John Jeansson

In Search of Information Systems Value

A Case Study of the EHR Benefits Realisation Efforts of Three Swedish Hospitals

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ABSTRACT

The Swedish public health care organisation could very well be undergoing its most significant change since its specialisation during the late 19th and early 20th century. At the heart of this change is a move from using manual patient journals to electronic health records (EHR). EHR are complex integrated organisational wide information systems (IS) that promise great benefits and value as well as presenting great challenges to the organisation. The Swedish public health care is not the first organisation to implement integrated IS, and by no means alone in their quest for realising the potential benefits and value that it has to offer. As organisations invest in IS they embark on a journey of value-creation and capture. A journey where a cost-based approach towards their IS-investments is replaced with a value-centric focus, and where the main challenges lie in the practical day-to-day task of finding ways to intertwine technology, people and business processes. This has however proven to be a problematic task. The problematic situation arises from a shift of perspective regarding how to manage IS in order to gain value. This is a shift from technology delivery to benefits delivery; from an IS-implementation plan to a change management plan. The shift gives rise to challenges related to the inability of IS and the elusiveness of value. As a response to these challenges the field of IS-benefits management has emerged offering a framework and a process in order to better understand and formalise benefits realisation activities. In this thesis the benefits realisation efforts of three Swedish hospitals within the same county council are studied. The thesis focuses on the participants of benefits analysis projects; their perceptions, judgments, negotiations and descriptions of potential benefits. The purpose is to address the process where organisations seek to identify which potential IS-benefits to pursue and realise, this in order to better understand what affects the process, so that realisation actions of potential IS-benefits could be supported.

A qualitative case study research design is adopted and provides a framework for sample selection, data collection, and data analysis. It also provides a framework for discussions of validity, reliability and generalizability. Findings displayed a benefits fluctuation, which showed that participants' perception of what constituted potential benefits and value changed throughout the formal benefits management process. Issues like structure, knowledge, expectation and experience affected perception differently, and this in the end changed the amount and composition of potential benefits and value. Five dimensions of benefits judgment were identified and used by participants when finding accommodations of potential benefits and value to pursue. Identified dimensions affected participants' perceptions, which in turn affected the amount and composition of potential benefits. During the

formal benefits management process participants shifted between judgment dimensions. These movements emerged through debates and interactions between participants. Judgments based on what was perceived as expected due to one's role and perceived best for the organisation as a whole were the two dominant benefits judgment dimensions. A benefits negotiation was identified. Negotiations were divided into two main categories, rational and irrational, depending on participants' drive when initiating and participating in negotiations. In each category three different types of negotiations were identified having different characteristics and generating different outcomes. There was also a benefits negotiation process identified that displayed management challenges corresponding to its five phases. A discrepancy was also found between how IS-benefits are spoken of and how actions of IS benefits realisation are understood. This was a discrepancy between an evaluation and a realisation focus towards IS value creation. An evaluation focus described IS-benefits as well-defined and measurable effects and a realisation focus spoke of establishing and managing an on-going place of value creation. The notion of valuescape was introduced in order to describe and support the understanding of IS value creation. Valuescape corresponded to a realisation focus and outlined a value configuration consisting of activities, logic, structure, drivers and role of IS.

SAMMANFATTNING

Den svenska offentliga hälso- och sjukvården kan vara på väg att genomgå sin största förändring sedan i slutet av 1800-talet och början av 1900-talet. Förändringens kärna består i övergången från manuella pappersjournaler till digitala patientjournalsystem. De digitala patientjournalsystemen är komplexa, integrerade, organisationsövergripande informationssystem (IS), vilka bär med sig löften om såväl nyttoeffekter som utmaningar för organisationen. Den svenska hälso- och sjukvården är inte den första att införa integrerade IS och inte heller på något sätt ensam i sin strävan efter att realisera potentiella nyttoeffekter. När organisationer investerar i IS ger de sig ut på vad som kan beskrivas som en nyttorealiseringsresa: en resa där IS-investeringens fokus skiftar från kostnadsfokus till nyttofokus, och där den huvudsakliga utmaningen ligger i det dagliga praktiska arbetet i att hitta sätt på vilket teknik, människor och verksamhetens processer kan flätas samman. Detta har dock visat sig vara problematiskt. Problematiken härstammar från ett perspektivskifte i hur organisationer hanterar IS för att nå önskad nytta: ett perspektivskifte från att leverera teknik till att leverera nytta, från att planera IS-implementering till att planera förändring och verksamhetsutveckling. Skiftet för med sig utmaningar som relaterar dels till IS oförmåga att i sig självt leverera nytta, dels till nyttans flyktighet. Som ett svar på dessa utmaningar har området IS benefits management vuxit fram inom vilket ramverk och processer erbjuds för att förstå och formalisera nyttorealiseringsaktiviteter.

Avhandlingens syfte är att studera och bättre förstå den process där organisationer fattar beslut om vilka potentiella IS-nyttoeffekter som ska realiseras, så att realisering av potentiella IS-nyttoeffekter kan stödjas. I avhandlingen studeras tre svenska sjukhus, inom ett och samma landsting, i deras strävan efter att realisera nyttoeffekter. Avhandlingen sätter fokus på deltagare i landstingets nyttoeffektsprojekt och hur de uppfattar, bedömer och beskriver potentiella IS-nyttoeffekter samt de förhandlingar där beslut tas om vilka potentiella nyttoeffekter som ska realiseras. Studien följer en kvalitativ fallstudie metod, vilken utgör ramverk för urval, datainsamling och dataanalys samt för diskussion kring validitet, reliabilitet och generaliserbarhet.

Resultatet av studien visar på förekomsten av en nyttofluktuering, vilket innebär att deltagarna i nyttorealiseringsprojekt skiftade i vad de ansåg vara och utgöra potentiell IS-nytta under nyttorealiseringsprocessens gång. Faktorer som struktur, kunskap, förväntningar och tidigare erfarenheter påverkade uppfattningen av nytta på olika sätt, vilket i slutändan resulterade i förändringar i sammansättningen och värderingen av den potentiella IS-

nyttan. Resultatet visade också på olika dimensioner av nyttobedömningar som deltagarna använde sig av i samband med beslut kring vilka potentiella nyttoeffekter organisationen skulle sträva efter. Identifierade dimensioner påverkade även deltagarnas perception av nytta och därmed också sammansättningen och värderingen av den potentiella IS-nyttan. Under den formaliserade nytto-realiseringsprocessen skiftade deltagarna mellan olika nyttobedömnings-dimensioner som en följd av interaktion och diskussion med varandra. De två mest dominanta dimensionerna var: bedömningar baserade på deltagarnas uppfattning av vad som förväntades av dem utifrån deras yrkesroll, bedömningar baserade på vad deltagarna uppfattade vara bäst för organisationen som helhet.

Under studien identifierades också förekomsten av nyttoförhandlingar. Dessa kunde kategoriseras under två huvudkategorier beroende på om deltagarnas drivkraft var rationell eller irrationell. Respektive huvudkategori bestod av tre typer av nyttoförhandlingar med olika karaktärsdrag och utfall. Även en nyttoförhandlingsprocess bestående av fem faser identifierades, vilka i sin tur påvisade förekomsten av olika utmaningar när det gällde att leda och styra förhandlingar om vilka potentiella nyttoeffekter en organisation ska sträva efter att realisera.

Till sist visade även studien på förekomsten av en diskrepans mellan beskrivningar av IS-nytta och hur potentiell IS-nytta realiseras. Diskrepansen tydliggjorde skillnaden mellan utvärderingsfokus och realiseringsfokus relaterat till värdeskapande. Utvärderingsfokus beskrev IS-nytta som välavgränsade, mätbara effekter medan realiseringsfokus beskrev IS-nytta som ett pågående tillstånd av värdeskapande i behov av att etableras och ledas. Utifrån ett realiseringsfokus introducerades *valuescape* som företeelse i syfte att beskriva och ge ökad förståelse för IS-värdeskapande. Valuescape beskriver aktiviteter, logik, struktur, drivkrafter och IS roll i samband med värdeskapande i organisationer.

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When spending time and effort on a journey for a long time it is quite difficult to grasp when it finally has come to an end. However, as this thesis project has reached its final destination the greatest journey of all continues, life! I am grateful to have had the opportunity to undertake a thesis project, it has challenged me in more ways than I ever thought it would. However, at the same time I believe it has enriched and enabled me for challenges to come. One of the most rewarding and fulfilling parts of a thesis project are all the wonderful people that you come a cross. Well aware of their vast number I would nevertheless like to take the time to pay my respect and express my gratitude to some of these "fellow travelers", and at the same time plead forgiveness from those not mentioned; rest assured you are not forgotten.

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Finally, over the years I have come to the understanding and conclusion that my own strength and ability often fail me, however, through you I can do anything, I can do all things because it is you who strengthens me; through you blind eyes are open, strongholds are broken and because of you freedom has come to me; I am humbled and in wonder brought to my knees, and as life unfolds and challenges arise I am reassured that nothing is impossible for you. Precious Jesus, I am forever thankfully yours.

John Jeansson
Kalmar, May 2014.

List of original research papers

1. Jeansson, J. Révay, P. (2005). Identifying and measuring IT-value within the public healthcare sector - the first steps. *Proceedings of MicroCAD 2005 International Scientific Conference*, Applied Information Engineering, University of Miskolc, Hungary, March, 2005.

2. Jeansson, J. (2010). Issues of benefits fluctuation during EHR benefits management projects. *Proceedings of the 33rd Information Systems Research Seminar in Scandinavia*, IRIS 33, Engaged Scandinavian IS Research, North Jutland, Denmark, August, 2010.

3. Jeansson, J. (2010). Perception of EHR value. *Proceedings of the 4th European Conference on Information Management and Evaluation*, Universidade Nova de Lisboa, Lisbon, Portugal, September, 2010.

4. Jeansson, J. (2013), Benefits negotiation: three Swedish hospitals pursuit of potential electronic health record benefits, *International Journal of Electronic Healthcare*, Vol. 7, No. 3, p. 248-268

5. Jeansson, J. (201x), Information Systems Valuescape, (accepted for publication in forthcoming issue of: *International Journal of Business Information Systems*).

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Part One

Research Summary

"Do not be discouraged over what you do not know, be excited about unwrapping all there is yet to discover."

Julie Ackerman Link
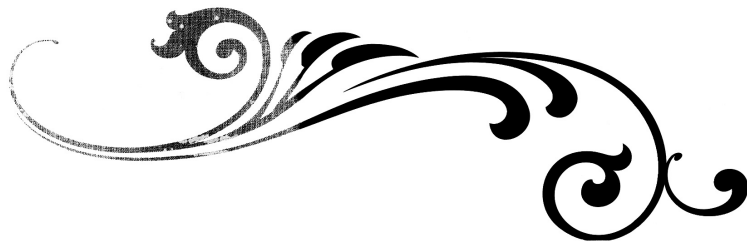
Chapter 1

Introduction

"I have a problem seeing what value the EHR generates with this benefit."
- Regional manager -

The digitalisation of the Swedish public health care organisation could very well be the most significant change since its specialisation during the late 19th and early 20th century (Nilsson and Peterson, 1998). At the centre of this change is a shift of form, character and use of information systems (IS), as the 21 county councils in Sweden move from using manual patient journals to electronic health records (EHR). These complex integrated organisation-wide IS carry promises of great benefits and value as well as great challenges to the organisation (Davenport, 2000, Menachemi and Collum, 2011). Early versions of IT-supported patient documentation in Sweden were first implemented within primary care units during the 1990s. It was not until 2005 that the first county council implemented what could be labelled as an EHR throughout their whole organisation. The complexity of the task initiated a nationwide IT-strategy by the Swedish government during 2005 (2005/06:139), pushing the county councils to build a shared infrastructure and promoting knowledge sharing. By 2012 all 21 county councils in Sweden had made the transition (Jerlvall and Pehrsson, 2012).

The Swedish public health care is not the first organisation to implement integrated IS and is by no means alone in its quest for realising the potential benefits and value that it has to offer. In general, IS support and impact both at an individual and an organisational level (Checkland and Holwell, 1998, DeLone and McLean, 1992, DeLone and McLean, 2003) carry promises of great benefits and value (Davenport et al., 2004b, Thatcher and Oliver, 2001, Uslu and Stausberg, 2008). As organisations invest in IS they find themselves embarking on a journey of value-creation and capture. A journey where they are encouraged to replace a cost-based approach towards their IS-investments with a value-centric focus (Venkatraman, 1999, Venkatraman,

1998) and where the main challenges lie in the practical day-to-day task of finding ways to intertwine technology, people, and business processes (Thorp, 2003). As a response to these challenges the field of IS-benefits management has emerged offering a framework and a process in order to better understand and formalise benefits realisation activities (Baccarini and Bateup, 2008, Ward and Daniel, 2006, Thorp, 2003, Farbey et al., 1999b).

In this thesis the benefits realisation efforts of three Swedish hospitals within the same county council are studied. The thesis focuses on conducted benefits analysis projects where the county council uses a formal IS-benefits management process. In such a process key stakeholders within the organisation engage in an inter-subjective discourse about their perceptions of potential benefits and value (Farbey et al., 1993, Ward and Daniel, 2006). The benefits management process (cf. section 1.3.4 and 4.2.2) generates descriptions, as perceptions of benefits become pictures of value that members of the organisation set out to achieve, thus making these descriptions important benefits realisation tools (Checkland and Holwell, 1998, Staples et al., 2002).

1.1 Perceived problematic situation

Experience gained by most organisations, together with results from a large amount of research, paints a picture of benefits realisation as a complex and problematic task not easily achieved (van Ginneken, 2002, Renkema, 2000). The problematic situation arises from a shift of perspective regarding how to manage IS in order to gain value (Ward and Peppard, 2002). This is a shift from technology delivery to benefits delivery; from expenditure proposals with loose linkage to business needs, to business cases highly integrated with business drivers; from an IS-implementation plan to a change management plan; from stakeholders being subjected to unfocused functionality, to stakeholders being involved in IS-investments that are sufficient to do the job (Ward and Daniel, 2006). Ward and Peppard (2002) describe it as the fourth era in the evolution of the role of IS in organisations. The shift gives rise to two challenges that are central to the problematic situation of this thesis; the inability of IS and the elusiveness of value.

The first challenge, the inability of IS, derives from an erroneous assumption that an IS with its technical functionality comes with a set of benefits that when installed will generate the intended business value. This assumption follows the magic bullet approach and has a technical deterministic view of IS-benefits realisation (Markus and Benjamin, 1997, Howcroft et al., 2004). In a magic bullet approach IS in itself is regarded as the one thing that

changes people and organisations, empowering them to work in new productive ways (Markus and Benjamin, 1997). Markus and Benjamin (1997) suggest that such an approach hides the true characteristics of IS, which is: *"a package of ideas about how people should work differently."* (Markus and Benjamin, 1997, p.58). A technical deterministic view argues that IS are an autonomous force that create social change, and in doing so disconnect IS from the social world within which they reside (Howcroft et al., 2004). The logic of this assumption can be traced back to the long lasting IS-productivity discussion regarding whether or not investments in IS are related to increased productivity and if productivity measures are relevant indicators of value (Brynjolfsson, 1993, Brynjolfsson and Hitt, 1996, Willcocks and Lester, 1996, Shu and Strassmann, 2005). The second challenge, the elusiveness of value, derives from an erroneous assumption that IS-benefits are easily defined and measured, leaving the organisation with a clear and stable map of benefits to pursue. This assumption follows a hard systems thinking approach to IS and IS-benefits (Checkland and Holwell, 1998, Checkland and Poulter, 2006). Such an approach argues that a perceived world consists of well-defined interacting subsystems that can be engineered to achieve their objectives. Such an approach pays little or no attention to social interactions providing conflicting world views (Checkland and Poulter, 2006). Its logic assumes a cause and effect-like approach where IS-benefits are regarded as highly objective, stable and rational phenomena (DeLone and McLean, 1992, DeLone and McLean, 2003). Research within the field argues that these two erroneous assumptions are part of a past paradigm and that creating and capturing benefits and value related to IS is not so much about technology and functionality as it is about people making sense of IS in daily activities, change processes, together with the benefits realisation capabilities of organisations (Orlikowski, 1992, Soh and Markus, 1995, Tiernan and Peppard, 2004, Ashurst and Hodges, 2010). Further, research shows that IS-benefits are a matter of perception (Tallon and Kraemer, 2007); shifting between stakeholders (Jurison, 1996b, Blake et al., 2010), changing over time (Kwon et al., 2002), emerging due to organisational change (Berg, 2001, Farbey et al., 1999b), migrating due to external forces (Slywotzky, 1996) and leaking due to lack of attention (Thorp, 2003). Potential IS-benefits become less a fixed result of technology implementation and more a dynamic and on-going state to manage.

The challenges of Swedish county councils, as they invest in EHR solutions, are then to formalise their benefits realisation efforts and to manage them in the presence of the inability of IS and the elusiveness of value. In practice this is very much a challenge of managing a social process where politics and instrumental decision-making are brought together in a consensus driven

context (cf. section 7.4), (Checkland and Holwell, 1998, Ackermann and Eden, 2011a, Lämsä, 2010, Isaksson, 2009, Alvesson, 1989). Research has shown that the initial phase of benefits management is a window of opportunity, and that decisions and directions taken during this stage often determine how the organisation will use IS in the longer run (Tyre and Orlikowski, 1994). The process of identification and categorisation of potential IS-benefits has proven to be of importance to gain the true advantages of IS (Jurison, 1996a, Lederer and Mirani, 1995, Venkatraman, 1999). Research has also shown that understanding people's perceptions of IS will shape actions towards benefits realisation and often determines the need for organisational changes (Checkland and Holwell, 1998, Ward and Peppard, 1996). One of the first benefits realisation activities initiated by the county council was a benefits analysis project in which a selected group of participants were to identify, structure, value and describe potential benefits that clinical departments throughout the three hospitals were to pursue and realise. A central challenge emerges addressing how IS-value creation is to be understood and described when IS no longer can be spoken of as a creator of benefits and value, and when benefits and value no longer can be perceived as fixed technology-driven entities. This thesis proposes that investigating the perceptions, judgments, negotiations and descriptions of potential benefits and value is vital for a deeper understanding of IS-value creation.

1.2 Purpose and research questions

The purpose of the thesis corresponds to the benefits management process (cf. section 4.2.2) with its focus on participants´ perceptions, judgments, negotiations and descriptions of potential benefits. The purpose has its theoretical foundation in the writings of Checkland and Holwell (1998) who speak of people within organisations seeking to act purposefully based on their perception of the world around them. They propose a model (figure 1) of a complex social process where the individual perception of selective parts of the world are part of a collective inter-subjective discourse in which meaning is attributed, judgments are made and intentions are formed in order for actions to be taken which change the perceived world initiating a new process (Checkland and Holwell, 1998).
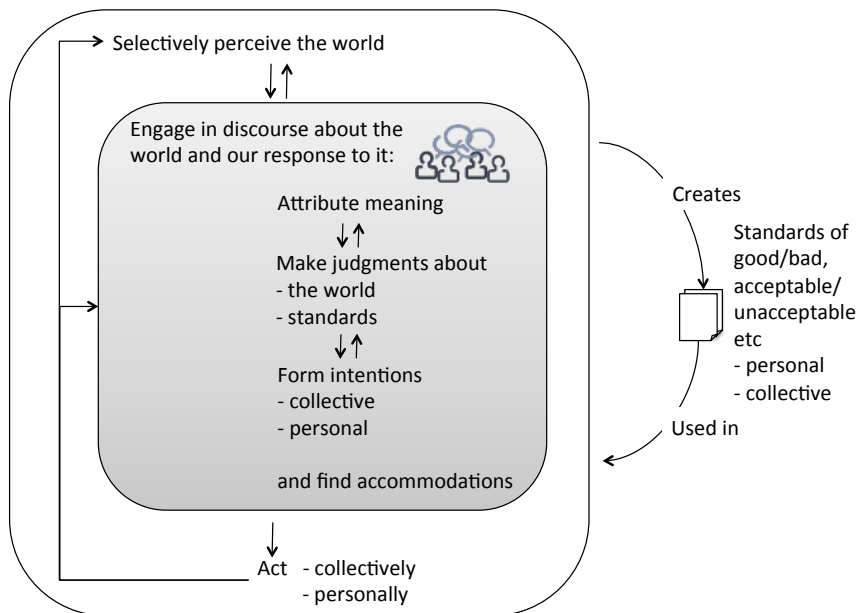
Figure 1: A model of the social process of purposeful actions (Checkland and Holwell, 1998).

In the context of the thesis different stakeholders within the studied county council come together to identify potential EHR benefits and required benefits realisation actions. Checkland and Holwell (1998) propose that they selectively perceive their world as a result of their previous experiences both as individuals and as members of multiple formal and informal groups. These different perceptions of what constitutes a benefit or a benefits realisation activity will then be shared, exchanged and challenged in an inter-subjective

organisational discourse. In such a discourse, meaning is created and judgments are made with the intention to form and take collective as well as individual actions toward EHR benefits realisation. Checkland and Holwell (1998) state that *"Changes both internal and external to the organisation will change individual and group perceptions and judgments, leading to new accommodations related to evolving intentions and purposes."* (Checkland and Holwell, 1998, p.104). This proposes a social process that brings together politics as well as rational instrumental decision making (Checkland and Holwell, 1998, Ackermann and Eden, 2011a).

The overall purpose of the thesis is to address the process where organisations seek to identify which potential IS-benefits to pursue and realise in order to better understand what affects the process, so that realisation actions of potential IS-benefits may be supported. The purpose is divided into four research streams that correspond to the framework offered by Checkland and Holwell (1998). Each research stream poses a research question that relates to one of the original research papers (figure 2).
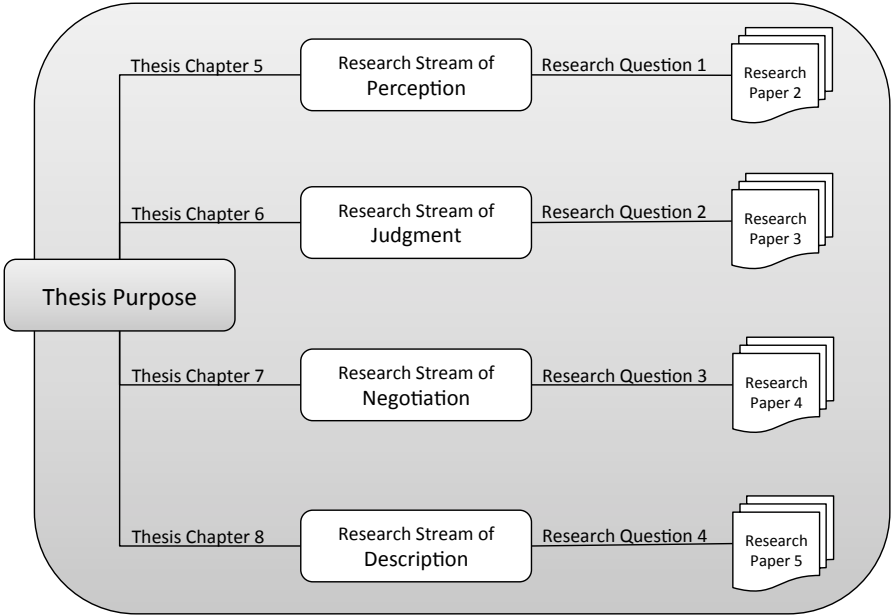
Figure 2: Research streams and their relationship to thesis chapters, research questions and research papers.

The research stream of perception sets focus on the relationship between perception and the discourse leading up to accommodations of which

potential IS-benefits to pursue and what realisation actions to take. The research stream relates to research paper 2, *Issues of Benefits Fluctuation During EHR Benefits Management Projects*, and poses the research question (Q1): *how are participants' perceptions of IS-benefits affected during a formal benefits management process?*

The research stream of judgment addresses standards of judgment used when finding accommodations regarding potential IS-benefits. The research stream relates to research paper 3, *Perception of Value*, and poses the research question (Q2): *how do different standards of benefits judgment affect which IS-benefits to pursue?*

The research stream of negotiation seeks to understand the inter-subjective discourse that participants of benefits analysis projects engage in when finding accommodation regarding potential IS-benefits. It sets focus on the social process that brings together politics and rational instrumental decision-making. The research stream relates to research paper 4, *Benefits Negotiation: Three Swedish Hospitals' Pursuit of Potential Electronic Health Records Benefits*. It poses the research question (Q3): *how are negotiations of IS-benefits to be understood and managed?*

The research stream of description addresses the challenge to describe and speak of IS-benefits and value. The agreed-upon descriptions become pictures of IS-benefits realisation actions that the organisation sets out to achieve. The research stream relates to research paper 5, *Information Systems Valuescape,* and poses the research question (Q4): *how are organisations to describe IS-value creation in order to support benefits realisation actions?*

1.3 Related work
Research related to how organisations are to achieve business value with and through IS has a long history and entails many different, but interacting, perspectives. In this section some of the topics considered important and relevant for the thesis will be discussed.

1.3.1 IS success
Over the years the IS-research community has taken on the challenge to understand and determine what constitutes IS-success. As IS has grown in complexity, issues that determine success have changed. Petter et al. (2012) state, based on their research, that evaluating IS-success has changed from a quantitative and objective focus to a qualitative and subjective. When defining what constitutes success they state that the context of IS, which is multi-dimensional, and the differing perspectives of its key stakeholders are the two most important issues that define success (Petter et al., 2012). In their

widely cited IS-success model DeLone and McLean (1992, 2003) propose six major interrelated and interdependent categories of success measures: information quality, system quality, service quality, intention to use, user satisfaction and net benefits. They suggest that attending to these factors will give a richer picture of what constitutes IS-success. Dezdar and Sulaiman (2009) take a similar approach as they study the literature related to integrated IS and, based on 17 identified critical success factors, propose a taxonomy consisting of five categories: technology, expertise, user, organisation and project. They conclude that identifying success factors are of increasing importance and that classifications of this kind will enable decision makers to formulate better strategies. Wateridge (1998) concludes that although there is a plethora of success factors to use, it is of the outmost importance that success criteria are defined and agreed upon by participating stakeholders at the outset of any IS-project. Remus and Wiener (2010) agree that identifying critical success factors is an important stage, however, they suggest that research and practice should be extended to include the analysis and management of these factors, proposing a multi-method research approach. In a health care context Goldberg et al. (2012) identify four categories of success factors related to EHR: plan for work transitions, ensure adequate technical support, operate as a team and invest in training and communication. They conclude that EHR adoption alone is not a guarantee for improved care. Heeks (2006) proposes a design-reality gap model in order to understand and address IS-success in health care settings. The model consists of eight dimensions: information, technology, processes, objectives and values, staffing and skills, management systems and structures, and recourses such as time and money. He concludes that although the model offers a generic framework of understanding success it has to be adapted to existing realities of each studied context.

