation AT model (See Figure 3 in Appendix A) addresses the interactions which occur when two or more activity systems interact - representing networked activity and incorporating the idea of boundary objects which are defined as where two (or more) activity systems come into contact resulting in potential contradictions and tensions. These potential contradictions and tensions can be viewed as "*motive force of change and development*" and a source of innovation (Engeström, 2001, p. 9).

The evolution of the AT models derives from these transitions and reorganizations within and between the activity systems changing not only the subject but the environment through mediated activity and in turn developing multiple perspectives and networks of interacting activity systems (Engeström, 1999).

As mentioned earlier, it is possible to identify eight important questions from figure 2, which need to be addressed and explored based on the eight components which make up an AT system (Mwanza & Engeström, 2005). The questions and related component are visualized in Figure 4 in Appendix A which will be applied to the case-study later in this paper.

2.4 The Five Principles of Activity Theory

Activity Theory can in its current shape be summarized with the help of five principles below

The first principle dictates that the prime unit of analysis is the collective, artifact-mediated and object-oriented activity system when seen in connotation with its network relations to other activity systems. Although relatively independent, individual and group actions, as well as automatic operations are subordinate units of analysis. They are only understandable when examined against the background of the entire activity system.

The second principle is the multi-voicedness of activity systems. An activity system is a community of different perspectives and varying traditions and interests. The division of labor creates different positions for the participants which in turn come with their own diverse histories. The activity system itself is made up of multiple layers and strands of history engraved in its artifacts, rules and conventions. The aforementioned multi-voicedness is multiplied when two or more activity systems are interacting in networks. This creates conflicts but is also a source of innovation, demanding actions of translation and negotiation.

The third principle is historicity. This means that the history of the activity and its objects needs to be locally studied as well as the history of the theoretical ideas and tools which have shaped the activity. For example an economic activity such as investment banking, needs to be examine against both its local organization as well as the global history behind investment banking concepts, procedures and tools.

The fourth principle is the central role of contradictions as sources of change and development. Contradictions are not the same as problems or conflicts. Contradictions are historically accumulating structural tensions within and between activity systems. Activities are open systems. When a new element is adopted into an activity system (for example, a new technology), it often provokes a secondary contradiction where some old element (for example, the rules, the community or the division of labor) collides with the new one. Far from being only a negative concept, resulting in disturbances and conflicts, contradictions can also instigate innovative attempts to change the activity. These will be examined and elaborated upon later in relation to expansive learning.

The fifth principle relates to the possibility of expansive transformations in activity systems. Contradictions arise within an activity system due to the relative long cycles of qualitative transformations. This leads to the individual participants questioning or deviating from the established norm within the system. In some cases this can escalate into a deliberate collective change effort when the activity is re-conceptualized to embrace a radically wider horizon of possibilities then the previous iteration of the activity and thus accomplishing expansive transformation. A full cycle of expansive transformation can be understood as a collective journey through Vygotsky's *zone of proximal development* of the activity which is defined as *"the distance between the present everyday actions of the individuals and the historically new form of the societal activity that can be collectively generated as a solution to the double bind potentially embedded in the everyday actions."* (Engeström, 1999; 2001).

It is the zone of proximal development which naturally leads to the following examination of the concept of innovative learning in which the term will be explored in relation to how organizations can manage and generate knowledge during the process of developing a mobile ICT.

2.5 Innovative Learning

Innovative learning within an organizational context is described as collaborative learning in organizations which can produce new solutions, procedures or transformations of organizational practices. Innovative Learning has been extensively researched in the last 20 years and one of the most contributing scholars are Ikujiro Nonaka and Hirotaka Takeuchi (Engeström, 1999).

Nonaka and Takeuchi refer to *Innovative Learning* as *Knowledge Creation*, which will be the used term for the purpose of the section (Nonaka & Takeuchi, 1995).

Before delving into the concept of knowledge creation, is important to briefly establish what the term *knowledge* entails within an organizational context.

In general there is no single definition of *knowledge*, as it varies depending on the author or in which context *knowledge* is being studied. Simply looking up the word "knowledge" in the Oxford Dictionary knowledge is defined as *"facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject."* Or put more simply: "*the sum of what is known"* (Oxford Dictionaries, 2012).

For the purpose of this paper, the above definitions are vague at best. In order for an organization to be able to apply knowledge creation, another framework is required.

Thus it is important to identify the different types of knowledge and the concepts these inhabit. Knowledge is often divided into two types: explicit knowledge and tacit knowledge (Polanyi, 2009).

Explicit knowledge is defined as coherent and articulated knowledge expressed and formulated as words, numbers or formal written documents. Explicit knowledge is easily communicated, stored and distributed. Examples of explicit knowledge include the information contained within books or other written documents such as, manuals and encyclopedias (Newell, Robertson et al, 2009).

Tacit knowledge, on the other hand, *"is highly personal. It is hard to formalize and, therefore, difficult to communicate to others [...] in other words, we can know more than we can tell."* (Nonaka & Takeuchi, 1995, p. 165).

Tacit knowledge is used to describe knowledge that cannot be clearly and plainly presented. It is engrained in individual experiences and "*know-how*". Examples of tacit knowledge include the knowledge on how to swim or knowing how to ride a bike or even a baker's skill to knead dough correctly (Newell, Robertson, Scarbrough, & and Swan, 2009; Nonaka & Takeuchi, 1995).

Having briefly defined the difference between explicit and tacit knowledge, it is time to elaborate upon how knowledge can be created and transferred. As mentioned earlier, tacit knowledge is highly personal and thus it is more difficult communicate to other individuals than explicit knowledge. Nonaka's (1995) perceptions and beliefs of what knowledge is begins in a simple manner by the claim that the one certain source of lasting competitive advantage, in a world confronted by economic uncertainty, is knowledge.

Knowledge creating companies are by Nonaka's (1991) definition any organization that strives to create, disseminate and embody new knowledge, continuously seeking for innovation.

Furthermore Nonaka states that; "*Creating new knowledge is as much about ideals as it is about ideas*" (1991). This statement embodies two fundamental principles regarding the knowledge creating companies examined by Nonaka. Firstly, creating new knowledge is more than just processing objective information; rather, new knowledge is dependent on the transformation of tacit knowledge into more explicit knowledge. Secondly, Nonakas postulates that a company is more like a living organism, it possess a collective sense of identity and fundamental purpose, and draws parallels with the organizational equivalent of "self-knowledge" - a shared understanding of what it stands for, where it is going, and how it can make that world into a reality (Nonaka I. , 1991, s. 97).

The aforementioned distinctions between tacit knowledge and explicit knowledge are visualized in figure 5 in Appendix A showing the knowledge creation cycle.

2.6 Expansive learning cycle

It is however argued that Nonaka and Takeuchi have simplified the process of creating knowledge in relation to Fig. 5 by visualizing the dynamic cycle in a static matrix. According to Engeström (1999, p.379) it is doubtful that their representational modes of knowledge are an appropriate basis for discerning the various phases and patterns related to the process of knowledge creation. Nonaka and Takeuchi's framework does not effectively account for sequences of formulating and debating a

problem as an open multifaceted *problematic* nor does it address the sequence of analyzing and debating a problem systematically in order to allow the problem to be circumscribed and thus completely avoided the phases of goal and problem formation (Engeström, 1999).

For this purpose Engeström (1999) has developed an expansive learning cycle which addresses the aforementioned issues with Nonaka and Takeguchi's framework. The expansive learning cycle implements multiple other activities which are neglected by Nonaka and Takeguchi.

Using AT, Engeström approaches knowledge creation (expansive learning) as a process of ascending from abstract to the concrete. Meaning that during the expansive learning cycle a new theoretical idea or concept is produced. The abstraction is enriched step by step and transformed into a concrete system of multiple constantly developing manifestations. The initial simple idea is during the expansive learning cycle, transformed into a complex object or new form of practice (Engeström, 1999, p. 382).

The transformation is composed of seven actions which together form the expanding learning cycle or spiral. Engeström defines the seven actions as follows:

- The first action is aptly called *questioning*. This action involves the act of criticizing or rejecting some aspects of the already established or accepted practice and existing wisdom.

- The second action called the *actual-empirical analysis* which seeks to explain the situation by conceptualizing the inner system relations of the relevant action. It is that of analyzing the situation which involves mental, discursive, or practical transformation of the situation in order to uncover any explanatory mechanisms. The analysis evokes "why?" questions and explanatory principles.

- The third action is that of *modelling the new solution*. It is the act of modelling the newly found explanatory relationships in some publicly observable and transmittable medium. This means constructing an explicit, simplified model or prototype of the new idea that explains and offers a solution to the problematic situation.

- The fourth action is called *examining the new model*. It is the act of running, operating, and experimenting on the model or prototype in order to fully grasp its potential and limitations.

- The fifth action is that of *implementing the new model*, concretizing it by means of practical applications, enrichments, and conceptual extensions.
- The sixth and seventh actions are those of *reflecting on the process* and *consolidating the new practice*. These include an evaluation of the process and the consolidation of its outcomes into a new and stable form of practice.

(Engeström, 1999, p. 384)

The cycle (See figure 6 in Appendix A) should be understood as the construction and resolution of successively evolving tensions or contradictions in a complex system that includes the object or objects, the mediating artifacts, and the perspectives of the participants.

Although the expansive learning cycle is typically applied to cases that involve entire corporations, the cycle in fig. 6 can be used as a framework for analyzing small or medium-scaled, innovative learning processes (Engeström, 1999).

The expansive learning cycle can beneficially be complemented by Waterson et.al. (2002) socio-technical systems design (STSD) approach which delves deeper into the how to examine the specific tasks which need to be consolidated in a new mobile ICT.

This approach will be elaborated upon in the following chapter.

2.7 Main Findings

This chapter has highlighted on the historical evolution and application of Activity Theory ranging from the initial theory by Vygotsky et.al to Engeströms *"Scandinavian"* take on AT.

It is Engeströms (2001) AT which will be the basis of the discussion as Engeström shifts the study of mediation towards its relationships with the other components in the Activity System as well as the interactions with each other which in turn aid in the identification and of tensions and contradictions within an activity.

Furthermore the central role multivoicedness and contradictions present in activity systems is shown to be a considerable source of innovation when two or more activity systems interact.

From these contradictions it is possible to provoke innovative learning.

The concept of innovative learning (knowledge generation) is examined from the perspectives of Nonaka & Takeuchi (1995) and Engeström (1999) which are shown not to be compatible. Explicit and tacit knowledge are two different types of knowledge. *Explicit knowledge* is defined as easily transferrable and distributed knowledge which can be in the form of written manuals, books and other static sources of information. While on the other hand *tacit knowledge* is defined as difficult to formulate and transfer as it is engrained in individual experiences often referred to "*know-how*" (Nonaka I. , 1991).

The real challenge however lies in the creation of knowledge. While Nonaka and Takeuchi (1991) have developed the framework in fig. 5, Engeströms (1999) argues that it is a rather simplified approach as it does not account for a sequence of solving a multifaceted problematic.

Engeström (1999) proposes the expansive learning cycle which includes the sequences of analyzing and debating any encountered issues systematically. Engeströms learning cycle includes seven actions which include the needed acts of *questioning*, *analyzing*, *modelling*, *examining the model*, *implementation*, *reflection* and *consolidation*.

Engeströms socio-technical approach encompasses all the components which need to be addressed when implementing a new ICT. All the objects, artifacts and perspectives of the participants are considered and examined in the cycle. Thus the next natural step is to examine the socio-technical approach to systems design as proposed by Waterson et.al. (2002) in the following chapter.

CHAPTER 3 SOCIAL-TECHNICAL SYSTEMS DESIGN

3.1 Chapter Objective

Having elaborated on Engeströms (1999) expansive learning approach the objective of this chapter is to further elaborate on the design process itself.

This is done by providing an overview of a work-allocation method and examining the system engineering activities related to systems development (Waterson, Gray, & Clegg, 2002; Baxter & Sommerville, 2011).

These methods highlight the areas which need to be addressed and will provide a structure for the consequent requirements analysis and elaborate on the decision criteria, imperative during systems development, which will be examined later in the Enterprise Mobility chapter. The review of the Socio-Technical System Design will only focus on the first stage (Stage A) of the method developed by Waterson et. al. (2002). The reason for this being that it includes both requirements specification and analysis & task specifications. This is done in order to apply the findings to the case and couple it with Enterprise Readiness in the analysis chapter of this paper as well as to highlight the similarities to Engeströms (1999) expansive learning cycle.

3.2 Socio-Technical System Design

In short it is possible to state that Socio-technical theory examines the relationship between people and machines. Specifically it is a useful approach to systems design that considers human, social, technical and organizational factors with the purpose of understanding how these factors affect the way work is done and how the technical systems work towards a common set goal.

The rationale for utilizing a socio-technical systems design (STSD) approach to design is to properly consider the complex relationships between organizations, the people enacting the business processes and the system supporting these processes (Baxter & Sommerville, 2011).

STSD approaches have evolved since the term was first coined in the 1960s based on the simple notion that *"every system is embedded in an environment that affects the way it behaves"* (Mumford, 2006, s. 321).

STSD deals with three of the most common concerns stakeholders have relating to systems development within an organization (Baxter & Sommerville, 2011).

- *Developers*: Does the system meet specified requirements?
- *Users*: Will the system help users do their job without affecting other parts of their work?
- *Management*: Will the system generate added value to the organization in a timely manner and is it compliant with regulatory requirements?

While the systems themselves and the engineering processes differ considerably depending on the organization, Baxter & Sommerville (2011) identify four fundamental activities present in all organizational IT systems development projects, seen in figure 7 in Appendix A.

1. *Procurement*: Decisions are made on what systems to reuse and what new systems to procure from internal or external suppliers. Some analysis will normally precede this, but this is rarely an in-depth analysis of the areas of the organization where the system will be used.

2. *Analysis*: Stakeholders in the system are involved in a process that results in a requirements analysis for the new components of the system that is to be introduced.

3. *Construction*: The new components of the system are constructed and integrated with existing systems and databases.

4. *Operation*: The system is deployed and put into use. Over time, changes to the system are proposed and the development activity continues to create new releases that are deployed and used.

Having identified the four fundamental Systems Engineering activities present during the development and implementation of a system, it is time to further examine the STSD using a method developed by Waterson et.al. (2002).

The aim of the method is to identify the feasible *task allocation* options when designing a new system (or redesigning an old one) and to consequently act as an aid to well-informed discussions relating to the choice of the most appropriate system. An example of *task allocation* could be the task of flying an airplane on autopilot – the task of flying the aircraft has been allocated from the human pilot to the autopilot.

The method is developed as a flowchart ranging from stages A through G. But as mentioned earlier, the focus on this paper will only be on the first stage and its included phases which are "*Formation of overall view of the system*", "*Specification of requirements*" and "*Specification and analysis of tasks*" (See figure 8 in Appendix A - (Waterson, Gray, & Clegg, 2002, p. 379).

In the first stage, using a top-down (Visualized in Fig. 8 as horizontal) approach users are firstly encouraged to provide an examination of alternative choices (if available) on how the system could work using a set of structure headings.

The headings include; *scope/boundary, vision, reason for vision, level of automation, organization structure, roles, benefits, costs, implications, preference* and *rational*.

Firstly the users identify the potential advantages and disadvantages of each choice using a formulated set of eight decision criteria categories to ensure that all the relevant issues are examined under each heading. They are; *Goal issues, Organizational issues, Cultural/Environmental issues, Resource issues, People issues, Task issues, Job Design/Work issues* and *Technology issues*. (See figure 9 in Appendix A for a more detailed overview.)

And secondly specify the requirements for the chosen system and finally specify and examine the tasks of the chosen system.

It is these first steps of the STSD method which will be coupled with the Enterprise Mobility Readiness Model in the discussion.

3.3 Main Findings

Examining the systems engineering activities as proposed by Baxter & Sommerville (2011) coupled with Waterson et.al. (2002) task allocation approach, the applicability to Engeströms (1999) expansive learning cycle is evident.

While Engeström (1999) Expansive learning cycle encompasses all of the actions associated with the development of a new ICT, it does not however specify which explicit issues need to be addressed within each action offering a rather descriptive approach to the problem. Coupling Engeströms approach with Baxter & Sommerville and Waterson et.al. (1999; 2002; 2011) it is possible to provide a more detailed examination of the development process as well as providing a more applicable approach to the case-study.

The combined approach will be applied to the case-study in the analysis and discussion sections of this paper.

CHAPTER 4: ENTERPRISE MOBILITY

4.1 Chapter Objective

The objective of this chapter is to examine the concept of Enterprise Mobility as well as the processes and issues which need to be addressed when adopting and implementing enterprise mobility.

Furthermore it is meant to highlight the importance of preparation in regards to enterprise mobility. This is done by examining various tools and frameworks which can be used to analyze both the organization and mobile ICT's. These include a model for examining the Enterprise Mobility requirements. A Mobile Transformation Framework, which provides insights into the transformation process itself and the importance of Strategic Planning, is elaborated upon, focusing on how to determine the value a new ICT and the overall organizational readiness.

4.2 Enterprise Mobility

Enterprise Mobility albeit not a new concept, has not been as popular and successful in the early years as it is now. For the last decade enterprise mobility consisted mostly of utilizing the wireless internet capabilities of personal computers (PC), but what was traditionally separate technologies, the internet and mobile-phone technology is converging and prognosticates a new era of portability, accessibility and networking (Barnes S. J., 2003).

With the rise of mobile devices coupled with the recent developments of communication technologies, enterprise mobility has become more widespread and recognized concept amongst organizations (Basole R. C., 2008).

The main motivators behind incorporating enterprise mobility into an organization are the observed benefits of increased productivity, decision-making-speed and process improvement – all possible since the relevant information is available at hand.

However when enterprises first started to adopt mobile ICT's often the enterprises lacked the technological infrastructure, business processes, human resources, leadership and organizational culture needed to embrace and facilitate enterprise mobility implementations.

Present day, the developments within mobile devices capable of handling exponentially higher amounts of mobile data then just 10 years ago is causing organization to realize the long-term strategic-benefits of enterprise mobility such as cost-savings, competitive advantages and enhanced core competencies, all of which are fundamentally able to transform organizational business model paradigms (Sørensen, 2011).

That said, although the material available on Enterprise Mobility is steadily growing, there is a distinct lack of material concerning the whole process of identifying the need for a mobile ICT, the implementation and consequent use of the technologies available today. It is equally important to note that most Enterprise Mobility literature examines Enterprise Mobility from a Business to Employee (B2E) perspective, for the purpose of the research questions, the theory will be discussed and analyzed in the subsequent discussion and analysis chapters from a Business to Customer (B2C) perspective in concordance with the case-study.

The following sections will provide an introduction to Enterprise Mobility and present the potential development of enterprise mobility within an organization. Furthermore the motivating areas which drive the adoption of mobile ICT will be examined which can aid in the strategic planning process and reduce the overall implementation risk, and finally the transformation process itself will be elaborated upon.

4.3 Enterprise Mobility Requirements

As mentioned earlier there are numerous strategic benefits of enterprise mobility, but the benefits as well as requirements are as diverse as the industry in which they are applied to.

Different organizations require a differing level of mobility and enterprise mobility requirements are generally divided into three categories, each with its own distinct level of mobility (Jain, 2003; Scornavacca & Barnes, 2008).

1. *Industries with high mobility requirements*

   This category includes an organizational setting where the users and assets are geographically dispersed. Examples include the shipping industry which can benefit from tracking and tracing information and law enforcement agencies. Within this category mobile technologies are crucial

as it enables employees and users to accomplish information system (IS) supported tasks within temporal and spatial restrictions.

2. *Industries with medium mobility requirements*
   Included in this category are users which are highly mobile within a restricted perimeter but perform the most critical tasks at a fixed location. (E.g. via a desktop or kiosk) Examples include settings such as the healthcare industry and a university environment.

3. *Industries with low mobility requirements*
   Users in this category are seldom mobile and any mobile ICT does not have any significant influence on the fulfilment of their tasks. Examples within this category could be a traditional office setting or cubicle.

The above shows that enterprise mobility level is defined by the level of mobility requirements as well as how the organizations operate. In order to understand the potential of mobile applications within organizations a conceptual framework called Mobile Enterprise Model (MEM) was developed (Barnes S. J., 2003).

Please view figure 10 in Appendix A, which shows the three different axes of the diagram, each with three possible positions ranging from lowest to highest.

The three different axes are described as follows:

Mobility describes the level of geographic independence of workers enabled by the wireless data solution.

1st level *Transient*: This describes the basic support for employees moving from one location to another.

2nd level *Mobile*: This entails employees with a much higher degree of geographic independence from the enterprise. Potentially for prolonged periods of time, but inevitably returning to "base" to perform certain functions or tasks.

3rd level *Remote:* This is the highest level of mobility in which employees are almost completely removed from the "base", allowing a high degree of spatial independence.

Process describes the change in work configuration and work processes as a result of the adoption of a mobile ICT.

1st level *Automation:* related to the potential increased efficiency when existing processes are transferred to the mobile application.

2nd level *Information:* relates to the degree of effectiveness and knowledge gained via the mobile ICT.

3rd level *Transformation*: describes the degree in which organizational processes can change using the mobile ICT which in turn may transform the nature of work and job roles within the organization.

Market describes the value proposition in the marketplace typically relating to the changes in products, services and relationships with customers. Additionally it may also include market experiences with suppliers and business partners.

1st level *Mobile Channel Access*: indicates that the mobile ICT is being used largely as a source of information for mobile employees without any significantly different services.

2nd level *Mobile service value:* indicates that the mobile ICT is being used and adds significant value to the market offering.

3rd level *Mobile service creation*: indicates that the mobile ICT is being used to create new services or products.

(Barnes S. J., 2003)

While most studies which have used MEM have applied it to B2E cases (Barnes & Walker, 2005)**,** MEM is equally applicable to B2C cases such as SOS, and this will be elaborated upon in the subsequent discussion where the framework will be applied to SOS to examine the level of enterprise

mobility within SOS to benchmark the current state and consequently comparing it to a possible future SOS.

4.4 Mobile Transformation Framework

The mobile transformation framework is a conceptual multi-phase framework aimed at providing insights into the dynamics of the transformation process itself, focusing on what needs to be transformed and to which degree it can impact the overall organizational strategy. (See figure 11 in Appendix A)

4.4.1 Phase 1 – Mobilization

Phase 1 of the transformation process begins with the mobilization of data, applications and processes existing within the organization and making these available for use on mobile devices.

Earlier research shows that previously enterprises often "mobilized" without considering the mobile end-user's needs and context which resulted in enterprise applications being morphed and transcoded to fit specific end-user target groups (Basole R. C., 2005; Britton, et al., 2001).

It is just recently the importance of delivering applications with a higher technological-fit and ease-of-use have come into focus within the field of Enterprise Mobility (Gebauer & Shaw, 2004). Examples of phase 1 transformation processes could include the process of transforming raw financial data and make it succinct and "readable" in a user-specific mobile application.

4.4.2 Phase 2 – Enhancement

During phase 2, focus is shifted from the mobilization of existing data, application and processes to enhancing and creating new ones which utilize the unique capabilities of mobile technologies to a higher degree in the form of value-adding services and exploiting the rising use of mobile devices which consequently enable end-users to perform tasks or make use of services with a higher level of convenience and efficiency (Comscore, 2012).

Examples of phase 2 enhancements can include location-based applications taking advantage of geographical data using the GPS technology present on most "modern" smartphones.

4.4.3 Phase 3 – Reshapement

During phase 3, mobiles solutions begin to affect and reshape the business models and strategies within the organizations which could lead to enhanced competitive advantages and new value-adding sources

for the organization. In this phase mobile solutions often become a critical element in the overall business model (Basole R. C., 2005).

Examples of phase 3 mobile reshapement could be commuter based transportation organizations whose mobile applications allow customers to purchase tickets for trains or busses via their mobile device and thus bypassing the need to visit a manned sales-desk or ticket-vending machine (DSB, 2012).

4.4.4 Phase 4 – Redefinition

In phase 4 of the transformation process the mobile solutions can create new core enterprise competencies which lead to new business models and strategies and could in turn redefine the entire market or industry in which the organization is operating in.

Examples of phase 4 enterprise redefinitions could be United Parcel Service (UPS) transforming from being a package delivery company to a global supply chain management provider (Rouse, 2005).

Albeit the aforementioned examples did not redefine their business models or strategies purely with the aid of enterprise mobility, the concept remains the same and should highlight the potential of enterprise transformation.

The four phases do not have to be executed sequentially as activities performed in Phase 1 continue to have repercussions during phases 2-4. The framework acts more as a guideline for organizations planning to develop enterprise mobility applications. Some enterprises could start in Phase 2 or skip it entirely, depending on their current level of enterprise mobility and specific needs. But according to Basole (2005) all four phases are interconnected and the framework will aid in the facilitation of the mobile transformation but not necessarily sequentially. It is imperative to note that each phase, although providing an understanding of mobile application opportunities, presents separate transition barriers. These consist of both internal and external factors within the organization which need to be addressed. It is thus necessary to examine the mobile readiness within the organization beforehand. Mobile readiness refers to the degree of preparedness and readiness within an organization in relation to its ability to adopt and implement a new mobile ICT. This will be examined and elaborated upon in the following section.

4.5 Strategic Planning

After having elaborated on how to examine the level of enterprise mobility within an organization and the mobile transformation framework, the next natural step is to examine if the organization is ready for the adoption of enterprise mobility.