1.3.2 Perception of IS-value

Kwon et al. (2002) study the relationship between different stakeholders' perception and IS-value. They provide a sensemaking framework that illustrates perception of benefits as a process of framing and reframing value. They argue that managing this process is a crucial management activity that could provide balanced actions needed to optimise value creation. Tallon and Kraemer (2007) also use the notion of sensemaking in their study of executives' perceptions of IS-value. They outline a model of executives' perception of IS-impacts on organisational level and argue that studying and using managers' perceptions in research is valid as these have been proven to be more accurate and consistent than previously thought. Ovaska et al. (2005) conclude that participants' expectations and attitudes had a considerable impact on the understanding of IS requirements. Talon et al. (2000) study executives' perceptions of IS-value and show a relationship

between perception of value and the degree of a organisations' focus on IS-goals. They state that executives in organisations with focused goals perceive higher levels of value than executives in organisations with low focus and lack of goals for IS. Fadel and Brown (2010) build on the unified theory of acceptance and use of technology model by Venkatesh et al. (2003) and state that user perception impacts IS-appraisal. Peterson et al. (2011), who study physicians' realised and anticipated benefits from EHR, conclude that users perceive benefits differently related to their EHR experience. Physicians that have adopted an EHR speak primarily of improved workflows leading to better clinical outcomes, whereas physicians that intend to adopt an EHR primarily focus on financial benefits.

1.3.3 IS-value assessment

Finding ways to accurately assess the impact and success of IS has been a central and important topic for the past 50 years (Powell, 1999) and research targeting issues of IS-evaluation has become extensive (Farbey et al., 1993). Farbey et al. (1992, 1994) argue that a major problem for managers is to know which evaluation framework to use in a specific situation. They propose a matrix method to support decisions. They further propose the use of formative evaluation in order to cope with the changing nature of organisations and IS. This notion is supported by Remenyi and Sherwood-Smith (1999) who, in their study, propose a continuous participative evaluation process built on a formative evaluation paradigm. Farbey et al. (1999b) conclude that IS-evaluation should be closely integrated with its organisational context in order to support organisations to achieve IS-value. Wyatt and Wyatt (2003) state that evaluation of health IS is important and conclude that the choice of evaluation framework does not depend on the technology that is being evaluated alone. Yusof et al. (2008a, 2008b) specify this further as they propose an evaluation framework for health IS, which uses a multi-disciplinary approach incorporating the notion of fit between humans, organisations, and technology. An initiative led by Ammenwerth et al. (2004), the HIS-EVAL workshop in Innsbruck, speaks of the importance of a multi-disciplinary, collaborative environment of IS-evaluation in health care organisations.

1.3.4 IS benefits management

Studies of IS-benefits management focus on structured processes of realising IS-value. In a study of 24 IS-projects Changchit et al. (1998) propose a process for identifying potential benefits. The conducted study shows that identifying potential benefits is an iterative and dynamic activity that is often used as a tool to persuade organisations to commit to their IS-project and value realisation. Shang and Seddon (2002) develop a framework of how to categorise and describe benefits of integrated IS from a business manager

perspective. Their framework consists of the following five dimensions: operational, managerial, strategic, IT-infrastructure and organisational benefits. Alongside these dimensions they identify what they call perceived net benefit flow graphs in order to describe the characteristics of benefits in each dimension. The net benefit flow indicates how a perceived benefit might change over a certain period of time due to different circumstances. In an early study Silk (1993) proposes that benefits management together with project management and people management contribute to achieving value from IS. He concludes that managers' personal commitment to achieving each category of benefits is important in order for organisations to succeed with their benefits realisation endeavours. Murphy (2002) presents a framework for benefits realisation, which is built around the concepts of pillars, processes and people. There are five pillars that provide a critical set of perspectives needed within the organisation related to IS-investments. The five perspectives provide a foundation for a six-step process towards benefits realisation. Murphy states that people, having different roles and performing different actions, are central to the achievement of IS-value. Thorp (2003) proposes a benefits realisation approach which is based on three premises: *one*, benefits do not just happen; *two*, benefits rarely happen according to plan; *three*, benefits realisation is a continuous process. Ward and Daniel (2006) state in their work on defining the field of IS-benefits management that investments in IS are not just investments in technology but in IS-enabled change. They build a case for a benefits management process that they state differs from earlier models as it focus on the relationship between the enabling information system and changes to processes, structures and working practises. In a study by Doherty et al. (2008) the IS-benefits management process proposed by Ward and Daniel (2006) is used when developing a clinical trials support system for a health organisation. Their conclusion is that the benefits management process supports the organisation in its focus on benefits and organisational change as well as stimulates communication between involved stakeholders.

1.3.5 IS-capabilities

Ward and Daniels (2006) state that the way in which organisations use their collective technical, business and managerial knowledge and skills determines the extent of their value realisation from IS-investments. The notion of organisational information competencies is proposed by Peppard et al. (2000). They build a framework based on macro and micro competences that enables business managers and users to unlock IS-value. Peppard and Ward (2004) further develop the notion of competencies and propose the concept of an IS-capability. They state that IS-capability is embedded within the fabric of organisations and that it represents a fourth era in the evolution of the use of IS in organisations. Caldeira and Dhillon (2010) develop a

comprehensive framework of IS-capabilities and provide an outline for how the identified competencies interconnect and integrate. Realising benefits and achieving value is then the result of a unique network of competencies. Jacks et al. (2011) conclude that IS-capabilities are central in order for IS to impact the performance of organisations. Weill and Aral (2006) take a portfolio approach towards IS-investments and state that these investments are not able to create value on their own. Instead they propose that organisations need to be what they call IT-savvy. Organisations that are IT-savvy have developed five characteristics consisting of interlocking practices and competencies that collectively derive value from IS-investments. Ashurst and Hodges (2010) build on the concept of IS-capability and propose a benefits realisation capability which they refer to as the ability of an organisation to succeed with IT-enabled transformation and change.

1.3.6 IS and strategic alignment

Findings according to Byrd et al. (2006) support the notion that business and IS-strategy alignment increases the value of IS-investments. Middleton and Harper (2004) conclude that alignment processes should be carried out before starting IS-investments projects. Booth and Philip (2005) argue that the business strategy and the IS-strategy should be developed in parallel rather than one after the other. They conclude that IS-alignment is an on-going process rather than a single event. In his study, Grant (2003) shows that IS-capability is central to achieving IS-alignment. Grant further states that IS-alignment is a complex task and exact alignment might not be possible. Avila et al. (2009) suggest three levels of alignment in order to enable a global and complete alignment: internal alignment, environment alignment and alignment with uncertain evolutions.

1.4 Introducing the study

In the thesis the benefits realisation efforts of three Swedish hospitals within one county council are studied. The author took the role of an observer and collector of data and not as an active partaker of benefits realisation activities (cf. section 2.4.1). Due to the request of the county council its name as well as the names of participating hospitals are not disclosed. The three hospitals are named and referred to according to their size (table 1). There was never any formal, written agreement of confidentiality, however, there was a mutual understanding between the CIO of the county council, partakers of the benefits analysis projects and the author that collected data were to be treated as confidential.

Table 1: Size and volume of each hospital within the county council during time of study.

Context	Hospital "large"	Hospital "medium"	Hospital "small"
Number of employees (approx.)	2500	1500	500
Number of beds (approx.)	400	200	100
Number of doctors appointments/year (approx.)	130 000	80 000	30 000

The county council made their EHR-investment during 2004. They launched their HealthIT-project at the same time with the aim of implementing the EHR at all three hospitals before the end of 2007. The end-date of the implementation was later postponed. The theme and vision of the investment was: "One patient – one journal". The long-term goals of the EHR-investment were to:

- Provide caregivers with an adequate tool for decision-making,
- Support collaboration and coordination between different care units,
- Relieve caregivers from routine work,
- Strengthen the caretakers'/patients' position,
- Reduce process time.

The EHR-implementation project started in January 2006. The implementation was broken down into different tracks consisting of clinical departments with similar functions; for example a paediatrics track, an internal medicine track, an orthopaedics track and so on. Each track were given an individual start date for which they had to make several months of preparations. The implementation was then carried out at the clinical departments at all three hospitals simultaneously. As the county council made their EHR-investment decision they also decided to initiate a benefits management project. One part of the project was to conduct benefits analysis for each track. In reality only the first four tracks conducted the analysis before the county council board decided to not go through with the rest as planned. Due to the request of participating clinical departments their names are not disclosed. Throughout the thesis they are referred to as track

1-4 (table 2).

The county council board formulated the overall purpose of the benefits analysis and stated that the analysis was to:
- Provide decision support,
- Identify potential benefits,
- Identify possibilities to cover the costs of using the EHR,
- Be owned by the participating clinical departments as a management support tool.

Each track was to use the same benefits analysis model and be led by the same external project leader. The chief information officer (CIO) together with heads of department selected project participants. Each track was to be represented by participants from all three hospitals, different work groups, different management levels within the county council, as well as participants from the central HealthIT project group.

Table 2: Overview of the case study context

Track/Case	Track 1/ Case A	Track 2/ Case B	Track 3/ Case C	Track 4
Time of benefits analysis				
Start of benefits analysis	Oct 2006	Oct 2007	Oct 2007	Sept 2005
Duration of analysis	5 days	5 days	4 days	4 days
Participants				
Number of participants	9	11	8	9
Attending roles/functions (apart from head of department and external project leader) during benefits analysis observations	Doctor, nurse, occupational therapist, human resource officer, CIO, local EHR project leader, Chief doctor and central IT-board member (one meeting).	Senior surgeon, ward nurse, nurse, office manager, IT-support staff, CIO, chief secretary.	Regional manager, local and regional EHR coordinator, CIO, IT-support staff.	-
Interview respondents	CIO, local EHR project leader, HealthIT project leader, head of department	-	-	-

Table 2: Overview of the case study context (continued)

Track/Case	Track 1/ Case A	Track 2/ Case B	Track 3/ Case C	Track 4
Relationship to EHR				
Previous experience	No	Yes	No	No
Related to implementation	Started benefits analysis before implementing EHR	Implemented EHR before starting benefits analysis	Implemented EHR before starting benefits analysis	Started benefits analysis before implementing EHR
Relationship to original research papers				
Research paper	2,3,4,5	2,3,4	2,3,4	2,3
Data collection	Project documentation, Observation, Interview	Project documentation, Observation -	Project documentation, Observation -	Project documentation, - -

1.4.1 Introducing the benefits analysis model

The benefits analysis model used by the county council consists of 10 steps divided into three phases performed in an iterative fashion (figure 3). The model is developed by three Swedish senior consultants based on their experience of investing and implementing IS/IT solutions within companies of different sizes and businesses, as well as within the public sector. The model has been widely used through out the Swedish public health care organisation (Dahlgren et al., 2006).
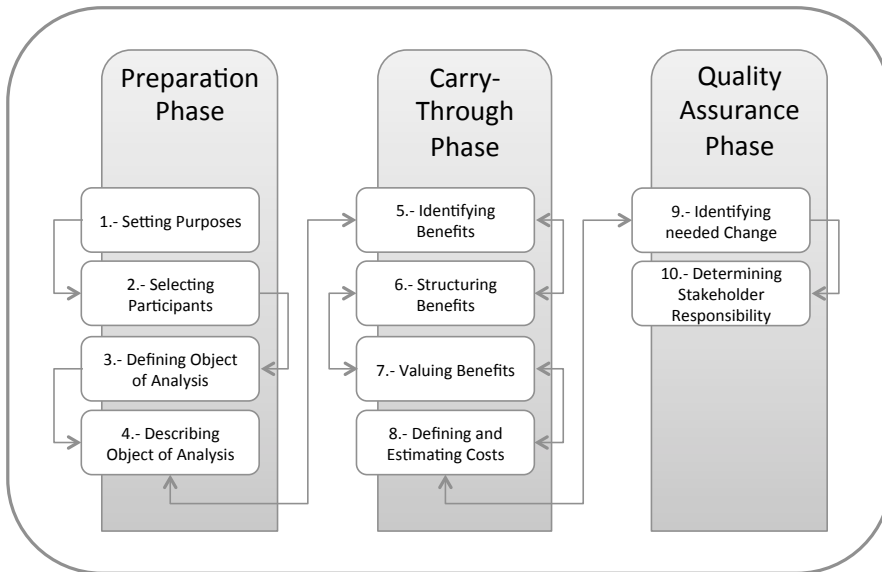
Figure 3: Phases and stages of used benefits model as described in Dahlgren et al. (2006).

The first phase, the preparation phase, accounted for approximately 10% of time spent in each of the three observed cases (A,B,C). In this phase participants defined the scope, purpose and goals of the analysis (table 3).

The second phase, the carry-through phase, accounted for approximately 80% of time spent in each of the three observed cases (A,B,C). In this phase participants identified, structured and valued potential benefits as well as identified costs associated with benefits realisation. The number of benefits varied between the four tracks (table 4), and each identified potential benefit was in this phase subject to a benefits negotiation (Jeansson, 2013a).

Table 3: Purposes defined by participants of the four conducted benefits analysis projects.

Track 1	Track 2	Track 3	Track 4
Contribute to a larger perspective	Be able to motivate improvements of the EHR	Identify needed improvements of the EHR	State potential benefits and their monetary value
Set focus on benefits and value	Identify what to evaluate in order to support management	Identify needed improvements of work processes	Create management commitment
Create county council management commitment	Support estimation and decision of needed number of employees within the organisation	Identify what to evaluate in order to support benefits realisation	Motivate employees
Identify potential benefits and benefits realisation activities	Show the effects on working environment		Identify what to evaluate
Identify what to evaluate in order to support management control	Show possible shortcomings in patient safety		Set focus on the benefits during the EHR-implementation
Enable collaboration between clinical departments through out the county council	Be able to motivate continuous training and education		Increase value
Set focus on improving the organisation	Be able to motivate continuous revision of the organisation		

The third phase, the quality assurance phase, accounted for approximately 10% of time spent in each of the three observed cases (A,B,C). In this phase, barriers for realising potential benefits and required change activities were identified. Participants also decided on the areas of responsibility and accountability for benefits realisation. The initial intention was to let each track decide and find people responsible for realising identified potential benefits. However, as the benefits analysis projects went on, the CIO, encouraged by participants of the different tracks, pleaded to the county council board to employ a benefits realisation controller. At first this was received favourably, however, in the end the suggestion was turned down. As a result there was no support function taking charge of realisation issues related to the results of the benefits analysis projects. It was up to each head of department to do their best in order to realise potential benefits in their department. The benefits analysis projects resulted in a final report that described a selection of identified potential benefits together with their estimated value and initial thoughts on benefits realisation. The report was considered a realisation tool for each local head of department.

Table 4: Number of potential benefits identified by participants of the four conducted benefits analysis projects.

Track/Case	Track 1/Case A	Track 2/ Case B	Track 3/ Case C	Track 4
Potential EHR benefits				
Identified potential benefits	190	85	70	170
Benefits in final report	11	11	8	25

In each observed analysis the last phase was not carried out as intended, which was a direct result of how project time was distributed between the three phases. The most time consuming phase was the carry-through phase, and especially the seventh stage of valuing benefits. The authors of the model highlight the efficiency of the model and that it should not require lengthy project time. The authors also stress the importance of conducting each phase thoroughly (Dahlgren et al., 2006). This mismatch between project time and conducting all stages of the model was never communicated as intentional and agreed upon, instead it was perceived as a lack in management. When comparing the used benefits analysis model with the theoretical framework of the IS benefits management process described in chapter 4 of the thesis, the used model corresponds to the two (five in total)

initial stages of identifying and structuring benefits and planning benefits realisation. The used model does not share the same focus on benefits realisation as the theoretical framework (Dahlgren et al., 2006, Ward and Daniel, 2012).

1.5 Original publications

The thesis consists of five original peer-reviewed research papers. They are all part of the same study but take on different perspectives related to the purpose of the thesis. The first three papers were presented at scientific conferences. These conferences were focused on IS and information management from a Scandinavian as well as a European perspective. Papers four and five were written for international academic journals. Paper four is published in a journal discussing IS in health care organisations and paper five is accepted for publishing in a journal discussing management issues of IS. In this section a short summary of the central issues of each paper is presented.

1.5.1 Paper one

Identifying and Measuring IT Value Within the Public Healthcare Sector, the First Steps. Co-authored with Péter Révay and presented at microCAD International Scientific Conference, 10-11 March 2005. Hungary.

The paper provides the starting point in outlining a research project aimed at studying IS benefits realisation within public health care organisations. It addresses the increased organisational interest in measuring the outcome of investments in IS/IT and to work strategically towards IS value realisation. The three main outcomes of the paper are: *one*, drivers and benefits of IS/IT value measurement; *two*, an IS/IT value process map as a framework for understanding the dynamics of IS/IT value; *three*, framing the problematic situation within the proposed framework for further studies.

1.5.2 Paper two

Issues of Benefits Fluctuation During EHR Benefits Management Projects. Presented at the 33rd Information Systems Research Conference in Scandinavia (IRIS33), 22-24 August 2010, Denmark.

The paper has a qualitative single case study design and studies three Swedish hospitals within one county council as they conduct benefits analysis projects related to their EHR investment. In total four benefits analysis projects are studied. The paper addresses the identified benefits fluctuation during analysis projects from three perspectives: *one*, the structure of IS benefits management process; *two*, perceived role of IS in organisations; *three*, the approach towards IS based on participants' former EHR experience. Findings

show that benefits fluctuation is affected differently depending on the degree of structure. A low degree of structure with a changing organisational context, insufficient control and a poorly managed process negatively affects the composition and amount of benefits. A high degree of structure contributes to benefits realisation in a positive manner by minimising uncertainty regarding identified, structured and valued benefits. The issue of role implies that there is a discrepancy between participants' knowledge of what the EHR is able to support and what they expect it to support. Four dimensions of role are especially evident: the EHR as an information provider, the EHR as an activity supporter, the EHR as a decision supporter and the EHR as a value creator. Findings show a difference depending on participants' former EHR experience. In pre-implementation analysis participants are more generous in their attitude and have stronger faith in the EHR and its ability, they are more prone to include intangible benefits and in general identify more potential benefits than participants in post-implementation analysis. In post-implementation analysis participants tend to be more restrictive in their estimations of what the EHR actually can do and place a greater focus on its costs and challenges. They are generally more prone to identify tangible potential benefits than participants in pre-implementation analysis.

1.5.3 Paper three

Perception of EHR Value. Presented at the 4th European Conference on Information Management and Evaluation, 9-10 September 2010, Portugal.

The paper is part of the same study as paper two and addresses how perceptions of IS and IS-benefits are affected by different standards of judgment, what we hold as good or bad. It builds on the notion that judgments form intentions that lead to purposeful actions. Standards of judgment act as indirect drivers of the initial phase of the benefits management process and, based on them, realisation action will be taken. The focus of the paper is to understand different standards of judgment and how they affect the addition and deletion of potential benefits during EHR benefits analysis projects. In the paper Kohlberg's (1966) stages of moral development are used as a theoretical lens. Findings show the presence of five IS benefit judgment dimensions: authority, self, role, organisation and society. Participants adopt judgment dimensions with an irregularity and shifts between dimensions based on their role, the aim and context of analysis, and perceived benefits at hand. A low-level and high-level benefit judgment thinking is identified. The difference between the high and low-level thinking is seen in the ability to move between several benefit judgment dimensions during the analysis. In low-level thinking, participants only use one or two dimensions. The presence of benefits judgment dimensions

implies that benefits are elusive and not fixed and that it is of importance to be attentive during benefits analyses as different dimensions could enhance or restrict perception of benefits and value.

1.5.4 Paper four

Benefits Negotiation: Three Swedish Hospitals' Pursuit of Potential Electronic Health Record Benefits, International Journal of Electronic Healthcare, 2013, Vol. 7, No. 3, p. 248-268

The paper has a qualitative multiple-case study design. It proposes the existence of a misconception of rationality stating that decisions of what potential EHR benefits to pursue are based on a rational process of identifying an optimal set of benefits with the highest potential value for the studied county council. However, as different stakeholders perceive an EHR to influence and change their everyday tasks and their preconditions to perform them, the process of identifying, structuring and valuing EHR benefits becomes not just a matter of rational analysis, but a matter of what could be labelled as a benefits negotiation. In the paper benefits negotiation is defined as a social process where different stakeholders negotiate which potential benefits to pursue in order to create value. Benefits negotiation is supported by analysis but also influenced by social processes with the power to put rationality out of play. The purpose of the paper is to better understand benefits negotiation and issues important for them. Ackermann and Eden's (2011a) work on strategy making is used as a theoretical lens. Findings show six categories of benefits negotiation divided into two groups, one group with a rational drive and the other with an irrational drive. Findings also show the presence of several key factors related to the benefits negotiation process that pose management challenges. Findings imply that EHR benefits are not given due to technology but are the result of negotiations between different stakeholders and that the drive of these negotiations together with identified key factors are important to manage in order to avoid benefit negotiations from failing their purpose.

1.5.5 Paper five

Information Systems Valuescape, (accepted for publication in forthcoming issue of: International Journal of Business Information Systems).

The fifth and final paper uses a qualitative single-case study design and studies the value creating efforts of one clinical department at one of the three Swedish hospitals within the county council. Primary data sources as observations and interviews, as well as secondary data sources, such as

various documents, emails and reports, are used. The paper addresses an identified discrepancy between how IS benefits are spoken of and how actions of IS benefits realisation are understood. It is proposed as a discrepancy between an evaluation and a realisation focus towards IS value creation. Evaluation focus describes IS benefits as well-defined and measurable effects and a realisation focus speaks of establishing and managing an on-going place of value creation. The identified discrepancy threatens to mislead IS benefits realisation activities as perception shape actions. The paper proposes the notion of valuescape in order to describe and support understanding of the complexity of IS value creation. As a theoretical lens the notion of scape as well as value creation configurations are used. Findings show the presence of a discrepancy and further describe its characteristics. Findings also show the initial outline of valuescape as a value-creating configuration with its logic, activities, structure, drivers, and role of IS. Findings imply that valuescape could support understanding and every-day actions of value creation related to IS investments.

1.6 Structure of the thesis
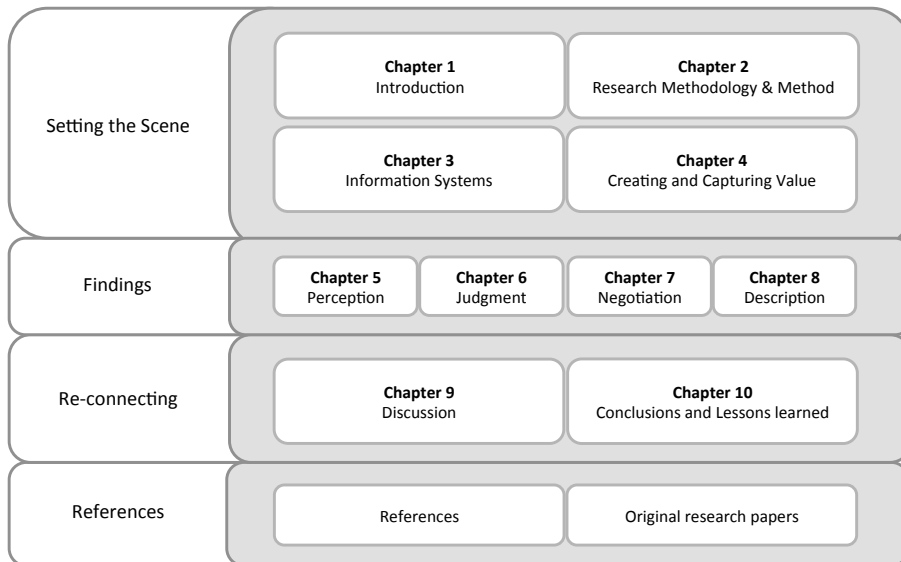
Figure 4: The structure of the thesis.

The chapters of the thesis are divided into four sets, figure 4. The first set of chapters sets the scene of the thesis; chapter 2 provides an outline of methodological choices; chapter 3 and 4 present the author's position on information systems as well as value creation related to information systems. The second set of chapters presents findings from the five published research

papers. Each chapter corresponds to a specific paper that relates to one of the four research streams. The third set of chapters re-connects with thesis purpose, problematic situation, research questions, and theoretical lens. The fourth and last set of chapters provides both an outline of used references as well as the five original research papers.

Chapter 2

Research Methodology & Method

"Case study research involves the study of an issue explored through one or more cases within a bounded system."
- John W. Creswell -

The chapter begins with a general overview and orientation of the IS research domain. After that the research design of the thesis is outlined, addressing sampling, data collection, data analysis and the trustworthiness of the conducted study. The chapter ends with a summary.

2.1 Information Systems research

When depicting and understanding the field of information systems research there are two on-going discourses to consider, one of methodology and one of identity. The aim of this section is to position the thesis in relationship to this discourse.

2.1.1 The methodological discourse

In their paper from 1991, Orlikowski and Baroudi examined 155 information systems research articles that were published from 1983 to 1988. The results showed no prevailing topic or theory in information systems research; however, it showed that there was a dominant philosophical assumption or tradition that guided researchers' and publishers' assumptions of what constituted, or were to be considered as, acceptable information systems research (Orlikowski and Baroudi, 1991). The results showed that 96.8% of the articles had a positivistic approach and only 3.2% of the articles had an interpretive approach. Results also showed that the three primary research designs were surveys (49.1%), followed by laboratory experiment (27.1%), and case study (13.5%) (Orlikowski and Baroudi, 1991). Chen and Hirschheim (2004) examined in their study 1,893 IS articles in eight major IS publications from 1991 to 2000. The purpose of their study was to trace methodological progress since 1991. Results suggested that there had been an increase in research with an interpretive approach, however, positivistic

research was still dominant accounting for 81% of published articles. The same pattern could be seen in the relationship between quantitative and qualitative research; quantitative research still being the dominant choice though an increase of qualitative research could be seen (Chen and Hirschheim, 2004). Their study also suggested a difference in IS research tradition between USA and Europe. IS journals in USA were more positivist-oriented and used more quantitative methods, whereas European IS journals tended to be more interpretive using more qualitative methods (Chen and Hirschheim, 2004). Orlikowski and Baroudi (1991) concluded and suggested that IS research as a field could gain much by an increase in the plurality of research perspectives. Chen and Hirschheim (2004) concluded that there is still work to be done if the IS field was to embrace such a pluralism and suggested that publication practices of the journal system needed to change. Rowe (2012), who built on the two presented studies, argued in his editorial that there is a need for greater diversity in information systems research genres. He proposed five categories: literature reviews, theory development and research essays, empirical research, ethnographies and narratives, issues and opinion. Rowe (2012) especially welcomed an increase of publications in the European IS journals within the categories of literature reviews, theory development and research essays, and ethnographies and narratives.

2.1.2 The identity discourse

Benbasat and Zmud (2003) went so far as to say that there is an identity crisis within the IS discipline. They recognised the interdisciplinary nature of IS research but argued that it had lost its core. They proposed the distinctive nature of the IS discipline to be the IT artefact and its immediate nomological net, and they provided four core properties of the IS discipline: *one*, the managerial, methodological and technological capabilities as well as practices involved when planning, constructing, implementing and designing the IT artefact; *two*, the human behaviours reflected related to the first property; *three*, the managerial, methodological and operational practices for directing usage of the IT artefact; *four*, the impacts of IT artefacts on humans who directly or indirectly interact with them and on the structures and contexts they are embedded within (Benbasat and Zmud, 2003).

Orlikowski and Iacono (2001) proposed that the IS field has not engaged with its core subject matters. Like Benbasar and Zmud they also focused on the IT artefact and stated that IT has been taken for granted in IS research. Based on their conclusions, they made a call to the IS research community to turn their attention to: *"developing and using interdisciplinary theories of IT artefacts"* (Orlikowski and Iacono, 2001, p.130), stating that: *"all IT research will benefit from a more careful engagement with the technology artefacts that are the core of our field."* (Orlikowski and Iacono, 2001, p.131). They offered five premises

as starting points when theorising the IT artefact: *one*, IT artefacts are not natural, neutral, universal or given; *two*, IT artefacts are always to some degree embedded in time, place, discourse and community; *three*, IT artefacts are often made up of a multiplicity of components which need bridging, integration and articulation in order to work together; *four*, IT artefacts are neither fixed nor independent but emerge from on-going economic and social practice; *five*, IT artefacts are not static or unchanging, but dynamic (Orlikowski and Iacono, 2001).

Checkland and Holwell (1998) speak of an IS field in confusion. They take an interpretive approach and do not advocate a stronger focus on the IT artefact. Instead, they propose four core streams of thinking and activity that are relevant when describing and researching in the field of IS: *one*, the information systems stream concerned with fundamental ideas of data, information, knowledge and the planning, development and management of information resources in organisations; *two*, the systems stream concerned with the link between systems thinking and the organised provision of information in organisations; *three*, the technology stream concerned with the IT artefact itself and its development; *four*, the organisation stream concerned with understanding organisations, organisational behaviour and behaviour in organisations (Checkland and Holwell, 1998). Hirschheim and Klein (2003) state that: *"IT is neither the root cause nor the technological fix for the structural patterns which lie at the base of the crisis"* (Hirschheim and Klein, 2003, p.248). Instead they propose that the core of the crisis relates to fragmentation. This fragmentation is both internal, rising from a lack of communication between the numerous research sub-communities, and external, rising from a disconnection with external stakeholders who doubt the relevance of IS research (Hirschheim and Klein, 2003).

2.1.3 The two discourses intertwined

The two discourses, methodology and identity, are to some degree intertwined. The methodological discourse proposes a pluralistic approach to IS research which is supported in the identity discourse. However, in the identity discourse there is a warning that a pluralistic approach should not be mixed up with fragmentation and that IS research should build on and contribute to the collective body of knowledge as well as being relevant for external stakeholders. This thesis project aims to do just that. By choosing a qualitative case study research design it contributes to a greater diversity in IS research and by building on solid IS theories and former knowledge it seeks to hold on to what could be termed the core of the field. However, at the same time the thesis project introduces theoretical frameworks from other disciplines in hope of contributing to the vibrancy and expansion of the IS field. The next part of the chapter introduces the research design of the thesis.

2.2 Research design

A research design refers in general to how a research idea is transformed into a research project and how that research project is carried out in practice. It includes theoretical, methodological and ethical considerations as well as the intended contribution to knowledge development within the stated area of interest (Cheek, 2008). A chosen design positions the researcher not only regarding goal of investigation, data sampling, collection and analysis, but also on questions like the nature of reality and the character of relationship to that being researched (Merriam, 2009, Creswell, 2007). In this thesis a qualitative research approach was chosen in order to study the social perspective of IS benefits realisation in its natural setting. However, qualitative research is a broad concept, much like an umbrella term, which calls for a further discussion of how it relates to the thesis.

2.2.1 Qualitative research

Creswell (2007) provides what he calls a working definition of qualitative research that emphasises the process of research and suggests that: *"qualitative research begins with assumptions, a worldview, the possible use of a theoretical lens, and the study of research problems inquiring into the meaning individuals or groups ascribe to a social or human problem."* (p. 37). He continues and states that, in order to study the research problems, researchers: *"use an emerging qualitative approach to inquiry, the collection of data in a natural setting sensitive to the people and places under study, and data analysis that is inductive and establishes patterns or themes."* (Creswell, 2007, p.37). In the end, the final report or presentation: *"includes the voices of participants, the reflexivity of the researcher, and a complex description and interpretation of the problem, and it extends the literature or signals a call for action."* (Creswell, 2007, p. 37). Merriam (2009) concludes after providing several examples of definitions, that: *"qualitative researchers are interested in understanding the meaning people have constructed, that is, how people make sense of their world and the experiences they have in the world."* (p. 13). Both Creswell and Merriam speak of qualitative research and its definition as something evolving and they both provide what they believe to be key characteristics in order to understand qualitative research, table 5.

Table 5: Key characteristics of qualitative research (Merriam, 2009, Creswell, 2007).

Characteristics of qualitative research
Natural setting, the aim of this thesis was to collect data at the site where participants experienced the issue or problem under study.
Participants' meanings, the aim of this thesis was to focus on learning the meaning that participants held about the issue or problem under study.
Researcher as key instrument, the aim of this thesis was to collect data through examining documents, observing behaviour, and interviewing participants.
Inductive data analysis, the aim of this thesis was to build patterns, categories, and themes from the bottom-up.
Multiple sources of data, the aim of this thesis was to gather multiple forms of data rather than rely on a single data source.
Theoretical lens, the aim of this thesis was to use theoretical lenses by which conducted studies were viewed.
Interpretive inquiry, the author acknowledges that made interpretations of what was seen, heard, and understood could not be separated from the author's own background, history, context, and prior understandings.
Holistic account, the aim of this thesis was to sketch and develop the complex larger picture of the issue or problem under study.
Rich descriptions, the aim of this thesis was to describe context, involved participants, and activities in the form of quotes from documents, interviews, field notes in order to support findings.

Together these key characteristics provide understanding of the author's positioning in this thesis. From an ontological perspective they paint a picture of reality as subjective and multiple. A reality in which each participant of benefits analysis projects provide evidence of different perspectives related to the four research streams of the thesis. From an epistemological perspective they speak of knowledge increasing as the distance between the researcher and that being researched decreases. During the time of study the author was not only meeting participants during benefits analysis sessions or when conducting interviews at clinical departments, but also during pre-analysis information gatherings, during

lunches between sessions and during informal kick-offs. From an axiological perspective they depict a research environment with the presence of different values shaping the narrative. One is the author's experiences and knowledge of working within a health care environment. This might affect interpretation of findings and is as such acknowledged and taken into consideration as possible biases (Creswell, 2007).

In this thesis a case study strategy was chosen. There are different approaches to case study research (Merriam, 2009, Creswell, 2007, Yin, 2003). The next section aims to introduce case study as a qualitative research strategy and to clarify choices made in order to fit the context of the study. The aim is not to provide an explicit debate of pros and cons with different case study approaches.

2.2.2 Case-study research

The choice to view case study as a qualitative research strategy raises at least three questions that call for clarification. One, there is the question of what constitutes a case. Stake (1995, p.2) states that a case is: *"a specific, a complex, functioning thing"*. It is by Merriam (2009) described as a bounded system: *"a single entity, a unit around which there are boundaries"* (Merriam, 2009, p.40). Miles and Huberman (1994, p.25) describe it as: *"a phenomenon of some sort occurring in a bounded context"*. A case could for example be a person, group, organisation or a policy, as long as it represents a unit of analysis and not a topic of investigation (Merriam, 2009). As an example, in this thesis a benefits analysis project is a case painting a picture of the social process of IS benefits negotiations. Understanding the process of IS benefits negotiation is not a case in itself as it is not intrinsically bounded. However, the benefits analysis project as an instance of benefits negotiation constitutes a bounded unit of analysis, a case. Merriam concludes that it is the establishment of boundaries in an object of study that is the most defining characteristic of case studies (Merriam, 2009).

Two, there is the question of how to understand case study as a concept. Stake (2006, p.8) states that: *"a case study is both a process of inquiry about the case and the product of that inquiry."* Merriam (2009) speaks of case study in a similar way and concludes that: *"the qualitative case study can be defined in terms of the process of actually carrying out the investigation, the unit of analysis (the bounded system, the case), or the end product."* (Merriam, 2009, p.46). Yin (2003) underlines the notion of case study as a research process stating that: *"case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident."* (Yin, 2003, p.13). Hamel et al. (1993) discusses whether case study is to be regarded

as an approach or a method. Merriam (2009) then argues that case study is not about a particular method for data collection, any method could be used. *"The uniqueness of a case study lies not so much in the methods employed (although these are important) as in the questions asked and their relationship to the end product."* (Merriam, 2009, p.44).

Three, there is the question of case study research being framed as a qualitative research approach. Creswell (2007), Merriam (2009), Miles and Huberman (Miles and Huberman, 1994), and Silverman (2010) place case study within a qualitative research approach. This even if both Merriam (2009) and Silverman (2010) emphasise that: *"any and all methods of gathering data"* (Merriam, 2009, p.42) could be used in a case study approach, and that any method of data collection could be used in both qualitative and qualitative settings. Yin (2003) argues that case studies should not be confused with qualitative research and as it can be based on both qualitative as quantitative evidence it has a place within both methodological approaches. Silverman (2010) points out that as methods are techniques they will take on different meanings depending on the underlying methodology. However, Merriam (2009) argues that the very design of case study is about insight, discovery and interpretation; that a case study focuses on a single phenomenon or entity, a particular situation, and seeks to paint as rich a holistic description and explanation as possible from significant factors characteristic of that phenomenon, thus framing case study as qualitative research.

In this thesis case study is regarded as an approach, a strategy of inquiry, within a qualitative research methodology. Methods for collecting data are not labelled to be either quantitative or qualitative, thus not ruling either out. Instead multiple methods are used based on their support of acquiring an in-depth understanding of the social process of IS benefits realisation in its natural setting. Creswell (2007) provides a definition of case study research that very much aligns with the intention of this thesis. Case study research is defined as: *"a qualitative approach in which the investigator explores a bounded system (a case) or multiple bounded systems (cases) over time, through detailed, in-depth data collection involving multiple sources of information (e.g., observations, interviews, audiovisual material, and documents and reports), and reports a case description and case-based themes."*(Creswell, 2007, p.73).

There are at least two choices to make regarding the case study design. One is a choice between an intrinsic or instrumental design. Stake (1995) describes the intrinsic case study as a study where the main interest and focus of the

researcher is on a particular case itself. In an instrumental case study the researcher studies, or uses, a case as an instrument in order to gain deeper understanding of a phenomenon or an issue. The specific setting or entity is of secondary interest and becomes a facilitator of understanding of something else (Stake, 1995, Merriam, 2009). The second decision is one between a single and multiple case study design. In a multiple case study design several cases are studied and, as opposed to a single case study design which could include subunits, a multiple case study consists of individual cases. These cases often share some common condition and are categorically bound together. Stake (2006) states that in order to grasp the advantages of a multiple case study design not fewer than 4 or more than 10 cases should be included. However, due to its demanding nature it is not uncommon to have less than 4 cases. According to Yin (2003) there are no methodological differences between a single or a multiple case study design and they are to be regarded as variants within the same framework. A multiple case study is organised around at least one research question, however, to some extent each case could be studied on its own having its own research questions (Stake, 2006). Miles and Huberman (1994) state that conducting multiple case studies deepens the understanding and explanation of a case under study. Yin (2003) argues that multiple case studies should follow a replication logic and not a sample logic.

In this thesis project an instrumental multiple case study research design is used: *instrumental*, as it is not the benefits analysis projects per se that are of interest, instead it is the interactions, behaviours, discussions of benefits analysis project participants when perceiving, judging, negotiating and describing potential IS-benefits; *multiple*, as several benefits analysis projects are regarded as providing a deeper and richer understanding of IS benefits management than a single case study design. The stated research strategy provides a framework for sample selection, data collection and analysis, as well as discussions of the validity, reliability and generalizability of the thesis.

2.3 Sample selection

The different cases were selected using purposeful sampling. The logic of purposeful sampling is to select cases that are information-rich and provide an in-depth understanding of the issues that are central to the purpose of the research (Patton, 2001). This approach to sampling is one that focuses on the degree to which the cases support understanding of the research purpose rather than focus on the number of samples and whether or not they are statistically representative (Patton, 2001, Merriam, 2009). A purposeful sampling strategy is typically used in qualitative case study research, and a probability sampling strategy is typically used in quantitative research

approaches. There are several different strategies for purposeful sampling and Patton (2001) provides a list of 16 strategies, table 6. Such a list speaks of the importance in selecting cases when conducting a qualitative case study.

Table 6: Purposeful sampling strategies (Patton, 2001)

Type
Extreme or deviant case sampling, cases are selected because they are unusual or special in some way.
Intensity sampling, cases are selected because of their intense and excellent rich examples of the phenomenon of interest.
Maximum variation sampling, cases are selected based on their heterogeneity, seeking common themes from great variation.
Homogeneous sampling, a small number of homogeneous cases is selected in order to describe a particular subgroup in depth.
Typical case sampling, cases are selected in order to illustrate what is typical for a certain program or setting.
Stratified purposeful sampling, cases are selected in order to capture major variations in a fairly homogeneous sample.
Critical case sampling, cases are selected because they make a point quite dramatically or are particularly important in the scheme of things.
Snowball or chain sampling, an approach for locating information-rich critical cases.
Criterion sampling, cases are selected meeting a predetermined criterion of importance.
Theory-based or operational construct sampling, cases are selected based on their potential manifestation or representation of important theoretical constructs.
Confirming or disconfirming cases, both cases that are confirming ideas as well as cases that are disconfirming providing rival interpretations which are placing boundaries around confirming findings.
Opportunistic sampling, case selection is the result of on-the-spot decisions about sampling to take advantage of new opportunities during data collection.

Purposeful random sampling, cases are randomly selected striving for increased credibility not representativeness.

Sampling politically important cases, cases are selected or not selected based on their politically sensitivity.

Convenience sampling, cases are selected based on their easy access and inexpensiveness to study.

Combination or mixed purposeful sampling, different sampling strategies are used in order to support multiple research purposes or to meet changes during long-term fieldwork.

Patton states that there are no rules when it comes to sample size in qualitative inquiry. Everything depends on the purpose of inquiry, what will be useful, have credibility and what is doable within given time and resources. Patton also states that it is possible to combine and mix several strategies (Patton, 2001).

In this thesis cases were first and foremost selected based on their perceived information-richness when it came to IS benefits management processes and especially the inter-subjective discourse between participants seeking to identify and select potential EHR benefits for their organisation to pursue. The author did not arrange nor decide on the composition of the cases, instead they were part of a benefit realisation action plan initiated by the county council. The author was then presented with the *opportunity* to study somewhat *homogeneous* cases unfolding in a real life setting that all met the same *criterion* of conducting a benefits analysis using the same analysis model and being led by the same external project leader. To some degree this opportunity was a very *convenient* event though convenience was not the intended strategy of sampling. Initially the county council planned for a large number of benefits analysis projects, all of which were to be studied. However, after conducting four projects they broke off the process and evaluated the outcome. Even if it was communicated that the projects were considered valuable the county council never continued as initially planned, resulting in the four projects being the only ones conducted. The selection of case A to be analysed as a single case study could best be described as an intensity sampling as it was made based on its excellent rich example of the phenomenon of interest.

2.4 Data collection

In this thesis data collection followed a qualitative case study research tradition and multiple data sources were used including observations and interviews as well as secondary data sources as internal reports, e-mail correspondence, and project documentation (Merriam, 2009). The different sources are highly complementary and no single source is regarded as offering a complete sampling of required data (Yin, 2003). A major strength when using multiple sources is the possibility of triangulating data. Major drawbacks are the increased cost of data collection and the challenge of mastering several data colleting methods (Yin, 2003).

2.4.1 Observations

Three out of four benefits analysis projects conducted by the county council were observed. Track 4, which was the first benefits analysis project conducted by the county council, was not available for observations. All analysis sessions of track 1-3 were observed, table 7. Each session usually lasted between 8.00 am and 5.00 pm.

Table 7: Observed analysis sessions.

Benefits analysis project	Track 1/ Case A	Track 2/ Case B	Track 3/ Case C	Track 4/ Case D
Sessions/days of observation	5	5	4	N/a

Observations generally have the advantage of allowing the researcher to study the phenomenon of interest in its naturally occurring setting. It also allows the researcher to collect first hand data and to be the one to interpret what is seen through his/her own knowledge and experience (Merriam, 2009). What to observe is first and foremost determined by the purpose of the study but also by practical conditions, the topic at hand and the degree of structure applied to observations. The degree of structure relates to the fact that a researcher can not observe everything and to some degree needs to focus on certain aspects that could change throughout the study. Merriam (2009) suggests six aspects to be observed: physical settings, participants, activities and interactions, conversations, your own behaviour and subtle factors e.g. nonverbal communication, symbolic and connotative meanings of words. In this thesis the choice to observe benefits analysis projects was made based on the research purpose of the study. There was never any intentional decision made regarding which of Merriam's suggested aspects to include or exclude. Instead, observations moved between the different aspects as participants interacted and as data emerged.

The role of the observing researcher is an important act of balance between level of interaction and degree of closeness. Gold (1958) proposed what today could be regarded as a classic set of four roles that a researcher could assume. Before the observations of benefits analysis projects began a choice was made to assume a role that is best described as the observer-as-participant role. The researcher then acts as a formal observer and not as a participant in the discussions and negotiations of potential benefits. The purpose of this is to be as objective as possible and not to influence the outcome of observed benefits analysis projects. In such a role the relationship between the researcher and the participants of the analysis projects are likely to be friendly but not close, as was the case in this study. Such an approach entails what Gold (1958, p.221) calls: *"less a risk of going native"*. On the other hand, not having a close relationship with participants could, according to Gold, risk increasing the possibility of misunderstandings (Gold, 1958, Baker, 2006).

The observations were documented using observational protocols, field notes. Each analysis session generated field notes which included; *one*, time and date references, these notes aimed to capture when the analysis session started, ended, when breaks were taken, when participants arrived and left and when discussions and activities took place; *two*, place and space references, these notes aimed to capture where the sessions were held, how participants were seated and the condition of the facilities through out the sessions; *three*, conversations and activities, these notes aimed to capture what participants said and did; *four*, observer reflection, these notes aimed to capture reflections made by the observer (Merriam, 2009, Pauly, 2010).

There are several observational biases to consider and to be aware of as a researcher. These biases are not always possible to eliminate, instead it is of great importance that the researcher is aware and open to their existence in order to minimise their influence. Robson (1993) proposes four areas that could be worth paying attention to: *one*, selective attention; the researcher's interests, experience and expectations affect what is attended to during observations and this calls for the intentional distribution of attention widely and evenly; *two*; selective encoding, the researcher's expectations, often unconscious, colour and affect encoding and interpretation and this calls for a constant effort to keep an open mind; *three*, selective memory; the distance between the researcher's observation and the construction of a narrative account affects its accuracy and completeness and this calls for a prompt write-up of the field notes; *four*, interpersonal factors; at the beginning of observations the researcher's choice of whom to interact with might affect understanding of the wholeness of the situation. This calls for overcoming any initial insecurity and be friendly with all participants (Robson, 1993).

2.4.2 Interviews

Interviewing has a long history and is today used to such an extent that some authors speak of the existence of an interview society (Fontana and Prokos, 2007). There are different types of interviews often categorised from either a structural, philosophical or disciplinary perspective (Merriam, 2009). In this thesis interviews were conducted using a semi-structured approach. Semi-structured interviewing is regarded as the most important form of interviewing when it comes to qualitative case study research (Gillham, 2010). In such an approach structured as well as open questions are mixed, allowing the researcher to gather specific information as well as responding to the situation and the emerging world view of the respondent (Merriam, 2009). Interviews were made with the following roles/respondents:

- Head of department of track 1 (interviews were made on two occasions, two months and 1.5 years after the benefits analysis project),
- The local EHR project leader of track 1,
- Head project leader of the HealthIT project responsible for the implementation of the EHR,
- The chief information officer (CIO) of the county council.

Kvale and Brinkmann (2009) state that there is no such thing as an ideal respondent, instead different people are appropriate at different situations with different types of interviews. The respondents that were chosen for interviews were done so based on what they could contribute to the understanding of the phenomenon under study. This criterion for selecting interview respondents follows the same purposeful sampling strategy also used during case sampling (Merriam, 2009). Each interview lasted approximately one hour and was conducted at a location decided by the respondent, either at their office or at a conference room located on the same site as their office. In order to limit the influence that the interviewer has on the respondent's willingness to speak freely and openly, the advice offered by Robson (1993) was taken into consideration: "*listen more than you speak; put questions in a straightforward, clear, and non-threatening way; eliminate cues which lead interviewees to respond in a particular way; and enjoy it*" (Robson, 1993, p.232). All interviews were recorded using a digital recorder and transcribed verbatim afterwards for analysis. In addition to the digital recordings, notes were taken during all interviews to support understanding (Merriam, 2009).

2.4.3 Documentation

Documentation as a source of data has a vital role to play in case study research and there are several different types of documents to choose from.

However, one needs to be aware that they are not without bias and should not be regarded as literal recordings of events that have taken place (Yin, 2003). When a document has been found to be of interest several of the following questions should be asked in order to verify its authenticity:

- What is the history of the document?
- How did it come in to my hands?
- Is the document complete, as originally written?
- Under what circumstances and for what purposes was it produced?
- Who was/is the author?
- For whom was the document intended?
- What was the author's source of information?
- What was or is the maker's bias?
- Do other documents exists that might shed additional light? (Merriam, 2009).

In this thesis documents of different kinds were collected and used (i.e. internal reports, e-mail correspondence and project documentation). These documents mainly acted as background and confirmation to data gathered from observations and interviews. The documents that played the most important role were the project documentation of each benefits analysis project. After each benefits analysis session the project leader updated the documentation and distributed a copy to all of the participants of the analysis. These documents played a significant role during analysis sessions as they acted as both a reminder of past negotiations and decisions as well as a record of the on-going work. The final version of the project documentation had two purposes: one, it was regarded as part of the end product of the benefits analysis and as such to be handed over to the county council leadership; two, it was regarded as a support tool for benefits realisation to each head of department at participating clinical departments.

2.5 Data analysis

Data analysis is the quest for making sense of gathered data. Its practical goal is to provide answers to posed research questions (Merriam, 2009). Initially there is a choice to be made regarding data analysis strategy in qualitative case study research. It is a choice between initiating data analysis from theory, a deductive approach, as advocated by Yin (2003), or from a rich set of gathered case data, an inductive approach, as advocated by Stake (1995). Merriam (2009) suggests that there is a movement between the two, and that the initial data analysis strategy is a highly inductive one. However, when saturation is reached and nothing more seems forthcoming from gathered data, a switch to a deductive approach is not uncommon in order to find further support of categories and themes. In this thesis, data analysis followed a qualitative, inductive tradition. Data analysis was initiated by the area of interest and posed research questions. It was guided more by the emerging meanings and patterns found in gathered data than theoretical propositions and, as the analysis progressed, the different identified categories were used to guide further data analysis. Creswell (2009) provides a good overview of the analysis process used in this study, figure 5. Even though the lines in figure 5 suggest a linear approach, in practice it is to be regarded more as an iterative process where the stages do not necessarily follow the presented order (Creswell, 2009).

As mentioned earlier, the main raw data of the study consisted of field notes from observations of benefits analysis projects, transcriptions of interviews and project documentation. This data was initially read through several times in order to get a rich picture of each case as well as to get an overview of all cases. During these read-throughs notes and markings were made regarding general observations of participants' actions, behaviours and conversations. As the data analysis became more detailed, data was coded by hand using codes in the left margin and pre-analytical remarks in the right margin (Miles and Huberman, 1994).
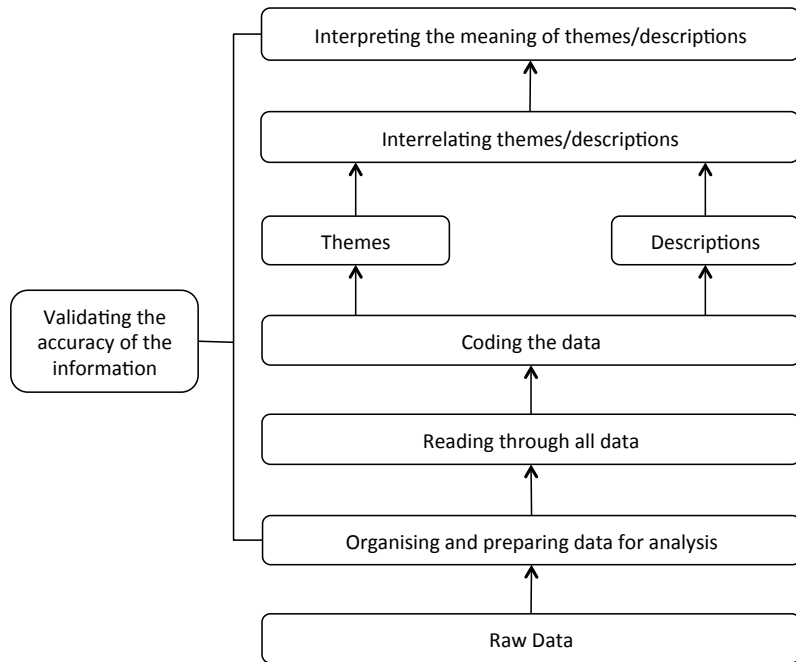
Figure 5: Data analysis process used in the qualitative case study (Creswell, 2009).

As themes and descriptions of both the phenomenon and setting emerged, eight questions were asked in order to support understanding and meaning. These questions are by Lofland et al. (2006) regarded as basic questions to pose when investigating social issues: *question 1*, what are the topic's types? This question seeks to clarify what the researcher sees before him/her; *question 2 and 3*, what are the topic's frequencies and magnitudes? These questions seek to clarify how often something is observed and its strength or size; *question 4 and 5*, what are the topic's structures and processes? These questions seek to clarify how something is organised and how it evolves and operates over time; *question 6 and 7*, what are the topic's causes and consequences? These questions seek to clarify factors that lead up to or are part of the development of something and what effects something has; *question 8*, agency? This question seeks to clarify where, what, and how people go about doing what they are doing (Lofland et al., 2006). In addition to these questions data were analysed in light of provided theoretical lenses as well as stated research questions in order to support understanding and meaning. The chosen data analysis strategy was applied in both the single-case and the multiple case study. However, the multiple case study analysis had an additional structure. The data analysis began with a within-case analysis where a detailed description of each case and their different settings were done. Within each case, the phenomenon under study was identified

and coded. The intention of this was not to determine the most successful case but to generate themes and categories within each case. After the within-case analysis, a cross-case analysis was conducted with the purpose of performing a thematic analysis across the three cases (Creswell, 2007, Merriam, 2009, Miles and Huberman, 1994, Stake, 2006).