Basole (2007) developed a strategic planning model specifically aimed at enterprise mobility. It is based on the notion that enterprise mobility planning requires a deeper understanding of internal and external driver in order to adopt and implement said mobility. Drivers such as the organizational means and capabilities to facilitate the process as well as the ability to evaluate the potential value and impact of said implementation inhabit crucial roles in the model (Basole R. C., 2007).

Drawing on theories of innovation adoption, institutional behavior, resource-based organizations and enterprise transformation Basole (2007) identifies four strategic areas which are essential when planning for enterprise mobility; *Business Value, Cost & Economics*, *Strategic Alignment* and *Enterprise Mobility*. These will be elaborated below and are illustrated in figure 12 in Appendix A.

4.5.1 Business Value

When considering the value of a new technology investment, it can be difficult to assess if it is strategically viable, since the actual value of any new ICT depends on a variety of factors such as the type if IT, management practices, organizational structure and even the competitive macro environment in which the organization inhabits (Melville, Kraemer, & Gurbaxani, 2004, s. 284).

For enterprise mobility specifically, it is possible to identify several value drivers using value-focused thinking (Nah, Siau, & Sheng, 2005).

Depending on the organization, it is possible to create a simple, albeit effective means-ends objective network which depicts the value structure of the new ICT within the organization, from data gathered from interviews within the organization.

In order to establish the value, fig. 13 in Appendix A is used as a guide based on Nah, Siau & Sheng (2005). *Identifying values* can be expressed from desired functionalities and enhanced processes relating to the mobile application. Subsequently it is possible to *convert values to objectives*. An objective consists of a decision context, an object and a direction of preference, which can be translated from a statement into an objective. And example could include an individual stating: *"I want the mobile application to make my job easier!"* which can be converted to the objective: *"Maximize efficiency"*. Additionally it is important to *distinguish between means and fundamental objectives.* A

means objective is an objective which is important if it will help or facilitate another objective otherwise it is a fundamental objective. Finally it is possible to *construct the means-end objective network* by linking *means objectives* with *fundamental objectives* and thus making the cause-effect relationship between them apparent (Nah, Siau, & Sheng, 2005, p. 87).

Depending on the organization, it is thus possible to gain an oversight over what value the ICT brings to the organization, and from the above analysis it is apparent that the actual value consists both of tangible and intangible assets, made up of different types of benefits. Basole (2007) argues that these benefits can be divided into four different types which organizations can realize depending on their needs. The four types of benefits, adopted from Basoles research are *strategic benefits*, *informational benefits*, *transactional benefits* and *enterprise transformation* and are elaborated upon in figure 14 in appendix A.

The total business value can consequently be measured by the extent to which decision makers agree on the purported benefits that the adoption and implementation the ICT will provide which in turn means the more strongly the decision-makers agree on the achieved benefits, the higher the value (Basole R. C., 2007).

4.5.2 Cost & Economics

There are wide arrays of issues which can either increase or decrease the cost of an ICT project, and make it economically unsound depending on the scale and complexity of the project.

Organizations often underestimate all the costs associated with implementing a new ICT. Issues such as hardware configuration and installation, organizational resistance to change, employee training and development of new work practices are amongst some of the issues most often encountered.

But these potential costs, have to be considered and compared to the potential loss associated with *not* implementing a new ICT.

A detailed assessment of the costs is thus important before beginning the implementation process, both in order to secure against future-losses but also to achieve a greater buy-in by senior management and other essential stakeholders within the organization. According to Basole (2007) an option-based framework is often used in recent ICT investment evaluations to assess both the economic value and the costs associated with the ICT investment. This approach makes it possible to incorporate risks and uncertainty into the modeling process, thus reflecting reality more accurately (Basole R. C., 2007, s. 4).

4.5.3 Strategic Alignment

The third element is pertaining to the strategic alignment of mobile ICT with the business objectives of the organization. The strategic alignment of ICT and the business objectives is a key aspect within information systems planning and Basole argues that the importance of strategic alignment has only become greater when considering emerging ICT such as mobile applications.

"If the emerging ICT under consideration does not fit with the long-term goals and objectives of the organization it is most likely that the organization will not benefit significantly from adopting it."
(Basole R. C., 2007, s. 4)

The above quote underlines the importance of a clearly defined strategic alignment as an ICT that is not aligned with the business strategy could ultimately steer the organization away from their intended course and the fundamental motive for investing in any new technology could be lost.
This leads to the five main activities outlined below which need to be undertaken in order to establish a *"link"* between the organization's business strategy and specific ICT needs and to ensure that the managements long term visions and the vision for the new ICT is in congruence (Simonsen, 1999).

1. *Project Establishment*: Clarifying the aim, level of ambition and scope of the new ICT.
2. *Strategy Analysis*: Clarifying the alignment between the business strategy and the overall purpose of the new ICT, with the purpose of defining and delimiting which work practices and domains should be in focus in the project.
3. *In-depth Analysis of selected work domains*: An analysis of the aforementioned work practices and domains with the purpose of revealing and developing an understanding or the rationale behind the current work practices.
4. *Developing visions of overall change*: Developing a vision which includes the functionality of the new ICT as well as the potential organizational change it can result in.
5. *Anchoring the Visions*: Anchoring the vision's rationale to ensure that it is understood by the decision-makers within the organization, those who will realize it by carrying it out and the by the users.

These five activities above examine the organizational, economical, and technical limitations associated with the investment of a new ICT and clarify the potential for investment as well.

These will be applied to the case-study in the discussion later in the paper.

4.5.4 Enterprise Readiness

The final element in Basole's (2007) model is the multilayered module representing *enterprise readiness*. Enterprise Readiness refers to the degree to which an organization is prepared to adopt and implement a new ICT. The Enterprise Readiness module is arguably one of the most critical elements in the strategic planning process as it enables decision-makers to identify any organizational deficiencies in the planning process and consequently make the necessary changes and improvements needed to combat these in order to reduce the risk associated with the implementation.

4.5.5 Readiness Framework for Enterprise Mobility

Basole (2007) utilizes a three-layered framework to examine an organizations *preparedness, potential* and *willingness* to adopt and implement a new ICT. Additionally the framework identifies eight important dimensions in which the readiness is assessed through:

1. Technology, 2.data and information, 3.process, 4.resource, 5.knowledge, 6.leadership, 7.employee and *8.value and goals*.

Thus the framework can be used to evaluate the readiness across all three and along the eight dimensions in which they are relevant. Basole's (2007) detailed framework can be seen in figure 15 in Appendix A.

First, it is important to provide a definition of the eight different dimensions.

1. *Technology Readiness* relates to the degree to which the technological infrastructure of the organization is able to support the adoption and implementation of a new ICT.
2. *Data and Information Readiness* refers to the ability to federate data from multiple systems, making it available in a single view when it is needed.
3. *Process Readiness* refers to the internal organizational processes and their ability to facilitate the adoption and implementation of a new ICT. (E.g. human processes, information processes, organizational change processes, etc.)
4. *Resource Readiness* refers to the organizational resources ability to support the new ICT. This can include financial resources, human resources or technical assets.
5. *Knowledge Readiness* is concerned with the decision-makers knowledge of the new ICT. Both general knowledge and specific knowledge. These include general knowledge such as the

decision-makers awareness and basic understanding of new ICT's while specific knowledge includes the understanding of the specific challenges, issues, barriers as well as strategic impact which can accompany the adoption and implementation of a new ICT.

6. *Leadership Readiness* reflects the level of support and strategic vision that management offers in association to the adoption and implementation of a new ICT. According to Basole (2007) this is one of the most critical factors in technology adoption as management needs to ensure that the new ICT strategies fits the current business strategy as well as supports it.
7. *Employee Readiness* refers to the level in which employees/customers (end-users) attitude towards change lies, their level of skills and perceived end-user benefits. The higher the level of end-user readiness, the faster the adoption and usage of the new ICT occurs.
8. *Value and Goals Readiness* refers to how well the existing structural and nonstructural enterprise characteristics fit with the mobile ICT characteristics. Structural enterprise characteristics can include organizational size, strategic objectives and goals while nonstructural enterprise characteristics may include organizational culture, bureaucracy, task environment and political climate.

(Basole R. C., 2007)

It is apparent that all the above dimensions in the framework are interconnected and do affect each other, and should therefore be considered as a whole. According to Basole (2007) a lack of readiness in any of the three layers will result in a lower degree of enterprise readiness throughout the framework and because of this the all the dimensions will go through an assessment and applied to the case at hand in the discussion.

4.6 Main Findings

This chapter has highlighted the importance of preparation. It is apparent that organizations that operate within different industries have different mobility requirements. Using Scornavacca & Barnes (2008) approach, these can be divided into three levels ranging from low, medium and high.

The requirements can be examined by applying the Mobile Enterprise Model (Fig.10) to the organization at hand. The MEM analyses the level of mobility based on three different levels; *Mobility*, *Process* and *Market*, and by estimating to which degree these apply to the organization it is possible to

provide a distinctive model based on the organization at hand and use it to examine the present level of mobile requirements in the organization. As mentioned earlier, although most studies have applied the model to B2E cases, it is equally applicable to B2C which will be elaborated upon in the discussion later in the paper.

Having established the level of mobile requirements, the Mobile Transformation Framework can beneficially be used to provide an insight into the transformation process itself. The framework provides a step-by-step overview of the four different phases of mobile transformation and highlights which issues are relevant and need to be addressed in each phase. The four phases are; *Mobilization*, *Enhancement*, *Reshapement* and *Redefinition*. Each phase relates to specific areas and processes within the organization focusing on the impact and transformation of these. Additionally it is shown that during the transition between the phases, most organization encounter barriers consisting of internal and external factors. What these factors include is examined using Basole's (2007) strategic planning approach which reviews *Enterprise Mobility Readiness* in an organization.

Basole (2007) identified four critical areas within an organization which need to be examined. They are *Business Value*, *Strategic Alignment*, *Cost & Economics* and *Enterprise Readiness.* The *Business Value* is not examined in a monetary context. Instead the *Business Value* of Enterprise Mobility is assessed to which degree it can aid the organization in achieving a set objective and which organizational benefits can be achieved doing so. This is done by constructing a means-end objective network using a value-focused approach. The network will be analyzed and applied to the case-study in the discussion (Nah, Siau, & Sheng, 2005).

The *Strategic Alignment* of a new mobile ICT refers to the process of coordinating the relationship between the Business areas and IT area if the organization. How the new ICT aligns with the business objectives of the organization. No matter the organizational objectives and goals it is important that a new ICT fits into the organization in order to achieve any significant benefits from adopting it. The process of Strategic Alignment will be elaborated upon in the discussion, focusing on examining the organizational context in question; clarifying if it is worth the resource investment as well as highlighting any organizational, economical and technical limitations associated with the new ICT.

Finally the three-layered framework for examining an organization's *preparedness*, *potential* and *willingness* to adopt a new ICT shows the eight different dimensions which embody all of the internal components which need to be "on board" for the project to succeed. They will be analyzed on the -study later in the paper.

CHAPTER 5: METHODOLOGY

5.1 Chapter Objective

This section will provide the rationale behind the methodological choices of the gathering and analyzing the data which is needed to answer the research question and sub-question. This section will furthermore provide an overview of how the data collection is planned as well as how to analyze said data once gathered (Oates, 2006).

5.2 Literature Search

The initial literature search for this paper was focused on three areas: (1) previous research pertaining specifically to Enterprise Mobility, on (2) classical Activity Theory literature and; (3) information and statistics relating to the proliferation of smartphones and mobile applications.

The initial literature search on Enterprise Mobility showed that it is a relatively new area of research since the available literature stems from relatively few researchers and most of the literature obtained was between four and eight years old. Compared to literature on Activity Theory which is a well-researched area, the decision was made to focus on the "classic" literature which is most commonly referred to.

Factual information and statistics on smartphone use and mobile application proliferation was acquired from the Danish Statistical Office and Industry Specific research and analytical organizations.

5.3 Research Design

The main purpose of the research behind this paper is two-fold. Firstly, it is *find the evidence to inform practice* which it is meant to provide the reader with evidence on which ideas are worth taking up or not and to provide evidence about the enablers or barriers to successful adoption of information systems; secondly to provide an exploration and application of the relatively sparsely researched area of Enterprise Mobility (Oates, 2006).

The posed research questions will explore what impact Enterprise Mobility can have on a modern organization. What issues or problem *could* arise with the implementation of mobile applications within an organization. Seeing as mobile applications are a widely adopted form of communication,

used extensively by both private and professionals in varying scopes, it is important to explore the process of adopting, implementing and executing a new IS like a mobile application..

> *"Good IS research could give managers the evidence about the enablers or barriers to successful adoption of such computer applications"* (Oates, 2006, p. 18)

Often new technology can be overly hyped and managers perceive a system to be a silver bullet seizing and implementing new technologies without realizing fully which implications they could have on the organization. Thus is could be stated that the overall purpose of conducting this research is to examine the connotations of implementing a new IS and furthermore gain an overview over how this new IS can affect the organization internally and externally as well as to act as the foundation on which the discussion will be based on..

5.4 Philosophical Paradigms

There are two important philosophical paradigms to consider when doing IT research (Bryman & Bell, 2007; Blumberg, Cooper, & Schindler, 2008; Oates, 2006); the positivistic and the interpretivistic. They offer two different approaches to research which each can be applied in its own right depending on which kind of research is being conducted.

The positivistic paradigm supports the so-called "scientific method" of research seen typically in the fields of chemistry, biology, physics and metallurgy to name a few. The positivistic approach is both the oldest scientific approach and the most well-known approach in the general public, at least. The positivistic paradigm has two basic assumptions:

1. Our world is ordered and regular, not random.
2. We can investigate it objectively.

(Oates, 2006, p. 286)

The first assumption states that nothing happens in our world that cannot be proven scientifically. If an individual jumps out of a window it is of the highest probability that that individual will hit the ground sooner or later because the downwards gravitational pull of the earth is everywhere. It is even possible to measure this pull, making it possible to calculate both how fast and how long the individual will fall and even at what force he or she will hit the ground. Even though it seems like a gruesome example, it is none the less a real one derived from the world of emergency services.

The second assumption states that we can investigate the world objectively, this can be exemplified by cause and effect experiments which are meant to validate the researchers' assumptions on any given subject. This is done by forming a hypothesis that A causes B. The aim of the research will thus be to find what causes B and to what effect, utilizing experiments and quantitative data. Consequently the aim of these researches should be to disprove a hypothesis, not prove it since it is impossible for something to be true all the time (i.e. 100%), which Oates exemplifies with his *"all swans are white*" analogy.

Thus the positivistic paradigm states that scientific theories and explanations should be seen as the best knowledge we have at the *moment*. (Oates, 2006, p. 285)

The second philosophical paradigm to consider is interpretivism. Interpretivism does not prove or disprove a hypothesis, but rather aim to explore and explain how all the factors are related and interdependent within a social setting. Interpretivism has multiple subjective realities, meaning there is no single version of the truth, but rather individuals or groups constructing their own version of the truth. Furthermore the interpretivism paradigm aims to be more interpretive and inductive, rather than seeking to confirm or disconfirm a given hypotheses. (Johari, 2009)

An example of using interpretivistism to a hypotheses could be to examine the old well known phrase: "Do woman drive men to drinking?". Usually it is nothing more humorous quip, but it is possible to examine it using interpretivism. In 1986 there was a research article published dealing with exactly this subject called: *"Do liberated Woman Drive Their Husbands to Drink?"* (Harrel, 1986). The hypothesis being that men with highly-educated working wives drank more on a weekly basis then their males counterparts which had stay-at-home wives with a lesser level of education. If the hypothesis was challenged using a positivistic approach it could be tested by observing the husband and the quantitative data would speak for itself by for example measuring the amount of alcohol he would consume during the day. Utilizing a interpretivisitic approach, the social setting within the married couple would be examined in a natural setting and not arriving at a single correct answer, but yet offering multiple interpretations of the hypothesis. Issues such as, is the husband unhappy, does he work in an alcohol-rich environment, what is his social background and more. And consequently it

would be possible to offer more than one explanation to the hypothesis and discuss which, if any seems stronger based on the evidence at hand (Oates, 2006).

5.5 Research Design

Following the above examples about the differences between the positivtistic and the interpretivistic paradigms, it is evident that for the purpose of this paper the interpretivistic approach will be used when answering the research questions allowing for a more interpretive and inductive paper.

5.6 Research Strategy

The research strategy is based on a combination of the initial literature search and the chosen research design. The paper is built upon a single case study that incorporates an exploratory and an explanatory approach. This is executed by exploring the views from the different respondents within the organization, as well as exploring the different literature related to the topic.

5.7 Data

Having defined which philosophical approach will be applied to the paper, it is time to elaborate upon *how* the paper will be written.

The paper will be conducted as a case study as opposed to a statistical study which is focused more on breadth then depth, a case-study provides a more in-depth and focused research area and allows the use of multiple sources of evidence. The use of the available research coupled with fresh qualitative data in the form of interviews allows for an elaborate and contemporary paper.

"An empirical inquiry that investigates a contemporary phenomenon within its real-life context"

(Blumberg, Cooper, & Schindler, 2008, p. 190)

Thus it will be a combination of empirical and theoretical data obtained from academic articles and text books which pertain particularly to Activity Theory, Enterprise Mobility and Social Informatics coupled with qualitative data. As mentioned earlier, in accordance with the interpretivistic philosophy qualitative data will be obtained in the form of interviews from employees within the case organization. The interviews will be conducted in a conversational semi-structured form, meaning that they include some main questions within the research area, but they will not be followed rigidly. This is done for the interviewees to have the possibility to elaborate upon each question and thus making the dialogue flow better and more informal, helping first and foremost in the gathering of the relevant qualitative data

needed and aiding the writer in *"seeing through the eyes of the people being studied"* but also there is higher probability of opening up for serendipitous revelations by asking follow up questions on the spot (Bryman & Bell, 2007, p. 416).

5.8 Data Collection

There will be conducted a total of two face-to-face in-depth semi-structured interviews spread out over two differing but imperative roles within the organization. These are the *project manager* and the *group business development manager* as the implementation of a mobile application is their project and idea.

The purpose of the interviews is to develop the more in-depth understanding of the issues related to the implementation process from the key individuals involved in all of the stages of the project, from initiation, planning and design, executing, monitoring and delivery and closing. The questions will all be constructed by using the interview guidelines derived from Business Research theory (Bryman & Bell, 2007, p. 482).

Additionally seeing as the mobile applications themselves are developed by an external IS provider; the first interview will be with the project manager. The project manager is the individual who is responsible for relaying the input and requests from the case organization to his designers and assistants. He is furthermore deeply involved with the development of the mobile application and on an almost daily basis, relaying requests and tweaks on to the developer. The second interview will be with the Group Business Development Manager. The interview will focus on what motivated her to approve the initiation of the project, which, if any expectations she has and what measures they are taking in preparing the organization for the implementation.

The interviews will all be recorded using a digital voice recorder and consequently transcribed. Transcribing interviews is a labor intensive endeavor depending on the length and number of interviews, but is well worth the effort. A transcribed interview allows for a more thorough examination of the gathered responses as well as it opens op the possibility of public scrutiny of the gathered data by fellow researchers as well as the gathered data becomes reusable for future research (Bryman & Bell, 2007).

The aim is to use the gathered data coupled with the research articles to examine if the statement formed by multiple Enterprise Mobility Researchers that Enterprise Mobility is the seemingly "cure-

all" solution to modern organizations. (Basole R. C., 2008; Barnes S. J., 2003; Scornavacca & Barnes, 2008) The collected data will thus be used to examine if the supposed beneficial attributes gained from adopting Enterprise Mobility are present within the organization.

5.8.1 Primary data

The primary data is what makes this paper stand out. The data which was collected in 2012 will provide the paper with a contemporary overview of a modern organization which is in the processes of adopting enterprise mobility. The primary data consists of two recorded semi-structured interviews of approximately 1 hour in length each, conducted face-to-face and are transcribed for further research. (See Appendix B & C)

The qualitative data was gathered in interviews with inspiration in Kvale´s 7 stages: *Thematization; Design; Interviews; Transcription; Analysis; Verification; Report* as well as Keeney's value focused thinking which involves deciding what is important and how to achieve it (Keeney, 1996; Kvale, 2009).

The selection of interview subjects was based the individuals' involved with the Enterprise Mobilization efforts within the case organization. It could be argued that luckily one of the individuals interviewed was both deeply involved with the development of the mobile applications as well as responsible for business developments.

The interview subjects were as follows.

- Simon Gough – Project Manager, Market Intelligence & Development
- Anja Thyssen – Manager, Group Business Development
  (Henceforth referred to as Gough and Thyssen respectively.)

An initial e-mail was sent to Gough explaining the purpose of the interview. (See figure 16 in Appendix A for the full e-mail, which has been translated from Danish to English for the reader.)

The interview guide was developed specifically for each using Kvale's (2009) recommendations and themes. The interviews were not identical since Gough and Thyssen inhabit different roles and responsibilities in relation to the mobile applications, but the main themes were similar differing only with Gough's interview being focused more on the technical aspect and the mobile applications while

Thyssen's interview also included an exploration of the case organization's business strategy. The full interview guide is viewable in figure 17 in Appendix A.

5.8.2 Secondary Data

The secondary data used in this paper consists of web-pages, books, scientific articles and statistical surveys relating to the research question.

5.9 Data Processing

The first step was transcribing the interview. Although considered highly laborious it is also rewarding because it brings the interview back to life and allow the researcher the first real chance of thinking about and analyzing the data (Oates, 2006, p. 194)**.** Having transcribed the interview, a summary was authored and key points highlighted. The transcription and summary was sent back to the interviewees to confirm that the facts were correct and that they could corroborate what was said.

5.10 Credibility

As the purpose of this paper is neither to scrutinize nor to criticize the implementation of enterprise mobility within case organization, but to objectively examine the process based on the chosen theories it is assessed that the interviewees (primary data) are credible and representative. The secondary data all originated from renowned academic scholars and industry leaders within their respective field.

CHAPTER 6: SOS INTERNATIONAL A/S – CASE OVERVIEW

6.1 Chapter Objective

The objective of this chapter is to provide a description of the case organization and the various available mobile applications. The reason for this is two-fold. First it is important to highlight the size and workload of SOS International. Secondly it is done as the various available mobile applications make up the function-specific modules which are the basis for the next generation of mobile applications currently being developed by SOS International.

Additionally the two interviews will be reviewed. The first interview with Gough, the project manager of the mobile applications project focuses on the mobile applications themselves and the current state of enterprise mobility within the organization. The second interview with Thyssen, the manager of group business development focuses on the underlying Business Strategy and how both the current and future mobile applications are incorporated into the organizational strategy. The interviews are concluded with a section highlighting the main findings of both interviews.

6.2 The Company

SOS International (henceforth referred to as SOS) is the largest Assistance organization in Scandinavia; specializing in providing acute medical and technical assistance for Scandinavian insurance-holders abroad. SOS is owned by 16 of the largest insurance companies in Scandinavia and employs over 720 people, representing 30 different nationalities, which combined speak over 40 different languages.

Additionally SOS is cooperating with more than 20 service offices worldwide, along with 800 doctors, nurses and psychologist, providing its clients the best possible coverage no matter what their emergency is or where they are located.

SOS is annually involved in over 670.000 cases of either medical or technical assistance distributed around the globe (SOS International A/S, 2012).

The aforementioned work-load has been steadily growing over the past years (SOS International A/S, 2011, s. 18) and recently SOS has taken action towards streamlining both the case-reporting as well as case-handling processes by developing user-centric applications for Smartphones. The interviews in

this chapter will thus focus on the conceptualization, development and subsequent release of said applications as well as examine the organizational motivators behind the apps, the development process and attempt to identify which considerations were discussed during this process.

For the purpose of this paper, only the applications released to the Danish market are listed below. (A full overview from November of 2012 with accompanying pictures is available in appendix D.)

6.3 Mobile Application overview within SOS

The mobile applications developed by SOS are divided into two main categories, each tailored to suit a specific need. The two categories are *Technical* and *Travel*. The applications differ in their functionality and purpose as well as target-group. They will each be elaborated on below.

As of November 2012 SOS has released five mobile applications; one technical applications and four travel application with additional applications currently in development.

6.3.1 Technical application

The technical applications refer to applications developed for the road assistance business area of SOS. The SOS Technical department handles cases all over the world concerning their customers' vehicles, be they automobiles, trailers, motor-cycles or mobile homes.

Typically the assistance provided in this area ranges from tow-truck assistance, transportation of vehicle, replacement vehicle acquisition or mechanical services.

6.3.1.1 The Red card (SOS Rødt Kort)

The Red Card was released in June of 2010 as a tool aimed specifically at providing roadside assistance for SOS's customers both within Denmark and abroad. The application is meant to streamline the reporting process of an assistance case. Its key features include GPS tracking, case reporting with the option to attach pictures as well as access to the current insurance policies valid for the current user. The app has been re-engineered for specific car companies who want to offer their customers a similar service based on the original application and using SOS's network of service providers. Currently released company-specific applications include German auto manufacturer BMW with more to come in the future (SOS International A/S, 2012).

6.3.2 Travel applications

The travel applications are developed to assist customers while abroad with travel-related issues. SOS has a separate division which handles travel cases which range immensely in scope, acuteness and priority.

Travel cases range from medical assistance, both acute cases where a customer needs hospitalization, potential life-threatening situations as well as the simpler out-patient cases where a customer has been treated by a medical professional without the need for hospitalization. Additionally Travel cases deal with issues such as baggage-claims and travel related delays.

The travel applications with SOS are mainly used as tools to aid in cases with a lower level of assistance requirements. In life-threatening cases or in cases were hospitalization is required, an assistance coordinator personally handles the case.

6.3.2.1 SOS Business Claims App

The claims application was released in March of 2012 and is similar to the Red Card application in the sense that it is meant to streamline the reporting process within SOS. The concept relies on the inherent feature most smartphones possess to function as a camera and an internet device. In case of mild medical cases such as illnesses or injuries which do not require hospitalization customers have the possibility to take a picture of any receipts for medical expenses they might have incurred during their trip and send the receipt directly to SOS coupled with the customer's pre-entered insurance and personal details. The medical case can then be handled by SOS, without the customer ever actually having interacted with an assistance-coordinator from SOS. The incoming claims are audited by a team of handlers upon receiving them, in order to ensure that the injury is covered by the insurance policy. If the claims are covered the customer's expenses will be reimbursed in accordance with the insurance policy and the information provided in the claim (SOS International A/S, 2012).

6.3.2.2 Sikker på Ski App

The ski application was released January of 2011 and was developed in cooperation with the Danish Ski Association as a service to the growing number of customers who go on skiing holidays throughout Europe. It does not have an actual reporting system embedded in it but offers guidance on how to report accidents which could occur during a ski-trip such as a falling injury or mass-accidents such as avalanches.

Additionally it includes safety tips, skiing guidelines as well as automatically updated weather reports and snow-data specific to the area in which the customer is located (SOS International A/S, 2012).

6.3.2.3 SOS Assist App

The SOS Assist app, released in November of 2012 is a strictly informational application which uses SOS's worldwide network of preferred medical providers to ensure the best possible standards of service and medical care to the customers. It is especially useful when customers are abroad in countries which do not have an as advanced and standardized medical infrastructure as Scandinavia. The application provides information on medical professionals from all over the world which SOS has an established history of co-operation, in order to ensure customers the best possible treatment wherever they might be located (SOS International A/S, 2012).

6.3.2.4 SOS Tracking App

The SOS Tracking App is a positioning application specifically aimed at organizations which have insurance policies covered by SOS and was released to selected organizations in August of 2012. It is aimed at organizations which need an operational overview of employees working abroad. The application utilizes a smartphones Global Positioning Systems technology to keep track of employees who either are working in dangerous locations or who are located in a disaster area allowing organizations to always have a overview of the organizations travelling personnel in case of a crisis. Additionally the application provides access to a crisis management center which is manned 24/7 providing assistance using pre-agreed upon emergency response plans (SOS International A/S, 2012).

Having described the various applications developed by SOS, it is time to examine the interviews conducted with Gough and Thyssen.

6.4 Interviews

Below is a review of the two interviews which constitute for the bulk of the qualitative data of this paper.

6.4.1 Simon Gough – Project Manager, Market Intelligence & Development

The first interview was conducted with Gough who was chosen as the first interviewee due to his crucial role with the inception, development as well as implementation of the mobile applications within SOS. The interview was conducted personally as a semi-structured interview focusing on both

Gough's role within SOS as well as uncovering his own motivation for pursuing the development of the mobile applications from his own perspective.

The interview was constructed around four main themes:

I. The motivation behind the development of the mobile applications
II. Development and reception of the first application
III. The current state and implementation of mobile applications within
IV. Future plans regarding the mobile applications within SOS

The abovementioned four main themes cover the general research area, but are constructed in order to allow for additional data to emerge naturally within each theme as the interview was a semi-structured interview.

I. The motivation behind the development of the mobile applications

According to Gough the main motivating factor for developing the first mobile application was simply: *"We tried to be first movers in our industry releasing the application […] and additionally we have experienced a rising trend from our consumers who want some kind of "self-service" application either online or in the form of an application."* (Gough, 2012). The idea was conceived mid 2009. The idea was pitched within SOS both to the management, the coordinators and to the IT department to see if the idea was feasible. The feedback was so overly positive that Gough was allowed to assemble a project group which focused specifically on mobile applications, its possibilities and usefulness within SOS.

The project-group, which was made up with individuals from various parts of the organizational structure, pitched multiple ideas and concepts and ultimately gathered a broad range of wanted features and ideas for a new mobile application. *"Maybe even too many good ideas, we had to re-evaluate our original idea and cut it down to basics and focus on developing one app at a time."* (Gough, 2012).

II. Development and reception of the first application

The first mobile application which was fully developed and released was "Rødt Kort", which is translated to "The Red Card" which refers to the car-insurance card Danish car-owners receive (Gough, 2010).

The Red Card is a mobile application tailored to road assistance. It uses GPS technology embedded within the user's smartphones to pinpoint the position of the user and thus SOS is able to provide the optimal service relating to the users position as well as making use of the new technology present within the smartphone. *"We became aware pretty early that we needed to develop the application ourselves without initially involving the insurance companies, since it was deemed that is would only slow down the development process"* (Gough, 2012). The first application was developed with the aid of a 3rd party mobile software development company and according to Gough it only took 5 months from the inception of the app till SOS had a working application ready for release. The rapid development of the application was done in order to release it for the summer of 2010 which is considered "high-season" within the assistance industry.

The response was overly positive from the start *"At first the application was only available for the Apple iPhone since we didn't have any experience with developing mobile applications […] but we did subsequently develop a version compatible with the Android operating system which allowed other smartphone users to download the application as well."* (Gough, 2012). According to Gough the success of the application is due to the positive coverage of the application within the media. *"Suddenly car magazines and other media mentioned our app as the "must-have" application for your car-holiday […] this has consequently led to us developing more and more applications aimed at other parts of our business"* (Gough, 2012).

III. The current state and implementation of mobile applications within

As mentioned earlier, SOS did not have any previous experience with developing mobile applications thus the development was outsourced to 3rd party developer. *"We did not have any specific in-house knowledge on how the process of developing and implementing a mobile application, so it was imperative to find a flexible and competent developer who understood our needs and was willing to put in that extra effort to release the application within our tight deadline"* (Gough, 2012).

The aid came in the form of an old DTU (Danish Technological University) alumnus of Goughs, which has started his own company developing mobile applications and other new-media technologies. They consulted with everything from idea to conception to basic design ideas. *"We have not yet not written or made any explicit effort to write down the entire process yet due to time constraints and general busyness with the continuous development of future applications.[…] but due to the amounts of mostly positive feedback we are receiving our current mobile applications are getting more and more recognition and being widely accepted as a natural part of our overall business, so much so that at this point users and partners are now requesting SOS for mobile applications as opposed to earlier, when SOS in a sense was forcing them on our clients"* (Gough, 2012)**.**

IV. Future plans regarding the mobile applications within SOS

At this point SOS has various ideas and concepts which they would like to see implemented into future applications but due to different technological as well as organizational issues, not all have been possible as of yet. *"We would of course like to see our applications 100% integrated into our business processes and for instance being able to provide our clients with fully-automatic service, but this has not yet been possible because the technological infrastructure is not present within SOS"* (Gough, 2012).

Using "The Red Card" application as an example Gough elaborates on the possible future of the application by pointing out that SOS has recently merged with a Danish road assistance company (Uggerhøj, 2012) which will provide SOS with its own network of auto-shops and tow-trucks within Denmark. *"We are continuously looking to expand and develop on our applications abilities and are looking into the option to cooperate with more and more road assistance companies throughout Europe"* (Gough, 2012) which in turn can expand the assistance capabilities and current degree of automation within SOS.

Additionally SOS released a mobile application filling the niche of medical cases aimed at individual users. The application "SOS Assist" is meant to aid individuals who are in need of medical assistance when abroad. *"The SOS Assist application is capable of guiding our customers to our preferred medical providers in their respective location which there is a high demand for"* (Gough, 2012). SOS has a vast network of Hospitals, clinics and other medical professionals which SOS continuously

evaluates and audits in order to secure the customers the best possible medical assistance. It is access to this network which SOS Assist provides access to. The need for this application rose from the fact that abroad the quality of medical facilities is as varied as they are numerous. *"At its current state, the application is just a reference tool, which will guide our clients to the facilities, but the idea is to expand on that notion and in the future implement a reporting module, allowing users to be able to report their own cases […] but that is far in the future, as the whole case becomes much more complex when transmitting medical information via mobile devices."* (Gough, 2012).

Despite the aforementioned issues, the concept is currently on the drawing board for users to be able to report "soft medical cases" via the mobile application, which according to Gough are cases which involve medicinal prescriptions and out-patient cases which can be defined as minor injuries such as cuts and bruises or medication for non-acute sicknesses such as nausea, head-aches and the likes. But it is imperative to note that SOS is not in the process of automating all of their processes as still most cases require the *"human touch of an actual assistance coordinator"* when relating to the customers, and this will most likely not change (Gough, 2012).

However the applications revolving around technical assistance are naturally evolving into offering more and more automated assistance. But it is a slow-process: *"It is just now, 2 years after releasing our first mobile application that we see users actually embracing the technology to such a degree that it has an impact on our operation […] and it is not until 2013-2014 that we will have enough data to actually see if the mobile applications have provided SOS with any financial or human-resource related benefits"* (Gough, 2012).

6.4.2 Anja Thyssen – Manager, Group Business Development

The second interview with Thyssen, Manager at Group Business Development was conducted on the 1st of November 2012. Thyssen has the overall responsibility of development of the mobile applications within SOS and is in charge of business development within SOS. The interview with Thyssen was conducted personally as a semi-structured interview, focusing on many of the same aspects as Gough's interview, but primarily on the current and future business strategy behind the mobile applications as well as the mobile applications potential for value creation within SOS.

The interview was constructed around four main themes:

I. Thyssen's role in relation to the mobile applications development within SOS
II. The evolution of mobile applications within SOS
III. Mobile applications role within the SOS Business Strategy
IV. Future plans regarding the mobile applications within SOS

The four main themes allowed for a semi-structured dialog with Thyssen relating specifically to the perceived Enterprise mobility strategy within SOS, with focus on how the applications bring value to SOS in the present as well as in the future and allowed room for further exploration of the given research area.

I. Thyssen's role in relation to the mobile applications development within SOS.

With her position as business development manager Thyssen is effectively Gough's supervisor. According to Thyssen this gave her the ability to act as intermediary between the development department, (consisting of Gough at the time) and the management: *"My role in the process was to make executive decisions and to effectively "sell" our application idea to the management […] and to explain to them why our applications were a sound investment, although they would not likely make any money at the time or in the near future"* (Thyssen, 2012). Thyssen's role was imperative in the development process of gaining recognition and understanding within SOS as mobile applications, at the time, were still a new concept for both SOS as a company and the management.

Thyssen oversaw the initial development process and the assembling of the aforementioned project-group: *"It was important that our project group consisted of key individuals from all the departments related to our applications"* (Thyssen, 2012).

II. The evolution of mobile applications within SOS.

Just as Gough mentioned in the previous interview there were plenty of ideas and features which they wanted to implement in the applications but it was Thyssen's role to ensure that any proposed application-features followed the overall business strategy of SOS: *"It is important to understand the role SOS plays in relation to the assistance we provide. SOS is a B2B organization (or B2C – as SOS's customers are the insurance companies.) and any applications we would develop would be developed as a white-label service. […] and to give our clients the ability to be more self-proficient by allowing*

them access to our vast network of resources […] without undermining our own ability to add value to our organization" (Thyssen, 2012).

The different applications were by themselves self-contained modules with a simple functionality. *"Our strategy was to release each application as a separate module each supporting a different need from our various customers […] this was done in order to test the modules by themselves and to see if there was an actual demand for the functions and services they provided"* (Thyssen, 2012). The different applications consisted of a reporting module, such as The Red Card, a tracker module (SOS Tracking), a reference module (SOS Assist) and a claims module (SOS Business Claims). *"Our current modules encompass the customers demand to have the ability to find suitable technical or medical assistance[…] the ability to track a client using GPS integrated within the smartphone and the ability to report any case digitally to us either medical or technical in order to claim a refund or to receive assistance in some other form."* (Thyssen, 2012).

III. Future plans regarding the mobile applications within SOS

According to Thyssen, the current applications function as a platform for both their new and old customers: *"We are now in the situation where we have slowed our development of new applications and instead are focusing on providing our customers with tailor-made service applications based on our existing modules […] so much so that we are considering hiring more manpower just to keep up with current demand on our applications"* (Thyssen, 2012).

SOS is now actively working with customers on developing applications which consist of a combination of their already established applications tailored for the respective needs of the customers. These applications are being developed by SOS and can be co-branded with SOS or released entirely as the customer's brand, only utilizing the SOS resource infrastructure. *"Our value lies within the service we can provide our customers with our global network of medical and technical professionals […] and our customers then have the option to either co-brand the chosen application with SOS International, or release it in their own brand making SOS role with the application invisible to the end-user."* (Thyssen, 2012). Examples include an application released by auto manufacturer BMW aimed solely for owners of a BMW automobile. The application utilizes the SOS reporting module from The Red Card and the currently unreleased co-branded Gule Kort (Yellow Card) application which includes the

reporting, claims- and reference modules featured in the SOS Assist, SOS Claims and SOS Locater respectively. (Bisbjerg, 2012).

Thyssen has high expectations for the summer of 2013 and is certain that the possibilities and advantages of the mobile applications will become evident. *"We are able to see the number of users of our applications increase exponentially. 2013 will be our 4th summer since releasing our first application, and while slow at first, we are certain that users will welcome our applications to a higher degree in 2013 as Smartphone's are becoming more and more widespread"* (Thyssen, 2012).

IV. Mobile applications role within the SOS Business Strategy

It is the possibility to customize the applications from SOS to suite the customer's needs which will add value to SOS. *"Offering customers a tailor made application provides SOS with a source of revenue, depending on the application […] customers will invest in an application for both the development and maintenance of the provided application. […] and will be contributing to the SOS revenue by either paying a fee to have our in-house crisis-management team on stand-by or by paying for the development and co-branding of an application"* (Thyssen, 2012).

According to Thyssen, the sources of revenue from the applications are as diverse as the applications. Using the SOS Tracking as an example, customers are billed by the amount of users coupled with a potential additional fee if the crisis-management team consisting of in-house doctors, coordinators and others needs to be activated.

Furthermore the increased use of applications within SOS can lead to a lower workload for the coordinators, which has opened up new business areas for SOS International: *"The idea of becoming 100% digital is of course impossible since we handle many cases which require personal assistance, but in the long-run it enables us to invest in developing new business areas and use our competent employees in other areas of our business, such as assisting our customers with damages on their homes or place of business, which until now has not been a market which SOS has been involved with*" (Thyssen, 2012).

6.5 Main Findings

According to Gough SOS is actively pursuing the continuous development of both the current and future mobile application. Gough recognizes that there is a high demand for the applications but highlights that the technological infrastructure is currently not present within SOS to sustain fully automatic mobile application integration. The reason for this being that the complexity differs from the technical mobile application and the medical mobile application, both in terms of the involved parties, but also on the contextual situation which requires a different approach to each case.

Both Thyssen and Gough have been active in involving multiple stakeholders throughout SOS, organized in a project group, both during the development phase, but also during the continuously ongoing maintenance/tweaking phase.

Thyssen consequently acknowledges SOS continuous and active pursuit of developing mobile applications within SOS and highlights the importance of developing applications which fit and enhance the business strategy. Although skeptical at first, her role as intermediary between the management and the development team was imperative to achieving support and resources internally within SOS. Emphasizing on the importance of mobile applications early on and releasing the applications as individual modules with its own functionality minimized the initial investment demand for SOS and allowed SOS to test each module at a relative low risk separately.

Furthermore, some of the applications provide SOS with an alternative source of income with their newly developed applications such as SOS Locator. And according to Thyssen, there are multiple other revenue-generating applications in the making.

While the successful implementation of mobile applications within any organization could potentially make some individuals within an organizational redundant, SOS will be using these employees pursuing new business areas, branching out within the assistance industry.

CHAPTER 7: ANALYSIS

7.1 Chapter Objective

The objective of the analysis is to couple the literatures reviewed earlier in this paper and apply it to the case-study.

This is done in order to provide a qualified foundation for answering the posed research questions, based on both the reviewed literature as well as the qualitative data gathered from the case-study. Furthermore after the analysis, these findings will be discussed and elaborated upon in the consequent discussion chapter of this paper.

For the sake of simplicity, the analysis is thus divided into two parts, each pertaining specifically to the two main theories chosen for this paper; Activity Theory and Enterprise Mobility Theory respectively.

Note that during this section there will be numerous references to the interviews conducted with Thyssen and Gough. As mentioned in the Data Gathering Section complete transcripts of the interviews are available in Appendix A and B.

7.2 Activity Theory

The application of activity theory to the case-study will act as a tool for understanding the complex interactions which occur when two activity systems interact. The eight essential components previously identified by Mwanza & Engeström (2005) in fig. 4 are applied to the case-study in order to visualize an activity system based on the activity of *developing a mobile application within SOS* which is shown in figure 18 in Appendix A.

Fig. 18 shows the interactions across SOS during the process of integrating and developing a mobile ICT. The use of Engeström's (1999) 2nd generation activity system provides a broader overview of the activity as the system additionally shows the interactions during the *production*, *consumption*, *exchange* and *distribution* of said activity.

As it is mentioned in the case-study, SOS already has and is in the process of releasing multiple other mobile applications. The activity system above can be applied to examine the different mobile applications, with only minor changes to the system itself.

The *division of labour*, *community*, *mediating artefacts* and *subject* remain the same, as it is still (at the time of writing) Thyssen and Gough who have the overall responsibility and accountability of the mobile applications available from SOS. The only thing which changes in the system is the targeted *customers* as well as the *rules & regulations* inherent in the potential mobile application.

Thus depending on the mobile application, the system can with minimal effort be tweaked to fit the relevant application and in doing so it is possible to gain an overview of any potential conflicts or contradictions present in the system.

This leads naturally to the examination of *innovative learning* within SOS.

7.2.1 Innovative Learning

Innovative learning is described as the ability to produce new solutions, procedures or transformation of work practices within an organization with the help of collaborative learning (Engeström, 2001).

In the literature review, both the perspectives of Engeström (2001) and Nonaka and Takeuchi (1995) are examined and compared. Highlighting the difference between explicit and tacit knowledge and knowledge creation, Engeströms (2001) approach is chosen as it encompasses the process of ascending from abstract to the concrete in a more succinct manner.

The expansive learning cycle (See Fig. 6) is divided into seven actions which will be applied to the case of SOS in the following section. The point of using the expansive learning cycle is to show where in the cycle SOS currently is and to elaborate on the steps already undertaken by SOS.

The action of *questioning*: According to Thyssen, it was Gough who first challenged the already established and accepted practice within SOS by proposing the development of a mobile application which potentially could add significant value to the SOS value chain. With his proposal Gough ventured out into, for SOS, unknown territory as they did not have any previous experience with

developing mobile applications nor was it to their knowledge any competitors within the assistance industry which had.

The action of *actual-empirical analysis:* Gough sought both internal as well as external input for the new proposed mobile applications, eliciting help from various departments within SOS and from external knowledgeable software developers within his own personal network.

The action of *modelling the new solution*: With the aid of Thyssen, Gough managed to gather the necessary support from management to proceed with the project, and was able to develop a prototype.

The action of *examining the new model*: Gough and Thyssen spent almost one year developing and refining the prototype in cooperation with the project group and 3rd party developers before it was finally released to the public. As mentioned by Gough while the actual usage of the first application (The Yellow Card) was seemingly minute, it did however garner overly positive reviews from the media and within the industry.

The action of *implementing the new model*: When the first mobile application was released, the various other ideas developed by the project group were concretized resulting in more mobile applications, each developed to suit a specific task or provide a specific service. The practical applications of the mobile applications branched out throughout the SOS value chain which in turn provided more support for the mobile applications within SOS.

The last actions are those of *reflecting on the process* and *consolidating the new practice* which include an evaluation of the process as well as the consolidation of its outcome into a new practice. According to Thyssen and Gough the response from the customers in relation to the mobile applications is so positive that is has opened up a new stream of revenue for SOS. From the humble beginnings of developing an application to provide roadside assistance, the mobile applications within SOS have the potential to evolve into a significant and valuable component of their business plan. Thyssen further elaborates that SOS is currently working with numerous clients throughout Scandinavia which are interested in purchasing co-branded and tailor-made applications based on existing applications , allowing SOS to branch out into other markets of the assistance industry not previously a part of SOS business plan.

The application of Engeströms (2001) expansive learning cycle provides an overview of the development process within SOS in relation to not only the mobile applications but also in allowing for the possibility to identify which actions SOS has taken during the development process. The cycle acts as a useful tool in both mapping the expansive learning within SOS and showing how the process lead to the development of new practices within SOS in the shape of branching out to other markets within the assistance industry.

This leads to the analysis of the socio-technical systems development approach which aims to further examine the development process within SOS. This is done by examining the systems engineering activities related to the development and by examining the task allocation related to the new mobile applications.

7.3 Socio-Technical Systems Design

The application of socio-technical systems design approach is important as the theory aims to understand how well a technical system can aid in a set of organizational goals considering the present human, social, technical and organizational factors. (Baxter & Sommerville, 2011)

According to Baxter & Sommerville (2011) the theory is focused primarily on three core stakeholders within the organization which are the *developers*, *users* and *the* m*anagement* which are involved in four fundamental activities: *procurement*, *analysis*, *operation* and *construction*. (See fig. 7)

In the case of SOS, the developers consisted of both internal and external stakeholders. These are Thyssen, Gough and *Sociable*, the external software development company previously mentioned. While SOS did not follow the theoretical approach, it is possible to identify the four activities proposed in the theory from the qualitative data gathered from SOS.

During the *procurement* process it was early on decided on opting for a mobile application compatible with the Apple iPhone's operating system. This was according to Gough, done since the alternative development tools needed for developing a mobile application for the Android operating system were at the time not up to par with the requirements set forth by the project group.

The aforementioned *requirements* included functionality, usability and accessibility. Based on Gough's own experience it was his opinion that the Apple iPhone application distribution platform (iTunes) was

best suited for the first mobile application due to its widespread use and usability. The process of requirements analysis will be further elaborated later on in this section. The *construction* of the mobile application took roughly five months according to Gough, and while not fully integrated into the existing systems or databases, SOS is currently working towards a higher degree of integration. The *operation* phase of the mobile application is continuously ongoing and the mobile applications for both the Apple and Android platform are frequently updated and revised according to both Gough and Thyssen.

7.3.1 Task Allocation

In order to examine how SOS was able to develop their broad range of mobile applications the task allocation theories of Waterson et. al and Older et. al. will be applied to the case. (1997; 2002)

The approach encourages users to use the headings below to examine how the system *could* function in order to provide an overview of the potential advantages and disadvantages within the system.

It is possible to identify the important feasibility issues presented in the theories from the interviews with Thyssen and Gough as they specified their requirements for the mobile applications. For the purpose of the discussion, the method of task allocation issues as developed by Waterson et. al. (2002) will be applied to the case below in a top-down approach; (See figure 9 in Appendix A).

Goal Issues

As mentioned earlier and in the case-study description; the goal of the mobile development project was clear early on. According to Thyssen the mobile applications are meant to ultimately open up new areas of business as well as optimize and supplement existing business areas. The overall organizational goal of most private organizations is financial gain and SOS is no exception. According to Thyssen and Gough the mobile applications will hopefully in the near future contribute to both cost-savings and new business developments which in turn can increase profits. Aside from financial goals, the mobile applications serve another goal set forth by Gough, the ability for customers to being able receive assistance in the most effective and timely manner possible.

Organizational Issues

According to Thyssen the organizational requirements for the development of the applications were in no way inhibiting the development process as they did not necessitate any radical changes in organizational procedures. The more sensitive and serious assistance cases still require human interactions with the coordinators and medical professionals. As mentioned earlier, the mobile applications were according to Gough not meant to specifically replace employees within SOS, but rather function as an added service to for the customers. Although Thyssen does not formally deny the fact that in the future the mobile applications and online services might result in the possibility to reduce the number of assistance coordinators, it is not something that in any way is relevant in the near future.

Cultural/Environmental

As mentioned above, there are specific issues which can arise depending on the context in which the mobile applications are used, which would negate their purpose to aid customers. According to Gough, it is the cultural and emotional security individuals experience when talking to a trained assistance professional in a time of distress. It is not realistic according to either Thyssen or Gough to ever consider automating this process both in relation to legal issues as well as health and safety issues. Additionally in relation to data security, Gough assures that the external software developers in coordination with the internal IT department are more than capable of assuring that all necessary security protocols are being followed.

Resource Issues

The mobile application development team did receive internal funding to proceed with their project and allow Gough to develop the first prototype. With the help of Thyssen, Gough was able to convince management that even though any financial investment into the mobile applications project would not show any sign of profit in the near future, it was a sound investment for the organization.

People Issues

According to Gough most of the people issues related to the development process were concerned with the target users. Although the applications received positive reviews, the subsequent use did not live up to the expectations of neither Thyssen og Gough. But both Thyssen and Gough expect an exponential

rise in the use of the mobile applications as more and more customers are acquiring smartphones capable of using the applications.