2.6 The trustworthiness of the case study

When designing a qualitative case study it is of the greatest importance to do it in a way that ensures the trustworthiness of the manner in which the study is carried out and the results it offers. Yin (2003) argues that the work of ensuring trustworthiness should continue throughout the case study and not only be considered during the initial stage of designing the study. There is however an on-going discourse regarding how to ensure and how to frame or speak of this endeavour (Merriam, 2009, Angen, 2000, Creswell, 2007). There is a line of argument that promotes reframing the terminology of validity and reliability in order to create a clear distinction between a qualitative research approach and a positivistic quantitative tradition (Creswell, 2007). An example of reframing that is often referred to is the work of Lincoln and Guba (1985). In their work they speak of credibility instead of internal validity, transferability instead of generalizability, and dependability instead of reliability (Shenton, 2004, Lincoln and Guba, 1985). This thesis follows in the footsteps of Merriam (2009) as well as Creswell (2007) and speaks of the trustworthiness of qualitative case studies using both terminologies intertwined.

2.6.1 Internal validity and the credibility of the study

The case study is designed to make inquiries of how participants of benefits analysis projects perceive and understand their reality as participants in IS benefits realisation activities. In qualitative research, perception of reality is regarded as multidimensional and ever changing. The author then acknowledges that an objective or absolute true picture of reality cannot be captured. Instead there is a challenge to ensure that research findings are credible given gathered data (Merriam, 2009). Throughout the case study several strategies have been used in order to build credibility: *one*, triangulating several data collecting methods as well as sources in order to support findings; *two*, participating in pre-analysis meetings, all the analysis sessions, and external certification courses of the used benefits analysis model in order to develop a familiarity with cultures and structures and to get as close as possible to participants' understanding of the phenomenon under study; *three*, adopting a peripheral-member-researcher role, as described by Adler and Adler (1994), and an observer-as-participant relationship, as described by Gold (1958) in order to minimise the author's effect on the context of the observed sessions, as well as declaring and taking into

consideration that the author has earlier experience of working in a health care environment; *four*, digitally record all interviews and transcribe them verbatim afterwards in order to minimise the risk of losing or misinterpreting data; *five*, inviting stakeholders within the studied organisation as well as colleagues to review and comment on work done (Merriam, 2009, Shenton, 2004, Creswell, 2007).

2.6.2 Reliability or the dependability of the study

The notion of reliability refers to the extent research findings can be replicated. Reliability is argued to be problematic in qualitative case study research. A qualitative approach does not denote the existence of a single reality perceived, understood and described in the same way by different participants and observers. Thus, when replicating a performed case study the same results are unlikely to be generated (Merriam, 2009). Instead of speaking of reliability Lincoln and Guba (1985) propose the notion of dependability where outside researchers instead of coming to the same results concur that the results make sense with the collected data (Merriam, 2009, Shenton, 2004). It is proposed that there is a close relationship between discussed credibility and dependability; hence a study found to be credible is also dependable (Robson, 1993).

2.6.3 External validity, generalizability, and transferability of the study

The notion of generalisation and its applicability in qualitative case study research is widely discussed. The discussion, as posed here, is one of logic and of responsibility. In a discussion of the logic behind generalisation, two opposite logics emerge. The first logic perceives generalisation to be derived from large amounts of data gathered from large numbers of randomly sampled individuals. Such an approach to generalisation is not well suited in qualitative case study research. The second logic perceives generalisation to reside in knowledge gained from the particular which could act as lessons learned and be transferred to similar situations (Merriam, 2009). Such an approach is well suited in qualitative case study research as it sets focus on the particular context and assumes that there are lessons to be learned, however not duplicated to other settings. Regardless of which generalisation logic one uses, Lee and Baskerville (2003) conclude that it is not appropriate to: "*criticise a theory for a lack of generalizability to other settings, a theory may never be generalized to a setting where it has not yet been empirically tested and confirmed. Along the same lines, neither an increase in the sample size in a statistical study nor an increase in the number of sites in a multisite case study would be indicator of greater generalizability of a theory to new settings.*" (Lee and Baskerville, 2003, p.241). In the discussion regarding responsibility, Lincoln and Guba (1985) as well as Stake (2006), argue that the

researcher has a responsibility to ensure sufficient contextual information about the studied setting that enables a reader to make a transfer, the responsibility of generalisation is however placed on the reader who is the one to make judgments regarding the generalizability or transferability of the findings. The findings presented in this thesis are thought of as lessons learnt from a particular setting, lessons that very well could be of value in other similar settings. However, it is up to you, the reader of the thesis, to make judgments regarding their generalizability.

2.7 A critical evaluation of methodological approach

This section consists of two discussions: first, a brief discussion of three different qualitative methodological approaches that were considered for the thesis; second, a discussion of some of the often mentioned challenges when conducting case study research.

2.7.1 Different qualitative methodological approaches

Phenomenology does to a certain degree underpin all qualitative research, however, it is also very much a research methodology on its own (Merriam, 2009). Its focus and purpose is to study peoples' conscious intense experience of a phenomenon in their real-life-world and to reduce the individual experience to a description of its universal essence (Merriam, 2009, Creswell, 2007). Data collection in phenomenological studies often consists of in-depth interviews of 5-25 individuals who all have experienced the phenomenon under study. One challenge of such an endeavour is to carefully choose participants of the study (Creswell, 2007). Other challenges are to identify and grasp the broader philosophical assumptions underlining the phenomenon and to bracket personal experiences (Creswell, 2007). A phenomenological approach was not chosen for this thesis project mainly because the purpose of the study was not to explicitly study participants' experiences of benefits analysis projects. Another reason was that the study did not lend itself to conduct interviews to the extent that would have been necessary in order to ensure the credibility of a phenomenological approach.

An ethnographic research approach studies the meaning of behaviour, language and interactions between members of a culture-sharing group (Creswell, 2007). Ethnographic studies involve extensive time spent with the group under study, often through participant observations. The purpose of this is for the researcher to be immersed in participants' day-to-day activities (Creswell, 2007). It is of importance that the group under study has been together for a longer period of time, enabling a discernable pattern of shared language, behaviour and attitudes. There are many different forms of ethnography, however a common feature is that they focus on human society and culture (Merriam, 2009). According to Myers (1999) ethnographic

research is: *"well suited to provide information systems researchers with rich insights into the human, social, and organizational aspects of information systems"* (Myers, 1999, p.2). An ethnographic approach was not chosen for this thesis project mainly because the purpose of the study did not have a cultural focus. Another reason was that the observed benefits analysis projects were regarded as having too short a time span to allow participants the time to develop a shared detectable culture necessary in order to ensure credibility of an ethnographic approach.

When defining action research Rapoport's (1970) definition is often used: *"Action research aims to contribute both to the practical concerns of people in an immediate problematic situation and to the goals of social science by joint collaboration within a mutually acceptable ethical framework"* (Rapoport, 1970, p.499). Susman and Evered (1978) add to this definition by proposing a cyclical process of five phases to be part of action research definitions. The process builds on a negotiated client-system infrastructure and includes the following phases: diagnosing, action planning, action taking, evaluating and specifying learning (Susman and Evered, 1978). Action research has, according to Baskerville and Wood-Harper (1996), three distinctive characteristics that imply when to use it: *one*, the researcher is actively involved and intervenes in that which is to be studied, this results in the researcher becoming part of the study as a study object; *two*, the knowledge obtained during the study can be immediately applied, the researcher is not detached but very much an active problem-solver; *three*, research links theory and practice through a cyclical process (Baskerville, 1999, Baskerville and Wood-Harper, 1996). Susman and Evered (1978) also provide action research characteristics as they state that action research is future oriented, collaborative, implies systems development, generates theory grounded in action, is agnostic and situational. An action research approach was not chosen for this thesis project mainly because the purpose of the study was not to study the interventions of an active problem-solving researcher in collaboration with the participants of benefits analysis projects (cf. section 2.4.1). Another reason was that the purpose of the study was not to provide and evaluate any testable solution to the challenges the county council met during their benefits realisation efforts.

2.7.2 Challenges when conducting case studies
Multiple case study research design has its challenges. One challenge that presents itself early on in the study is the challenge to decide on a bounded system or systems worthy of studying. As mentioned earlier, in this thesis cases were purposefully selected. However, case boundaries need to be clearly stated in order to clarify whether it is a case or a phenomenon understood through a case that is to be studied (Creswell, 2007). The later being the case

in this thesis. Another challenge often mentioned is one of generalizability. It is often argued that as the case study approach sets focus on the particular, the question of generalizability becomes problematic. However, as mentioned earlier, much can be learned from both a single and a multiple case study design, and as concluded earlier, findings presented in this thesis project are lessons learnt from a particular setting that could very well be of value in other similar settings. However, it could be argued that the responsibility for transferring empirical findings to other settings is left for those reading the findings to make (Merriam, 2009). A third challenge is one related to the researcher being the primary instrument of data collection. This is a challenge that requires both the researcher as well as the reader to be aware of potential biases affecting the final findings of the thesis project. The researcher needs to be continually aware of this challenge during data collection (Merriam, 2009). A fourth, and last challenge to be addressed, relates to the workload of a multiple case study. A multiple case study is often very time consuming and as such poses a greater challenge to manage than a single case study design. However, its rewards are often a deeper understanding of the phenomenon under study. In this thesis project the rewards were considered worth the greater efforts (Merriam, 2009, Stake, 2006).

2.8 In conclusion

This thesis adopts a qualitative case study research design. In doing so it contributes to a greater diversity in IS research, and by building on solid IS theories and existing knowledge it seeks to hold on to what could be termed the core of the field. The stated research strategy provides a framework for sample selection, data collection and data analysis. It also provides a framework for discussions of validity, reliability and generalizability. Findings presented in this thesis are considered to be lessons learnt from a particular setting. These lessons could very well be of value in other similar settings; however, it is for the reader of the thesis to make judgments regarding their generalizability.

Chapter 3

Information Systems – An Overview

"Creating information is a human act."
- Peter Checkland & Sue Holwell -

The aim of the chapter is to position the author´s view on IS. In doing so the two concepts of information and system are discussed separately before IS are defined. After discussing the relationship between IS and organisations the chapter ends with a discussion of IS within health care organisations giving extra attention to electronic health records (EHR).

3.1 Understanding information

A first step when attempting to understand information is to define data. Langefors (1995) states that: *"In information systems the information is typically represented by signs called data or text."* (Langefors, 1995, p.28). Data is then to be understood as a pre-requisite to information, and according to Ackoff (1999) *"consists of symbols that represent objects, events, and/or their properties."* (Ackoff, 1999, p.15). Data is the result of observations made by either people or instruments and remains as data until it has been processed, attributed meaning, placed in a context by those having the requisite pre-knowledge i.e., transformed into information (Ackoff, 1999, Checkland and Holwell, 1998, Langefors, 1995). The data-information distinction is the one most used when defining information. However, Checkland and Holwell (1998) propose that there is yet another distinction to be made between the large amount of data available for processing and the fraction that is chosen to be processed (figure 6).
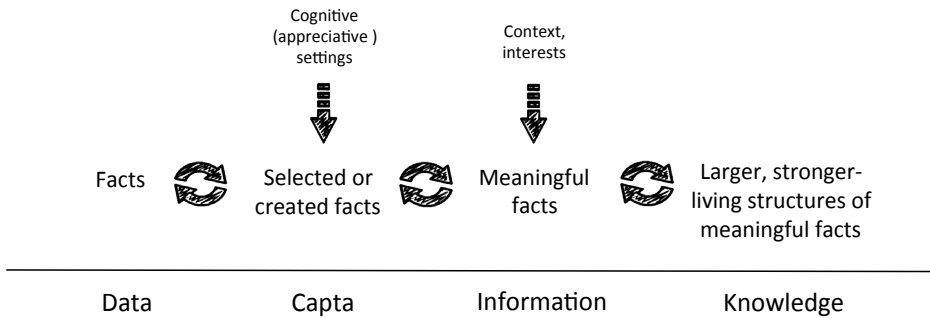
*Figure 6: The relationship between data, capta, information, and knowledge
(Checkland and Holwell, 1998).*

They introduce capta, which is the *"small fraction of the available data which
we know about or pay attention to, or create."* (Checkland and Holwell, 1998,
p.89). They describe the process of turning data into capta as a transparent
and familiar process that we do all the time without noticing. Another
distinction made in order to understand information is the one between
information and knowledge. Knowledge is described as larger structures of
information that has greater longevity. The difference between information
and knowledge could be described as the difference between the two
questions of: what to do and how to do it, knowledge being the later (Ackoff,
1999).

3.1.1 Creating information

The process of creating information gives further understanding of the
nature and characteristics of information. Langefors (1973) describes an
Infological equation, Checkland and Holwell (1998) speak of a meaning
creating process, and O´Brien and Marakas (2009) propose a value-added
process. From these descriptions four important characteristics are derived
regarding how to understand information: *one*, creating information is a
human activity and it is not until human beings, not applications or
machines, have attributed meaning to data that information has been created;
two, creating information is a matter of structure, and as the structure of data
could either support or oppose selection and analysis of data, it is of
importance to design information systems with its specific users in mind;
three, creating information is context dependent, and processing data relates
to our pre-understanding and pre-knowledge of the world around us
suggesting that information is very much a matter of subjectivity and that
information creation can be done individually or in a group; *four*, creating
information is value creation and the main characteristics of information is
that it is something that has become meaningful, useful, and of worth,

suggesting that it is in the very core of information, and thus information systems, to add value (O´Brien and Marakas, 2009, Langefors, 1973, Checkland and Holwell, 1998).

3.1.2 Information characteristics

Even if information is very much a matter of subjectivity there are characteristics of information that are proposed to be general. Land (1985) speaks of three different types of information: descriptive information, probabilistic information and qualitative information. Alter (2002) proposes four factors of information usefulness: information quality (accuracy, precision, completeness, age, timeliness, source), information accessibility (availability, admissibility), information presentation (level of summarisation, format) and information security (access restriction, encryption). Information is no longer scarce as a shortage of information has been replaced by what Toffler (1970) calls information overload. Brown and Duguid (2000) propose that attending too closely to the plethora of available information overlooks the social context that supports understanding of information in the first place. Thorp (2003) speaks of an existing information paradox. A paradox that argues that the more information an organisation has the better it is. However, the connection between investments in the information gathering capacity of organisations and business value has proven to be weak. Marchand et al. (2001) propose a people-centric viewpoint in order to (re)establish the connection. They stress the need for an information orientation where the capabilities of the organisation to manage technology, information, and information behaviours and values are essential.

3.2 Understanding systems

Speaking of systems is very much to be speaking of an approach (Ackoff, 1971), a theory (Von Bertalanffy, 1969), a meta discipline (Checkland, 1981) that supports our thinking and understanding of the world around us and how to deal with problematic situations in it. Even though it would be interesting to elaborate on the history and development of the systems movement it would not correspond well with the purpose of the thesis. The interested reader will find good accounts of this in the writings of Ludwig von Bertalanffy (1969), Peter Checkland (1981), Lars Skyttner (2001), and Michael Jackson (Jackson, 2000).

The concept of systems is described by Checkland (1981, p.3) as: *"the idea of a set of elements connected together which form a whole, this showing properties which are properties of the whole, rather than properties of its component parts."*

The notion of systems as a connected whole implies a shift from a reductionist approach to a holistic approach when dealing with complex situations. In a reductionist approach identifying and defining different parts of a complex situation is crucial for understanding. The main problem with such an approach is that the whole often displays properties and characteristics that are not recognisable in its parts (Checkland, 1981, Jackson, 2003). In a holistic approach the whole is the primary and it emerges from networks of relationships between its interdependent parts. Central notions within the holistic approach are that the whole is regarded as more than the sum of its parts and that it is the whole that gives meaning to the parts and their interactions (Jackson, 2003).

3.2.1 Thinking about systems vs. systems thinking

There is an important distinction to be made between what Cabrera et al. (2008) speak of as thinking about systems and systems thinking. The difference is one between what we know about systems, which they regard as systems science, and patterns of thinking systemically, which they regard as systems thinking. Checkland (1981) refers to this distinction as one between hard and soft systems thinking (figure 7).
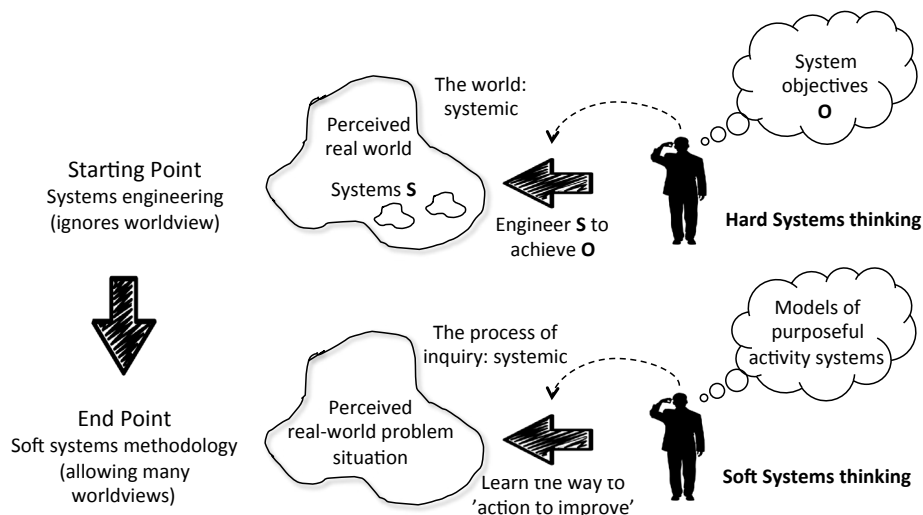
Figure 7: A hard and soft systems approach (Checkland and Poulter, 2006).

Hard systems thinking perceives the world as containing many systems and takes an engineering approach to problematic situations. It assumes a system with its parts to be objectively accounted for, that there is a desired end state to reach, and that there is one optimal way to be chosen from a set of alternative ways to reach the desired state. Hard systems thinking is highly

goal-oriented and has been successful in tackling well-defined engineering problems (Jackson, 2003, Checkland, 1981). However, the limitations of hard systems thinking refers to the inability to deal with highly complex, changing, fuzzy problematic situations often present when managing social situations. These situations are characterised by multiple stakeholders having different perceptions of reality, the nature of the system and its purpose (Checkland, 1981, Jackson, 2003). Soft systems thinking takes a learning approach to a problematic situation in which it assumes the world to be characterised by clashes of worldview and to be created and recreated by people thinking and taking action. Soft systems thinking does not view the world in a systemic manner, instead it facilitates a systemic process of inquiry into the world, a learning process in which different perceptions of the problematic situation are examined and debated in order to take purposeful actions in pursuit of its improvement (Jackson, 2003, Checkland and Poulter, 2006). Reynolds and Holwell (2010) express the distinction in terms of ontological and epistemological traditions, as a distinction between perceiving systems as representing actual real world entities and perceiving systems as conceptual constructs, learning devices, for inquiry into real world entities (Reynolds and Holwell, 2010).

Cabrera et al. (Cabrera et al., 2008) point out that there are several ways to think about systems thinking. They state that systems thinking is conceptual and complex, that it is based on contextual patterns of organisation rather than specific content. Senge (1990) describes the essence of systems thinking as a shift of mind from seeing cause-effect chains to seeing interrelationships, from seeing snapshots to seeing processes of change. Dawidowicz (2012) refers systems thinking to a decision making, problem solving or information-processing model used in order to analyse action plans or situations within a systemic framework. Reynolds and Holwell (2010) distinguish two fundamental aspects of systems thinking: *first*, systems thinking is a way of looking at the world as a whole and trying to gain understanding of the relationships between its component parts; *second*, systems thinking starts with the complex problematic situation at hand and is concerned with improving the situation rather than solving a problem.

Checkland (1981, 2012) describes four concepts, ways of thinking, to be considered by a systems thinker. *One*, an entity under study, a system, contains sub-systems or could be considered as part of a larger system. Sub-systems are interdependent and part of a web of relationships where each sub-system supports the whole. A system is then, in principle, part of a layered hierarchical structure, and it is up to the systems thinker to determine which is a system or a sub-system. *Two*, a system has definable emerging

properties. These properties characterise a higher level of complexity within the layered hierarchy and do not exist at lower levels. They are the results of the exchanges and relationships between sub-systems. *Three*, in a system there are processes of communication that involve both the system and its environment. These processes enable monitoring of performance to support decisions whether to adapt to changes or not. *Four*, as a response to communication processes, different control processes have to be available and to be activated to bring about change (Checkland, 1981, Checkland, 2012). Buckle Henning and Chen (2012) identify several mental stances to be made by a systems thinker. *One*, cause and effect sequences are a too simplistic way of thinking in a world of systems behaviour where causes often are multiple and complex. *Two*, there are principles, logic, to be found in the underlying arrangement of elements, even though first impression of a situation bids otherwise. *Three*, understanding people´s assumptions, preconceived ideas, values etc. while trying to avoid imposing one's own is a difficult skill to master, however, it must be learned in order to understand the system to operate with or within. As said by Churchman (1968, p. 231) *"A systems approach begins when first you see the world through the eyes of another."* Understanding systems is then to understand an approach, a way of thinking of the world and, as discussed in this context, of information supporting people in an organisational context.

3.3 Defining information systems

There are several different definitions available of what constitutes an information system (IS). Alter (2008) compiles a list of 20 definitions as a background to his own addition in which he defines information systems as work systems. He divides definitions into those that emphasise social or organisational concerns and those that emphasise technical or mathematical concerns. This plethora of definitions is by Checkland and Holwell (1998) viewed as one sign of IS being a relatively young and emerging field, and by Benbasat and Zmud (2003) as a discipline in search of a lost identity. The authors depict the road ahead, however in somewhat different ways. Benbasat and Zmud urge for a stronger focus on the information technology (IT) artefact, while Checkland and Holwell suggest a more interpretive approach to information systems. To make a distinction between the two terms IS and IT is by Ward and Peppard (2002) as well as Pearlson and Saunders (2013) regarded as an important start in order to understand IS as a concept. In this thesis an information system is, with the words of Frank Land (1985, p. 215), understood to be *"a social system, which has embedded in it information technology"*. IT refers to the specific technical devices like hardware, software, and telecommunications networks which facilitate the gathering, processing, storage, and exchange of information. IS refers to a broader concept where

technology, people, and processes are combined. (Pearlson and Saunders, 2013, Ward and Peppard, 2002). The UK Academy of Information Systems definition supports the notion of IT being part of IS as IS are: *"the means by which people and organisations, utilising technologies, gather, process, store, use and disseminate information."* (UKAIS, 2013).

3.3.1 Purpose and role of information systems

The main purpose and role of IS differ depending on what approach one takes. There are at least four approaches to consider that together provide a rich picture; the hard and soft approach, and the isolated and integrated approach. In their pursuit of painting a picture of the IS field Checkland and Holwell (1998) make a distinction between a hard functionalist approach and a soft interpretative approach. The hard functionalist approach which they propose has been the dominant one and assumes that organisations are goal oriented social entities/systems with an information need satisfied by IT. IS are then to support decision making in order to close the gap between a present and a desired future state. A soft interpretive approach assumes a process view of organisations where people seek to understand their world in order to act purposefully. The purpose of IS is then to serve and to be regarded as a support function for people taking action in the real world. The information support function could then be thought of as a system. There are two dimensions of information support in a soft approach, the first is to support desired actions, the second is to support monitoring and then control if desired outcomes do not emerge. Both a hard and a soft approach are valid and together they contribute to a richer picture of the purpose and role of IS (Checkland and Holwell, 1998). An isolated and an integrated approach has emerged over the years as the demand for IS within organisations has changed and as the competitive environment has become more global and complex (Motiwalla and Thompson, 2012). An isolated approach follows a reductionist tradition as IS are thought of as supporting specific tasks and functions within the organisation, e.g. payroll, customer relation and inventory control. These information systems draw from an information technology with an architecture that does not support the easy flow and exchange of information between tasks or functions. An isolated approach seeks to reduce complexity with a high degree of specialisation, which often results in a large number of different IT solutions making the organisational IS support scattered and difficult to manage (Motiwalla and Thompson, 2012, Davenport, 2000, Sandoe et al., 2001). An integrated approach follows a holistic tradition and seeks to cope with complexity through a process view of the organisation and its IS support (Davenport et al., 2004b). In such an approach the purpose and role of IS are thought of as supporting integration between all major processes and functions within the organisation. The IS draws from an information technology with an

infrastructure that enables information exchanges between different hierarchical levels and specific functions within the organisation as well as between organisations (Motiwalla and Thompson, 2012). An integrated approach leaves the organisation with one IS to manage, however, the complexity of such IS is high and implementing a process structured IS support has proven to be a great management challenge (Davenport, 2000, Davenport et al., 2004b, Dezdar and Sulaiman, 2009).

3.4 Information systems and organisations

When attempting to understand the potential benefits and impacts of IS in organisations IS researchers are encouraged to shift focus from design and development of the IT artefact to changes and challenges resulting from the relationship between IS and the organisation it is to support (Avgerou, 2001). Checkland and Holwell (1998) point out that in order to understand an IS it is necessary to understand what it is intended to support. The relationship between IS and organisations is here discussed from two perspectives. The first is a theoretical perspective positioning IS and organisations as a socio-technical endeavour. The second is more of a practical perspective speaking of the relationship between IS and organisations as a life cycle.

3.4.1 Socio-technical tradition

The socio-technical tradition outlines a close relationship between the social context and the technical content. Checkland and Holwell (1998) argue that an information system is to be understood as an intertwined pair of systems, both the system serving (IS) and the system being served (organisation). Lee (2004) proposes a somewhat similar notion when stating that IS are more than technology and that they emerge from the transformational interactions between technology and organisation. This implies that changes in one of the two will be followed by change in the other whether it is intentionally designed or not. Orlikowski (1992) speaks of the duality of technology where technology on one hand is created and changed by human action and on the other hand also used by humans to achieve some action. Avgerou (2000) continues on this line of thought and demonstrates the presence of an intertwined process of organisational transformation and IS development. Latour (2005) emphasises the close relationship between the social and technical using the notion of a network of heterogeneous entities, actors, that are constantly being enrolled, translated, gathered together. An actor is anything and everything that modifies a state of affairs and makes a difference. Latour then places people and technical artefacts as equally important entities but emphasises that they are not the same. Technical artefacts do not determine action, however, they might authorise, allow, encourage, permit, suggest, influence, block and so on (Latour, 2005). When heterogeneous actors are connected in a way that displays an effect, a process,

a situation, a service, a whole and not the individual modes of action of any actor, i.e. when the organisation and the IS are connected in a way that supports purposeful action, Law (1992) speaks of a state of punctualisation. This state is not static but present as long as the actors remain connected in a particular way. Changing actors, connections, contexts render another network and thus another perception (Law, 1992, Latour, 2005). The socio-technical tradition implies that the technical and the social are not juxtaposed instead they are closely connected to support action.