Task Issues

Relating to the task issues associated with the mobile application development were amongst others the issues of cognitive demands, speed of response, accuracy, reliability, efficiency and operational criticality. Gough implied that most of these were considered beforehand by SOS. The mobile application would increase the speed of response, accuracy and efficiency as the there is no need for a client to hold on the phone during peak-hours at SOS – and with all the relevant information such as insurance policy number, social security number already pre-entered in the application by the customer before reporting a case, this enhances the response speed of SOS as well as accuracy and reliability. But it is ultimately the customer's responsibility to ensure that the supplied information is correct and up-to-date in order to ensure a swift response from SOS in accordance with the emergency or assistance need at hand.

Job Design/Work

The issues associated with the job design and work could be pinned down to consist of mostly control issues such as responsibility, decision making, organizational accountability and feedback on performance. According to Thyssen it was her role to oversee the various project developments and as such she was ultimately accountable for the project although the idea of forming a project group consisting of various stakeholders from the organization was to ensure that all issues were examined within a cross-organizational context. The issues information exchange, knowledge sharing, awareness, collaboration and performance were not an issue as the project group involved consisted of specifically chosen and trained individuals almost exclusively from within the organization. Gough further elaborated that there was an overwhelmingly high level of consent during the development phase from the project group which further aided the process.

Technology Work

The cost of automation and feasibility was addressed by Thyssen who, as mentioned earlier clarified the level of integration the applications have at this point is not at such a degree that they significantly

alter any organizational procedures or affect any systems. While both Gough and Thyssen would like to see a higher-level of integration and automation from the mobile applications, it is not something which is feasible anytime in the near future. According to Gough the technical issues relating to the project have been kept to a minimum as the chosen development platforms (Android and iOS) are well-known and established within the mobile application development industry.

7.4 Enterprise Mobility

The previously reviewed Enterprise Mobility literature will be applied to the case and each chosen framework and component will be examined in correlation with the gathered data in order to examine if the Enterprise Mobility theory is applicable and to uncover if the procedures and practices present within SOS can be recognized in the theory.

Having applied the socio-technical approach to the case in order to examine the present feasibility issues, it is time to examine the organizational mobility requirements within SOS.

7.4.1 Mobile Enterprise Mobility

Having previously elaborated on the proposed three distinct levels of enterprise mobility present in organizations (See fig. 10) it is evident to note that Jain and Scornavacca & Barnes (2003;2008) distinctions are aimed at organizations utilizing enterprise mobility in a B2E perspective, although it is equally applicable in a B2C perspective.

The distinctions in the Mobile Enterprise Model (MEM) will be used in the analysis only submitting "workers" with "customers" for the sake of the case-study.

Mobility

From the interviews with Thyssen and Gough it has been previously stated that the level of *mobility* SOS whishes to reach for their customers include mostly the functions to report minor cases and to have access to information spatially independent. But the customers still need to contact SOS when they are in need of acute or serious assistance. Thus the level of *mobility* within SOS in relation to the customers is estimated at a level 2 as the mobile applications allow for geographic independence, but there will still be an unavoidable need to contact SOS directly in some cases.

Process

On the other hand in relation to the *processes* within SOS, the mobile application can have a significant impact on which organizational processes can change with the implementation of a mobile application. Thyssen mentions how the reporting process and response time can be greatly improved when customers are using the reporting application for roadside assistance and is very optimistic on the impact the, as of November 2012, unreleased application "The Yellow Card" will have on the reporting, handling and financial assistance capabilities of SOS in relation to medical cases. Based on this it is assessed that SOS's level of process mobility is at a level 3 as the application already have transformed the nature of work and job roles within the organization.

Market

Currently the applications within SOS are being used as mainly a source of information according to both Thyssen and Gough. But the services they provide are virtually unchanged. Thyssen mentioned that there currently are multiple applications in development based on the various modules available which will become a source of income for SOS, but as of now the current array of applications does not add any significant value to SOS according to Gough.

Although it is important to acknowledge the potential and the future development within the market, at the time of writing the mobile applications are not contributing greatly to either new services or products or adding significant value. None the less, due to the applications which are on the verge of being released, SOS is assessed land on a lower level 2 in relation to market.

Based on the above data it is thus possible to draw a MEM showcasing the current state of Enterprise Mobility present within SOS. (See figure 19 in Appendix A)

The MEM is a useful tool to convey and visualize the current level of mobility within in an organization, based on both the needs and actually performance of the organization. The next section will delve deeper into the current state of enterprise mobility within SOS using the mobile transformation framework.

7.4.2 Mobile Transformation Framework

The mobile transformation framework provides an insight into the dynamics of the aforementioned transformation process. The framework is divided into four phases focused on examining the *impact* and *focus* enterprise mobility can have on an organization. (See fig. 11)

The aim in this section is to apply the framework to SOS based on the data in order to identify which phase of the framework SOS currently is in and how to examine if there is a correlation between the SOS development process and the four phases of the framework.

Phase 1 – Mobilization

According to Basole and Britton (2001; 2005) many organizations often *mobilized* without considering the mobile end-users needs first. Both Thyssen and Gough establish that SOS was very active and precautious during the early phases of the application development. The mobilization of what data and which processes should be mobilized were debated and scrutinized by the project group extensively. According to Gough there were numerous ideas during the development process which never came to fruition as there simply were too many ideas to implement.

Thus is it possible to identify SOS as being in Phase 1 during this period as the focus was on the transformation of *existing data and processes* into a mobile application based on the impact of *convenience* towards the customers.

Phase 2 – Enhancements

During this phase the actual transformation of current practices and processes was developed into an actual mobile application. Gough mentions the "*baby-steps*" SOS took by choosing to initially only develop the applications for the Apple iPhone partly due to the usability of the development tools but also based on his own personal assumptions at the time that iPhone users were more likely candidates to download and use the application in the first place.

Additionally it is possible to assess that SOS was in this phase when developing the other apps which utilized the other inherent capabilities of the smartphone, such as embedded GPS technology and the

camera which resulted in the subsequent development and release of the applications; *SOS Claims*, *SOS Tracking* and *SOS Assist*.

Phase 3 – Reshapement

It is not until Phase 3 that the mobile applications SOS has released begin to affect and reshape the business models and strategies within. According to Thyssen this is specifically true in relation to the financial value adding applications such as *SOS Tracking* which generates income in the form of service fees and the upcoming *The Yellow Card* which has been developed in conjunction with the Danish Healthcare System. Furthermore there are other applications being developed which are based on the various modules of the earlier iterations – which are currently being sold to insurance companies across Scandinavia.

It is assessed that SOS is currently in Phase 3 as they are using the mobile applications to enhance competitiveness and further utilize mobile applications as a value-adding service to SOS resulting in the mobile applications becoming an increasingly important element of their overall business model.

Phase 4 – Redefinition

During the *redefinition* phase the transformation of mobile applications can create new core enterprise competencies which in turn can lead to new business models, this has not happened yet.

Albeit according to Thyssen there are distinct plans for SOS to use their "*redundant*" human resources to enter into the market of assisting property and home damages, this has at the point of writing (November, 2012) not yet happened.

Thus is it possible to conjecture that SOS is on the verge of entering into Phase 4, but has not fully accomplished it yet.

It is imperative to note that even if SOS is almost on the verge to developing new core competencies and transforming their market and business plan during the transformation through the abovementioned four phases SOS encountered several transition barriers.

The barriers consist of various internal and external factors which need to be addressed in order for an organization to be able to progress. Thus in the next section of this paper the *enterprise readiness*,

which refers to the degree of preparedness and readiness SOS had in relation to its ability to adopt and implement a mobile application into their business strategy, will be analyzed.

7.4.3 Strategic Planning

In order to examine both the aforementioned transition barriers as well as the overall readiness of SOS. Basole (2007) has specifically developed *the strategic planning model* (See figure 12) for understanding the internal and external drivers in relations to ICT implementation. There are four critical areas identified within an organization which need to be analyzed.

Business Value

The value of the mobile applications can be assessed using the value-focused thinking approach by Nah et. al.(2005) which using a top-down approach to identifying value-driver within an organization. (See fig. 13)

The *identified value* expressed in desired functionalities and enhanced processes are according to Gough identifiable within the mobile applications. Both Thyssen and Gough were motivated to implementing and developing the mobile applications due to the inherent increased functionalities. According to Gough the idea of developing a mobile application came from customers actively asking for the option of "*self-servicing*", either via a website or other alternatives as opposed to using the telephone or e-mail in order to contact a coordinator.

Keeping with Nah et.al. (2005) value-focused thinking, the customer's whishes for alternative methods of reporting cases coupled with Thyssen's and Gough's desire to enhance processes within SOS can be considered the *conversion of values into an objective*. However there are as mentioned earlier, two types of objectives, *fundamental objectives* and *means objectives*. In figure 20 in Appendix A, a *means-end objective network* based on the case is visualized in order to show the cause-effect relationships between the objectives set forth by Gough and Thyssen.

Figure 20 is based on SOS as it encompasses the fundamental objectives of both Thyssen and Gough.

Using the Means-end object network in fig. 20 as a reference it is possible to see that the value the mobile applications bring to SOS consist of both tangible and intangible elements.

Thus is it important to further analyze the value by using Basole's (2007) proposed four benefit types which can be achieved using a mobile ICT – *Strategic Benefits, Informational Benefits, Transactional Benefits* and *Enterprise Transformation Benefits* in order to establish an overarching indicator for the value of the mobile applications.

Strategically the benefits SOS can achieve from the mobile applications consist of a competitive advantage within the industry. According to Thyssen, there are no competitors currently in the process of developing their own mobile applications, which sets SOS apart from the rest of the industry leaders within Scandinavia. Additionally the mobile applications will in the future aid in supporting the organizational goals, providing new services in the form of new mobile applications and improving customer relationships.

Informational benefits include the faster and easier access customers have with SOS, both internally and externally. Gough highlights the increased reliability and accuracy achieved when customers enter their own insurance information, which often can be misunderstood by a coordinator via telephone for various reasons.

As mentioned earlier, Thyssen elaborated on the potential for staff cost savings and business processes as a result of the mobile applications increasing use. And furthermore more, due to these savings new business plans and models emerge naturally. These benefits are according to Basole (2007) *Transactional* and *Enterprise Transformation benefits* respectively.

Thus the business value can be assessed by the combination of *strategic*, *information*, *transactional* and *enterprise transformational* benefits achieved from the implementation and use of the mobile applications.

Cost & Economics

According to Thyssen and Gough the management willingly invested in the development and implementation of the mobile applications, but as mentioned in the delimitation it was not possible to obtain any figures for the initial investment or how much profit the subscription-based applications or the co-branded applications currently under-development actually earn SOS. But according to Thyssen

it such a considerable sum that SOS is continuously expanding on their portfolio of mobile applications due to popular demand.

Strategic Alignment

The strategic alignment of the mobile applications towards SOS consisted of Gough and his project group in cooperation brainstorming on the various features and functionalities to include in the application supported by Thyssens leadership which ensured that the developed applications were linked to SOS's business strategy.

In relation to Simonsens (1999) proposed five main activities which must be carried out in order to link an ICT to an organization, it is possible to see that both Thyssen and Gough almost followed the activities sequentially. From the initial (1) *project establishment* where Thyssen and Gough clarified what the application should include onto Thyssen's (2) *strategic analysis* where she clarified that any application developed should be in alignment with the existing business strategy as well as overall purpose. Gough did during the development phase conduct a preliminary (3) *analysis of selected work-domains* based on his extensive knowledge on the working procedures within SOS as well as his many years as an employee. It was due to these analyses it was decided to first release *The Red Card* application as Gough deemed it as the simplest application to begin with compared to *SOS Assist* or the upcoming *The Yellow Card*. It is however not evident that Thyssen or Gough (4) *developed visions of overall change* prior initiating the development of the applications. But as mentioned earlier Gough had a well defined idea before the development began in terms of functionalities and operating systems. Additionally Thyssen has grasped the importance of the activity as she is well aware of the potential change the new applications can mean for SOS with the planned entry into the property damage assistance area. According to Gough, Thyssens role as mediator was imperative for the project as it was her roles to (5) anchor *the vision* of the applications to the management and decision-makers as without their support, there would not be a mobile application. Thyssen confirms that her role as mediator was to "sell" the idea to the management in order to secure initial investments and human resources.

Enterprise Readiness

Finally the last step in Basole's (2007) model is the aspect of *Enterprise Readiness* (See fig. 15 in Appendix A) which relates to the overall degree in which SOS is prepared to embrace or adopt the mobile applications as a part of their business strategy. Enterprise Readiness is a three leveled framework focusing on eight different dimensions listed below. Some of the dimensions are examined on all three levels, others are not. This is elaborated below:

1. *Technology readiness* is examined in terms of preparedness which refers to the degree in which the technical infrastructure of SOS is able to support and implement the mobile applications. Thyssen and Gough clearly state that in the future they would like to see a higher degree of integration of the application and infrastructure. But at present time this is not something which is considered important. According to Gough the applications currently in use and the ones under development a compatible to the current infrastructure and at present time it does not need to be altered significantly.
2. *Data and information readiness* relates to the ability to federate data from multiple systems making it available in a single view when needed. According to Gough SOS already uses the information rich applications such as *SOS Assist* which provide users with access to SOS databases containing information on hospitals and other medical professionals worldwide as well as *SOS Business Claims* and *SOS Locator* which acquire data and information from the corporate IT systems. There are no foreseeable issues in relation to the upcoming release of *The Yellow Card* as the application is based on the current line of well functioning and established mobile applications.
3. *Process readiness* refers to SOS internal processes (e.g. human processes, information processes, organizational processes etc.) and their ability to facilitate the adoption and implementation of the mobile applications. The processes are examined in terms of *preparedness* and *potential*. In order to prepare SOS for the mobile applications both Thyssen and Gough assembled the aforementioned cross-organizational project group. This was done in order to increase readiness across the various involved departments both on a technical level as well as on a human level. According to Gough, the *potential* within SOS was never an issue as

Thyssen in her position as mediator had achieved a certain level of optimism from the management and relevant team-leaders.

4. *Resource readiness* was according to Thyssen not an issue. As mentioned earlier the management was willing to provide both financial and human resources for the project.
5. *Knowledge readiness* was an issue in the first stages of the mobile application development. According to Gough the decision-makers did not have much information or knowledge about what a mobile application could contribute to SOS before the release of the first application. Gough pitched the idea to Thyssen who in turn pitched the idea to the management. Gough additionally states that he utilized his personal network of old alumni friends from the IT University of Copenhagen in order to facilitate a higher level of technical knowledge and expertise.
6. *Leadership readiness* which according to Basole (2007) is one of the most critical components in enterprise readiness was not an issue during the development process due to Thyssen elaborating her vision of the mobile application and explaining how it would support and enhance SOS' business strategy.
7. *Employee readiness* refers in this case to which degree the customers (end-users) were ready to use the applications. Gough stated that customers were at first slow to adapt to using the mobile applications, but with each consecutive year the use is rising. Gough and Thyssen argue that it might be due to the increased spread of smartphones amongst their customers as opposed just three years ago. Gough additionally expects the coming summer of 2013 to be a record-setting summer in terms use of the SOS mobile applications.
8. *Value and Goals readiness* which relates to how well the overall enterprise characteristics, both structural and non-structural fit with the mobile applications. According to Thyssen, the mobile applications were a natural step in the ongoing business development. Thyssen further elaborated that the potential for opening up new areas of business as well as aiding in achieving organizational goals make the application an excellent supplement to SOS.

From the analysis of the Enterprise Readiness framework when applied to SOS it is evident that there is considerable level of readiness across all dimensions. This is due to the commitment of Thyssen,

Gough and the rest of the project group which ensured that their enthusiasm and potential was evident throughout the organization.

CHAPTER 8: DISCUSSION

8.1 Chapter Objective

The objective of the discussion chapter is to state the relation of the main findings to the main research question by discussing the various concepts and components of the chosen theories. (Interpretation of main findings)

This is done by examining the findings in both the literature review and coupling it with the analysis in order to provide the basis for a qualified discussion on the relevance of Enterprise Mobility Theory within the context of SOS International, and its development, use of mobile applications and consequent strategic impact.

8.2 Findings from Activity Theory

The application of Engeström's (1999) Activity Theory to SOS is shown to be a useful tool in providing a overview of the related activities and interconnected relationships inherent in the development process of the application themselves in order to pinpoint any potential conflict and contradictions and exploit these respectively.

Furthermore the expansive learning cycle applied to the case in an effort to provide an ideal development process within SOS. It was possible to identify many of the actions in the cycle to some degree in the case of SOS, but the learning cycle on its own is also useful as a stand-alone tool if the sequences of continuous actions in the learning cycle are followed. It can beneficially be used within SOS and other organizations during a development process or as a tool for ongoing enhancements and further development of both current and future mobile applications.

8.3 Findings from the Socio-Technical Systems Design Approach

In order to elaborate on the importance of continuous information flow amongst the various involved stakeholders in a systems development process Baxter & Sommerville's (2011) four fundamental system engineering activities are applied to the case. When applied to SOS it is evident that by

assembling a project group consisting of both internal and external stakeholders within SOS the fundamental activities of *procurement*, *analysis*, *operation* and *construction*, the actions of continuous information sharing amongst the individual within the project group are essential and was a significant contribution factor towards the project's success. Although the first applications underwent a rapid development process, the fundamental actions were considered during the early stages of the project such as the *formation of the overall view of the system, the requirements specifications* and *analysis of tasks and specifications*. The gathered qualitative data shows that although SOS did conduct a "simple" brainstorming session during the start-up phase of the development process the framework provided by Waterson et al. (2002) encompasses to a higher degree the necessary issues which need to be addressed in much higher detail then SOS seemingly did. However there is evidence that both Thyssen and Gough performed an as comprehensible task allocation analysis as was possible with the available resources at the time.

8.4 Findings from Enterprise Theory

As Enterprise Mobility theory is the primary theory of this paper Enterprise Mobility is scrutinized to a much higher degree compared to the previous theories.

The approach to apply Enterprise Mobility theory to an organization in a B2C context is a new approach compared to the classic B2B approach which essentially all the Enterprise Mobility literature was focused on. Additionally the concept of applying the theory to smartphone applications within an organization is new as even the newest literature by Sørensen (2011) does not discuss smartphone applications. Although the underlying theory of Enterprise Mobility does not address these, it is still very applicable to SOS and their mobile applications.

The first steps taken included as assessment the mobile requirements of SOS. Scornavacca & Barnes (2008) provide a framework which elaborates on the various stages of mobility requirements within three main axis where the "ideal" mobile enterprise would rate at a level three on all three axis.

The framework can be seen in figure 19 in the analysis as applied to SOS.

SOS is assessed based on the gathered data and in relation to the *process* they have achieved the highest level of *process transformation*. This is due to the fact that both Gough and Thyssen elaborate

to which degree the current and future mobile applications have changed the nature of work within SOS.

In relations to the *market*, SOS is assessed to be at a level two which indicated that the mobile applications within SOS are being used and do add value to the organization. SOS is not assessed to be at level three as the current mobile applications are not being used to create new services or. According to the interview with Thyssen, in the long-term the mobile applications can be used to create new services as SOS enters the new business area of home/property damage assistance, but at the point of writing this has not yet happened. Although the potential is not to be missed as SOS already has a solid and established portfolio of mobile application modules which easily could be customized to fit this business area. If this was accomplished, SOS's rating would be increased to the third level of the mobile enterprise model.

The third and final *mobility* axis which describes the geographic independence of "workers" enabled by a mobile ICT is applied to SOS. As mentioned earlier the theory is used in B2C context, thus for the purpose of this paper the axis rates to which degree SOS's customers are geographically independent of SOS as enabled by their mobile applications.

Both Gough and Thyssen clearly state that it is not possible for the customers to completely rely on the mobile applications as the incoming cases vary in terms of the seriousness of the injury or the degree of assistance needed. As such SOS is rated as being at a level two as the need to interact with an assistance coordinator personally within SOS cannot change due to the complex nature of some the cases.

Thus the only axis which allows for improvement is in relation to the *markets* where SOS can utilize the mobile applications to a higher degree in order to create new services or products.

Additionally, relating to the above, the application of the transformational framework as proposed by Basole (2005) it is established that SOS is on the verge of entering into phase 4 with a redefinition of enterprise competences and business areas. Although Basole's framework dates back from 2005 and he notes that examples of organizations on the verge of entering phase 4 are scarce at best, the framework is still applicable as it does encompass the potential for enterprise mobility within

organizations although the technological resources have increased significantly in the seven years since the development of the framework.

The strategic alignment of Enterprise Mobility is applied to the mobile applications within SOS. Although the framework by Basole is from 2007 it is aimed at examining the general enterprise readiness for adopting a new ICT, which in the case of SOS are the mobile.

Basole (2007) bases his model on the argument that a deeper understanding of internal and external drivers is imperative in positioning and utilizing a mobile ICT within an organization. These include an examination of the *business value*, *strategic alignment* and the *cost & economics* of the ICT which are critical components in the overall readiness.

As the perceived *value* of the application within SOS is intangible at best, the value-focused-thinking approach of Nah et.al. (2005) which focuses on divides the perceived value into objectives which in turn can be used to form a means-end objective network as seen in figure 20. Although SOS did not use this approach during the development process, it is elaborated upon in order to provide an alternative method in which the intangible *value* of the mobile applications can be translated into *fundamental objectives* within SOS. Basole approaches the subject of value by focusing on the elaboration of the perceived beneficial properties the mobile application can bring to the organization and argues that the value is determined by the degree to which the decision makers within the organizations agree on the beneficial properties the application provides.

Applying the comprehensive Enterprise Readiness Framework to SOS, it is apparent to which degree SOS is ready to embrace enterprise mobility in terms of all eight dimensions identified by Basole and Simonsen (1999; 2007).

Based on the accessible information and data analysis, Thyssen and Gough have ensured the best possible circumstances for the successful implementation of the mobile applications within SOS.

The most eye-catching issue in relation to the analysis is concerned with the actual value of mobile applications within organizations. As mentioned earlier, it was not possible to obtain any information from SOS pertaining to the actual cost or budget for the application development within SOS or

information regarding the current and expected income generated by the applications. Thus the perceived value of the applications remains just that. Perceived.

However due to the situation, the mobile application are estimated in relation to the benefits and objectives they support within SOS, which based on the available data shows evidence to be significant both in relation to increasing efficiency, optimizing work processes and enhancing the business strategy.

CHAPTER 9: CONCLUSION

In order to provide a comprehensive answer to the main research question, three assisting research questions were formulated which need to be addressed first.

> *Using Enterprise Mobility Theory as developed by Basole, Barnes and Sørensen, how can we understand the ways in which organizations utilize mobile ICT's to support the organizational strategy?*

The first assisting research question was performed by an assessment and analysis of the various Enterprise Mobility frameworks and tools developed by the abovementioned authors and consequently applied to the case-study.

The main findings showed evidence that preparation and readiness are imperative. The analysis showed that any organizations planning on adopting or developing mobile applications should involve all the stakeholders which could potentially be affected by these applications.

It was showed how it was possible to utilized Enterprise Mobility tools and frameworks to assess the value and requirements of a mobile ICT, which in this paper were applied to SOS and the mobile applications.

In terms of SOS it is evident that the Enterprise Mobility Readiness framework is a very useful tool, easily applicable to the case study. The analysis of SOS shows that in order for the mobile applications to support the organizational strategy it is imperative to achieve readiness on eight different dimensions within the organization. *Leadership, Employees, Values & Goals, Resources, Technology, Data and Information, Processes* and *Knowledge*.

The analysis shows that there is a significant level of readiness throughout the organization, without which the mobile applications would not exist nor have the growth potential which is evident today.

Additionally it is important to note that the analysis shows a high degree of strategic alignment of the mobile applications within SOS based on the available data which is especially evident in the fact that

SOS' management sees the potential in the mobile applications in terms of the positive organizational change it can result in as well as the potential opening of new business areas.

*How can the development of a **new** mobile application benefit the organization's customers?*

In order to answer the second assisting research question it was first necessary to assess the value and potential of the mobile appliactions within SOS. As mentioned previously it was not possible to aquire any data on the actual budget or potential income generated by the mobile applications. But it was still possible to asses the organizaitonal value of the application within SOS.

Using value-focused thinking coupled with an examination of the *strategic*, *informational*, *transactional* and *entperprise transformational* benefits it is possible to pinpoint how the mobile application benefits SOS and consequently the customers. *Strategically* the mobile application provides SOS with a competitive advantage in the shape of a tool or way of communicating which customers have sought for a number of years according to the case study.

The *informational benefits* provide costumers with a higher degree of spatial independence and faster and easier access with SOS. And finally the mobile applications showed the potential to increase cost-savings within SOS in relation to both human resources and increased efficiency in the not to distant future. This would allow SOS to lower the price of their services without compromising on quality further benefitting the customers.

Using the theories of Engeström, Nonaka and Baxter & Sommerville as a foundation, how can an organization benefit from the development process of a mobile ICT?

Firstly the application of Activity Theory by Engeström (1999) explicitly shows the inherent relationships present within the involved stakeholders (actors) in the development process. (Activity) This is done in order to provide an overview of the involved stakeholders both responsible for the development and also possible beneficiaries of the development process.

The development process itself is potentially a significant source of new knowledge and innovation as shown by the application of the expansive learning cycle. During which the developers and

stakeholders are involved in a continuous sequence of actions facilitating learning (Or *knowledge generation).*

Coupling the expansive learning cycle with the socio-technical systems design approach the importance of continuous knowledge sharing is highlighted by Baxter & Sommerville's (2011) system engineering activities focusing on the information flow in the stages of *procurement*, *analysis*, *operation* and *construction* of the mobile application. The development process of the first mobile application conducted by the assembled project group within SOS showed many similarities towards the approach of the learning cycle and system engineering activities. The initial development project of the The Red Card application has since resulted in the release of multiple other mobile applications with varying specifications with multiple others currently under development.

What is the strategic impact of the adoption of enterprise mobility within an assistance organization in 2012?

Without the need to reiterate the main research question, this paper has shown that the relatively unreasearched area of Enterprise Mobility was perfectly applicable to a present day organizaiton both in terms of changing the area of focus to mobile applications for smartphones and in terms of altering the end-users to customers (B2C) as opposed to employees (B2E) which most of the reviewed literature used.

The analysis showed the significant strategic impact the mobile applications have on SOS in relation to the potential for creating new business areas; the increased efficiency in the case handling procedures and as a significant additional source of income for SOS.

The potential of mobile applications within a corporate setting is not to be underestimated, but there are multiple caveats to consider before undertaking such a complex endevour.

SOS International A/S will for the time being stand as a testiment of a success story in relation of B2C Enterprise Mobility, but only time will tell if mobile applications will meet the expectations of both SOS and its' customers.

9.1 Suggestions for further research

This paper presented and elaborated the strategic significance of enterprise mobility within the setting of a single organization with a limited amount of empirical data.

A follow-up research paper conducted in the winter of 2013, after the peak-season would to a much higher degree uncover if there are any measurable strategic ramifications of the mobile applications present within SOS. Due to lack of empirical data obtained *after* the implementation of mobile applications, coupled with the expected increase of individuals downloading and using applications, it could be conjectured that the summer of 2013 will be the most exciting summer yet in terms of the Enterprise Mobility within SOS.

Additionally the next natural step could be to conduct additional research comparing multiple organizations in different stages of the enterprise mobility implementation process with access to actual economic data related to such a project. This would contribute greatly with up-to-date information and comparable results, essential to Enterprise Mobility Research worldwide.

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Appendices

- Appendix A: Overview of figures and models used throughout the paper.
- Appendix B: Interview Transscript with Simon Gough
- Appendix C: Interview Transcript with Anja Thyssen
- Appendix D: Overview of mobile applications from SOS International A/S

Appendix A

Overview of figures and models referred to throughout the paper.

Contents

Figure 1 – Activity Theory model 1st generation (Engeström, 1999)

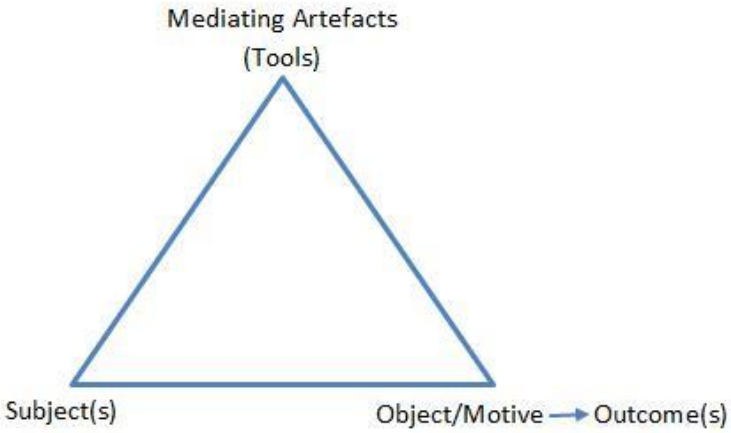


Figure 2 – Activity Theory model 2nd generation (Engeström, 1999; 2001, p. 134)

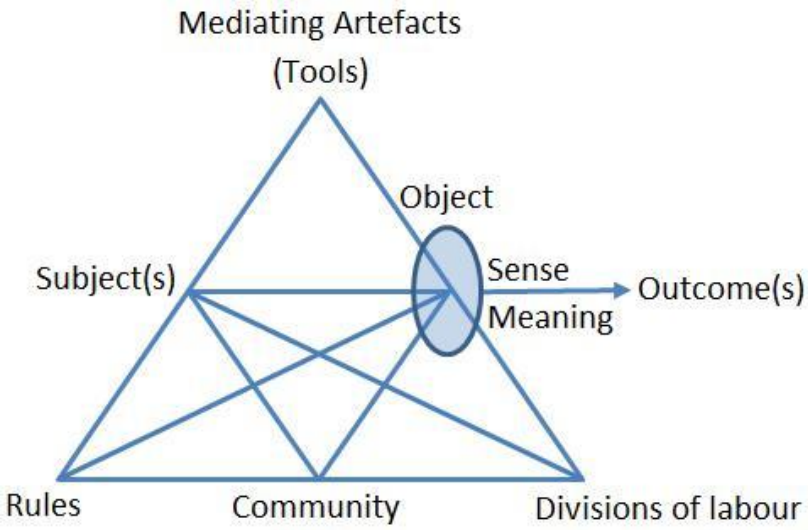


Figure 3 - Activity Theory model 3rd generation (Engeström, 1999; 2001)

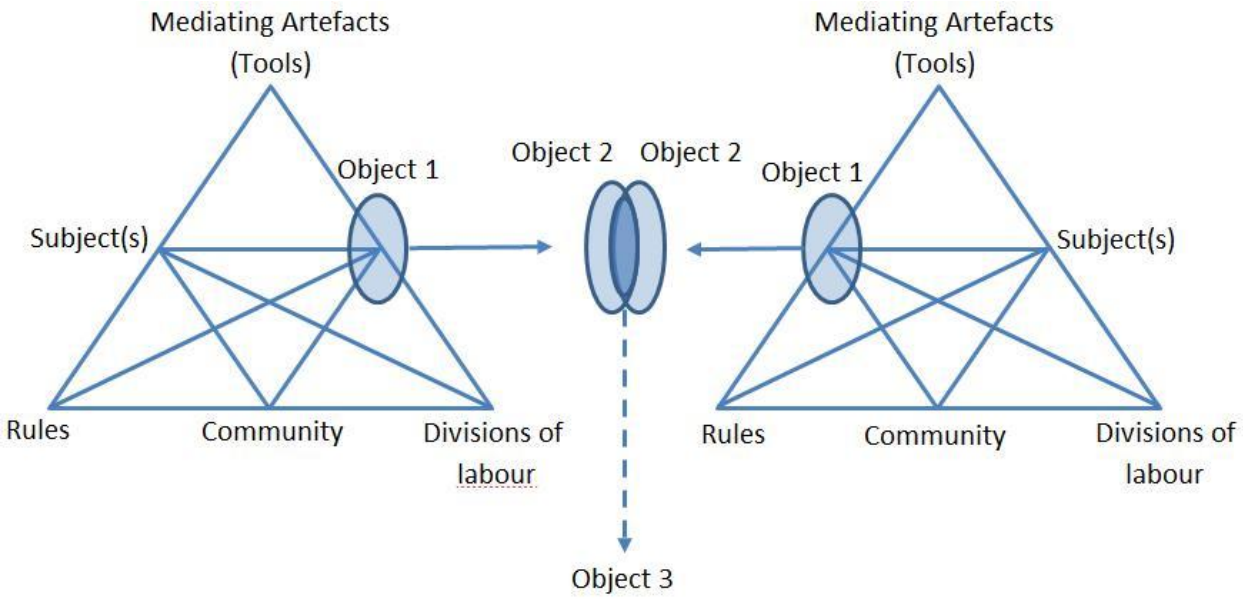


Figure 4 - Eight components of an AT system (Mwanza & Engeström, 2005)

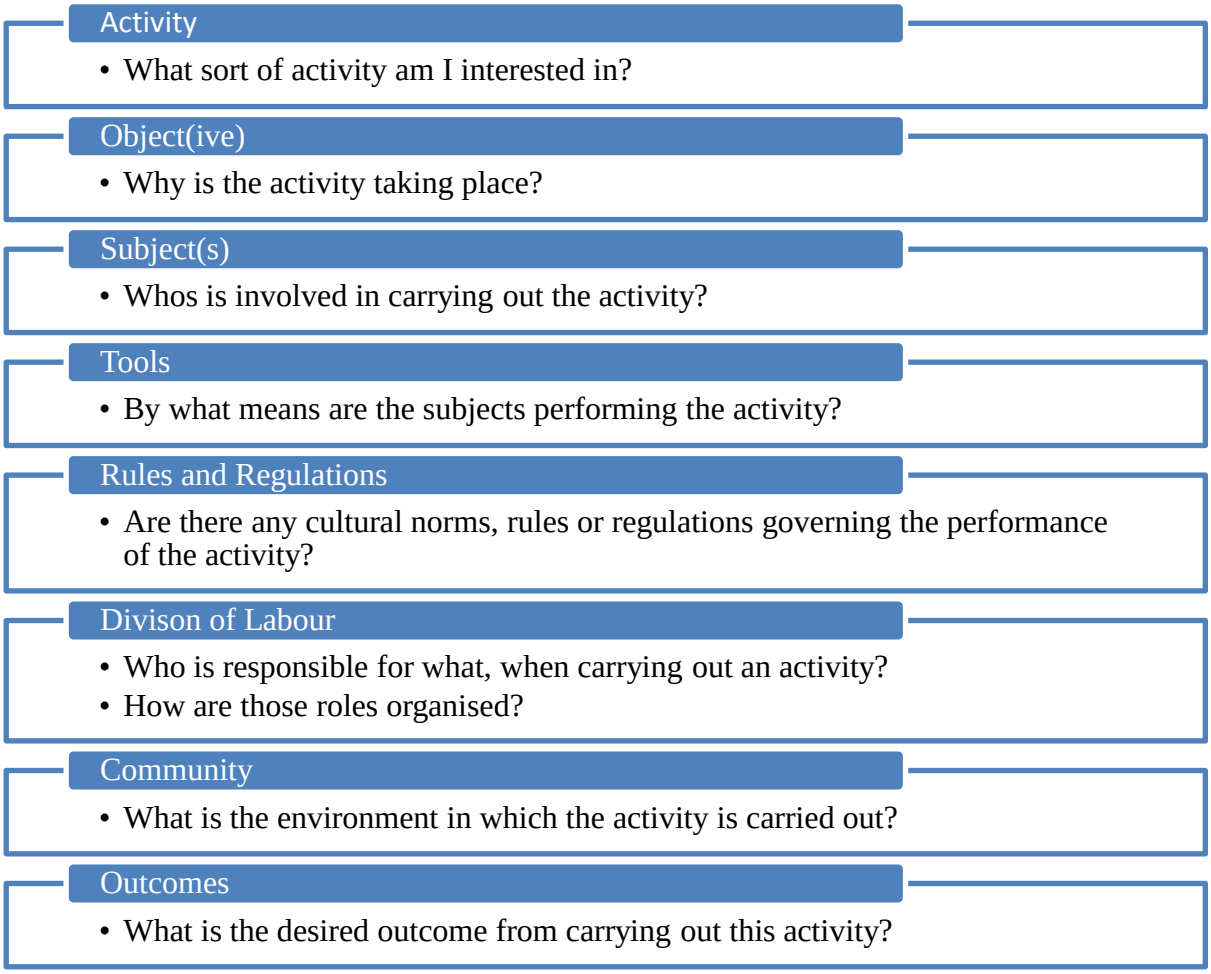


Figure 5 - The four modes of knowledge conversion. (Nonaka, 1991; Engeström, 1999)

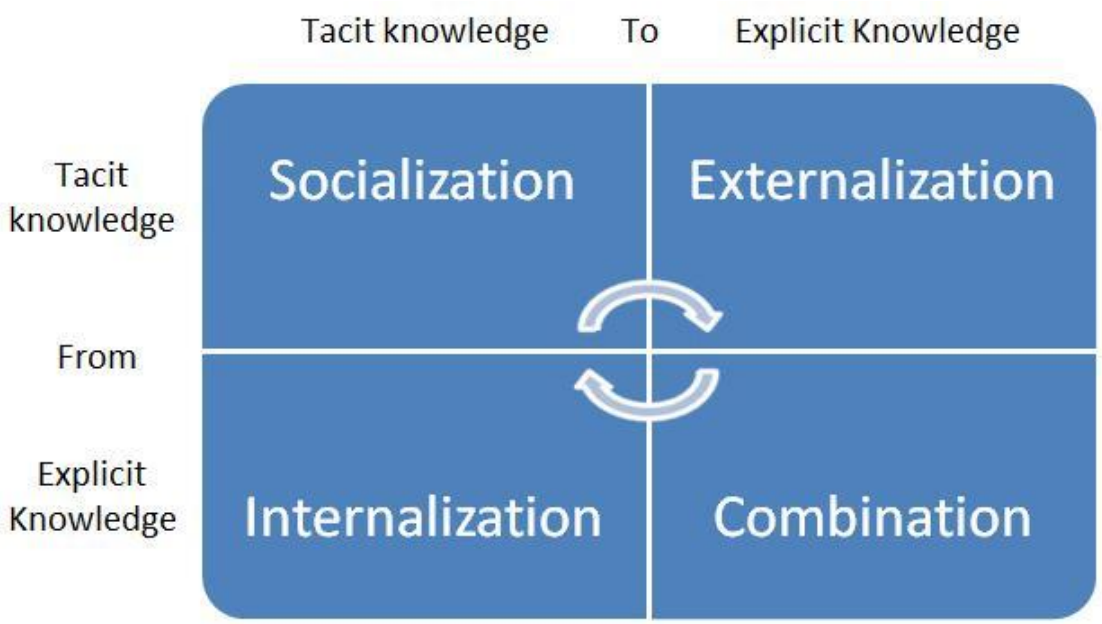


Figure 5 - The four modes of knowledge conversion.

From tacit to tacit: *socialization* / From tacit to explicit: *articulation*
From explicit to tacit: *internalization* / From explicit to explicit: *combination*

Figure 6 – Expansive learning cycle. (Engeström, 1999)

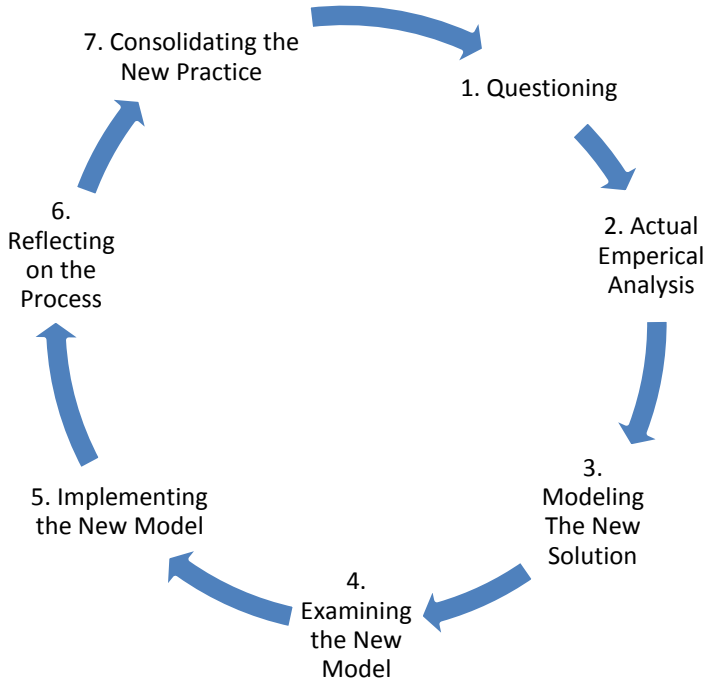


Figure 7 - Systems Engineering Activities (Baxter & Sommerville, 2011, p. 13)

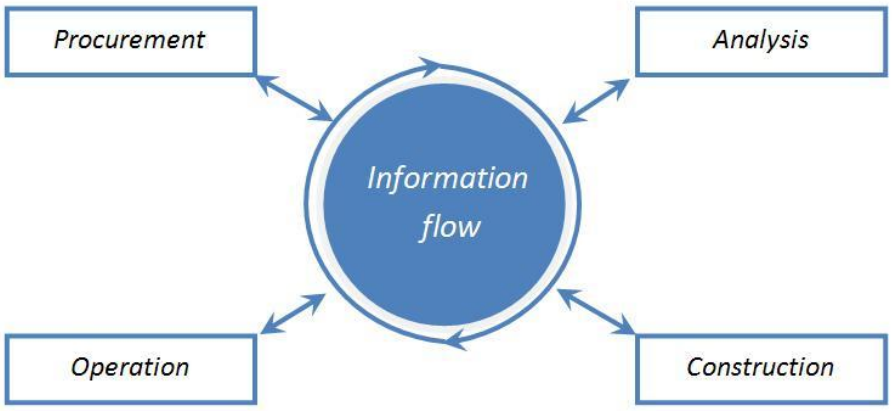


Figure 8 – Task Allocation (Stage A) (Waterson, Gray, & Clegg, 2002, p. 379)

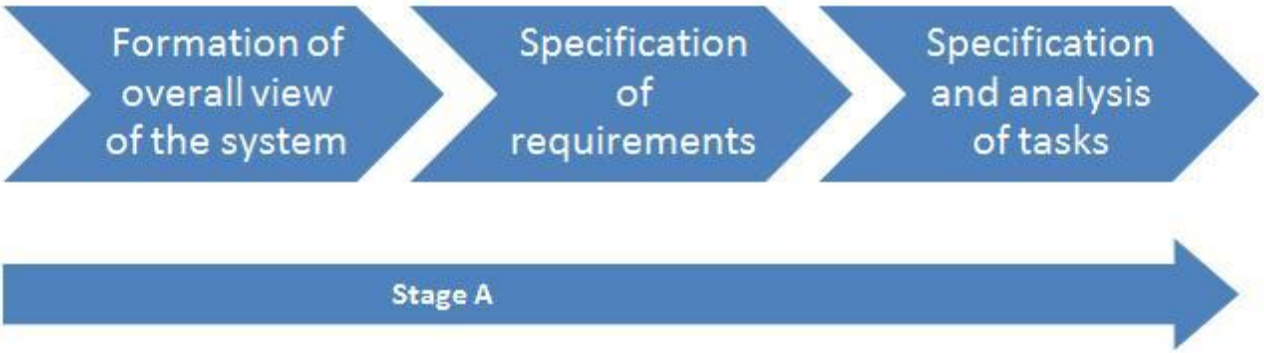


Figure 9 – Potential advantages/Disadvantages. (Older, Waterson, & Clegg, 1997; Waterson, Gray, & Clegg, 2002)

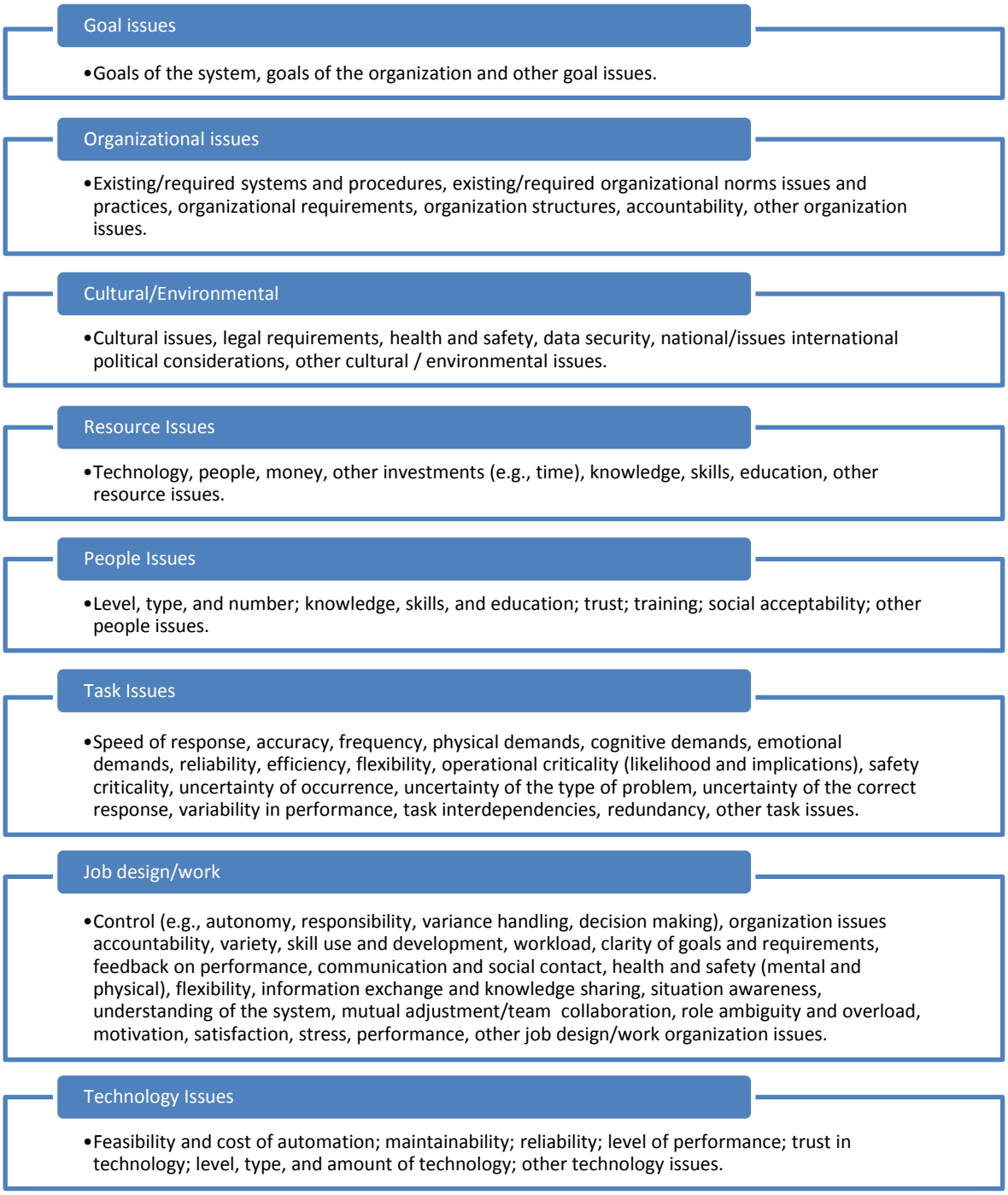


Figure 10 – Stages of Mobile Enterprise Model. (Scornavacca & Barnes, 2008, s. 232)

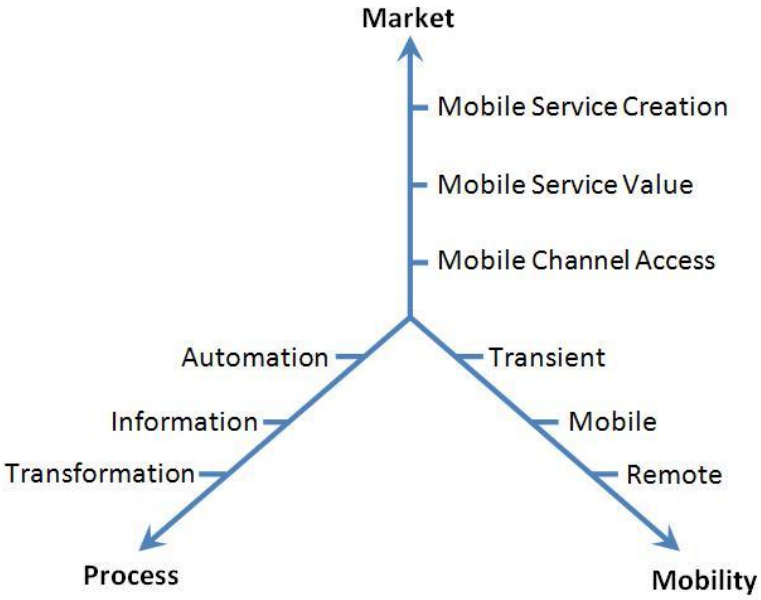


Figure 11 - The Four Phases of Mobile Transformation (Basole R. C., 2005)

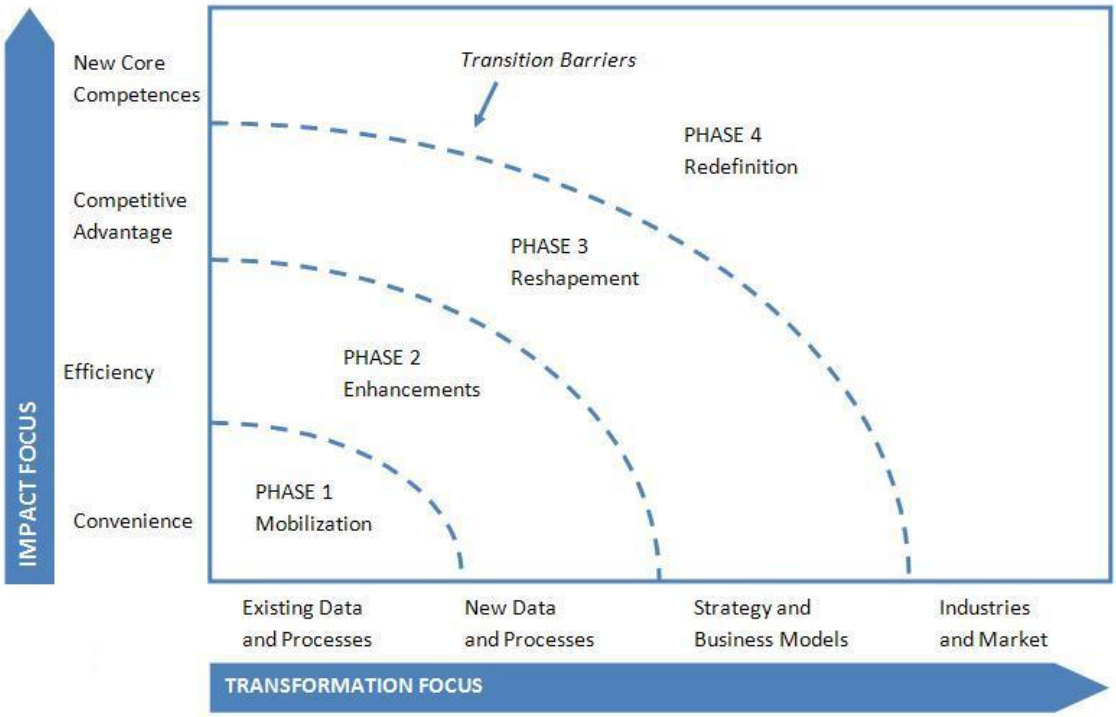


Figure 12 - Critical Areas of Strategic Planning for Enterprise Mobility (Basole R. C., 2007, s. 2)