3.4.2 Information systems life cycle

A life cycle perspective of the relationship between IS and an organisations relates to the well-established notion of information systems development life cycle (SDLC) (Motiwalla and Thompson, 2012, Andersen, 1994).
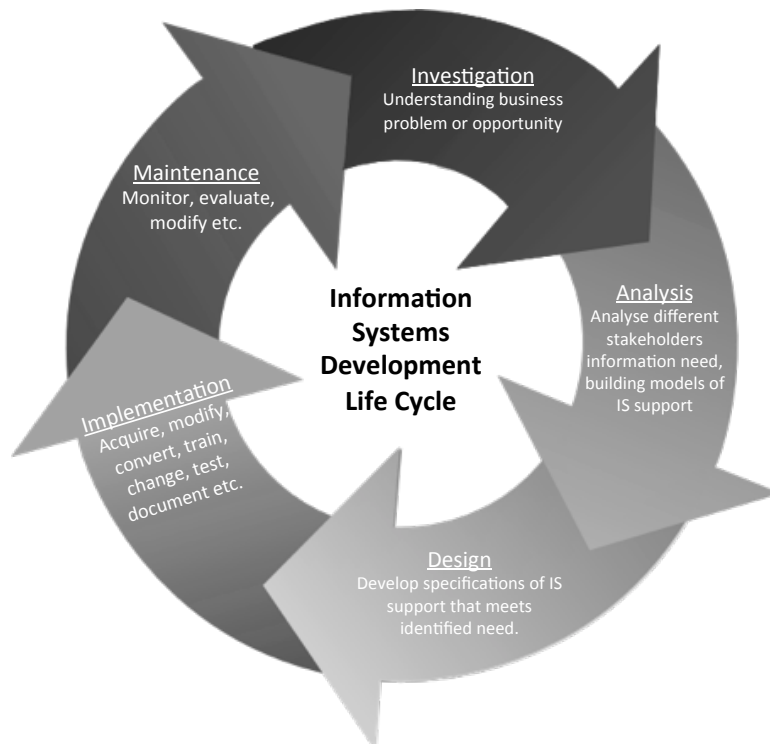
Figure 8: The information systems development life cycle (Motiwalla and Thompson, 2012, O´Brien and Marakas, 2009).

The life cycle has five steps that describe different phases of the relationship between IS and an organisation (figure 8). It points out that such a

relationship builds on the understanding of IS providing support to the needs of stakeholders within the organisation. It speaks of a relationship where both IS and organisations affect and are affected by each other. Even if each step to some degree has standardised actions that hold true in most organisations and settings, each relationship is to be treated as unique with its own challenges. The steps differ from each other in the purpose, duration, activities, outcome and required capabilities of those involved implying a complex, shifting and on-going character of the IS/organisation relationship (O´Brien and Marakas, 2009, Motiwalla and Thompson, 2012).

3.5 Information systems in health care

Healthcare organisations are highly information-intensive and healthcare personnel require sufficient IS support in order to both care for patients and often at the same time manage and run the organisation (Harold and Perreault, 2006). IS in healthcare organisations have a rich history and as they has evolved over the years different categories of IS have emerged. Haux (2006) makes a distinction between health information systems and hospital information systems. Health information systems are defined as *"systems of processing data, information, and knowledge in health care environments"(Haux, 2006, p. 270),* with the purpose of contributing to a high quality and efficient patient care. Hospital information systems are viewed as one instance of health information systems with a hospital as its environment. Harold and Perreault (2006) speak of healthcare information systems (HCIS), which they define as: " *information systems used within a healthcare organisation to facilitate communication, to integrate information, to document healthcare intervention, to perform record keeping, or otherwise to support the functions of the organisation*" (Harold and Perreault, 2006, p. 945). IS in healthcare organisations have gone from providing automation of specific functions e.g., patient registration and billing, to offering an integrated IS support throughout the whole healthcare organisation (Harold and Perreault, 2006). Haux (2006) outlines seven important shifts throughout the development of IS in healthcare, *one*, a shift from paper-based to computer-based processing and storage; *two*, a shift from institution-centred departmental IS to organisation-wide regional and global IS; *three*, a shift from IS supporting only healthcare professionals to including the direct support of patients and consumers; *four*, a shift from using data only for patient care to include using data for planning and research; *five*, a shift from technical to strategic information management priorities; *six*, a shift from mainly alpha-numeric data to images and data on the molecular level; *seven*, a shift from limited functionality to ubiquitous computing environments and sensor-based technologies for health monitoring.

3.5.1 Electronic health record vs. electronic health record systems

Over the years the term electronic health record (EHR) has not provided a stable definition of the phenomena it wishes to represent. Many are the terms that have been used to describe similar IS support and at times they provide incompatible descriptions causing confusion (Tan, 2005, Häyrinen et al., 2008). In order to create clarity, the technical committee ISO/TR 215 (ISO/TR20514:2005(E), 2005) provides definitions of several concepts related to the EHR domain. In their technical report they make a clear distinction between EHR and EHR systems. EHR is defined as: *"repository of information regarding the health status of a subject of care, in computer processable form, stored and transmitted securely and accessible by multiple authorized users, having a standardized or commonly agreed logical information model that is independent of EHR systems and whose primary purpose is the support of continuing, efficient and quality integrated health care"* (ISO/TR20514:2005(E), 2005, p. 2). An EHR contains information that is retrospective, concurrent and prospective. An EHR system is defined as: *"a system for recording, retrieving and manipulating information in electronic health records."* (ISO/TR20514:2005(E), 2005, p. 3).

The main purpose of EHR is to *"provide a documented record of care that supports present and future care by the same or other clinicians"* (ISO/TR20514:2005(E), 2005, p. 15). Secondary purposes include areas such as continuous quality improvement studies, education, research, trend analysis, resource allocation etc. (ISO/TR20514:2005(E), 2005). Tang and McDonald (2006) define the purpose of EHR systems to be the addition of: *"information management tools to provide clinical reminders and alerts, linkages with knowledge sources for health care decision support, and analysis of aggregate data both for care management and for research"* (Tang and McDonald, 2006, p. 448), and to: *"provide computer based tools to help the reader organise, interpret, and react to data"* (Tang and McDonald, 2006, p. 448). An EHR system often contains functional components like integrated view of patient data, clinical decisions support, clinical order entry, access to knowledge resources and integrated communication and reporting support.

Both EHR and EHR systems could have different characteristics and are often categorised depending on their scope. EHR are divided into three categories: *non-shareable EHR*, which are closely connected to a certain EHR system software and a particular database product; *shareable EHR*, which share information between different clinical disciplines and different EHR systems; *integrated care EHR,* which support planned and delivered care over an extended period of time in a multi-speciality and disciplinary environment (ISO/TR20514:2005(E), 2005). EHR systems are divided into two main

categories that to some extent relate to provided EHR categories: *the local EHR system*, which supports an individual local health provider with detailed local health information and relates to all three EHR categories; *the shared EHR system*, which supports healthcare communities which could be local, regional or national, with shared health information from several organisations and relates to shareable and integrated care EHR (ISO/TR20514:2005(E), 2005).

3.6 In conclusion

The concept of information systems builds on two central notions: *first*, that information and information creation are highly human endeavours; *second*, that understanding and managing information in organisations is not an isolated endeavour but one to be approached in a systemic manner. Further, information systems are action supporting and value creating entities that are able to provide both specific and integrated support. However, information systems can only be spoken of in relationship to the context in which they are to provide support. This relationship has the characteristics of an on-going and changing network where the social context and the technical content are highly intertwined, implying that potential information systems benefits and value are the result of such a relationship. EHR are in this thesis regarded as being equivalent to information systems, which implies that EHR benefits and value are to be understood in relationship to different stakeholders' perception of how the EHR supports their daily actions.

Chapter 4

Creating and Capturing Information Systems Value

"There are really no IS/IT projects per se-there are only change projects that have significant IS/IT components."
- Ward & Daniel -

The aim of the chapter is to discuss benefits, value, and benefits management as a result of the relationship between information systems and organisations. The chapter has two distinctive parts: *first*, it begins with a discussion of definitions and descriptions of benefits and value related to information systems in general and electronic health records in specific; *second*, it ends with a discussion on IS management as a quest for value with special attention to the IS benefits management tradition and process.

4.1 Understanding benefits and value in an information systems context

In order to understand IS-value it is helpful to define and clarify the terms effect, benefit and value. The three terms are at times and to some extent used when speaking of the same thing. The Oxford English Dictionary (2005) provides the following definitions:

- Effect: "*to bring about an event, a result, to produce a state or condition*",
- Benefit: "*advantage, profit, good, a thing well done*",
- Value: "*important, useful, valuable, of worth, the quality of a thing considered in respect of its ability to serve a specific purpose or cause a particular effect*".

Definitions offered by researchers within the information systems domain take on different perspectives and provide further understanding. Thorp (2003, p. 282) defines IS-benefits in relationship to an organisational context stating that it is "*an outcome whose nature and value (expressed in various*

ways) are considered advantageous by an organisation." Ward and Daniel (2006, p. 107) take a stakeholder perspective and define them as *"an advantage on behalf of a particular stakeholder or group of stakeholders."* King and Schrems (1978, p. 21) define IS-benefits in relationship to action stating that it is *"the consequence of an action that protects, aids, improves, or promotes the well-being of an individual or organisation."* Renkema and Berghout (1997, p. 2) define IS-benefits from an investment perspective as: *"all positive consequences of an IS investment."* Value on the other hand is often defined in relationship to the competitive advantage of an organisation as in the definition proposed by Parker and Benson (1988, p.3): *"value is a concept based on the effect information technology investments has on the business performance of the enterprise"*, and further: *"value is based on advantage achieved over the competition, reflected in current and future business performance"* (Parker and Benson, 1988, p.65). Renkema and Berghout propose that: *"financial and non-financial consequences together determine the value of an IS"* (1997, p. 2).
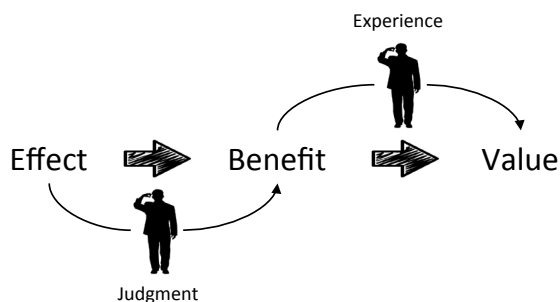
Figure 9: The relationship between effect, benefit, and value in an IS context.

Provided definitions indicate an order of things (figure 9). Effects are to some extent neutral until people exposed to them have passed judgement as to whether they are positive or negative. Benefits are effects that have been deemed to be of advantage in relationship to the objectives of an organisation, to concerned stakeholders and to other effects. Value speaks of a deeper experience of beneficial effects that have been proven to be useful and valuable in a specific setting for a specific group of stakeholders affecting organisational performance and advantage. When using the term IS-benefits in this thesis it refers to the beneficial effects emerging from the IS/organisation relationship, and when using the term IS-value it refers to IS-benefits that have been realised and thus regarded as something supporting people taking purposeful actions and enhancing organisational performance and advantage.

4.1.1 Characteristics and categories of information systems benefits

In IS literature both different characteristics as well as categories are used when describing beneficial effects resulting from the IS/organisation relationship. As mentioned earlier, the characteristics of IS-benefits are described as elusive. They are:

- A matter of perception (Tallon and Kraemer, 2007),
- Shifting between stakeholders (Jurison, 1996b, Blake et al., 2010),
- Changing over time (Kwon et al., 2002),
- Emerging due to organisational change (Berg, 2001, Farbey et al., 1999b),
- Migrating due to external forces (Slywotzky, 1996),
- Leaking due to lack of attention (Thorp, 2003).

Even though the characteristics of IS-benefits suggest a highly subjective state there are several proposed categories of IS benefits which in turn could be divided into generic and contextual categories (table 8). Benefits that are categorised as tangible, quasi-tangible, or intangible are done so in relationship to financial impact. Tangible benefits are benefits that directly impact the bottom line of an enterprise, are measurable and have widespread agreement. Quasi-tangible benefits are quantifiable but difficult to measure in monetary terms and they often concern improvement of existing organisation and processes. Intangible benefits can only be judged subjectively and often contribute to improving effectiveness in a way that does not directly impact the bottom line of enterprises (Ward and Daniel, 2012, Farbey et al., 1993, Murphy, 2002, Parker and Benson, 1988). Benefits could be of high or low measurability (Remenyi et al., 1995). Ward and Daniel (2012) argue that if an identified potential benefit cannot be measured it should be excluded and not pursued. Dahlgren et al. (2006) on the other hand argue that all identified potential benefits should be included, even if they are difficult to measure, as they are indicators of potential value. However, the unquantifiable benefits should be of low priority. Organisations need to recognise that a full account of all potential benefits can not be identified during the initial stages of an IS benefits management process (Ward and Daniel, 2012).

Table 8: Categories often used when describing beneficial effects of IS.

	Benefits related to	Benefits being either	Described in
Generic	Financial impact	Tangible, intangible, quasi-tangible	(Parker and Benson, 1988, Farbey et al., 1993, Murphy, 2002, Wiseman, 1992, King and Schrems, 1978, Ward and Daniel, 2006, Remenyi and Sherwood-Smith, 2001)
	Measurability	Quantifiable, unquantifiable	(Remenyi et al., 1995, Bannister, 2004, Lederer and Mirani, 1995, Ward and Daniel, 2006)
	Degree of expectation	Expected, emergent, serendipitous	(Remenyi et al., 1995, Bannister, 2001, Ward and Daniel, 2006)
Contextual	IS functionality dependence	Direct, indirect, joint	(Farbey et al., 1999b)
	Stakeholder level	Society, organisation, individual	(DeLone and McLean, 1992, DeLone and McLean, 2003, Dahlgren et al., 2006)
	Organisational structure	Strategic, managerial, operational, functional, support	(Mirani and Lederer Albert, 1998, Farbey et al., 1993, Love and Irani, 2001, Love et al., 2005, Ward and Daniel, 2006)
	Work impact	Task productivity, task innovation, customer satisfaction, management control	(Torkzadeh and Doll, 1999, Torkzadeh et al., 2005)

There will be emerging benefits which are unexpected even serendipitous and which depend on changes made. These benefits tend to be more intangible than expected benefits but are often of significant value (Farbey et al., 1999b, Bannister, 2001). Contextual categories of benefits relate to technical functionality, stakeholders, organisational structure and work impact. Benefits described in relationship to the technical functionality of IS are direct, indirect or joint. Direct benefits have a close connection to the implemented technical solution, where indirect benefits are the outcome of a chain of consequences. Joint benefits may be a result of the technical solution but will only be realised if other things are in place (Farbey et al., 1999b). Benefits categorised by stakeholder level are described depending on their impact on an individual, an organisation, or a societal level (Dahlgren et al., 2006). Farbey et al. (1993) build a framework for categorising benefits in relationship to organisational structure: strategic benefits are those related to the organisation as a whole, its alignment and competitive advantage; managerial benefits are those related to the support of middle management activities e.g. collecting, aggregating and passing of information; operational benefits are those related to the core processes of the organisation; functional and support benefits are similar and are those that affect the enablement of new ways of working or allowing people to do new things (Farbey et al., 1993, Mirani and Lederer Albert, 1998). Torkzadeh et al. (1999, 2005) categorise benefits according to impact on work. Task productivity benefits are those related to the improvement of users output per unit of time; task innovation benefits are those related to users creating and trying out new ideas in their work; customer satisfaction benefits are those related to users creating value for the firm's internal or external customers; management control benefits are those related to regulation of work processes and performance (Torkzadeh and Doll, 1999, Torkzadeh et al., 2005). Benefits could be part of several categories; as an example, an operational benefit could be a tangible, quantifiable, expected, direct, task productivity benefit at an individual level.

4.1.2 Examples of identified information systems benefits

Research within the IS benefits management domain has provided many examples of IS-benefits in different contexts. Some of these benefits are recurrent and others are more occasional. It has been argued that as organisations develop and implement IS for the second or more time, the palette of benefits change in character. For an example, the first time an organisation implements an IS, benefits often appear in the form of automated administrative processes which are not so clearly evident in later implementations where benefits often have a more intangible character (Davenport et al., 2004a, Shang and Seddon, 2002). In table 9 common examples of benefits are presented. Lederer and Mirani (1995) compose a list of anticipated IS-benefits collected from 178 IS projects. They identify nine

major anticipated benefits that they propose could support researchers in their understanding of why or why not IS-benefits are achieved. The composed list also provides practitioners with a checklist when preparing for benefits analysis projects (Lederer and Mirani, 1995). Farbey et al. (1993) propose a set of what they call generic IS-benefits based on evaluation projects in 16 organisations. They categorise identified benefits according to Mintzberg's view on organisational structure and thus take a people-centric view underlining that IS benefits cannot be considered in isolation from those that are to use and be supported by the IS. Both Shang and Seddon (2002) and Harris and Davenport (2006) describe benefits from an integrated information systems perspective. Shang and Seddon (2002) construct their benefits framework based on data from vendor success stories, academic literature review and case studies of organisations that were part of vendor success stories. Harris and Davenport (2006) combined data from interviews with industry analysts and experts, case studies of 28 organisations and qualitative survey data from another 168 organisations that implemented integrated IS. Together they provide a good picture of benefits from integrated IS. Menachemi and Brooks (2006) and Menachemi and Collum (2011) compare users' experience with intended adopters' perception of EHR-benefits. They conclude that EHR show great potential to improve and support healthcare quality and efficiency. The results show an interesting difference between users and adopters of EHR. Users tend to depict EHR-benefits in terms of improved workflows leading to better clinical outcomes, where adopters tend to focus on expected financial gains as clinical outcomes are unclear (Menachemi and Brooks, 2006). Even though lists of this kind, as argued in chapter 8, could to some degree have a negative effect on IS-benefits realisation, they are records of what has been achieved by organisations and thus provide valuable lessons learned.

Table 9: Different aspects and examples of IS benefits.

Anticipated IS Benefits (Lederer and Mirani, 1995)	Generic IS Benefits (Farbey et al., 1993, Ward and Daniel, 2012)	Integrated IS Benefits (Shang and Seddon, 2002, Harris and Davenport, 2006)	EHR Benefits (Menachemi and Brooks, 2006, Menachemi and Collum, 2011)
Business redesign	Support for the organisation's strategy	Better management decision making	Improved quality of care
Improved information	Permit new business models	Improved financial management	Improved patient safety
Strategic advantage	Increased agility	Faster, more accurate transactions	Improved coordination of care
Reduced workforce costs	Better control through improved information	Cost reduction	Improved productivity
Reduced technology costs	Improve the quality of working life	Improved inventory and asset management	Reduced supply and printing costs
Return on investment	Reduced headcount	Ease of expansion/growth and flexibility	Improved utilisation of tests
Better application development	Timeliness and accessibility of data	Cycle time reduction	Better availability of information and elimination of chart pulls
Adherence to government regulations	Improved turnaround time	Headcount reduction	Increased revenues
Reduced travel costs	Improved communication and collaboration opportunities	Improved customer service and retention	Reduce cost for recruitment through improved clinician satisfaction
	Enforcement of regulatory or legal requirements	Competitive advantage through distinctive capabilities	Improved ability to conduct research

4.2 Information systems management, a quest for value

IS management as a field has changed and evolved in character over time. This IS management evolution paints a bigger picture of central issues and challenges. Carr (2003) proposes an IS evolution that displays two movements. The first movement is one where IS have gone from being an administrative back-office tool not in need of any more management attention than a typewriter, to becoming a matter of strategic value and of interest at the highest management levels in organisations. The second, and more recent, movement is one where IS are no longer proposed to be of strategic value as proprietary technology has become infrastructure and standardised best practise widely known and used by many. Proposed IS evolution challenges organisations to be able to manage IS in a way that both captures its window of opportunity in order to gain strategic advantages as well as unlocking its full infrastructural potential to be used and shared by many (Carr, 2003). Murphy (2002) also suggests an IS evolution where IS management has gone from having an internal focus on automation, cost control and efficiency, to having an external focus on new business models; integrating not only IS and internal processes, but also IS and inter-organisational processes. This leads to an IS evolution that challenges organisations to manage both the optimisation of internal IS support functions as well as external relationships and strategic alliances facilitated by highly complex and integrated IS solutions (Murphy, 2002). Moschella (2003) proposes an IS evolution where IS have gone from a systems-centric era where the development and use of IS in organisations were very much in the hands of engineers and driven by technology, to a customer-centric era where knowledge of IS and how to use them is widely spread leaving users and customers in the driving seat. This means an IS evolution that challenges organisations to manage technology development and requirement competences, as well as fostering an innovative improvement attitude towards the IS/organisation relationship (Moschella, 2003).

Ward and Peppard (2002) also describe IS management from an evolution perspective and propose four eras. The first era, *data processing*, sets focus on automating information-based processes. The nature of technology in this era is fragmented and hardware driven and IS are internal and operational. The main purpose of IS/IT is to reduce costs. The second era, *management information systems*, sets focus on satisfying managers' information requirements for decision-making. The nature of technology is distributed and interconnected, and the characteristics of IS are accommodating and controlling. The main purpose of IS/IT in this era is to support business users' needs. The third era, *strategic information systems*, sets focus on improving competitiveness by changing the nature or conduct of business.

The nature of technology is networked and integrated, and the characteristics of IS are external and strategic. The main reason for using IS/IT is to enable the organisation to reach its goals. The fourth era, *information systems capability*, recognises that IS/IT has an integral role to play in the majority of business processes and that managing IS and realising benefits is essentially a knowledge-based activity. The fourth era sets focus on fusing IS knowledge and business knowledge, a flexible and reusable IT infrastructure, and an effective process to link IS assets with value realisation (Ward and Daniel, 2012).

4.2.1 Information systems benefits management

There are several IS benefits management frameworks to support organisations in their realisation efforts:

- Remenyi and Sherwood-Smith (1998) propose an active benefit realisation methodology,
- Silk (Silk, 1993) suggests an approach that builds on IS benefits principles from an information management context,
- Sapountzis et al. (2009) propose a benefits realisation framework for healthcare contexts which they call the BeReal framework,
- Changchit et al. (1998) formulate The Model of Benefit Identification Process,
- Andresen et al. (Andresen et al., 2000) propose a benefits measurement process,
- Murphy (Murphy, 2002) proposes a framework developed by Gartner consisting of pillars, process, and people,
- Thorp (2003) suggests, what he calls, the Benefits Realisation Approach.

In this thesis the notion of IS benefits management as proposed by Ward and Daniel (2012) is used as a framework of thought. Ward and Daniel (2006, p. 36) define IS benefits management as: *"the process of organising and managing such that the potential benefits arising from the use of IS/IT are actually realised."* They state that IS benefits management is a well-needed shift from traditional IS project management approaches. At the centre of this shift is a movement from delivering technology to delivering benefits; from focusing on an IT implementation plan to establishing a change management plan; from business managers being onlookers or even victims to being involved and in control (Ward and Daniel, 2006). Benefits management is by Ward and Daniel regarded as the key process, which other methodologies like project management methodology, systems development methodology, change management methods, investment appraisal, risk management techniques, programme and project portfolio, and strategic

planning should take into account and fit around (Ward and Daniel, 2006). It sets focus on the relationship between the enabling technology and changes in processes, structures, and working practice.

4.2.2 IS benefits management process

Baccarini and Bateup (2008) compare IS benefits management approaches and discern four common stages: benefits identification, benefits planning, benefits control and benefits realisation. Ward and Daniel (2012) propose a five stage IS benefits management process in which they draw from different sources and methods (figure 10).
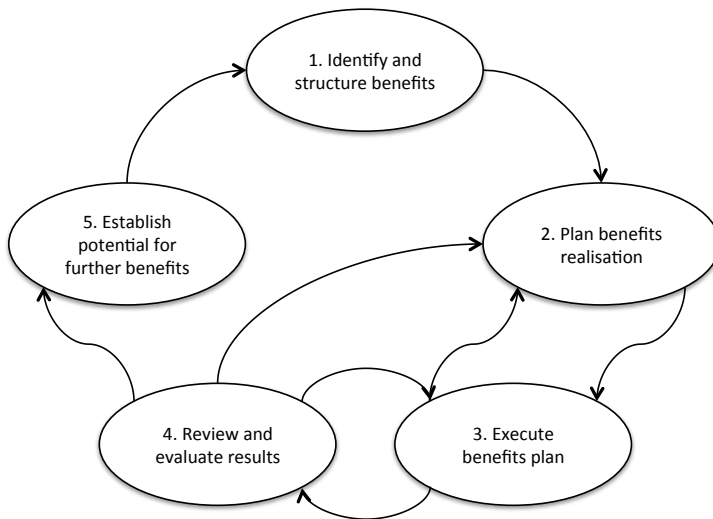
Figure 10: A five stage IS benefits management process model (Ward and Daniel, 2012).

The first stage of identifying and structuring benefits has three main purposes: establishing objectives for the IS investment; identifying all potential benefits which include specifying where in the organisation they will occur, how they are to be measured, what could hinder their realisation and determine ownership and responsibility for their realisation; developing a benefits dependency network where change activities are determined and outlined for each benefit. This first stage is very much an iterative one as the picture of objectives, benefits and required changes emerges (Ward and Daniel, 2012). During the second stage benefits realisation is planned, stakeholders are analysed and a business case is built in which timescales, activities, responsibilities, resources, deliverables and dependencies etc. are clearly described (Ward and Daniel, 2012). During the third stage the

benefits plan is executed. It is in this stage important to monitor progress against the benefits realisation plan and to be attentive as the project evolves. Changes are inevitable as resources, employees and external events change and evolve. Further benefits might emerge and intended identified benefits might become irrelevant causing a need to revisit and reassess the realisation plan (Ward and Daniel, 2012). During the fourth stage a formal review of implemented IS and business changes is conducted. The purposes of this are to determine which expected and unexpected benefits have been achieved, and to provide knowledge in order to conduct future benefits management projects as well as to develop the benefits management process itself. The fifth and last stage builds upon research stating that it is difficult to identify all benefits and that benefits emerge as a result of changes made when implementing the IS and realising identified benefits (Farbey et al., 1999b). During this stage key stakeholders gather to discuss further business changes or if further investments are required in order to gain emerging potential benefits (Ward and Daniel, 2012).