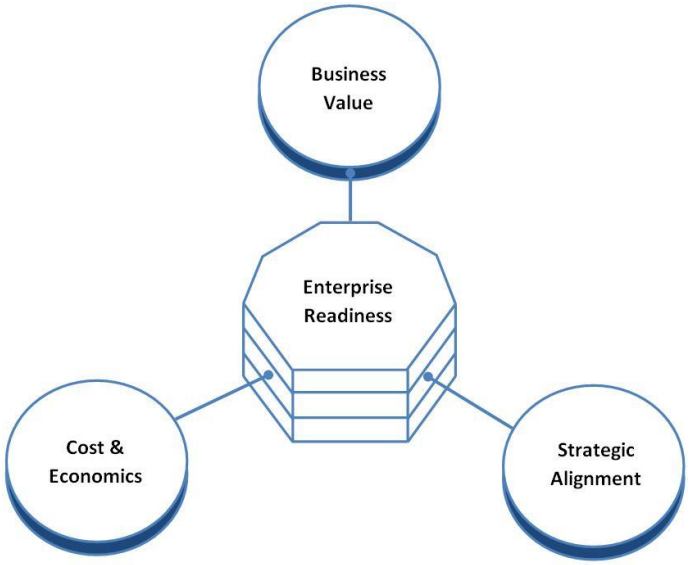


Figure 13 - Procedures of value-focused thinking (Nah, Siau, & Sheng, The Value of Mobile Applications: A Utility Company Study, 2005, s. 86)

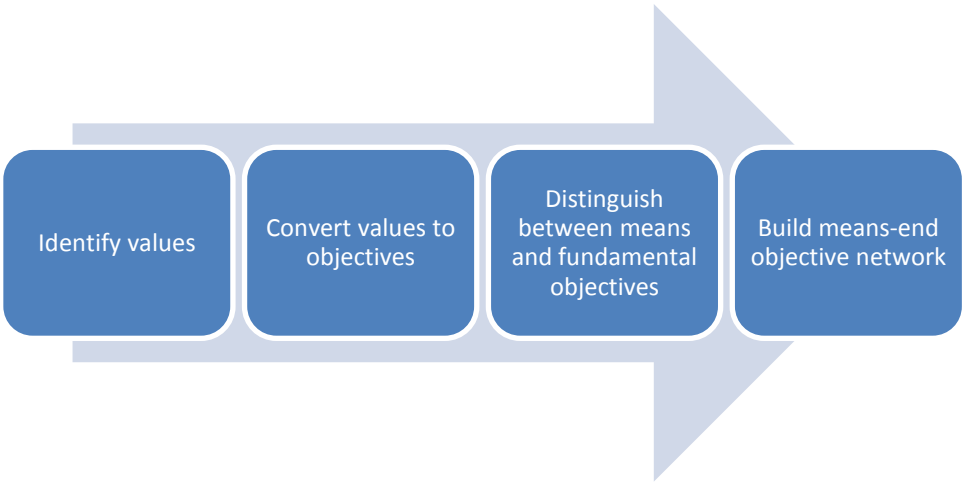


Figure 14 - Enterprise Mobility benefit types (Basole R. C., 2007, s. 3)

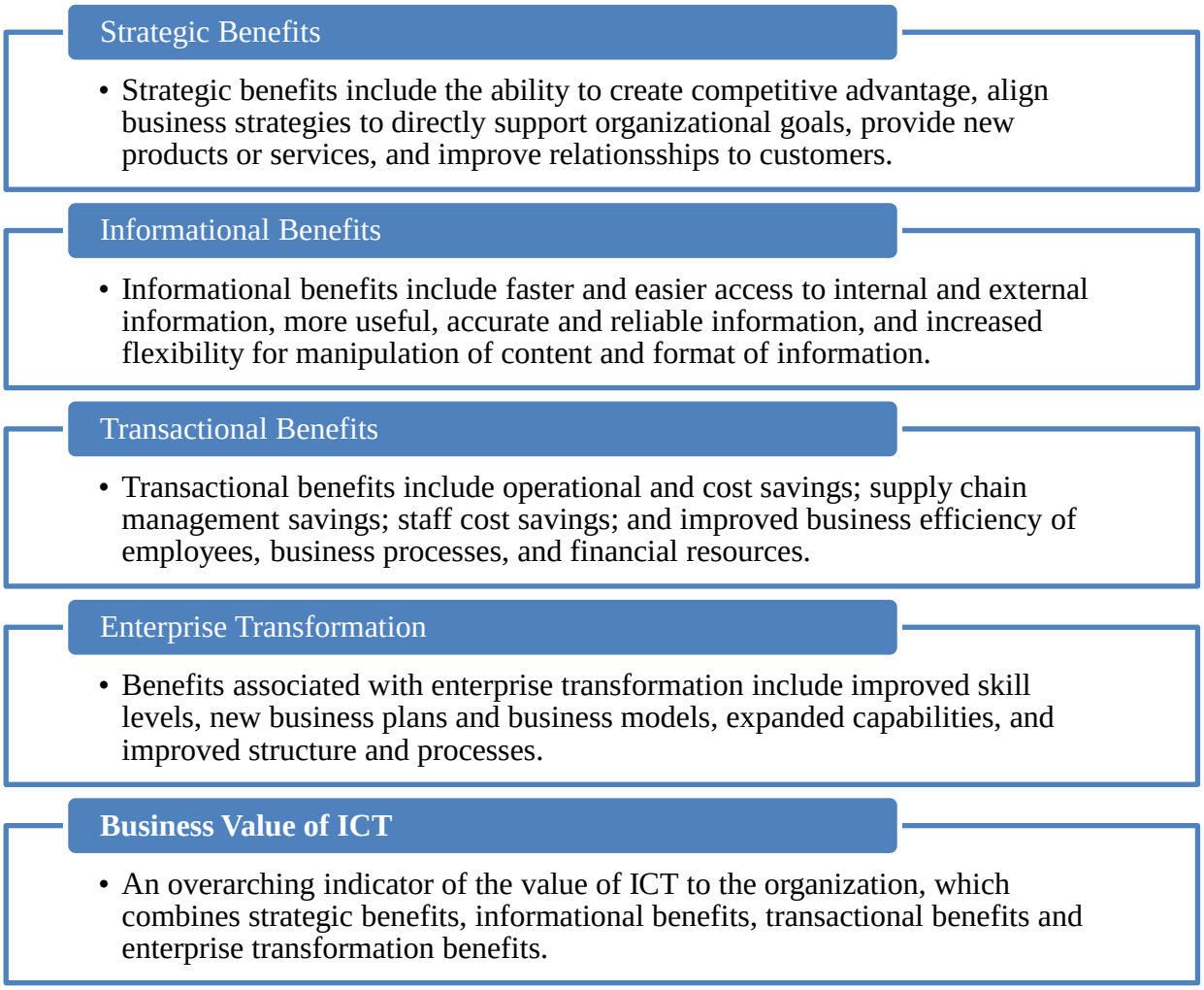


Figure 15 - Model of readiness for Enterprise Mobility. (Basole R. C., 2007, s. 5)

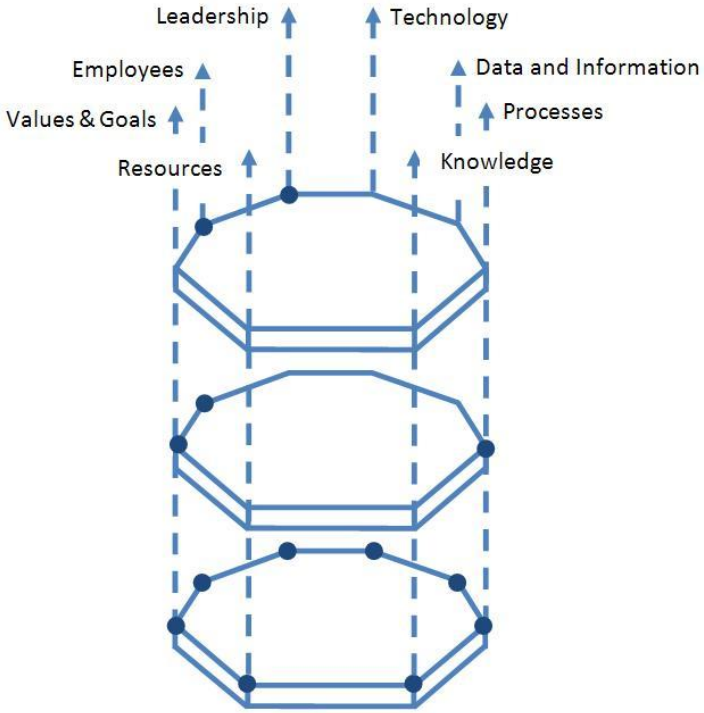


Figure 16 – Initial contact email.

Initial contact e-mail

Topic: Interview regarding mobile applications within SOS

Dear Simon,

My name is Sølvi Jespersen and I am currently doing research for my Master Thesis at Copenhagen Business School.

I am currently writing about the strategic impact Enterprise Mobility can have on an organization. I am aware that SOS International A/S is in the process of releasing multiple mobile applications and would be very interested in hearing about the project as well as your viewpoints on theme of Enterprise Mobility.

Sincerely

Sølvi Jespersen

Figures 17 – Interview Guide

Interview guide

- Formalities
  - Inform about recording device
  - Explain about the master thesis
  - Offer a non-disclosure-agreement
- Themes
  - About yourself and the your role (To get the interview going)
  - Uncover previous level of experience with mobile applications
  - Mobile application technical background
  - Reason/motivation for initiating the development of a mobile application
  - Requirements and expectations relating to the mobile application
  - Follow up on any key learning points from the development process
  - Challenges/opportunities faced during development
  - Expectations on impact on business strategy?

Figure 18 - Adapted from Mwanza & Engeström (1999; 2005)

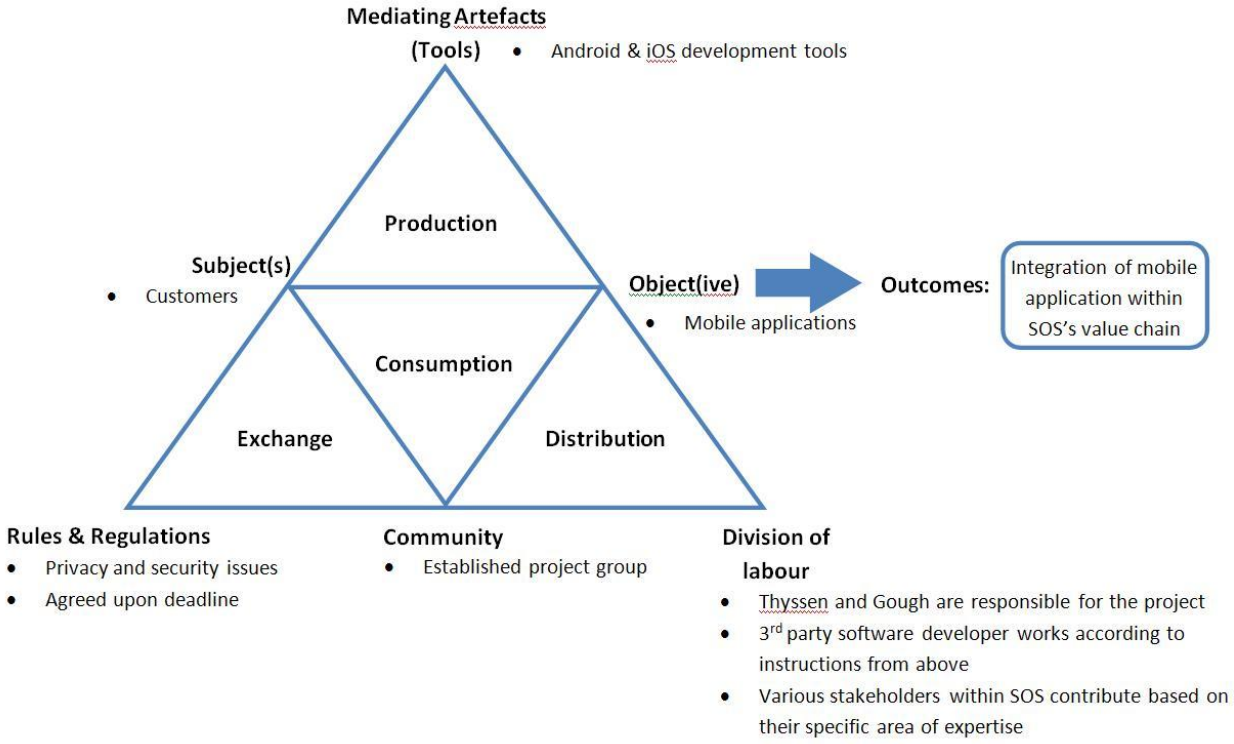


Figure 19 – Current state of Mobile Enterprise Mobility within SOS

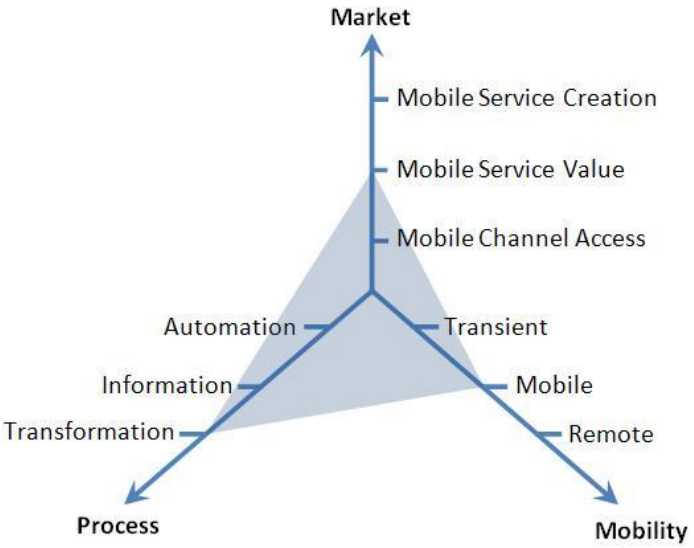
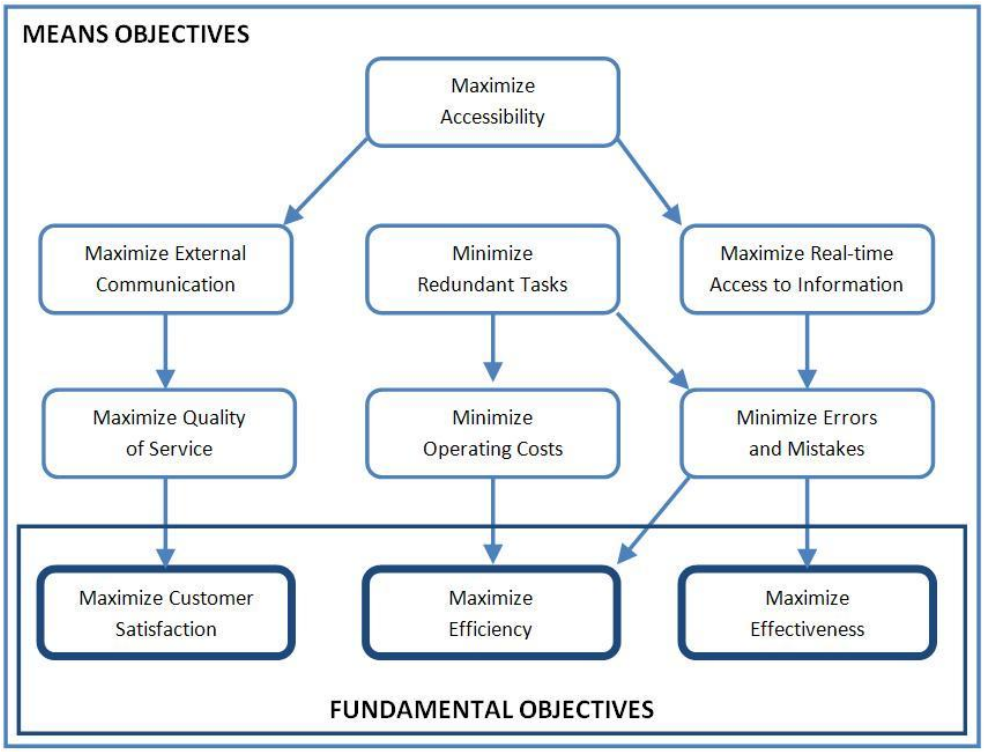


Figure 20 - Means-End Objective Network – adapted from Nah et.al. (2005, p.87)



Appendix B

Personal Interview med Simon Gough – Project Manager, Market Intelligence & Development

Interviewed on the 5th of October 2012 at 10:00am

Corporate location: SOS International, Nitivej 5, 2000 Frederiksberg, Denmark

Q = Question

A = Answer

Q: Hvad er bagrunden for at udvilke en app ? Hvor så I at der var behov for en?

A: Vi prøvede sådan ride med på bølgen, at være med fra starten af. Var selv initiativ tager til appen.

Tilbage i 2009 blev der lavet en prototype. Simon gik rundt i SOS og viste den rundt. Få den tested af samt at få feedback internt i SOS. Og det viste sig at være stor interesse for en app, så meget at vi fik samlet et hold der ville se nærmere på mobil applikationer. Gruppen satte sig at brainstorme, og fik en masse ideér, men måske for mange idéer – var nødt til at skære ind til benet og det blev til appen "Det røde kort"

SOS udviklede selv appen da de mente at det ville være en for langsommelig process at få evt et forsikrings selskab at hjælpe med udviklingen. De udviklede derfor appen selv og siden tilbyder den til brugerne (forsikrings selskaberne) efterfølgende. Dette har vist sig at være en success. Rødt kort blev lanceret til sommer perioden i 2010 efter kun ca. 5mdr udviklingstid. Blev først kun udviklet til iphone, da det med mobile apps var stadig relativt nyt. De fik en god respons fra brugerne på appen, fra medierne.

Medierne omtalte SOS meget da SOS var en af de første ude med en lignende app hvilket var meget heldigt.

Q: Hvem har været involveret i udviklingen af appen?

A: IT afdelingen, Kontrol centralen og flere andre. Jeg spurgte de IT anstte omkring min idé.

Q: SOS Assist, hvor langt er den henne?

A: Den er igang med at blive udgivet, men det er blevet forsinket lidt pga. iOS6. Den er sendt til Apple for godkendelse og forventes ud at blive udgivet i uge 42. Den er tiltænkt forsikringsselskaberne og deres brugere.

Q: Er den tiltænkt indivudelle medicinske sager ?

A: Den er tiltænkt rejsende både privat og erhverv. Mest for at vejlede de rejsende til nærmeste godkendte hospital eller klinik. (som SOS har aftale med)

Vi har også SOS Tracker som er på gaden nu. Det er en overvågnings app, hvor man skal tilkendegive sin position, med det formål at man kan holde øje med vedkommendes position i tilfælde af en krise af en eller anden art. Bombe, Tsunami o.l. Den er mest tiltænkt virksomheder der har behov for at vide hvor deres ansatte er lokaliseret. Den findes på appstore men kræver log-in info som du kan få fra mig.

Q: Hvad med den allerførste app I lavede - Det Røde kort. Var der nogle learningpoints i den forbindelse? Noget modstand, gnidninger, erfaringer e.l. selv om I fik rullet den ud på kun 5mdr ?

A: Der var rigtig meget arbejde involveret at få organisationen at forstå konceptet med selve mobil applicationer. At få folk med på vognen. Der var selvfølgelig positiv feedback for det meste, men folk forstod ikke idéen bag det.

Men det kan vi mærke nu at den er blevet accepteret som en naturlig del af forretningen. Før i tiden skulle vi bruge meget tid på at få folk til at bruge vores mobil applicationer mens det er omvendt nu hvor vores kunder/samarbejdspartnere der efterspørger vores mobile applicationer. Så man kan sige at rollerne er blevet vendt.

Q: Hvar der nogle specifikke ting som gjorde udviklingen meget svær? Eller var der nogle store udfordringer forbundet med den første applikation som I ikke havde forventet?

A: Vi vidste ikke hvordan processen i applikation udvikling fungerer, så det handlede meget om at finde en fleksible samarbejdspartner som var villig til at yde lidt ekstra for at få denne applikation på gaden hurtigst muligt og som delte vores tankegang omkring mobile applikationer og kunne se mulighederne i det. I den forbindelse fandt jeg en jeg kender fra mit gamle studie (ITU) som har en virksomhed der udvikler mobile applikationer. Det var involveret i alt fra idé til udvikling til udrulning. (wireframes, design osv.) Men vi har stadig ikke fastlagt helt hvordan processen foregår endnu, vi har ikke skrevet dem ned eller noget pga travlhed.

Q: Under udviklingen af de forskellige applikationer, var der nogle nøglefeatures som syntes var essentielle for appen, mens I valgte at skære andre fra? Hvilke tanker gjorde I der for at tage de beslutninger ?

A: Vi ville gerne have den her dybe intergration med vores systemer – sådan at en anmeldelse sker 100% elektronisk. Hvilket betyder at anmelderen sender sin anmeldelse in til os via applikationen, så ryger den direkte videre i vores system og automatisk finder ud af hvor den nærmeste bugserings vogn er f.eks. (røde kort app)

Teknologien er der, men vi har desværre ikke de tilbageliggende netværk der gør det muligt. Det er først nu i kraft af at SOS har opkøbt Dansk Autohjælp at vi har mulighed for at få de informationer tilgængelige i systemet og applikationen. Det er dette der vil give applikationen Det Røde Kort værdi, da det i første omgang næsten kunne kaldes for et "marketing stunt" hvor formålet var at skabe mest muligt opmærksomhed omkring SOS. Det er først nu at vi har mulighed for at udvilke applikationen til det som den var tiltænkt at gøre. Da vi ikke havde vores eget netværk af f.eks. bugseringsvogne tidligere i Danmark. Det er samtidig planen at indgå samarbejde med autohjælps firmaer rundt om i Europa så de også kan indgå i vores netværk i applikationen. Vi bygger kontinueerligt på applikationen i kraft af at vi nu har en voksende brugerskare.

Q: Hvordan var det så i 2010 når i udgav den første version af appen? Tog det lang tid før folk begyndte at bruge den eller hvordan?

A: Vi fik en meget fornuftig brugerbase hurtigt pga. Meget medie omtale. F.eks. Ekstra Bladet, Børsen, div. Bilblade o.l. har inkluderet den i deres "top 10 must-haves til din bilferie". Vi ser en klar tendens at brugerbasen stiger når medierne omtaler vores applikationer.

Q: Men der er vel en forskel på hvordan i behandler sagerne internt når de enten omhandler en bilskade eller når det er en medicinsk sag?

A: Vi har jo to forskellige afdelinger. Technical til bilsager og Travel til medicinske sager. SOS Assist er på nuværende tidspunkt bare en app der kan behjælpe med at se hvor det nærmeste hospital er. Der er ikke nogen anmeldelses modul i selve applikationen på nuværende tidspunkt, men det er helt sikkert noget vi gør os tanker om fordi vi ser at der ville være en mulighed for at hjælpe brugeren gennem sin mobil telefon. Fordi der er nogle informationer som hurtigt kan få via mobiltelefonen og vil derved lette ved sags anmeldelsen.

Q: Så som det er nu så er hovedformålet med SOS Assist at aflaste Travel sagsbehandlerne fra folk der ringer ind og "bare" vil vide navnet og adressen på nærmeste hospital ?`

A: Ja, det er en af årsagerne. Vi har lavet noget research på alarmcentralerne på at finde ud af lige præcis hvor meget tid de bruger på lignende opkald. Samt bagage forsinkelse o.l.

Q: Men kan det anmeldes via SOS Assist?

A: Nej, ikke endnu, men det er ihvertfald tanken at få det implementeret. Det er dog meget mere komplekst når det er en sygesag,

Q: I har så SOS Assist, Det Røde Kort samt en applikatoner for BMW ?

A: ja, SOS har fået lov at bruge rødt kort applikationen i deres navn og fået tilføjet deres firma navn og logo til den, så den er kun tiltænkt BMW ejere. Det har så medvirket til at vi håber på at få flere lignende samarbejds aftaler med div. firmaer.

Q: Okay, så det rødekort vejleder dig til det nærmeste værksted, men når du så har fundet frem til det, så må man vel stadig ringe ind til SOS og anmelde skaden?