4.3 In conclusion

IS could be expected to affect the context which they are to support. At the same time the context could be expected to affect the support of IS. This IS/organisation relationship results in different potential benefits depending on the subjective judgment of those experiencing them. The main challenge of organisations is to manage in a way that turns potential benefits into value. To do this they are encouraged to change their view on IS projects from technology projects to change projects and to implement and use a formal benefits management process.

Chapter 5

Depicting Issues Affecting Perception of Information Systems Value

"How did we think here?"
- Nurse -

Chapter five is the first of four chapters presenting the findings of the study. In this chapter the research stream of perception is addressed. It consists of a summary of findings from research paper two together with its theoretical lens and main conclusion. Findings are based on data from observations of three benefits analysis projects (track 1-3), and documentation of four benefits analysis projects (track 1-4). The aim of the chapter is to depict the relationship between participants' perception and the discourse leading up to accommodations of which potential IS-benefits the county council with its clinical departments are to pursue. During observations it became clear that participants changed their perception of what they regarded to be potential IS-benefits worthy of pursuit. Throughout all the observed benefits analysis projects the amount and composition of identified potential benefits changed and were not fixed until the final report was written and handed over. Initially there were in total over 500 potential benefits identified for the four benefits analysis projects. However, the total amount presented in the final version of the four reports had been reduced to 55 potential benefits (Jeansson, 2010a). Based on this initial observation, referred to in paper two as benefits fluctuation, the following question is addressed in the thesis: how are participants' perceptions of IS-benefits affected during a formal benefits management process?

The relevance of studying what affects participants' perception of IS-value during benefits analysis projects is supported in literature. Tallon (2013) and Tallon and Kraemer (2007) state that participants' perception of IS-value mirrors to a great extent the reality of objective measures. They encourage the study of perceptions in order to further understand IS-value, however,

they suggest that researchers pay careful attention to respondent selection (Tallon and Kraemer, 2007). Checkland and Holwell (1998) state that participants' perceive a data-rich world selectively as individuals or as members of formal or informal groups. Perception is influenced by previous experiences, and by partaking in inter-subjective discourses where perception is exchanged, shared and challenged (Checkland and Holwell, 1998). Findings from observations during IS benefits analysis projects showed that participants' perceptions of what constitutes potential benefits and value are affected by past experience and knowledge, as well as the present structure of the benefits management process.

5.1 The issue of structure

Observations showed that:

> Alterations in objectives and incentives, insufficient documentation and poor time management during the benefits management process affect what is perceived as potential benefits in a way that reduces the number of benefits and the amount of estimated value.

Halfway through the benefits analysis in track 1 participants from the central administrative department of the county council told the group that costs related to the EHR investment and its support were to be divided amongst the clinical departments. The size of each share was to be based on the amount of estimated value that each department identified during the benefits analysis project. In other words, the more potential benefits and value identified during the benefits analysis, the larger the share of EHR costs for the department. Participants were also told that politicians were to follow up on their benefits realisation efforts and: *"if the different tracks did not realise benefits, politicians would"* (Jeansson, 2010a, p. 8). The group expressed concerns, as they believed that incentives had changed. Up to this point all participants had been very motivated to identify potential benefits. The project leader had even praised them for setting an unofficial record of the number of identified potential benefits. From this point on motivation and what was regarded as potential benefits and value changed.

During the benefits analysis projects, the project leader continually documented the progress of the different groups. Discussions were often an on-going matter and as a new day of analysis started both the project leader and participants turned to the documentation in order to recapitulate their thoughts. There were times when the documentation was insufficient to

support discussions, especially in track 1 and 2. As one nurse exclaimed during analysis in track 2: *"How did we think here?"* When participants did not remember what they had been discussed earlier the amount and composition of potential benefits changed. This resulted in increased uncertainty regarding the legitimacy of the analysis results. Participants in track 1 and 2 requested, at several occasions, a more structured documentation.

There were occasions, especially in track 1, when the project leader pressed on in order to finish before the end of the day. On these occasions participants often displayed tiredness. As a result, potential benefits tended to be briefly discussed and were largely excluded from the analysis with no other motivation than participants wanting to go home.

5.2 The issue of knowledge and expectations

Observations showed that:

> Having knowledge of what an information system is able to support affects what is perceived as potential benefits.

Proposed functionality of the EHR constituted a firm foundation for participants when identifying potential benefits. During discussions there were three areas of functionality used in order to support identification: *one*, EHR perceived as an information provider which, for example, in track 2 generated potential benefits as "increased patient safety through faster access to important information" and "better and easier overview of medicaments"; *two*, EHR perceived as an activity supporter which, for example, in track 3 generated potential benefits as "better support for planning" and "support for easier report making"; *three*, EHR perceived as a decision supporter which, for example, in track 3 generated potential benefits as "increased decision support through better documentation" and "better decision support through secure communication".

The issue of knowledge became evident in track 1 as participants shifted between knowledge of what they wanted the EHR to be able to support and what it actually could support. Initially participants were enthusiastic and had no problem picturing how the EHR could be of value. However, half way through the analysis the EHR was implemented. After that participants re-evaluated what they had known about the functionality of the EHR. What

was previously regarded as potential benefits were, due to technical limitations, instead perceived as disadvantages.

Observations also showed that:

> Perception of potential benefits differ depending on expectations and previous experiences of an IS.

Participants in the four observed benefits analysis projects had different levels of experience of using an EHR. Participants in tracks 1 and 4 had no previous experience, and both tracks conducted their benefits analysis project before they implemented the EHR. Together they identified approximately 360 potential benefits. Track 2 and 3 implemented the EHR before conducting their benefits analysis project and participants of track 2 had previous experience of a computer-based medical journal application. Together they identified 155 potential benefits. Throughout the analysis a difference could be observed in expectations and enthusiasm between the two sets of tracks. The pre-implementation tracks had high expectations and easily identified benefits, they were inclusive of potential benefits that indicated future possibilities of an intangible character and they had in general a strong focus on value. The post-implementation tracks had low expectations of the EHR and expressed difficulties in identifying benefits; they were more prone to seeing cost than value; and they tended to favour potential benefits of a tangible character with a strong connection to EHR functionality.

5.3 Theoretical lens

5.3.1 The need for a structured process

Findings show that when structure fails perception of IS-value suffers (Jeansson, 2010a). Tiernan and Peppard (2004) stress the importance of a structured benefits management process in order to support IS value realisation and to understand the context where benefits fluctuation occurs. Dahlgren et al. (2006) propose that a structured and formal benefits analysis project has many advantages in addition to the main purpose of identifying and valuing potential IS-benefits, such as: increased decision support, better follow up and evaluation, increased employee engagement on both operative and management levels, greater acceptance and understanding of required change due to EHR implementation (Dahlgren et al., 2006). Farbey et al. (1999a, 1993) and Ward and Daniel (2012) speak of the importance of a formal structured approach and argue that the composition of benefits and their realisation could be affected by uncertainty regarding the purpose of IS investment and benefits analysis, as well as unclear communication of

potential benefits to involved stakeholders. Tallon et al. (2000) show in their study of over 300 business executives that there is a relationship between managers' perception of IS-value and whether or not their organisation has well thought-through goals and purposes of how to use IS. In organisations with unfocused and ill-structured goals, managers perceive less IS-value than those in organisations with clear and well-structured IS goals. Their study also shows that the main locus of perceived IS-value corresponds to the character of IS goals (Tallon et al., 2000).

5.3.2 The influence of expectations and knowledge

Research shows that expectations on an IS affect perception of IS-value. Fadel and Brown (2010) propose that users' expectations of how IS will support their work shape their perception of IS-value. Users expecting IS to support them to improve job performance or that IS will be easy to use tend to perceive IS-value more favourably. Staples et al. (2002) state that unrealistic high expectations lead to lower levels of perceived IS-value. Tallon (2013) lists research where knowledge and experience of IS relates to perception of IS-value. Findings in a study made by Peterson et al. (2011) show that there is a difference in perception of IS-value between those having previous experience of an EHR and those with no previous experience. Those with previous experience tend to perceive benefits and value related to improved workflow whereas those with no previous experience tend to focus primarily on tangible financial benefits (Peterson et al., 2011).

5.4 In conclusion

> Perception of what constitutes potential IS-benefits and value shifts during a benefits analysis project. Awareness of this benefits fluctuation and its characteristics supports benefits realisation management.

The identified benefits fluctuation paints a richer picture of the challenges organisations face when identifying and describing potential IS-benefits and value. It proposes that when participants come together, their perceptions of what constitutes potential benefits and value are affected by past experience and knowledge, as well as present structure of the benefits management process. In light of these issues one should not forget the existence and influence of a social process encompassing perspectives like procedural justice, group decisions, organisational politics and power (cf. chapter 7). This supports the understanding that there is more to benefits realisation than the specific functionality of a specific EHR system (cf. 1.3.4 and 4.2).

Chapter 6

Depicting Dimensions of
Information Systems Benefits Judgment

"It is up to us to find the benefits, the responsibility is on us."
- Chief physician -

In this chapter the research stream of judgment is addressed. It consists of a summary of findings from research paper three together with its theoretical lens and main conclusion. Findings are based on data from observations of three benefits analysis projects (tracks 1-3). The aim of the chapter is to depict different standards of judgment used by participants when finding accommodations regarding potential IS-benefits. During observations of benefits analysis projects participants' perception of what constituted potential benefits and value fluctuated (Jeansson, 2010a). Findings from observations showed that throughout the three observed benefits analysis projects participants made judgments of which potential IS-benefits to pursue. These judgments displayed different dimensions of reasoning, which in paper three are referred to as benefits judgment dimensions.

The relevance of studying benefits judgment related to IS value realisation is supported in literature. Kwon et al. (2002) propose that participants' interpretation of what constitutes IS-value changes and evolves over time, and that different frameworks are used during what they call an interpretation and value construction process. They conclude that the framing and reframing of identified frameworks is an important benefits realisation activity (Kwon et al., 2002). Checkland and Holwell (1998) state that as we attribute meaning to our perceptions of the world we will make judgments based on what we perceive as good or bad, acceptable or unacceptable etc. Based on those judgments we form intentions that lead to purposeful actions (Checkland and Holwell, 1998). IS benefits realisation and value creation is then affected by the judgments made related to perceived potential IS-benefits within a given context. In order to support

understanding of benefits judgment Kohlberg's theoretical framework of moral development is used (Kohlberg, 1966, Kohlberg and Hersh, 1977). This theory, both praised and criticised, addresses how individuals think of good or bad, right and wrong. Kohlberg studied the reasoning behind subjects' response to moral dilemmas. From his studies he defined six moral stages as well as their characteristics (cf. section 6.3.1).

6.1 Dimensions of benefits judgment

Observations showed that:

> Benefits judgment comes in five dimensions: authority, self, role, organisation, and society.

Findings in
Participants intentionally or unintentionally made judgments of potential EHR-benefits that corresponded to five benefits judgment dimensions. In the authority-dimension participants added or deleted potential benefits based on perceived interests or directives from formal or informal authority. At the end of the benefits analysis in track 2 the head of department, who had not attended the analysis until now, participated in the analysis for three hours. During this time the head of department questioned several earlier decisions. This made participants who had been part of the analysis insecure of work done, some to the extent that they distanced themselves and did not take ownership of what they had accomplished earlier.

In the self-dimension participants added and deleted potential benefits based on how changes would affect their own interests. This became evident during the fourth day of analysis in track 1. Representatives from the central administration of the county council made it clear that each department was to carry EHR costs in proportion to the outcome of their benefits analysis. The greater amount of identified potential value the greater share of the overall costs. Participants then changed their judgment of what they perceived as potential benefits and reduced both the number of benefits and their estimated value.

In the role-dimension participants took upon themselves to represent their colleagues and, based on their role within the organisation, judge whether to add or delete potential benefits. Identifying potential benefits was seen as a great responsibility and at times generated great anxiety as participants struggled with their assignments. Participants in a management role within the organisation often identified potential benefits that affected several

different groups of employees where participants with a more specific role, as for an example a nurse, tended to identify benefits close to their own field of work.

In the organisation-dimension participants added and deleted potential benefits based on what they perceived most advantageous for the participating clinical departments. This dimension was the predominant one and seen as the main purpose of the analysis, as expressed by the head of department in track 1: *"I believe that identified benefits should reflect the track under study and not so much the society or the county council as a whole"*.

In the society-dimension participants added and deleted potential benefits based on perceived good for the county council and society as a whole. Even if this was one of the dimensions that the external project leader wanted participants to use during the analysis, several participants expressed difficulties in identifying and valuing benefits from a society dimension. The further potential benefits were perceived to be from the practical reality of the clinical department the less motivated and enthusiastic participants seemed to be.

6.2 Characteristics of benefits judgment dimensions

Observations showed that:

> Participants use and move between different benefits judgment dimensions.

Observations showed that participants adopted judgment dimensions with irregularity. They shifted between dimensions based on the aim and context of analysis, their role and perceived potential benefits. Participants with a management role tended to use organisation and society dimensions more often. During discussions of how to perceive and describe potential benefits there was a difference in how participants took on different perspectives. When participants used and moved between several different benefits judgment dimensions the analysis gained in depth and strength (high-level benefit judgment thinking), and when participants used only one dimension the outcome of analysis suffered (low-level benefit judgment thinking). Participants often displayed low-level benefits judgment thinking when using self and authority dimension.

6.3 Theoretical lens

6.3.1 Defining moral stages and their related benefits judgment dimension

Kohlberg (1966) identified six stages of moral development. For each stage Kohlberg's definition is presented together with the definition of its corresponding benefits judgment dimension.

Stage 1: the obedience and punishment orientation. In this stage subjects' judgments of good and bad are determined by the physical consequences of action. Morality is seen as something external and subjects assume that powerful authorities provide a set of fixed rules that unquestioningly must be obeyed (Kohlberg and Hersh, 1977, Kohlberg, 1966, Crain, 1985). Kohlberg's first stage corresponds to the authority-dimension of benefits judgment in which participants add and delete potential IS-benefits based on perceived interest of authorities (Jeansson, 2010b).

Stage 2: the instrumental-relativist orientation. In this stage subjects judge actions based on what satisfies one's own needs and occasionally other's. Subjects recognise that there is not simply one correct view and that value is relative to each actor's needs and perspectives. Elements of fairness and equal sharing are present, however their underlining philosophy is one of "you scratch my back and I'll scratch yours" (Kohlberg and Hersh, 1977, Kohlberg, 1966, Crain, 1985). Kohlberg's second stage corresponds to the self-dimension of benefits judgment in which participants add and delete potential IS-benefits based on self-interest (Jeansson, 2010b).

Stage 3: the interpersonal concordance or good boy-nice girl orientation. In this stage subjects find it important to maintain expectations of individuals or groups. Actions are based on that which pleases or helps others, and what is approved by them (Kohlberg and Hersh, 1977, Kohlberg, 1966, Crain, 1985). Kohlberg's third stage corresponds to the role-dimension of benefits judgment in which participants add and delete potential IS-benefits based on perceived expectations on one's role by individuals or groups (Jeansson, 2010b).

Stage 4: the law and order orientation. In this stage, as in the previous stage, subjects are not only focused on the conformity of personal expectations but having feelings of loyalty and being more broadly concerned with society as a whole. There is an emphasis on rules and laws, maintaining social order, doing one's duty just for the sake of it (Kohlberg and Hersh, 1977, Kohlberg, 1966, Crain, 1985). Kohlberg's fourth stage corresponds to the organisation-

dimension of benefits judgment in which participants add and delete potential IS-benefits based on one's perceived best for the organisation as a whole (Jeansson, 2010b).

Stage 5: the social-contract, legalistic orientation. In this stage subjects have a utilitarian approach and think in terms of what a society ought to be like and what a society ought to value (Kohlberg and Hersh, 1977, Kohlberg, 1966, Crain, 1985). Kohlberg's fifth stage corresponds to the society-dimension of benefits judgment in which participants add and delete potential IS-benefits based on one's perception of the common good for the society as a whole (Jeansson, 2010b).

Stage 6: the universal-ethical principle orientation. In this stage subjects make decisions based on self-chosen abstract and ethical principles that at heart are universal principles of justice (Kohlberg and Hersh, 1977, Kohlberg, 1966, Crain, 1985). Kohlberg has after initial problems of finding subjects who reasoned at this stage and problems with scoring subjects at this stage decided to, temporarily, view and call this a theoretical stage (Crain, 1985). For that reason the sixth stage is not used in the study of benefits judgment dimensions (Jeansson, 2010b).

6.3.2 Characteristics of moral stages

Kohlberg's concept of stages has four main characteristics. The first one is that stages are not the result of maturation. Reasoning on higher stages is not something inherent that will simply unfold. Instead, stages emerge as subjects think, discuss and debate moral problems. Stages represent a transformation in a person's form or structure of thought (Crain, 1985, Kohlberg and Hersh, 1977). The second characteristic is that stages are structured as wholes or organised systems of thought. As such they are clearly differentiated from each other qualitatively rather than quantitatively. This suggests that stages are not isolated responses but general patterns, and that subjects are consistent in their level of moral thinking (Crain, 1985, Kohlberg and Hersh, 1977). The third characteristic is that stages form an invariant sequence. Kohlberg states that movement is always forward, a person never skips a stage or moves backwards. Not all people reach the highest stages but their movement always proceeds in order (Crain, 1985, Kohlberg and Hersh, 1977). The fourth characteristic is that stages are hierarchical integrations. Thinking at higher stages includes thinking at lower stages, and a person tends to prefer the highest stage available (Crain, 1985, Kohlberg and Hersh, 1977).

6.4 In conclusion

Decisions of which potential IS benefits to pursue are influenced by participants' benefits judgment. Kohlberg's theory of moral development supports understanding of different benefits judgment dimensions.

As participants engage in discussions of how to view identified potential benefits they come to pass judgment whether they perceive them worthy to pursue or not. The reasoning behind these judgments varies, and participants move between them in an irregular fashion. As judgments made affect actions taken, awareness and knowledge of benefits judgment dimensions could support management of benefits realisation processes.

Chapter 7

Depicting Negotiations of Information Systems Value

"Then all our work is undone if politicians are to decide over our heads anyway."
- Ward nurse -

In this chapter the research stream of negotiation is addressed. Its findings are based on data from observations of three benefits analysis projects, tracks 1-3. Its purpose is to depict the inter-subjective discourse that participants of benefits analysis projects engage in when seeking to identify potential IS-benefits and value. The chapter consists of a summary of findings from research paper four, its theoretical lens and main conclusion.

The pursuit and realisation of benefits and values have proved to be challenging tasks (Silk, 1993, Murphy, 2002, Bayer et al., 2007), and as organisations formalise realisation activities a misconception of rationality threatens to mislead their realisation efforts. This misconception is built around the erroneous assumptions that an IS comes with a set of benefits ready to install, and that IS benefits are easy to define and stable over time. Research within the field shows that this is a limited view of a past paradigm, and that potential IS benefits and value become less the result of technology adoption and more the outcome of change processes (Orlikowski, 1992, Soh and Markus, 1995, Farbey et al., 1999b, Willcocks and Lester, 1999, Ward and Peppard, 2002, Carr, 2003). When participants of benefits analysis projects perceive the IS to influence and change their everyday tasks and their preconditions to perform them, the process of identifying, structuring and valuing IS-benefits becomes not just a matter of documenting formal discussions based on rational analysis, but more a matter of negotiation. This benefits negotiation does not seek to identify IS functionality or find ways to use it, instead, its aim is to make sense of IS supported value-creating changes of how people think and act as they face everyday problematic situations. As

stated by Ackermann and Eden (2011a) this is a negotiation supported by analysis but also a negotiation very much influenced by social processes, which could put rationality out of play. The outcome of benefits negotiations determines what potential IS-benefits and value that the different clinical departments, and by that the county council as a whole, are to pursue.

7.1 The character of benefits negotiation

Observations showed that:

> Benefits negotiations shift in character depending on length, depth, and frequency.

Each identified potential EHR benefit underwent a negotiation; some benefits were negotiated more than one time. When re-negotiations occurred it often depended on participants not trusting former negotiations or their results. The length of negotiations varied greatly and depended on access to information, level of motivation and how well the analysis process was managed. The level of information was also essential for the depth of negotiations. When participants had the information they needed negotiations were focused and detailed, and when participants lacked information negotiations were unfocused and often deviated from the topic.

7.2 A colourful palette of negotiations

Observations showed that:

> Benefits negotiations differ depending on whether participants have a rational or irrational drive.

During observations of benefits negotiations it became evident that negotiations could either have a rational or an irrational drive. The rational drive was the one most observed and it came in different shapes with different outcomes. A rational drive was characterised by participants seeking to make decisions based on thorough analysis of accurate information for the benefit of the county council. Negotiations with an irrational drive were characterised by the opposite. Negotiations were carried through even if participants did not have the accurate information at hand, or even if decisions were not made with the good of the county council in mind. Irrational driven negotiations also came in different shapes with different outcomes.

Rationally driven benefits negotiations come in three shapes: the perfect, interrupted and uncertain negotiation.

Each rationally driven negotiation had defining characteristics. The perfect negotiation was inclusive as participants expressed their opinions in an open manner. It was also information saturated as participants had access to accurate information when making their decisions. The interrupted negotiation was fragmented and deviated from its intended purpose as participants' initiated discussions concerning technical support or implementation issues. These negotiations were often lengthy and at times left unfinished. The uncertain negotiation was observed when negotiating intangible benefits. Participants were as committed as in the perfect negotiation; however, they often struggled with how they were to come to a conclusion or decision. The outcome of uncertain negotiations was unclear descriptions generating re-negotiations.

Irrationally driven benefits negotiations come in three shapes, the self, relief and distrust-driven negotiation.

Each irrationally driven negotiation had defining characteristics. The self-driven negotiation was in essence a conflict of interests as participants sought to maximise the outcome of negotiations to fit their own needs and purposes instead of that of the county council, the later being the given task. The distrust-driven negotiation was regarded to be of low legitimacy as participants who had not been part of negotiations constantly questioned negotiations made by others and their outcome. Those who participated were not always able to motivate and defend decisions made. The relief-driven negotiation was characterised by the silent agreement by participants to end negotiations in order to be relieved of work, often after lengthy discussions before lunch or at the end of the day. The outcome of negotiations was regarded as negative as potential benefits were either deleted, reduced in estimated value, perceived as uncertain, or of low legitimacy.

7.3 A generic benefits negotiation process

Observations showed that:

> The generic benefits negotiation process displays key factors to pay attention to when managing negotiations.

During observations a negotiation process of five phases was identified. Each phase displayed key factors in need of attention when managing negotiations. In the initiating phase the timing of negotiations was a challenge to consider. Negotiations that were initiated when participants showed signs of tiredness affected the outcome negatively. Another challenge in this phase was to pay attention to participants' goals and motives as they at times could be in conflict with the overall purpose of the analysis and thus indicate an irrational drive. In the information-gathering phase the main challenge was to set the scene of negotiations making sure that access to accurate information existed, that key stakeholders were present, and that the project leader acted within his role during negotiations. During the third phase participants negotiated and discussed identified potential EHR benefits. The main challenge was to motivate and engage participants to get involved and at the same time create a balance between cohesion, as participants needed to come to an agreement, and divergence, as participants needed to feel comfortable to express their opinion. The fourth phase, in which participants came to a decision, had issues of trust as its main challenge. This meant building participants' trust in the benefits analysis process; their own ability and the outcome of their negotiations. The challenge of the last phase, documentation, was all about capturing and communicating negotiations in a clear and concise way; a challenge the project leader at times struggled with.

7.4 Theoretical lens

The notion of benefits negotiation is built on Ackermann and Eden's (2011a) theory of strategy making. They state that strategy making is a social process where key stakeholders within an organisation take part in a negotiation about which issues that deserve the most attention, and how to implement given priorities. The intended outcome of strategy making is changed activities of an organisation thus focusing on changing how key people in organisations think and act. Ackermann and Eden stress the importance of understanding what affects negotiations in order to be successful (Ackermann and Eden, 2011a). They provide four perspectives; procedural justice and rationality, organisational politics and power, group decisions and engagement.

7.4.1 The importance of process and fairness

As participants come together in order to negotiate which potential benefits the county council should pursue, the manner in which the negotiation process is conducted and the level of fairness perceived by participants are important for the outcome (Ackermann and Eden, 2011b). Whether the negotiation process makes sense, and whether it is coherent and appropriate for the outcome or not, is a matter of procedural rationality. Research shows that the negotiation process and its environment affect decisions, strategic choices and is a prerequisite of organisations as a whole (Dean and Sharfman, 1993, Dean and Sharfman, 1996). Procedural justice relates to participants' perception of fairness and how people are treated during the negotiation process. Participants are more concerned with perceived fairness than the actual outcome of negotiations. Perceived fairness supports and increases participants' engagement and commitment towards accomplishing common goals (Tyler and Blader, 2003, Michel et al., 2010, Ackermann and Eden, 2011a).

7.4.2 Shifting the balance of power

There is a power dynamics related to political feasibility that needs to be taken into account during benefits negotiations. Ackermann and Eden (2011a) propose three things to consider: *one*, networks of relationships between participants; *two,* participants' action to protect and promote personal status; *three*, the extent to which the project leader of benefits analysis projects identifies with the group (Ackermann and Eden, 2011a). Benefits negotiations propose real and actual changes to how participants act, which will change habits and beliefs about structures forming the notion of: "the way to do things around here". These changes in networks of relationships create feelings of either discomfort or satisfaction depending on personal experience. As a result participants of negotiations will make judgments about whether they will personally gain or lose from the changes (Ackermann and Eden, 2011a, Ullah et al., 2011). The role of leadership in benefits negotiations is a powerful and important one. In benefits negotiations the project leader facilitating negotiations has a unique position to influence and inspire how participants think and act (Ackermann and Eden, 2011a).

7.4.3 The balance between cohesion and divergence

Ackermann and Eden (2001, 2011a), state that participants' shared sense of membership and willingness to work together are important elements in strategy making. They refer to it as an act of balance between cohesion and divergence. In general a cohesive group tends to be more productive (Kerr and Tindale, 2004). There are however two phenomena to take into consideration where cohesiveness results in flawed decisions, the Abilene

paradox and the theory of groupthink. The Abilene paradox is the notion of dysfunctional decision-making based on false consensus and a mismanagement of agreement. As the social norms of a group could either encourage or discourage participants' willingness to express their thinking or opinion, circumstances could lead to decisions that no one really supports (Harvey, 1988, Harvey et al., 2004). The main theme of groupthink is concurrence seeking, which is best understood as a process where participants attempt to maintain a shared positive identity as a group *"override their motivation to realistically appraise alternative courses of action."* (Janis, 1982, p.9). In a strategy making context the two phenomena relate to the degree participants are free to express ideas and make use of multiple perspectives, as well as degree of openness in communications (Whyte, 1989, Turner et al., 1992, James K, 1998, Ackermann and Eden, 2011a).

7.4.4 Facilitating engagement

Participants' sense of urgency and importance to engage is crucial for the outcome of benefits negotiations (Kotter, 2007, Ackermann and Eden, 2011a). In order to intentionally increase commitment and engagement, Ackermann and Eden (2011a) propose an integrated framework of participation, communication and leadership behaviour. Participation relates to managing on-going relationships with participants in a way that view them as: *"members of teams that are seeking recognition, trust and a positive sense of their individual worth"* (Ackermann and Eden, 2011a, p.22). Communication relates to shifting emphasis from what has been said to what has been understood, from communication to comprehension, and by that making time for sensemaking (Weick, 1995). Participants then reflect and rephrase in their own terms as well as personalising discussions within the group using different communication channels for different information needs and purposes (Ackermann and Eden, 2011a). Leadership behaviour refers to the emotional support given by leaders through specific behaviours like courtesy, sincerity, open-mindedness and good listening. The effort made by leaders to invest in building relationships as they provide practical support to participants when working on matters of importance, increases participants' commitment for the results of the negotiation. As leaders actively take part in and contribute to the negotiation process, they legitimise and confirm the identity that the group adapts and defines for itself (Ackermann and Eden, 2011a).

7.4.5 Working towards consensus

When to understand the context of observed benefits negotiations it is of relevance to speak of what is termed: the Swedish way of leadership (Lämsä, 2010, Isaksson, 2008). Isaksson (2009) characterize it as team-focused,

consensus-based, anti-hierarchical, action-oriented, non-confrontational and conflict-avoidant. Lämsä (2010) describes Swedish management to be dominated by efforts of consensus in order to involve, engage and to create commitment. The Swedish management culture aims at creating an environment built on trust, where employees are encouraged to use their skills and to participate in improving it (Wickelgren et al., 2012). The Swedish way is often regarded as positive (Isaksson, 2008), however, the strive for consensus and to create a positive atmosphere could be negative. Alvesson (1989) shows in his research that the strive for consensus could restrain participants from expressing their point of view, and that the will to get on well could become greater than the will to asses a matter or a situation critically.

7.5 In conclusion

> EHR-benefits are not given due to technology but emerge due to negotiations between different stakeholders.

Even though an EHR system has specific technical functionality that could enable people to act in a manner that realises organisational purpose, it is not until people, processes, and IS are linked together through change activities that potential benefits can be seen and value realised. These change activities are in part the subject and result of negotiations between key stakeholders, which suggests that benefits negotiations and the management of them to be crucial benefits realisation activities.

Chapter 8

Depicting Descriptions of
Information Systems Value

"But all these measures and financial estimates become very blunt.
And now afterwards it does not feel really relevant."
- Head of department -

The chapter addresses the research stream of negotiation. Its purpose is to depict the challenge to describe IS-benefits and value in a way that supports benefits realisation actions. The chapter consists of a summary of findings, theoretical lens and the main conclusion from research paper five.

Research shows that it is crucial to consider how perceived benefits are spoken of, described, communicated and understood in order for benefits to be realised (Yusof et al., 2008a, Staples et al., 2002, Davern and Kauffman, 2000, Peterson et al., 2011). Checkland and Holwell (1998) describe it as a sense-making process where participants of benefits analysis projects come together to negotiate their perceptions of how the IS could enable benefits and value on an individual, organisational and societal level. Negotiations produce descriptions of potential benefits that the organisation later on sets out to achieve. As descriptions may guide actions taken they become important benefits realisation and value creation tools. However, even though there is a suggested shift in IS management focus, descriptions of benefits and value seem to have remained the same (Ward and Daniel, 2012). Descriptions reflect more a cause-effect relationship related to technical functionality than an intertwined on-going setting of IS, people and processes. Through observations and interviews of one clinical department's benefits realisation journey, a benefits realisation approach toward descriptions of information systems value emerges.

8.1 Two settings, two descriptions

Observations showed that:

> Depending on the setting in which descriptions of potential IS benefits are made they will differ in character.

The case study provided two main settings: the first setting was a benefits analysis project consisting of participants with different roles and functions in the department trying to depict potential benefits and value related to their EHR investment; the second setting was that of the daily challenges of value creation faced by the head of department who was the one with the overall responsibility for benefits realisation in the department. The first setting had an evaluation focus towards potential benefits where benefits were described with a strong emphasis on economic valuation and measurability. This placed the technical functionality of the EHR at the centre of attention where it was regarded as a driver for change and generating a range of potential benefits at all stakeholder levels. The second setting had a benefits realisation focus, and instead of speaking of beneficial effects of technology the head of department described benefits and value in terms of changes and new initiatives. In this setting the technical functionality of the EHR was only one of many components that needed to be aligned in order for potential benefits to be realised.

> Descriptions of potential benefits that are made from an evaluation focus do not provide sufficient support for benefits realisation actions.

During the benefits analysis project all participants, including the head of department and the external project leader, shared the same understanding. Namely that the results of the analysis, their descriptions of potential benefits, were to assist benefits realisation actions. 1.5 years after the benefits analysis project the report had still not provided the expected support to the head of department's realisation efforts: *"if I am to be honest I have not opened the report from the benefits analysis project."… "if I was to pick up the results of the analysis as it is right now, I do not think that I would have any use of it."… "All these measures and* financial estimates *become very blunt. And now afterwards it does not feel really relevant."* (Head of department, track 1). The CIO who had the overall responsibility for the benefits analysis projects at the county council confirmed the head of department's experience. The CIO was unsure if developed descriptions of potential benefits were to support

realisation actions as the focus of the benefits analysis project had been on identifying key figures in order to be able to measure the effects of the EHR. The local EHR project leader was even more hesitant as she perceived the benefits analysis to be more of an evaluation tool: *"benefits realisation through changed processes could be done in other ways, not in this analysis."*

8.2 Spotting the course of events

Observations showed that:

> Descriptions of potential benefits are not descriptions of a stable phenomenon, as the IS/organisation relationship evolves and changes over time so will also the conditions for benefits realisation as well as the nature of potential benefits.

During the benefits analysis project, time savings were identified as a potential benefit. However, when interviewed after two months, the head of department was concerned as more time was needed to perform everyday tasks with the EHR than before. The potential area of benefits had become a matter of frustration. After another year the head of department again spoke of time savings and how the department had been able to take advantage of freed up time as they rearranged work assignments for different groups of employees. Time savings had throughout the time of study shifted from a tangible perceived potential benefit to a matter of frustration, and from a matter of frustration to be perceived as IS-value .

> Descriptions from a realisation perspective need to embrace the many and irregular formations that are part of managing the benefits realisation landscape.

During benefits realisation the head of department experienced different challenges that had not been previously anticipated. In total seven challenges were identified that needed the head of department's attention: knowledge, power, people, process, application, support and technology. These challenges, or formations, did not present themselves in a particularly fixed order; instead several formations could be present at the same time. Formations did not remain static, instead they all changed in character as the IS/organisation relationship evolved. This posed management challenges when trying to create and keep value. As an example, the formation of knowledge reflected the challenge of capturing knowledge and competencies

related to EHR usage and activities of value creation. It presented itself initially as a challenge of training new employees. When the EHR had been used for one and a half years the formation had changed in character and now presented itself as a knowledge-sharing challenge, the head of department expressed it as follows: *"we need EHR 2.0…we have been using the EHR for some time now but we need to learn how to use it smarter. Some have found good ways to work with the EHR that we will share with each other"*. The formation of knowledge was also present at a strategic county-council level. The CIO tried to capture knowledge gained in different departments throughout the county council. Key stakeholders were to meet and share their experience and knowledge regarding problems and solutions related to EHR usage and value creation. The initiative did not play out as hoped. The group grew too large to offer any practical support, and important issues raised during meetings were not attended to properly due to lack of a functioning general support structure .

8.3 Theoretical lens of the chapter

The theoretical lens addresses three areas: *first*, the implications of proposed discrepancy in descriptions of IS-value; *second*, the notion of scape as a framework for describing IS-value from a realisation focus; *third*, the notion of value configuration as a framework for describing IS-value from a realisation focus.

8.3.1 Evaluation vs. Realisation focus

Proposed discrepancy is an outcome of the IS management evolution. There are two shifts identified related to IS benefits management: first a shift from cost-centred focus to a value-centric focus, then a shift from an evaluation focus to a realisation focus (Parker and Benson, 1988, Renkema, 1998, Jeansson, 2013b). An evaluation focus has a quantitative cost and benefits analysis approach and addresses the assessment of IS investments. It speaks of beneficial effects of IS as being well-defined and measurable constructs (Irani, 2002, Thorp, 2003). A realisation focus, on the other hand, has a qualitative-subjective approach and addresses the complexity surrounding activities of IS value creation, which includes the activity of evaluation (Chan, 2000, Ward and Daniel, 2012). A realisation focus depicts IS-value as a dynamic, intertwined state to reach (Farbey et al., 1999b, Sapountzis et al., 2009, Ward and Daniel, 2012). Descriptions of IS-value are characterised by the prevailing focus and will affect benefits realisation actions (Checkland and Holwell, 1998). Ward and Daniel (2012) propose that organisations adopt a realisation focus which will challenge the way IS-value is described and spoken of. The theoretical lens supports findings that the description of IS-value differs between an evaluation-focused and a realisation-focused

setting, and that an evaluation-focused description does not support realisation actions, or only to a limited extent.

8.3.2 Introducing scape

The use of scape in an IS value creation context draws from three fields: landscape theory, cultural anthropology, and service marketing (Elkins and Delue, 2008, Appadurai, 1990, Bitner and Zeithaml, 2003, Bitner, 1992). Each field uses the scape suffix to describe a setting and provides different aspects of the nature of scape and an understanding of scape in an IS value creation context (Jeansson, 2013b). Within cultural anthropology scape is something that speaks of fluidity and irregularity of different formations. A scape is navigated by people who both experience and constitute formations (Appadurai, 1990). Within landscape theory a scape is regarded as an ongoing conversation and something that serves and supports the purposes of people and organisations. A scape has features like structure, formation, and function (Elkins and Delue, 2008). Within service marketing a scape is spoken of as having formations and components that could be both tangible and intangible. The importance of particular components may vary across different contexts and organisations. A scape is a purposeful designed environment, which is manipulated in order to produce desired effects and managed in order to enhance actions (Bitner and Zeithaml, 2003, Bitner, 1992, Ezeh and Harris, 2007, Kim and Moon, 2009). In a realisation focused setting the scape suffix enables IS-value to be described as a setting where people use IS in order to act purposefully, where shifting and fluid formations constitute the value experience, and where IS-value is the result of an active and interactive process of arranging formations (Jeansson, 2013b).

8.3.3 The language of value creation

Stabell and Fjeldstad (1998) introduce the notion of value configurations as they seek a way to understand and describe how firms differ in their way of creating value to their customers and gaining competitive advantage. They argue that the common used value chain logic proposed by Porter (1985) is but one of three generic value configurations, the other two being value shop and value network (Stabell and Fjeldstad, 1998). Gottschalk (2006) states that: *"value configurations represent the way a particular organisation conducts business"* (Gottschalk, 2006, p. 1061), and concludes that the manner in which IS-value is created differs depending on which value configuration an organisation adopts. Most organisations are not pure instances of one single value configuration and a single firm could have more than one (Stabell and Fjeldstad, 1998). In a realisation focused setting the notion of value configuration enables descriptions of: *one*, a value creation logic that is valid indifferent of context and describes how IS-value is created; *two*, primary and secondary activities in order to create IS-value that are context dependent;

three, a structure of the interrelationship between value creating activities; *four*, drivers that an organisation needs to pay attention to in their search for IS-value.

8.4 In conclusion

> IS valuescape replaces IS-benefits as a level of description when depicting what organisations are to pursue in order to create IS-value.

The notion of valuescape is proposed in order to capture and describe IS-value from a realisation perspective. A valuescape speaks of a setting, a purposefully designed environment where IS-value is created and captured. Its value creating logic is built on the understanding that IS do not create value on their own, and organisations cannot passively wait for benefits and value to emerge. Instead, IS-benefits are realised and value created through the active, on-going arrangements of different formations. The two main drivers of an IS valuescape are to integrate and harmonise the different formations constituting the scape, and to transform data that emerge from interactions between formations into support for purposeful actions.

Chapter

9

Discussion

"The IS does not create value on its own, instead it is one formation amongst others that needs to be aligned, one piece of a larger puzzle."
- John Jeansson -

The aim of the chapter is to discuss findings in relationship to the proposed problematic situation, in relationship to the purpose of the thesis, and in relationship to posed research questions. As stated in the introduction chapter, the overall purpose of the thesis is to: *address the process where organisations seek to identify which potential IS-benefits to pursue and realise, this in order to better understand what affects the process, so that realisation actions of potential IS-benefits could be supported.* Checkland and Holwell (1998) speak of such a process as one of finding accommodations in order to take purposeful actions, Ward and Daniel (2012) speak of it as a benefits management process, and Ackermann and Eden (2011a) view it as a strategy making process. These three perspectives provide a deeper understanding and act as a theoretical lens for discussions.

9.1 The problematic situation revisited

The process of identifying which potential benefits organisations need to pursue is in this thesis viewed as a problematic situation. Ward and Daniel (2012) have in their studies identified and described challenges that organisations have been struggling with in order to realise IS-benefits. Four challenges stood out: *one*, organisations had ineffective processes when it came to IS/IT-appraisal and benefits realisation; *two*, there was a lack of involvement of business staff; *three*, business changes were not considered as requirements in order to gain value when investing in IS; *four*, there was a high percentage of IS/IT projects that failed their purposes indicating a highly complex management situation (Ward and Daniel, 2012). These four areas illustrate two main issues constituting the problematic situation of the thesis; *one*, IS could not be expected to produce benefits and value on its own, the inability of IS (Markus and Benjamin, 1997); *two*, potential benefits and value

are not rational and stable phenomena, <u>the elusiveness of value</u> (Tallon and Kraemer, 2007, Kwon et al., 2002, Slywotzky, 1996). The management challenge of the problematic situation is to understand how people, processes and IS connect, interact and affect each other. Ward and Daniel (2012) propose an IS benefits management framework and a formal benefits management process in order to address this challenge.

However, findings showed that even if the studied organisation used a benefits management framework and a formal process, the heart of the problematic situation remained. Participants still seemed to expect the IS to provide a set of beneficial effects that easily lent themselves to be defined, described and valued in a reductionist and rational manner. As they entered into the context of benefits analysis participants instinctively assumed: *one*, a cause and effect relationship between the IS, often its technical functionality, and potential benefits and value; *two*, that benefits and value were well-defined entities to be described related to their financial impact and their measurability. The formal benefits analysis process did to some degree act as a guarantee for the validity of the analysis. However, its structured process reinforced the notion of rationality. During the analysis confusion emerged as social issues became more prominent. When faced with the complexity and dynamics of IS-benefits and value, a collision between what was believed and what was experienced occurred. The identified benefits fluctuation showed that potential benefits and value were not rational and stable phenomena but dynamic and changing, affected by subjectivity (Tallon and Kraemer, 2007, Kwon et al., 2002, Slywotzky, 1996). Participants then expressed doubts regarding the legitimacy of the process. Even if the formal benefits analysis process to some degree provided a structure in which to capture the complex and dynamic nature of potential benefits and value (Ward and Daniel, 2012), descriptions made were first and foremost descriptions of financial impact and measures, which did not support benefits realisation actions. Ackermann and Eden (2011a) speak of such a collision in terms of political feasibility. As it became clear that IS benefits realisation meant organisational change not necessarily to participants' own advantage, their perception of the process and what constituted potential benefits and value changed. One implication of such a collision is that organisations could actively work toward establishing a benefits realisation focused mindset, and encourage participants of benefits analysis projects to discard their preconceived ideas of what constitutes IS-benefits and their realisation.

9.2 The process from perceiving potential information systems benefits to establishing valuescapes

In the introduction chapter Checkland and Holwell's (1998) social process of purposeful action is presented as a framework of the purpose and its four research streams. Since then the research streams have to some degree been disconnected from each other in order to allow a deeper understanding within each stream. Checkland and Holwell's (1998) framework has during that time never stopped being a part of the underlying theoretical lens, however it has been complemented by several other, more specific, frameworks. When the research streams are now brought together again in the discussion chapter they come enriched by findings discussed in light of broader theoretical lenses. Figure 11 provides a holistic picture of the four research streams: perception, judgment, negotiation and description.
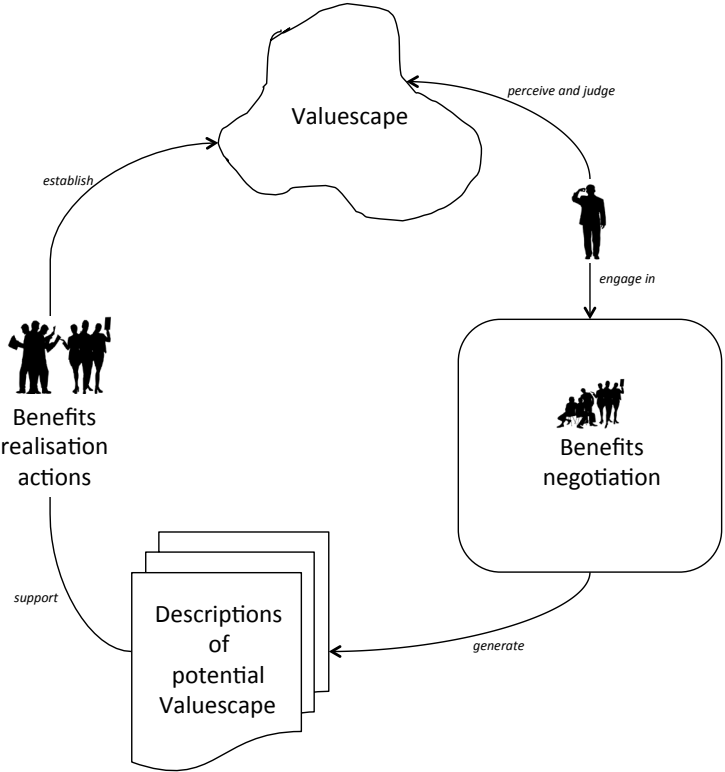
Figure 11: A holistic picture of the four research streams, perception, judgment, negotiation and descriptions and how they relate to each other.

The four streams show evidence of a benefits management process (Ward and Daniel, 2012) where participants, through an inter-subjective discourse, form intentions and descriptions of purposeful actions toward benefits realisation (Checkland and Holwell, 1998); a process very much social in its nature with the power to put rationality out of play (Ackermann and Eden, 2011a). In the first part of the holistic picture participants of benefits analysis projects perceive potential IS-benefits as a result of the alignment of formations within a specific valuescape, figure 12. It corresponds to the first stage in Ward and Daniel's (2012) benefits management process. This is what Checkland and Holwell (1998) speak of as a personal process where participants' perception and judgment of benefits are based on an understanding of themselves as an active agent within the observed valuescape. It should be emphasised that it is potential IS-benefits that are perceived, a state of a possible future, and not realised existing IS-value.
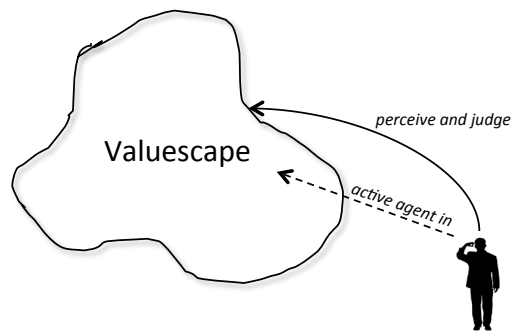
Figure 12: Participants perceiving and making judgments of potential IS-benefits, the personal process.

Checkland and Holwell's (1998) framework could be argued to describe and emphasise the now, how people perceive selected parts of the world that they are an active and present part of. Ackermann and Eden (2011a) speak, in their strategy-making framework, of the challenges to perceive what is to come. Identified potential benefits reflect participants' ability to envision a changed context where IS support purposeful actions and fulfilment of organisational goals. During observed benefits analysis projects participants quietly, for themselves, wrote down what they perceived as potential benefits on post-it notes. This corresponds well with Ward and Daniel's (2012) notion of benefits as perceived advantages for a particular individual or group.
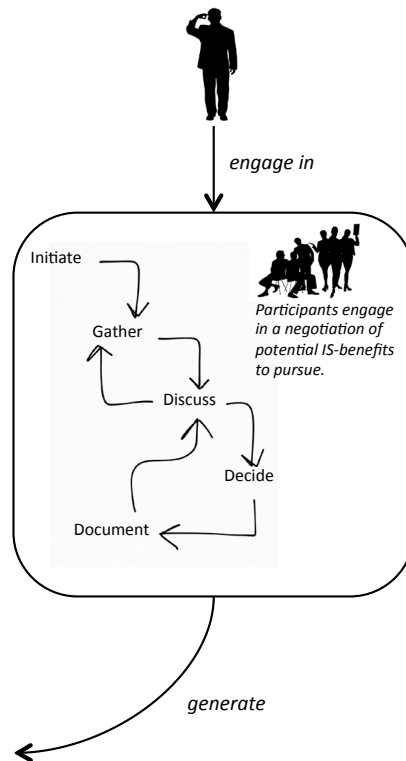
Figure 13: Participants engaging in a benefit negotiation which generates descriptions of potential valuescapes.

In the second part of the holistic picture participants bring their perceptions and judgments into a place of discussion and negotiation with others, figure 13. Checkland and Holwell (1998) describe this as a social process, an inter-subjective discourse, where the notion of rationality is challenged; a discourse affecting the individual and collective perception of what constitutes potential IS-benefits and value. Ackermann and Eden's (2011a) framework of strategy-making describes the discourse in terms of a negotiation between key stakeholders in order to come to an agreement of future change. The purpose of this benefits negotiation is to reach an agreement on which potential IS-benefits an organisation should pursue. The negotiation entails both rational analysis and social issues. This became evident during the benefits analysis projects. Benefits negotiations of different characteristics were identified and could be categorised into those with a rational or an irrational drive. Based on these, a negotiation process was identified with key factors and management challenges corresponding to the social perspectives proposed by Ackermann and Eden (2011a). According to Checkland and Holwell (1998) the outcome of the process is accommodations of how to act

collectively and personally. Benefits negotiations generate descriptions of potential valuescapes that during benefits realisation act as realisation tools. This second part corresponds to both the first and the second stage of Ward and Daniel's (2012) benefits management process.
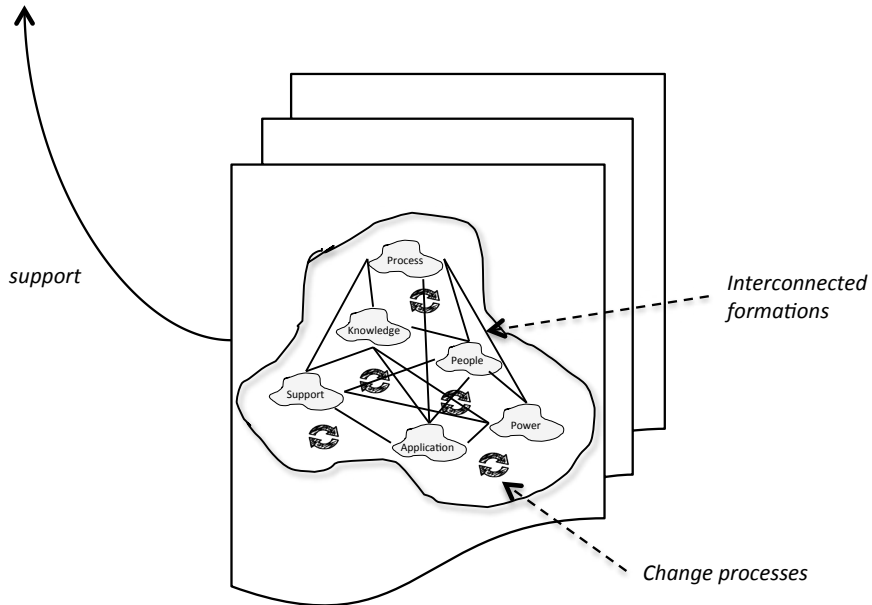
Figure 14: Participants' descriptions of potential valuescapes that support benefits realisation actions.

In the third part of the holistic picture participants produce descriptions of potential valuescapes. These descriptions are not of static beneficial effects of IS, instead they are descriptions of purposefully designed dynamic environments where IS-value is created and captured, figure 14. The notion of valuescape captures a realisation focus and replaces benefits as a level of description. As observed during interviews with stakeholders responsible for IS-benefits realisation, descriptions of single beneficial effects did not support benefits realisation actions. Instead different formations were identified that stakeholders tried to align in order to establish a landscape of value, a valuescape, which in turn displayed beneficial effects. This corresponds to the first and second part of Ward and Daniel's (2012) benefits management process, and to some degree to their notion of a benefits dependency network. In such a network identified benefits are linked to needed business change, investment objectives, and IS/IT enablers. Descriptions of valuescape

incorporate an interconnected environment and the importance of change, however, valuescape is viewed and described at a value configuration level with value creating logic, activities, structure, drivers and role of IS (Stabell and Fjeldstad, 1998). This third part also corresponds to Checkland and Holwell (1998) who speak of participants forming intentions to act and in doing so build models of purposeful actions. As stated earlier, the purpose of descriptions is to support benefits realisation actions.

establish

Value creation activities
- Notice possibilities,
- Initiate change,
- Arrange formations,
- Evaluate results

Structure
On-going and interacting formations

Drivers
Integrate and Informate

Logic
Formation alignment

Figure 15: Participants partaking in value creating activities in order to establish the described valuescape.