A: Rødkort er til når du har dit breakdown og du får sendt din anmelde afsted. Her udnytter vi mobilens mulighed for at have GPS samt kamera for evt. At tage et billede af skaden. Derefter vil SOS så finde nærmeste bugseringsvogn og sende den ud til brugeren ud fra det der er blevet tilsendt. Og så ryger bilen så på værksted og så er der så en kontakt mellem værksted, SOS og forsikrings tageren. Så der er ikke nogen yderligere kommunikation efterfølgende med SOS, men kun før og under.

Q: Så i grunden kan en forsikringstager godt anmelde og udrede en skade på bilen via sin app uden nogensinde at tale med en person fra SOS?

A: ja, det kan de godt.

Q: Mødte i nogle særdeles/uventede udfordringer under udviklingen generalt af jeres apps ?

A: Der er jo altid nogle tekniske problemer forbundet med udviklingen af apps. F.eks. at de ikke altid var kompitible med den seneste version af android eller iphone fordi de bliver hele tiden opdateret.

Der er også nogle funkionerne på telefonerne som ikke kan lade sig gøre på iphone men på android. Derfor er det vigtigt at finde ud af med det samme hvad man vil have ud af den her applikation og hvad skal den kunne. Der opstår hele tiden noget uventet under udviklingen af de her apps og vi har ofte oplevet forsinkelser i projekterne pga. Dette. Selv om vi har taget højde for det meste. Men det har meget at høre med selve udviklingen af appen til telefonen. Vi kan stadig blive overrasket over nogle ting, selv om vi har udviklet flere apps. Det er fordi de bliver mere og mere komplekse og skal kunne tale sammen med flere og flere systemer. De skal kunne tale med SOS eksiterende systemer. I den sammenhæng kan siges at ”Det røde kort” var en mere simpel app da den kun skulle hente information fra et enkelt system (bugseringsbil) og så sende en anmeldelse afsted. Mere skal den ikke.

SOS Assist samt SOS Tracker skal begge ind på andre systemer for f.eks. at finde brugerens position.

Det er ikke helt muligt at tage højde for alt inden man sætter projektet igang.

Q: Hvem udvilker jeres apps?

A: De hedder Sociable.dk

Q: Står de for vedligholdelse af appen ?

A: Det gør de som det ser ud nu, og vi har derfor en aftale med dem omkring dette.

Q: Du nævnte tidligere at du gjorde en form for behovs analyse omkring jeres app. Har i nogle faktuelle tal på hvor meget i optimerer hele sags-processen? F.eks. minutter I sparer på hver sags behandler o.l.

A: Vi er ikke nået dertil endnu, fordi der er ikke nogle af vores nuværende applikationer som optimerer direkte de processer der involverer sagsbehandlerne. Her til starten har vi kun udviklet dem efter markedsbehov . Altså at vise at vi er med fra starten af og for at få erfaring og learnings på de her mobil applikationer. Vi er først nået dertil nu hvor vi har nogle apps på gaden som gør at de apps der skal optimere nogen process internt i virksomheden først kommer i 2013-2014.

Q: Så som nu hyrer i f.eks. ikke færre og færre sagsbehandlere siden appen er kommet ud ?

A: Nej slet ikke – vi prøver bare nu at få vores apps ud til en så stor brugerskare som muligt og først derefter gå igang med at optimere de efterfølgende processer. Det er i hvertfald hensigten.

Q: Hvis vi tager udgangs punkt i det røde kort, når en sag bliver anmeldt – hvor går data'en hen? Den formular hvor bliver den sendt hen? Går den direkte til afregning eller hvordan?

A: Den ryger til Technical afdelingen via email på anmeldelsen. En Sagsbehandler har så en kode som han taster ind for at oprette en ny sag og så ryger dataen fra emailen automatisk ind i AS400 og så skal den bare tastes igennem og så er den oprettet og vi handler den derfra. Det ville selvfølgelig være optimalt hvis det skete automatisk og sagsbehandler ledet kunne blive skåret bort.

Q: Så som det er nu så får et bugseringselskab ikke besked automatisk ?

A: Nej, der er en sagsbehandler involveret i den forbindelse. Det er også mest for at få nogle human hands på og for at evt. Filtrere åbenlyse fejlanmeldelser fra.

Q: Det er vel meget godt så at folk ikke kun arbejder med en "robot" der skal også være en human-factor i, specielt når det er sager hvor folk er usikre?

A: Ja, lige præcis på vejhjælps delen så er det mere naturligt at det kan digitaliseres. Det er trods alt bare en bugserings vogn. Hvor imod hvis det er en sygesag, så skal der typisk en sagsbehandler involveres i forløbet.

Q: Ja, det var også tanken at undersøge omkring hvis I tog springet fra at lave en app hvor man også kunne anmelde sygesager via app ? Om i har gjort jer nogle tanker omkring hvordan den process kommer til at foregå ?

A: Ja, alstå tanken har været at i de "bløde sager" skal det være muligt at anmelde via appen. Her tænker vi på sager som f.eks. bagage forsinkelse, eller hvis man bare skal have noget medicin. Hvorimod det stadig selvfølgelig skal involveres en sagsbehandler når en sag er alvorlig. Det er særligt relevant for de vi ser en voksende tendens at vores unge brugere efterlyser en form for digital selvbetjening. Det er helt klart den vej vi går imod. Derfor er vi nødt til at også udvikle disse løsninger i fremtiden, men der skal stadig være mulighed for at kunne få personlig betjening via telefonen.

Q: Ligger det på tegnebrættet ? eller er det kun noget som i har i tankerne mens i nu er fokuseret på at få SOS Assist ud ?

A: Nej, det ligger på tegnebrættet nu.

Q: Har i gjort jer nogle tanker omkring selve processen når talen er om f.eks. en blødsag når en PT har været outpatient (gastro e.l.) har i så overvejet muligheden at ikke alle personer føler sig trygge i at anmelde lignende via mail ? F.eks. sende en medrep, anmode om medicin og lignende via en smartphone. Nogle brugere sammenligner det jo med en lægejournal.

A: Jo, det er helt klart nogle tanker vi gør os for at ligesom imødekomme den type bruger også. Der skal vi være knivskarpe i hvad vi tilbyder til kunderne og må starte meget simpelt og så simpelthen bare bygge på den app. For at iførste omgang se om vi overhovedet får nogle anmeldelser via den vej. Fordi det er først nu her efter 2år at vi kan mærke at anmeldelserne ryger ind in på Det Røde Kort. Det er selvfølgelig fordi vi nu har fået flere og flere brugere samtidig som flere og flere folk har smartphones.

Q: Har du tal på hvor mange folk har brugt det røde kort o.l. ?

A: Ja, det kan jeg godt skaffe dig. Men det er godt nok en promille af de samlede sager vi får der er anmeldt via appen. Men vi har lige nu ikek mulighed for at se hvor mange der ringer ind via appen, og det er noget som vi er i gangd med at udvilke for at kunne få lavet den analyse. Analytics. Som det er nu er det bare muligt at se hvor mange sager der er anmeldt via appens email og ikke hvor mange har ringet op fra selve appen. Og det er vigtigt da det godt kan være at størstedelen ringer ind via appen, men det ved vi ikke.

Q: Har i set nogen trend omkring at det mest er de unge brugere der benytter sig af appen eller hvordan? Har i nogen statistikker for det?

A: Vi har ikke lavet nogen alders-analyse på det nej. Men umiddelbart tror jeg at det er meget bredt demografisk fordelt. Men vi kan ihvertfald se at der er væsentligt flere der downloader til iphone end der er til iphone. Iphone brugerne er mere villige til at downloade apps end androidbrugerne på trods af at der er flere android brugere i verden end der er iphone brugere.

Du skal nok have fat i Lene Ovesen nede i Technical omkring oprettelsen af disse sager. Hun er invovleret i udviklingen af det rødekort og har hands-on erfaring med det.

F.eks. er vi igang med at ændre selve flowet af appen. Hvor man f.eks. før man overhovedet kan bruge den skal have indtastet ens forsikrings detajler ind. (registrerings nummer, kontakt info og nummerplade) så man ikke skal stå og gøre det efter uheldet er ude, som det er nu. Samtidig vil designet blive lidt forbedret og opdateret.

SOS assist skal ikke ud til alle og vil derfor ikke blive reklameret for. Den vil kun blive udleveret til nogle samarbejds partnere da man skal have log-in for at bruge dem. Det er fordi der er meget følsomt data inde på den omkring SOS's samarbejds partnere som ikke vedrører andre end SOS's kunder og samarbejds partnere.

Q: Så som bruger skal man henvende sig til sit forsikrings selskab for at få adgang til den?

A: ja, det skal man – eller kan det være en virksomhed som tilbyder den til sine ansatte.

Q: Har i oplevet nogle finansielle besparelser e.l. efter udgivelsen af appen?

A: Nej, ikke endnu, de kommer vi nok ikke til at mærke til efter 2013. Men det kan godt være før, fordi som nævnt tidligere så mærker vi en voksende interesse fra kunderne omkring vores apps. Hvor vi før måtte reklamere og presse dem på kunderne, kommer de selv til os og efterspørger disse apps.

Appendix C

Personal Interview with Anja Thyssen – Head of Market Intelligence & Development

Interviewed on the 1st of November 2012 at 10:00 am

Corporate location: SOS International, Nitivej 5, 2000 Frederiksberg, Denmark

Q = Question

A = Answer

Q: Vedr.alle jeres apps, bade de kommende og dem I har udviklet før. Hvem var involveret i udviklingen af disse?

A: Simon var meget drivende med det her at komme med eksempler på apps. Det her med at komme med nye ideer og input omkring hvad er det der sker på markedet udenfor og egentlig hvor enkelt det er at udvikle apps. Umiddelbart troede jeg at det ville virke som et stort projekt at skulle udvilke en app, men så begyndte Simon at tegne nogle tegninger og han havde noget i sit netværk også hvor de havde nogle ideér. Og Simon arbejdede også meget i udviklings afdelingen og havde mange af de tanker omkring "hvad kunne vi ellers lave af nye idéer" ? Og så kom han med en demo hvor man fik en god fornemmelse af hvordan appen kunne se ud. Og det var skridtet til at vi sagde: "såden en skal vi have, vi skal være med og prøve at se hvad der sker på det her område." Og det var endnu egentlig inden vi vidste hvilken retning udviklingen konkret gik og hvad apps ville betyde og hvilken betydning de ville få for SOS.

Det handlede egentlig om at nogen der får en idé, prøver at modne den lidt, gør det konkret. For i første omgang må man prøve at forklare og snakke om om man ikke skal udvilke en app . Da er det rigtig svært at få folk med. Det her at få en forståelse af hvad mobile apps var, der var vi ret tidligt på den tænker jeg. At få et forståelse af hvad de her mobil apps kan gøre, men så snart der var en demo og man kunne lige som få en look & feel, og det tog omkring et år inden man kom der til hvor vi egentlig fik accept af at det var det her vi skulle afsætte nogle penge til. Men så efterfølgende var alle jo begejstrede helt op til direktøren. Men det altså bare at træffe en beslutning at nu investerer vi altså nogle penge i det her og så var det også at investeringen i udviklingen skete i et godt samarbejde med

nogle fra Simon netværk som havde rimelige priser på det, så investeringen til at starte med var ikke så stor.

Jeg tror ikke vi var kommet igang hvis det var at vi skulle investere flere hundrede tusind i det her, da det ville påvirke hele budget det mere. Men fordi det var simpelt at komme igang, det var rimelige priser for at komme ud over rampen så fik vi kickstartet den her ide.

Q: Hvordan var det så med når han lavede den her demo fra starten af. Var der en stor forskel fra den oprindelige idé til det i rent faktiskt gav ud ?

A: Nej, det synes jeg ikke. Han tog selvfølgelig nogen med fra forretningen. Det var vigtigt at starte et sted hvor vi havde den her beslutnings kompetence fordi normalt har vi ikke end-user. Vi ejer ikke nogen slut-bruger. Men fordi vi har det røde kort, som vi administrerer så kunne vi gøre det på det. Vi kunne f.eks. ikke gå til IF's kunder eller et andet forsikrings selskabs kunder og lave en mobil applikation og sende den på gaden. Så vi vidste fra starten at det skulle være en app vi kunne sende på gaden uden forpligtelser og som skulle være gratis og gav noget til alle vores kunder. Og vi vidste også at det ville blive en lang og sej process hvis vi skulle starte op med en kunde, fordi forsikringselskaberne kan siges at være meget konservative. Så det var vigtigt at starte op med noget vi selv havde kontrol over og som tilgodeså alle kunderne på en gang og derfor blev vi egentlig på det røde kort og så tog vi en med fra forretningen. Forretnings udvikleren på technical siden havde vi med. Og en operational ansvarlig for det røde kort som kunne komme med inputs til hvordan tingene kunne se ud. Og forsøge at få tingene at være meget simple. Og det har vi fået meget ros for. Nu 3 år efter lanceringen er vi stadig med, og bliver stadig nævnt af medierne når de promoter apps og sådan nogle ting indenfor bilbranchen. Og det siger bare noget om det har været et tidløst design og at det har været så simpelt at den dag i dag stadig er brugbar.

Q: Så den har ikke ændret sig meget på de 3 år?

A: Nej ikke meget. Vi har nu nogle opdaterede versioner, men det har mest været systems opdateringer som f.eks. at lave den til android. Vi er også igang med at lave nye features til den, men det har egentlig vist sig at det vi startede op med – de simple moduler har fungeret. Simpelt design.

Q: Hvordan var det så at få folk til at bruge den? Blev der reklameret for appen eller hvordan?

A: Det er igen det her med at vi er en B2B virksomhed. Vi har ikke noget marketing budget til at gå ud til B2C og så skal vi også passe på med at gøre det fordi det er egentlig vores kunders kunder, vi er jo white label, men vi var så heldige at vi var ret tidligt ude og vores app egentlig blev så godt modtaget i medierne at den blev lanceret som ”endelig en app man kan bruge til noget” så det var en overskrift som vi ikke engang selv har været med til at påvirke, men jeg tror at vi har været tidligt ude med det her at det ikke bare har været noget som folk måske troede det var en marketing gimmick eller bare for sjov eller et spil. Men at den faktiskt er direkte integreret ind til vores systemer. Det er virkelig en assistance hjælp til noget. Og det er noget medierne så og derfra har vi virklig fået noget markedsføring. Den blev efterfølgende også en af top 10 downloads hvilket også gav yderligere medie opmærksomhed. Jeg tror det har været ren held at vi har fået så meget opmærksomhed på den. At der er mange der har downloadet den, men det har været en rigtig svær process at få folk til at bruge den fordi det er ikke en app du bruger til hverdag og det er jo noget vi tænker fremadrettet, hvordan kan den blive en del af hverdagen så folk huske den her app når de har brug for den for en ting er at få folk til at downloade den og synes at den er snart. Men så går der forhåbentligt lang tid inden de bliver ramt af et uheld eller motorstop som gør at de skal bruge den. Så på den måde er det lidt både og. Det har været let at få folk til at bruge den, vi har været rigtig heldige at få noget medieopmærksomhed på den. Det er klart at vi har lavet pressemedelelser om den, men journalisterne har også taget den til sig og set at den er brugbar. Men det er stadig noget andet at få folk til at bruge den når så uheldet sker. Men vi har nogle tal omkring dette, og de ser positive ud. Som Simon har. Hvormange har downloadet dem, procentvis af brug osv.

Q: Det er meget spændende, da jeg fandt på min opgave efter at have læst lidt om enterprise mobility, og specielt omkring hvor mange apps bliver pumpet ud for tiden af forskellige virksomheder, uden at de rent faktiskt bidrager eller kan bruges til noget.

A: Ja, og det har faktiskt været vores filosofi for de andre apps vi har udviklet. At det skulle være noget som er intergrret i vores system. Og samtidig er der 3 formål når vi udvikler vores apps. At vi skal effektivisere, at det var tidsbesparende for os hvis folk taster deres oplysninger ind korrekt med det samme, så slipper vi fra at skulle ringe tilbage. Andet var at vi skulle kunne tjene penge på det. Det var også en af de formål vi havde. Hvis vi kan putte så meget energi i vores apps at vi kunne derved skabe en ekstra indtægtskilde på det. Ellers handlede det simpelthen om at vi ville integrere os mere med

vores kunder. Der har hele tiden været meget fokus på at et af disse tre formål skal være tilstede for at vi ville udvilke nogle apps.

Q: Jeg fik fra Simon en pdf en oversigt over de forskellige apps I har. Men jeg forstod sidste gang jeg var her at Assist appen lige var ved at blive udgivet. Hvordan går det med den ?

A: Det er faktiskt meget spændende. Den er blevet godkendt i appstore, til en mobil telefon, men de vil ikke lancere den fordi den ikke fungerer til en ipad. Så vi har skrevet tilbage til dem at de skal lancere den, da vi ikke har haft planer om at få den lanceret til ipad, men kun til mobil telefoner.

Men lige præcis til den har har de haft en issue med at den ikke fungere til ipad, men Simon har den seneste status på det her. Vi har formuleret et brev til dem hvor vi forklarer at vi aldrig har haft brug for at få den godkendt til ipads, så på den måde skal den bare lanceres på telefonen i første omgang.

Q: Er det her din første erfaring med udvikling af mobile apps?

A: Ja, Min funktion i det her, i kraft af at være Simons leder været at kunne bane vejen for de ting der skulle til. At træffe nogle beslutninger og presse ting igennem. Sådan er det med udviklings sager, det er rigtig svært at få accept bredt, om det nu er en god case eller ej og her har vi ligesom besluttet at nu er vi en eksperimenterende periode og har valgt at afsætte nogle penge til det og så har vi kørt sådan i nogle år, for at gøre os nogle erfaringer. Og det er her jeg skal fungere som en slags filter omkring hvorfor vi ikke tjener nogle penge på det. Hvorfor har vi ikke sparet flere penge på det. Hvorfor bliver vi ved at bruge flere penge på at udvikle nye apps. Og derfra er så strategien at vi nu udvikler fem forskellige typer moduler. Så vi kan gøre os nogle erfaringer. Og ud fra disse fem laver vi så nogle forretnings-model og en strategi omkring hvad vi vil og kan bruge dem til. Og herfra har det været formålet at vi skal lancere vores helt egen, som var det røde kort og gøre os erfaringer med det. Vi skulle lancere en app som var co-brandet med et andet firma som var danmarks skiforbund for at se hvordan det fungerede. Vi skulle være underlevereandører og helt usynelige med vores BMW app. De ville gerne have vores system og være integrerert i vores system som fungerer delvist som det røde kort modulet. Og så har vi ville udvikle en app som vi kunne tjene penge på. Det var været den her Tracker app. Hvor vi ville aprøve muligheden for at der lå noget forretning i det. Der handler det om som en del af vores crisis-management service at man kan overvåge folk og have folk på beredskab. Disse

erfaringer er vi så igang med at opsamle og samtidig med så har vi kunne præsenetere disse moduler for kunderne. Og vi har de første aftaler i hus med kunder der vil at vi laver nogle apps sammen med dem ud fra de moduler.

Q: Hvilke typer apps er det så?

A: Jamen for eksempel har vi en finsk kunde, som gerne vil have det her SOS Assist og et anmeldelses modul og et forsikringstjek modul – på den måde går man så i dialog med dem og forklarer dem at vi har de her apps på gaden, og her er der nogle eksempler på hvad vid kan gøre og hvordan vi kan integrere vores systemer. Så sætter man sig ned med kunden og taler om hvad de har brug for og tanken er så at man netop skal kunne skræddersy forskellige moduler og så sige at den her kunde gerne vil lancere den her type apps med den her type moduler. Og så skal de have mulighed for at lancere den sammen med SOS og blive co-brandet eller de kan lancere dem i deres eget navn. Og på den måde bliver der skabt en forretnings model som vi kan tjene penge på. De betaler for at vi udvikler den, de betaler for vedligholdelse og de betaler et beløb pr download. Så er vi egentlig lykkes at få skabt en forretningsmodel omkring det.

Q: Omkring disse moduler, så syntes jeg ikke at Simon sagde at I havde nogle anmeldelses moduler i jeres apps forruden Det Røde Kort?

A: Jo anmeldelses moduler har vi. Vi har også den her Claims App. Hvor du kan gøre en skades anmeldelse igennem. Så vi har både dækket den tekniske og rejse afdelingen. Men ikke på den akutte del hvis man kan sige det sådan. På den akutte del har vi det kun det er en crisis management aftale som med vores tracker app. Hvilket vil sige at der er alle krise beredskabs procedurer aftalt på forhånd så vi ved nøjagtigt hvad vi skal gøre i tilfælde af at der er en akut hændelse alarmeret. Men vi har ikke nogle akutte anmeldelses moduler ned til alarmcentralen til privat rejsende. Men vi har en crisis management set op så vi ved hvad vi skal gøre hvis kunden ringer ind fordi ellers kan vi ikke reagere hurtigt nok. Og så har vi et skades anmeldelses modul til de ikke akutte sager. Som er Claim.

Q: Vedr. Den tracker app som en indtægtskilde, hvordan foregår det med betalning? Betaler de pr. Case? Eller abbonoment ?

A: Ja, de betaler et abbonoment pr. pers. Det er afhængigt af hvor mange der er i denne virksomhed. Og det fungerer så sum et årligt beredsskabs fee. Det er fordi de bliver tilknyttet vores alarmcentral og vores crisis management setup og special trænede personer. Og så er det det her med at man sætter sig ned og laver nogle procedurer og i tilfælde af at man så skal aktivere nogle personer, enten psykologer, læger e.l. så er det ekstra betalning. Så det der ligger i det årlige fee, det er så kun et fee til beredskab for at holde os på standby – så snart vi skal til at aktivere noget så kommer det til at koste ekstra.

Q: Hvilke firmaer er det der har det ?

A: Det er alle typer. Mobil selskaber, fly selskaber, offshore selskaber. Generelt store virksomheder med mange rejsende ansatte. Enten udstationeret eller business rejsende indenfor alle mulige brancher. Men generelt internationale virksomheder.

Q: I forbindelse med at SOS har opkøbt Danske Autohjælp, så nævnte Simon muligheden at lave en fuldt integreret app hvor du har både mulighed for at checke hvor du er henne, tage billeder af skaden, anmelde den – og derfra sende alt automatisk videre til autohjælp. Men det kræver ifølge Simon en anden type infrastruktur, er det noget som er i støbeskeen at kunne automatisere dette ?

A: Det er egentlig vores generelle strategi omkring dette nu. Man kan sige at som det er nu, så vil SOS gerne være en form for central hub, for at styre alt det logistik der er – da vi er en outsourcing partner og b2b virksomhed. Så det er vores kunder (selskaberne) der ejer det hele da det er en del af deres egen værdikæde. Det kan enten være at vi hjælper med at aktivere nogle læger eller sætte gang i noget betalning til hospital eller vejhjælp. Det handler om at vi har det store netværk som gør os i stand til at iværksætte den rette og bedste hjælp igang for derved at spare forsikrings selskaberne penge samt assister den rejsende bedst. Der hvor appes indgår er som en ny adgangs kanal til SOS, hvor imod den indtil nu har været telefon, fax, telex og email. Så for mig at se så handler det om at apps er en udbygning af den naturlige udvikling, da folk på et eller andet tidspunkt jo nok vil stoppe med at sende fax, ringe o.l. men istedet at bruge nye kanaler. Telex bruger vi ikke længere. Fax får vi rigtig sjældent og endda Emails er dalende. Det som vi ser smart med apps er funktionaliteten med f.eks. alarmer hvor du kan have indbygget knapper i bilen som du kan komme i kontakt med SOS.

Men vi ser apps som et instrument, da brugerne altid har mobil telefonen med og det skal være der at vi skal være klar at tage imod sager og apps hjælper at styre hvordan disse apps kommer ind digitalt. Samtidig med at vi arbejder på at blive knyttet op imod alle de her bilselskaber. Hvor vi f.eks, har Volvo on call idag. Så den knap som sidder i volvo idag, ryger direkte til vores alarmcentral. I takt af udviklingen, når folk stopper med at ringe, må vi være klar at tage imod andre former for opkald eller alarmer.

Og her ser vi apps som en af de dele som vi bare skal kunne være med på.

Q: Ifølge Simon var i first movers indenfor at lave apps til assistance industrien. Men hvordan kan det være at I egentlig var det ? Var det fordi at i var så heldige at have Simon med sin gode idé, eller var I begyndt at se nogle tendenser eller efterspørgsler på app fra kunderne ?

A: Ja, vi har haft fokus på at prøve at udvide kontakt mulighederne til SOS hele tiden. Så det er en del af en løbende udvikling for at gøre det tilgængeligt for kunderne på alle former for medier.

Men det er en nu egentlig en kombi af begge dele. Det var en idé som blev præsenteret som det faktiskt tog lang tid for folk at forstå om det nu var nødvendigt samt om der skulle investeres penge i idet. Det var der vi startede, hvor vi sagde at nu begynder vid at eksperimentere lidt med det og se hvor det bringer os hen. Det var både det og at vi kiggede på hvad er der nu folk bruger at kommunkiere med og fremadrettet omkring hvad folk nu vil anvende. Men på det tidspunkt syntes apps ikke at være så langt fremme og der var hellere ikke mange som havde smartphones på det tidspunkt. Så det var svært at få vores idé igennem, da vi ikke vidste hvem der ville downloade appen overhovedet. Men det gjorde at vi blev firstmovers i markedet, måske lidt for tidligt i forhold til hvad behovet var – da der ikke var nogle selskaber der havde efterspurgt nogen apps. Det var modsat. Selskaberne var dog positive overrasket om lanceringen af disse apps. Falck og nogle udenlanske har nu lanceret apps. Som f.eks. International SOS (ikke det samme.)

Q: Hvor mange apps har i udgivet hidtil ?

A: fem, ski appen, røde kort, bmw, tracker, claims og assist som er på vej.

Q: Er der så flere i støbeskeen?

A: Man kan sige at nu har vi udviklet de moduler vi har brug for. De som er støbeskeen som skal komme i år er f.eks. den offentlige rejsesygesikring. (Gule kort) Der kommer der en fuld rejse app, hvor vi samler alle de her forskellige moduler i en app som bliver lanceret inden nytår. Der bliver flere moduler samlet.

Men stadig med fokus på kunderne, vi laver ikke selv nogle moduler nu, men processen er mere at vi er ude hos kunderne, taler med kunderne men ved godt at kunderne har nogle forskellige behov da de gerne vil differentiere sig lidt. Der kan jo også være forskelg på kundesegmenterne og derved er processen og udviklingen af apps fremadrettet ske i samarbejde med kunder.

Q: Hvis vi tager udgangs punkt i det gulekort – hvor der er et anmeldelses modul og forsikrings tjek (cpr nr.) Er hele processen fuldt automatisk hvis jeg f.eks. kun har haft nogle udlæg som jeg vil have refunderet?

A: Ja, det er en del af claims app modulet, hvor du kan indtaste all de forskellige oplysninger, tage billede af din kvittering og så bliver det hele sendt til SOS i en samlet anmeldese. Så i princippet handler det kun om at den skal blive godkendt af en sags behandler. Lige nu har vi hånd i hanke med vilke sager bliver godkendt. Men vi ved jo af erfaring hvad tingene plejer at koste, så hvis det er rimelige udgifter så er der mulighed for at godkende det automatisk hvis vi ikke har brug for flere oplysninger. Hvis vi kan se at den kvittering kan godkendes og at diagnosen har været der og den kan matches med den anmeldse vi har fået, så kan vi bare køre den igennem.

Og for at vendte tilbage til vejhjælps modulet, tanken er jo at man skal kunne køre det her 100% digitalt igennem. Og også at den person som anmelder sagen skal have mulighed for at følge sin sag hele vejen igennem. F.eks. at kunne se hvor langt hjælpen er henne, hvor langt væk er den nærmeste station og hvornår er vejhælpen der. Tanken er netop at man skal give kunden mulighed for at gøre så meget som muligt selv. Være mere selvhjulpen. Vi stiller vores netværk til rådighed og sætter det igang, men at man i princippet har mulighed for at ikke skulle vente på andre personer i netværker for at kunne hjælpe.

Q: Kan du forklare sagsforløbet for en anmeldelse for det røde kort sådan som det fungerer nu?

A: Det er direkte integreret i systemet. En sag kommer ind lige som når man ringer op, den anmeldelse popper op hos en sags anmelder. Det er mest for at man bliver gjort opmærksom på at der er kommet en anmeldelse af at det her data er inde i systemet. Og så kan man så arbejde videre der fra.

Og det gør at man sparer tid da man får de rigtige oplysninger fra starten af og man kan sætte sagen igang.

Q: Ringer så sagsbehandleren tilbage til personen eller ?

A: Ja, hvis der er nogle ting som skal diskuteres nærmere. Nogle gange er alt klart – hvis alle oplysninger er inde og alt er udfyldt i appen, så kan man bestille en vejhjælps assistance direkte der fra. Så kan man ringe kunde op for at bekræfte at man nu har bestilt en vejhjælps assistance. Enten ringer vi eller SMS vi. Flowet er meget hurtigere og effektivt med appen.

Q: I har jo tænkt på at automatisere det hele.

A: Ja, det er ihvertfald målet. Og det er et led i det her at effektivesere. Med at gøre det hele mere brugervenligt. At gøre folk selvhjulpne. Jo mere man tænker over det så er det ret gammeldags at man tager tlf og ringer ind til en alarmcentral som hjælper en igennem. Er det en simpel form for assistance so bruger de bare appen. Men tanken er ihvertfald at det skal være 100% digital.

Q: Det kan måske tænkes at det er nemmere at lave de tekniske apps 100% digitale iforhold til de travel apps der er?

A: Ja, der er stor forskel. Det er lidt mere kompliceret. Det med at tage imod en anmeldelse når det er en akut sygesag. Fordi det er så følsomt og jeg tror at folk hellere vil tale med en sagsbehandler når de står i en akut sygesag. Hvis det er mere simpelt så tror jeg at folk vil bruge vores apps og anmelde et udlæg og så få pengene refunderet på et senere tidspunkt, men har du brug for at få et HOS ophold betalt, læge koblet på e.l. så skal du have fat i en sagsbehandler. Så der er virkelig stor forskel på de forskellige sager. Men der findes jo rejsesager som passer perfect at andmeldse med app, som f.eks. bagage sager, flyforsinkelser og andre standard sager. Der er det jo dine forsikringsvilkår der bestmmer hvilken form for assistance du har ret til at få, og der kan man køre den igennem en app. Det eneste der gør det kompliceret er at vi har flere 1000 forskellige forsikringsvilkår at administrere og

tage hensyn til . Man kan ikke lave et generisk app, med et set regler. Det røde kort er enklere i den forstand fordi det er de samme vilkår.

Q: Hvordan er det så med Assist, at tu får oprettet et brugernavn o.l. fra dit eget forsikringsselskab?

A: Assist er hvor du kan søge på providers hos SOS. Appen bruges til at lede efter HOS o.l. Den eneste app med en anmeldelse modul er claims. Det er i princippet moduler vi har udviklet og det har været den klare tanke at vi vil hellere udvilke nogle mindre moduler at lancere, så vi til dels kan komme i dialog med kunderne og få dem prøvet at, men også at så fik vi hurtigere noget på gade og så kan vi på et senere tidspunkt samle modulerne i en app ligesom kunden vil have det.

Man kan så sige at et search modul som providers og et anmeldelses modul som claims ville være logiske at slå sammen, men har valgt at lancere dem enkeltvis for at give kunderne mulighed for at plukke dem ud og se modulerne hver for sig. Og det er der hvor vi er nu. Og F.eks. i det Gule kort der kommer ud, her samler vi alle modulerne i en app.

Q: Så det kommer helt an på hvad kunden vil ha?

A: Ja, kunden kan modulere sin app som han vil.

Q: Hvornår kommer det gule kort ud?

A: Omkring årsskiftet.

Q: Når I så har fået de forskellige moduler samlet i en app som f.eks. det gule kort, vil der så opstå en form for streamlining hos SOS. Som det er nu så sagde du at I kun tjente penge på Tracker app eller hvordan?

A: Ja det er rigtigt, men vi har nogle andre apps i støbeskeen for nogle andre kunder som vi også vil tjene penge på.

Q: Er det så måske tanken at med alle de apps i udvikler og streamliner processen at tanken var at i fremtiden engang kunne f.eks. spare X antal sagsbehandlere væk da flere og flere anmeldelser kommer ind via apps?

A: Helt sikkert! Fordi prispres er en af vores største udfordringer i branchen. Og ved at udvikle de har apps, så får vi øget mulighed for at yde billigere assistance til vores kunder fordi vi har brug for færre folk.

Til gengæld så arbejder jeg med nye forretnings områder. Områder hvor vi kan sige at med de kompetente medarbejdere vi har nu kan evt assistere på andre områder. Det kan være at vi kan hjælpe forsikringselskaberne med at håndtere skader på hus, hjem og bygninger. Noget som SOS ikke er inde på idag, men som vi tilfældigvis lancerer i den her uge. Så vi bruger vores kompetener at udvide vores forretnings områder. Det er det her med at indse at det her handler om effektivsering. At kunne gøre de her typer skader så billige på assistancen at vi stadigvæk findes i markedet.

Det gode ved apps er at der er et fastholdelses moment i dem, fordi de vil blive digitalt integreret med vores kunder. Så det er virkgelig vigtigt at få investerert i de her former for udvikling selv om man ser at der er behov for mindre medarbejder. Men de folk skal bruges andre steder. Der vil jo være nogle der tænker at vi automatiserer det hele og der bliver brug for færre og færre medarbejdere. Ja visionen er 100% digital alarmcentral for visse typer sager. Og jeg tror at vi kan få det op at stå indenfor ganske kort tid.

Q: Hvilke sager ville det være som ville blive 100% digitale?

A: Vejhjælps delen, eller de ikke akkutte skadessager. Der ser vi helt sikkert at der ikke er langt til indtil vi kan lave en 100% digital alarmcentral hvor der ikke vil være brug for den samme type af tunge medarbejder. De kompetencer og den viden der findes der skal bruges andre steder.

Q: I den her effektivsering af jeres IT del med apps o.l. har konceptet Sustainable IT spillet nogen rolle? Eller er det ikke noget i har betraget som vigtigt?

A: Jeg vil sige at det har været en lille del af det, da vores digitaliserings process også formindsker papir arbejde specielt når man tænker på vores Claims moduler. Og i skadesafdelingen er det en 100% papirløs afdelingen der håndterer Claims skaderne. Men vores apps er kun en lille del af den samlede SOS IT strategi, hvor vi vil automatisere og digitalisere processen. Det er et fokus område hos SOS, men apps indgår som en lille del af den.

Q: Var der nogle punkter igennem hele udviklings processen hvor i mødte nogle forhindringer, eller var det meget nemt hele vejen igennem?

A: Overhovedet ikke! Der var mange bump på vejen. Som vi tidligere nævnte så var det bare at få accepten eller det at forstå apps svært (inhouse). Vi var ganske tidligt ude med at begynde på de her apps. Så derfor handler det jo om at finde ud af om hvem skal så være leverandør til at levere de her ting, hvordan sikrer vi at det er os som har kildekoden til det samt hånd i hanke med hvad der foregår. Hvad er det for en balance der skal være mellem intern viden og ekstern viden. Hvad er det for en forretningsmodel? Hvilken betydning har et? Så vi sikrer os at vi ikke bare underminerer vores egen indtjening. Det var en udfordring at få de IT resourcer der skulle være. At få resourcer fra forretningen, hvor vi lavede en styregruppe hvor der var repræsentanter fra de forskellige områder indenfor SOS.

Så er vi opdelt i tre forskellige forretnings områder, hvor Simon og jeg sidder i Travel som er det største, men hvor vi argumenterer for at samle al udvikling af apps i den her så vi ikke bare udvikler apps i de andre forretnings områder og ikke får samlet den viden der er. Det har også været en udfordring. Der er nogle forretnings områder som gerne få lanceret en app og gerne vil gøre det selv. Nu sidder vi så i en situation om hvordan sikrer vi så at kunderne ikke bare udvikler deres egne apps, men ser potientialet i at udvikle dem sammen med os. Det er noget med at få synligjort den ekstra værdi der er med at få dem intregreret med vores systemer. Fordi vi er ikke noget app firma, så hvorfor skulle de komme til os? Der er der noget med at ligesom sige: hvad er det for en værdikæde der er når man udvikler en app. Lige fra idé til design til programmering til kundedialog. Hvad er det for nogle ting vi absolut skal sikre bliver indsourcet, så vi beholder den her viden inhouse. Bla. Kontakten til kunderne. At få modeleret den rigtige app sammen med kunderne. Lytte til deres forretnings forståelser samt er der integrationen. De her ting ligger hos os og der er repræsentanter fra IT aftdelingen der sikrer at integrationen med vores systemer finder sted. Så det har også været en svær process at finde ud af hvad er det vi vil insource og hvad er det vi vil outsource. Hvad er vigtigt for SOS som virksomhed. Lige nu står vi overfor den beslutning om vi skal ansætte folk da vi får så mange efterspørgsler fra folk om at udvilke apps. Kan vi følge med? Skal vi ansætte en person oppe i IT ? eller er det bedre at alliere sig strategisk med et firma som har lidt mere føling med i markedet. Så det evt. Kan have nogle synergi effekter med noget af det vi har udviklet for de andre firmaer. Og hvor sårbart er det? Hvis vi begynder at integrere en masse forsikringsselskaber og store SOS kunder ind i et

eksternt firma. Så der er flere problemstillingerne der ligger nu. Så processen har absolut ikke været nem. Der har også været så simple ting som budgettet. Penge. Hvor mange kroner kan man blive ved med at bede om uden at der kommer noget ud af den anden ende. Man taler meget om den her inkubationsfase. Der sker meget i fasen som egentlig koster, men hvor det kræver tålmodighed. Vi bliver nød til at eksperimente, vi bliver nød til at opsamle noget viden inden vi kan godkende accelereringen. Nu er vi ligesom godkendt til at accelere, til at gå ud i markedet og udvilke de her apps sammen med kunderne. Min rolle har været at holde en mur på udviklingsafdelingen og lade dem nu få ro til at eksperimentere.

Q: Er der så en mærkbar forskel på hvor nemt det er at skaffe budgetter idag iforhold til hvordan det var i starten?

A: Ja, det vil jeg sige. Jeg har argumenteret for at vi havde brug for de her år til at eksperiementere – og det er her det har kostet SOS nu når vi er kommet her til, og det har jeg også sagt til udviklings afdelingen, nu lægger vi en dæmper på nye idéer. (Vi har en masse af idéer der ligger i pipelinen) Men de idéer skal præsenterer sammen med kunderne nu. Det har tidligere været svært at komme i dialog med kunderne omkring at få dem at forstå hvad en app er og hvad den kan. Nu har vi nogle demo modeller. Vi har nogle moduler vi allerede har lanceret, vi har erfaring med at bruge dem. Nu kan vi gå i dialog med kunderne og det er egentlig det som skal være med til at finansiere det. Så er det spørgsmålet omkring hvor meget vi kan tjene på det. Vi har nogle store kunder som bare er intereseret i at få noget digital integration med. De skal måske betale mindre for den her integration en de mindre kunder som er interesseret i at få det til en del af deres forretnings område.

Q: Eksisterer styregruppen stadigvæk ? Så i holder regelmæssige moder omkring vedligholdelse o.l.?

A: Ja. Nogle gange har det været en gang om måneden og nogle gange har det været en gang om kvartalet, alt efter om der har været noget nyt. Men det der bliver besluttet meget i gruppen er hvilken plan vi skal lægge. Hvad er det for en strategi for den kommende periode. Hvilke moduler skal vi udvikle, hvad skal vi bruge dem til, hvordan får vi prioriteret resourcer og budetterne osv.

Q: SOS ejer alle rettigheder til jeres apps ? kilekode osv.

A: Ja, det har vi sikret os.

Q: Er det inhouse eller bliver opdateringer/vedligholdelse lavet af det eksterne firma der udviklede appen?

A: Det er det her partnerskab, hvor en fra vores IT afdelingen arbejder sammen med Sociable. Selve appen blev jo udviklet eksternt. Og der var nogle udfordringer eksternt. Det her med tidsplaner. At have et firma der skal passe ind med nogle interne projektstyrings resourcer. Så det er et puslespil at få at hænge sammen. Og så handler det også om at vi ikke har erfaringer om hvad der kan godkendes. Nu har vi jo mødt udfordringer i appstore i forhold til de systemer vi brugte til at vores første app, det rødekort at nu har styresystemerne udviklet sig så meget at man ikke kan bruge det gamle røde kort i android længere. Derfor var vi nødt til at omprogramere det hele så det virkede i HTML5 så man kan lettere opdatere de til nye systmer. Det er meget learning by doing. Vi var ikke klogere på det i starten, men udvikler os sammen med vores apps.

Q: Har i statestikker på hvor mange iphone bruger i har vs hvor mange android bruger i har?

A: Ja, det ved jeg at han har – men Simon siger det er ikke så simpelt at få de tal. Fordi det er ikke muligt at skelne imellem f.eks. hvem der downloader en app på frisk, eller om det bare er en gammel bruger der opdaterer sin gamle app. Så der er noget manuelt arbejde i det her system. Hvor det ikke bare bare.

Q: Har i tal på nogle tal omkring besparelser ?

A: Det er meget begrænset hvilke besparelser der har været. De sager vi jo har fået ind, har der været besparelser på i forhold til pr sag pr mandetimer. Men i om med at vi har brugt de sidste 2 år på at udvikle og opsamle viden, så har der ikke været så meget fokus på at høste og analysere effekten af det.

Q: Men kan i mærke at flere og flere folk downloader og bruger jeres app?

A: Ja helt sikkert, specielt den her sommer. Nu er det så det 3. sommer hvor vi kører med appen. Første sommer kom der bare nogle enkelte anmeldelser, og det var stort i sig selv fordi vi så ihvertfald at det virkede. Næste sommer kom der lidt flere, men der var vi egentlig lidt skuffede over at det ikke var flere. Vi havde ihvertfald store forventinger til appen. Men det er jo igen det her med at dem der downloadet den på nyheden har så glemt at den findes. Der er flere ting der kunne være faktorer i det.

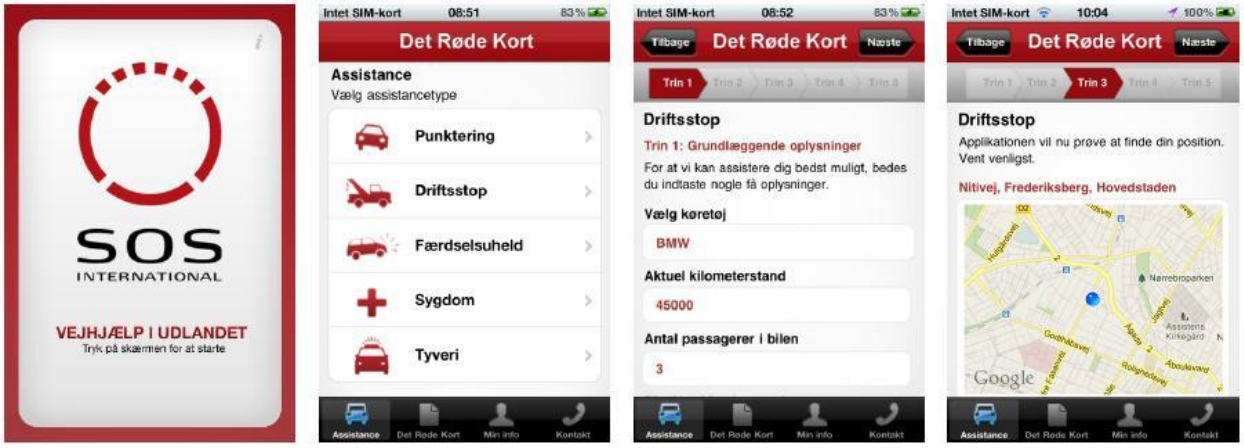
Hvor mange havde egentlig smartphone på 3år siden i forhold til nu? Hvor mange downloadede den men glemte den.

Men jeg vil sige at den her sommer har der været rigtig mange. Det er jo nok pga. At folk er blevet bedre til at bruge sin smartphone, folk bruger flere apps. Det virker som om det er blevet en mere naturlig ting at bruge en app til sådan noget. Så vi har store forventinger til næste sommer. Så det ville måske være muligt at kunne beregne nogen former for besparelser ud, på den her sommer, men der er vi ikke nået til endnu.

Det bliver meget spændende kommende sommer specielt med det gulekort, som jo har et dedikeret nummer at ringe ind til, så det vil være meget nemmere at kunne måle på de oprettede sager der i forhold til appen. Så det er nemmere statistikker på det iforhold til det rødekort som kommer ind til vores hovednummer.

Appendix D

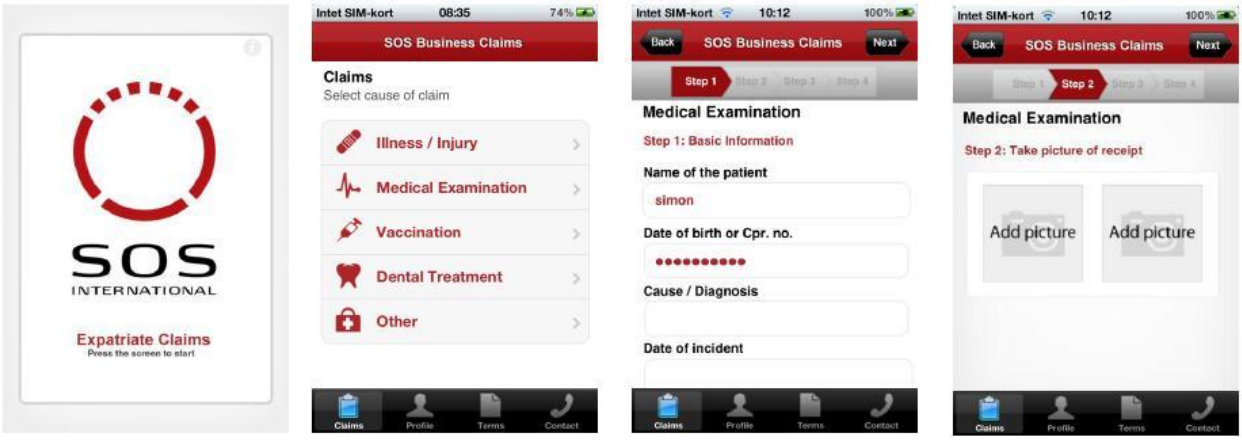
An overview mobile applications currently available from SOS International A/S (November 2012)



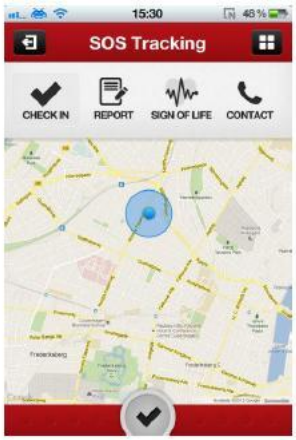
Name: **Det Røde Kort (The Red Card)**
Release Date: **10.06.2010**
Compatibility: **iOS and Android**

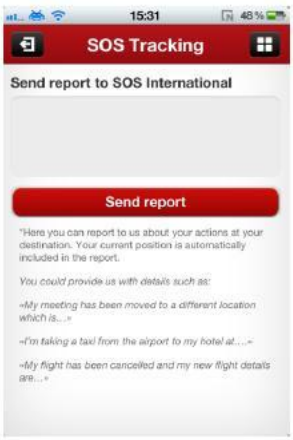
Name: **BMW Application (Developed by SOS International)**
Release Date: **Early 2011**
Compatibility: **iOS**

Name: **Sikker på Ski**
Release Date: **10.01.2011**
Compatibility: **iOS and Android**

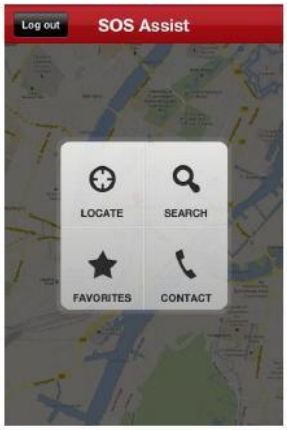


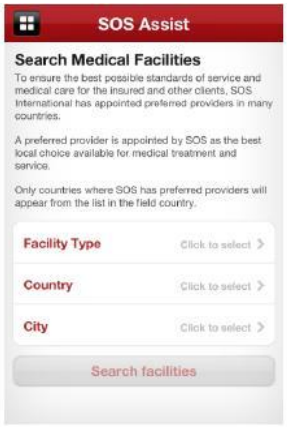
Name: **SOS Business Claims**
Release Date: **13.03.2012**
Compatibility: **iOS and Android**



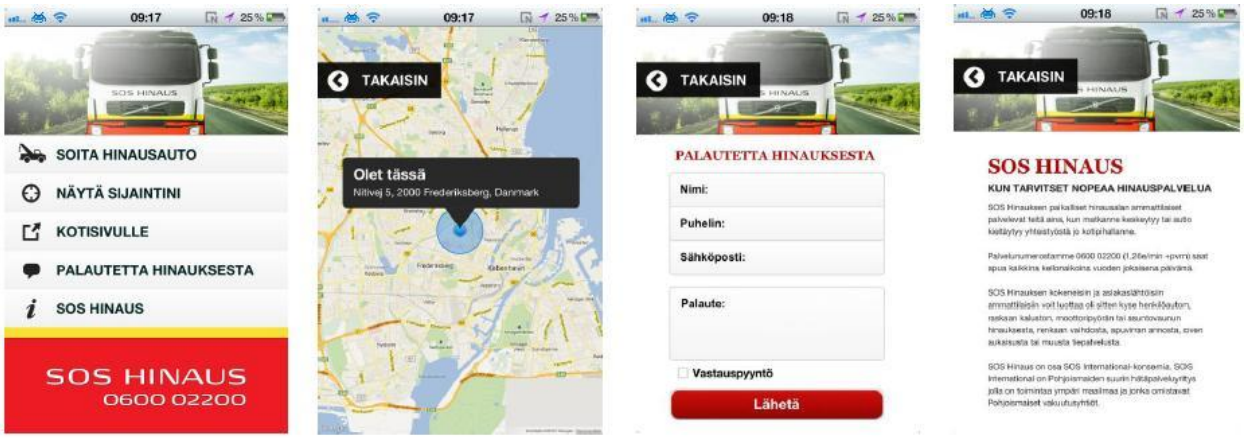


Name: **SOS Tracking**
Release Date: **01.08.2012**
Compatibility: **iOS and Android**





Name: **SOS Assist**
Release Date: **07.11.2012**
Compatibility: **iOS and Android**



Name: **SOS Hinaus (Finnish version of The Red Card)**
Release Date: **10.06.2010**
Compatibility: **iOS, Windows Phone and Android**