In this fourth part, participants engage in value-creating activities in order to establish the described valuescape, figure 15. As stated earlier, value is created when different interacting formations are aligned. Establishing a valuescape is not the same as creating static fixed end results, instead it is an on-going

endeavour as people (both internal as well as external stakeholders), organisations and their context change. The driving forces are to integrate IS, processes and people, and to gather data generated in the valuescape in order to support further value creation. Four primary value-creating activities were identified, which to some degree correspond to activities in the last three stages of Ward and Daniel's (2012) benefits management process. The established valuescape results in tangible and intangible benefits perceived differently by different stakeholders.
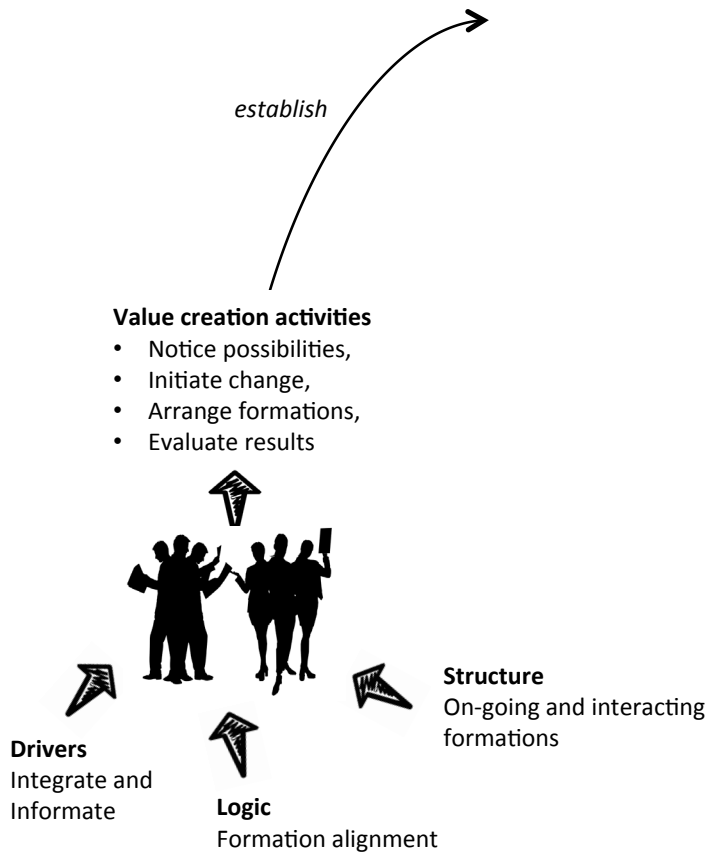
The depicted process from perceiving potential IS-benefits to establishing valuescapes illustrates an important issue that is to some extent emphasised in the frameworks of Checkland and Holwell (1998), and Ward and Daniel (2012); namely that there is a difference between what is perceived and what is to be established. In benefits analysis projects participants perceive potential benefits but they seek to establish valuescapes. Internal as well as external stakeholders do not perceive an established valuescape, they perceive that which the valuescape generates. When formations are aligned it seems that they cease to exist as separate parts, the only thing that remains is the perceived benefit and value. Law (1999) describes this as a state of punctualisation. Expressed with the terminology of systems thinking, valuescape is the interaction between parts which forms a whole that in turn displays properties only related to the whole and not to be found in the parts (Jackson, 2003). This whole is not to be understood as an environment of cause-and-effect chains, instead it is a place of interrelationships and change (Senge, 1990). Depicting the social process and the notion of valuescape is very much a call for an additional level of explanation, much in the spirit of Checkland and Holwell (1998) when introducing capta as a level of description between data and information. In the next part of this discussion the research questions are discussed, addressing issues affecting the depicted social process.

9.3 Four research streams and four research questions

In this part the research questions of the thesis are addressed. The different research questions (RQ1-4) relate to the four research streams, which are presented in chapters 5-8 (CH5-8) of the thesis. It is in part a summary of discussions made in the original research papers. Each research question is discussed separately. The participants of benefits analysis projects have been invited to comment on the findings of the study; some did but not in a systematic manner.

9.3.1 Discussion of what affect participants' perception of information systems benefits (CH5-RQ1)

Changes in participants' perception were most evident and observable during discussions concerning the state of an IS-effect or a potential IS-benefit (i.e. when an identified IS-effect was regarded as a potential benefit, or when a potential IS-benefit no longer was regarded as valid). The first issue affecting participants' perception was one of structure. Structure related to how the IS benefits analysis process was designed and managed. The issue of structure is discussed from three different perspectives. The first perspective addresses how participants in the different tracks related to the strategy, objectives and activities of the IS-benefits analysis project. Farbey et al. (1999b) state that changes made in these areas during the analysis affect the composition of benefits. This became especially evident in track 1. Participants believed that incentives regarding their analysis changed, and as a result of that they became more restrictive and prone to question and delete identified benefits. The second perspective addresses how well participants were able to justify and clarify a suggested potential benefit. Ward and Daniel (2012) state that identified benefits that can not be measured or accounted for should not be included in the analysis and instead be deleted. This was evident in all three tracks. When participants could not give a clear account of how a potential benefit related to their context, or when they could not find satisfactory ways to measure it, they excluded the benefit from further discussions and regarded it as non-existent. Whether or not this depended on participants' lack of argumentation skills and/or knowledge, or if there in fact was no IS-value to be found, could not be determined in this study. The third perspective addresses documentation and time management. Insufficient documentation and poor time management are very much a question of project management. This perspective was evident in all three observed tracks, and was the issue that most frustrated participants. Even though they to some extent were aware of their contribution to its occurrence, they both directly and indirectly held the external project leader responsible.

The second issue affecting participants' perception was one of knowledge and experience. It related to what participants brought with them to the IS benefits analysis project. The issue of knowledge and experience is discussed from two perspectives. The first perspective addresses changes in participants' perception of potential IS-benefits during the benefits analysis projects. Potential benefits were identified based on a mix of participants' knowledge of what the IS actually could do, and what they wanted it to be able to do. It became evident, especially in track 1, that when participants gained increased knowledge of the abilities of the implemented IS, or rather its limitations, the composition of benefits changed. These observations

correspond to the discussion of information systems and organisations in chapter three of the thesis. IS-value is to be understood in relationship to how it supports people taking purposeful actions. Participants experienced more trouble than support during the initial phase of IS implementation, which affected their perception of what constituted potential benefits.

The second perspective addresses participant's perception of potential IS-benefits in relationship to their earlier experience of IS and its implementation. Staples et al. (2002) state that expectations of IS and perception of IS-value are related in an implementation context. Participants in pre-implementation tracks (tracks where the benefits analysis were made before implementing the IS) had in general a more generous attitude and a stronger faith in the IS and its possibilities than post-implementation tracks. A generous attitude resulted in participants being more inclusive of potential benefits. Participants in post-implementation tracks held a restrictive attitude, which was characterised by a disbelief regarding the real contribution of the IS. A restrictive attitude resulted in participants being more prone to exclude potential benefits. Davenport (2000) states that organisations could adopt a strategic or a technical approach towards IS implementation; a technical approach being more concerned with implementing the functionality of an IS as fast as possible, and a strategic approach being more concerned with gaining competitive advantages often requiring an extended implementation process. Pre-implementation tracks showed in general a greater allowance for discussion and addition of intangible benefits, where post-implementation tracks were more prone to seek tangible, immediate benefits related to tested functionality. A strategic vs. technical perspective affected the composition of benefits, rather than the amount. Pre-implementation benefits analyses could be said to give a too positive picture, whereas post-implementation analyses could provide a more sober picture of EHR benefits. However, at the same time it could be argued that post-implementation benefits analyses provide a too restrained picture, and pre-implementation analyses provide a truer picture of potential EHR-benefits. This underlines the use of both pre-, and post-implementation analysis; together they provide a richer picture.

9.3.2 Discussion of benefits judgment dimensions (CH6-RQ2)

Participants intentionally or unintentionally made judgments of perceived potential IS-benefits during the benefits analysis projects. In general these judgments concerned whether or not to define an IS-effect as a potential IS-benefit, or whether to remove it from the analysis. The use of Kohlberg's (1966) stages of moral development supported understanding of different benefits judgment dimensions and how they related to each other, as well as

how participants interacted. The role and organisation dimension constituted the dominant lens by which benefits were judged. The self and society dimensions were in general those dimensions that were used when IS-benefits were removed.

The five identified dimensions of benefits judgment did not fully apply to Kohlberg's notion of moral development as a concept of stages. *Firstly*, findings did not suggest benefits dimensions as something participants moved through in an invariant universal sequence (Kohlberg and Hersh, 1977). Instead observations showed that participants adopted judgment dimensions with an irregularity, and that participants shifted between dimensions based on the aim and context of analysis, their role and perceived benefits at hand. *Secondly*, findings did suggest that movement between dimensions emerged through debates and interactions between participants (Crain, 1985). *Thirdly*, findings did not suggest benefits dimensions being hierarchical integrations (Kohlberg and Hersh, 1977). Kohlberg and Hersh (1977) stated that insights from earlier stages integrate and form a new broader framework, implying different levels of thinking. Even though dimensions did not denote hierarchic stages, participants were seen using what could be labelled as high-level and low-level benefits judgment thinking. In high-level benefits judgment thinking participants used and moved between several benefits judgment dimensions as they discussed a certain potential IS-benefit. In low-level thinking participants only used one dimension. Following the reasoning of Kohlberg, high-level judgment is the preferred choice and participants with high-level benefits judgment thinking capability have the tendency to prefer it to low-level thinking. *Fourthly*, findings did suggest that benefits judgment dimensions are structured wholes implying that judgment dimensions are systems of thought that could be identified and differentiated from each other qualitatively rather than quantitatively (Kohlberg and Hersh, 1977, Crain, 1985). All dimensions allowed themselves to be described and separated from each other by their qualitative characteristics rather than by quantitative measures.

9.3.3 Discussion of the characteristics and management of benefits negotiation (CH7-RQ3)

Observations showed that participants of benefits analysis projects initially perceived their task as simply one of documenting and calculating the monetary value of already existing benefits. However, a first shift from this notion came as participants conducted a brainstorming session where they were to suggest what they perceived to be potential benefits. A complete shift came when participants were to discuss each identified benefit and not regard it as valid and existing until it had been submitted to a negotiation. These

findings support the existence of the proposed benefits negotiation as suggested by Ackermann and Eden (2011a). Findings also suggest that potential benefits do not appear automatically and that they are not given a specific set of IS functionality. Instead, potential IS-benefits emerge when key stakeholders engage in a benefits negotiation. Participants then negotiate based on their collective knowledge of the organisation and its processes; the specific IS to be implemented and required change processes. These findings are supported by those of Ward and Daniels (2012).

Findings showed the existence of two main categories of benefits negotiations that affected the composition of benefits differently: rationally driven and irrationally driven negotiations. These two categories of negotiations corresponded to Ackermann and Eden (2011a) who state that negotiations contain both rational analysis and social processes, and that social processes have the power to put rationality out of play. Each category of benefits negotiations entailed three types of negotiations. Ackermann and Eden´s (2011a) four perspectives of social processes provided an understanding of their characteristics. All four perspectives were present in all types of negotiations but in different combinations. In negotiations with a rational drive, the perspectives of group decisions and engagement were the most significant. Even though the two perspectives had an unwanted effect on the outcome of negotiations, they did not have the power to alter their drive. In irrationally driven negotiations, procedural justice together with organisational politics and power were the two most significant perspectives. In these negotiations procedural justice and organisational politics and power acted like tipping-points, altering the drive of negotiations. They seemed to enhance the negative effect of group decisions and engagement.

The different benefits negotiations supported understanding of a generic benefits negotiation process, with key factors posing management challenges. These key factors corresponded to one or more of Ackermann and Eden´s four perspectives (Ackermann and Eden, 2011a). Findings suggest that it is of importance to: *one*, establish and manage a place of negotiation as mentioned by Ackermann and Eden (2011); *two*, facilitate understanding of the negotiation process and how different phases are affected by social issues.

Each observed case had a unique environment that set the stage for benefit negotiations. Case A was a combination of victory and disappointment. The sense of victory derived from the fact that participants identified a record high number of potential benefits that held promise of great value. The sense of disappointment derived from a shift where the large number of benefits became almost impossible to analyse within the given time frame, and where

the promise of great value turned into a threat of proportionally increased cost savings to finance the overall IS costs of the county council. Case B was a struggle of participation and legitimacy. Throughout the analysis participants' attendance shifted greatly. This resulted in distrust and uncertainty regarding the legitimacy of results. Case C was a place of harmony and motivated participants. Participants had a high level of attendance and a good picture of how the IS related to the organisation.

Even though the three cases were heterogeneous they, as part of the same county council, shared common features: *one*, participants of each benefits analysis were selected by the county council who was instructed by the external project leader to select participants in a way that guaranteed process knowledge, IS knowledge and leadership legitimacy; *two*, the external project leader as well as the CIO of the county council were present in all cases. Ackermann and Eden (2011a) state that negotiations are to be conducted by those within the organisation that have the power to influence and form its future. Findings showed that only a few participants within each case had that kind of power or position. This was especially evident in Case B. To some degree, the adopted benefits analysis model and Ackermann and Eden´s thoughts on strategy making differed regarding group constellation, however, the outcome of the composition of participants in Case B is regarded as a failure by both the benefits analysis model and the framework of Ackermann and Eden (Ackermann and Eden, 2011a, Dahlgren et al., 2006). Having the external project leader and the county council CIO present in all benefits analysis projects ensured continuity and trust. However, it also posed a challenge as the project leader and CIO at times had a difficult time not to interfere and override the outcome of negotiations.

9.3.4 Discussion of how organisations are to describe information systems value creation in order to support benefits realisation actions (CH8-RQ4)

Findings showed two settings with different descriptions of what constituted IS-value. The first setting was the benefits analysis project where participants discussed potential benefits and how to measure their estimated value. These descriptions reflected an evaluation focus. The second setting was the everyday challenge of value creation where the head of department spoke of organisational changes and new initiatives when trying to depict IS-value. His descriptions reflected a realisation focus. The observed differences in descriptions might not be surprising and were, to some degree, anticipated as they reflect the difference between the two settings from which they had sprung. On the other hand, the differences reveal the essence of the proposed discrepancy; that descriptions in the form of beneficial effects of an IS do not

support realisation actions. The benefits analysis project, and its results, was intended and believed to support value creation activities. In reality, it did not. Instead it was perceived as blunt, irrelevant and unworthy of leaving the drawer where it was placed after the conducted analysis. Checkland and Holwell (1998) speak of how our understanding and our descriptions of the world around us support our actions in it; in this case descriptions did not support action.

Findings showed that descriptions of IS-benefits as final destinations to reach are of little use when acting to gain potential value. A realisation-focused environment speaks of a greater complexity, which aligns with conclusions made by Thorp (2003) to recognise, accept and manage the complexity of value creation and reject a too simplistic focus. The IS does not create value on its own, instead it is one formation amongst others that needs to be aligned, one piece of a larger puzzle (Thorp, 2003). Not to describe it as such threatens to mislead people into passively awaiting benefits to emerge instead of actively arranging for them to happen.

Findings propose the notion of valuescape to capture a realisation focus environment and to replace benefit as the level of description. The value configuration framework was used as a language to understand and speak of IS valuescape. However, in doing so there are four issues that need to be discussed. The <u>first</u> issue addresses the purpose and use of the value configuration framework. The value configuration as a framework addresses the organisational level, sets focus on the external customer and depicts the competitive position of an organisation (Stabell and Fjeldstad, 1998). In order to support an understanding of IS valuescape it has been used at an operative level, studying internal stakeholders and the configuration of valuescape. However, IS valuescape is the notion of arranging formations in order to establish a setting where different stakeholders might experience value differently. As an example, the same established valuescape could by the head of department, an internal stakeholder, be perceived as increased efficiency, but could by a patient, an external customer, be experienced as an increased quality of care and as such communicate an increased competitiveness related to other hospitals at other county councils. This subjective, elusive and dynamic character of value is one of the proposed characteristics of a valuescape.

The <u>second</u> issue addresses whether existing value configurations are suited to describing a realisation focus setting. This thesis proposes that they are not. However, as stated by Stabell and Fjeldstad (1998), there are often traces of more than one value configuration in an organisation and to some extent

this holds true in this case. The value chain configuration with its strong cost-drive, cause-and-effect structure and production logic was farthest from the realisation-focused, dynamic and relational setting of valuescape. The value shop configuration corresponded to some degree with its focus on knowledge and problem-solving activities. However, there was a difference in mindset that should not be underestimated, finding problems or searching for possibilities. The configuration that was the closest to describing a realisation focus setting was the value network. The value network is all about linking, which is also a central part of the realisation focus setting. However, the value network views the organisation to be the provider of networking services and not actually being part of the network itself, the realisation focus setting was very much the opposite.

The third issue addresses how valuescape relates to different parts of the value configuration framework, its logic, activities, structure, drivers and the role of IS. The logic of valuescape correlates with the arrangement of different formations (Appadurai, 1990). The head of department never used this terminology. Instead of formations he spoke of different management challenges emerging when working towards benefits realisation. These formations appeared both at an operative department level and a county council strategic level, however, their composition and shape varied depending on context (Bitner and Zeithaml, 2003). The primary value-creating activities of valuescape were derived from the head of department's descriptions of how time savings resulted in new services. The four value-creating activities are: *notice possibilities*, initially the head of department noticed how time-savings were evident for medical secretaries; *initiate change*, changes were outlined and initiated as secretaries took over some of the responsibilities of nurses who were given new assignments; *arrange formations*, initiated change meant the arrangement and rearrangement of formations in order to offer a new service to patients; *evaluate results,* the results of the established setting were then to be evaluated. All four activities related to each other in an iterative fashion. The structure of valuescape addresses the fluidity of formations as well as the dynamic character of value. Each formation shifted in character making different management issues more or less urgent over time. As formations shifted, conditions also shifted for value creation and perception of value. At one point the IS was arranged in a way that consumed time and created frustration amongst stakeholders. However, as formations shifted, frustration turned into value as time was saved and new services initiated. It became evident during the study that value creation was perceived in relationship to how well the IS supported daily work and challenges at the department. When work was not perceived to be supported sufficiently value was lost. This corresponded well with the

notion of valuescape being a setting where IS supports people acting purposefully (Checkland and Holwell, 1998, Elkins and Delue, 2008). The drivers of valuescape address the strong connection between value creation, arrangement of formations and people taking actions supported by information. Two drivers were identified: integrate and informate. Integrate related to value creation driven by increased integration of different formations (IS, technology, people, processes etc.) within and between organisations. Informate related to value creation driven by transforming data that emerge from arranged formations into purposeful actions (Davenport et al., 2004; Checkland and Holwell, 1998).

Chapter 10

Conclusions and Lessons Learned

"This is what I have been waiting for!"
- Head of department -

The chapter presents both conclusions and lessons learned. Conclusions aim to summarise the answers to posed research questions. Based on given answers conclusions are drawn and implications for practice are suggested. Lessons learned present the overall learning outcomes of the thesis. The chapter ends with suggested implications for theory and further research. As discussed in section 2.6 of the thesis, the trustworthiness of the case study, conclusions and lessons learned derives from a particular setting. These conclusions and lessons learned could very well be of value in similar settings; however, this is left to the reader of the thesis to judge.

10.1 Participants' perception of information systems benefits

Answers to the first research question (Q1) relates to the research stream of perception:

How are participants' perceptions of IS-benefits affected during a formal benefits management process?

Findings displayed a benefits fluctuation, which showed that participants' perception of what constituted potential benefits and value changed throughout the formal benefits management process. Issues like structure, knowledge, expectation and experience affected perception differently, which in the end changed the amount and composition of potential benefits and value. A low degree of structure with a changing organisational context, insufficient control and a poorly managed process, negatively affects the composition and amount of benefits. A high degree of structure contributes

to benefits realisation in a positive manner by minimising uncertainty regarding identified, structured and valued benefits. In pre-implementation analysis participants are more generous in their attitude and have stronger faith in the IS and its ability. They are more prone to include intangible benefits, and in general identify more potential benefits than participants in post-implementation analysis. In post-implementation analysis participants tend to be more restrictive in their estimations of what the IS actually can do and place a greater focus on its costs and challenges. They are in general more prone to identify tangible benefits than participants in pre-implementation analysis.

One conclusion to draw from this is that by using a formal benefits analysis process the structure of the process and how it is managed, even though designed to enable and support participants, might instead affect the intended outcome negatively. Even though participants are active partakers of and contributors to how benefits analysis sessions are conducted, the project leader, probably more than anyone else, influences the outcome of a benefits management process. By paying attention to structural issues like documentation and time management, the project leader could eliminate unwanted benefits fluctuation. Participant's perceptions are then affected by the formal benefits management process itself and how it is managed. Another conclusion is that participants' perceptions are affected by what they bring with them into the formal benefits management process in terms of expectations, previous knowledge and experience. Even though the project leader to some extent could address these issues, it is up to the different participants in the formal process to reflect upon their pre-understanding. This is a challenge of putting past experience aside and treat a new initiative with an open mind. It is also a challenge of how to manage expectations which is a delicate matter of balance. On one hand, IS investments need to be communicated and when doing so expectations are often raised in order to motivate required change. On the other hand, having false expectations mislead participants in their perception of potential benefits and value. Increased knowledge of the invested IS, its capabilities and what is required of the organisation in terms of change activities will support the setting of expectations. These conclusions imply that participants have different levels of knowledge and expectations when entering into a benefits analysis project. Organisations should therefore ensure the presence of specialist knowledge of the intended IS and of change management throughout the entire project. Organisations should also form directives and incentives that enable management of benefits analysis projects and support the clarity of their outcome.

10.2 Dimensions of benefits judgment

Answers to the second research question (Q2) relate to the research stream of judgment:

How do different standards of benefits judgment affect which IS-benefits to pursue?

Five dimensions of benefits judgment were identified (authority, self, role, organisation, and society) and used by participants when finding accommodations of potential benefits and value to pursue. Identified dimensions affected participant's perceptions, which in turn affected the amount and composition of potential benefits. During the formal benefits management process participants shifted between judgment dimensions. These shifts emerged through debates and interactions between participants. Judgments based on what was perceived as expected due to one's role and perceived best for the organisation as a whole, were the two dominant benefits judgment dimensions. Judgments based on perceived interest of authority, self-interest and perceived common good for the city council and society, were in general those dimensions that mostly related to the deletion of potential benefits. One conclusion to draw from this is the importance of a rich inter-subjective discourse in order to reduce judgment dimension biases. Another conclusion is that IS-value is elusive and not a stable construct very much affected by social subjective dimensions. These conclusions imply the importance of being sensitive to the existence of different benefits judgment dimensions during benefits analysis projects as they are able to enhance or restrict perceptions of potential benefits.

10.3 The characteristics and management of benefits negotiation

Answers to the third research question (Q3) relate to the research stream of negotiation:

How are negotiations of IS-benefits to be understood and managed?

Findings provided support for the existence of a benefits negotiation. Negotiations were divided into two main categories, rational and irrational, depending on participants' drive when initiating and participating in negotiations. In each category three different types of negotiations were identified, having different characteristics and generating different outcomes. The identified benefits negotiation process displayed management challenges corresponding to the five phases of the process. One conclusion to draw from this is that potential IS-benefits do not automatically appear due to a certain

IS, instead they emerge during negotiations between different stakeholders based on how they perceive changes initiated by the IS playing out in their everyday work processes. Another conclusion is that benefits negotiations are a crucial activity to manage and that a clear understanding of the benefits negotiation process provides support to prevent negotiations from failing their purpose. These conclusions imply that tracing the drive becomes a crucial management task to conduct and that social processes play an important role during benefits negotiations.

10.4 Describing IS-value creation in order to support benefits realisation actions

Answers to the fourth research question (Q4) relate to the research stream of description:

How are organisations to describe IS-value creation in order to support benefits realisation actions?

A discrepancy was identified between how IS benefits are spoken of and how actions of IS benefits realisation are understood. This was a discrepancy between an evaluation and a realisation focus towards IS value creation. An evaluation focus described IS-benefits as well-defined and measurable effects, and a realisation focus spoke of establishing and managing an on-going place of value creation. Valuescape was introduced in order to describe and support understanding of IS value creation. The notion of valuescape corresponded to a realisation focus and outlined a value configuration consisting of activities, logic, structure, drivers and role of IS. One conclusion to draw from this is that descriptions matter. Using evaluation-focused descriptions of IS-value did not support realisation activities. Another conclusion is that benefits are an experience of the established valuescape and not a final destination to reach. Value is created and captured through an on-going arrangement of formations. These conclusions imply that organisations, using the notion of valuescape, will have: *one*, a greater understanding of the complexity of value realisation; *two*, a richer picture of what to expect during the everyday activities of IS-value realisation.

10.5 Lessons learned

Lessons learned relate to the holistic picture of establishing valuescapes. They are a compilation of interesting findings from the different research streams and to some extent they complement earlier suggested practical implications. They are not arranged in order of importance but in a way that corresponds to the different parts of the holistic picture.

10.5.1 Participants perceiving and making judgments of potential information systems benefits

- Alterations in objectives and incentives, insufficient documentation and poor time management during the benefits management process affect what is perceived as potential benefits in a way that reduces the number of benefits and the amount of estimated value,
- Having knowledge of what an information system is able to support affects what is perceived as potential benefits,
- Perception of potential benefits differs depending on expectations and previous experiences of an IS,
- Perception of what constitutes potential IS benefits and value shifts during a benefits analysis project. Awareness of this benefits fluctuation and its characteristics support benefits realisation management.
- Benefits judgment comes in five dimensions: authority, self, role, organisation and society,
- Participants use and move between different benefits judgment dimensions,
- Decisions of which potential IS-benefits to pursue are influenced by participants' benefits judgment.

10.5.2 Participants engaging in benefit negotiations and generating descriptions of potential valuescapes

- Benefits negotiations are characterised by their length, depth and frequency,
- Benefits negotiations differ depending on whether participants have a rational or irrational drive,
- Rationally driven benefits negotiations come in three shapes: the perfect, interrupted and uncertain negotiation,
- Irrationally driven benefits negotiations come in three shapes: the self, relief, and distrust-driven negotiation,
- The generic benefits negotiation process displays key factors to recognize when managing negotiations,

- IS-benefits are not generated due to technology but emerge due to negotiations between different stakeholders.
- Depending on the setting in which descriptions of potential IS-benefits are made they will differ in character,
- Descriptions of potential benefits that are made from an evaluation focus do not provide sufficient support for benefits realisation actions,
- Descriptions of potential benefits are not descriptions of a stable phenomenon. As the IS/organisation relationship evolves and changes over time so will the conditions for benefits realisation as well as the nature of potential benefits,
- Descriptions from a realisation perspective need to embrace the many and irregular formations that are part of managing the benefits realisation landscape,
- IS valuescape replaces IS-benefits as a level of description when depicting what organisations are to pursue in order to create IS-value.

10.6 Contribution to theory and further research

There are four main proposed contributions to theory. The <u>first</u> is a deeper understanding of the notion of benefits fluctuation and its characteristics. The amount and composition of potential benefits change over time and in the thesis a deeper understanding of the nature of fluctuation and different issues affecting it is offered. Further studies of benefits fluctuation in other settings could be of interest as well as studying specific identified issues, like previous experience of IS and how to take advantage of them. The <u>second</u> proposed contribution is the notion of benefits judgment dimensions. By using a theoretical framework not often used in IS-research, it is suggested that the field has been enriched. It provides a richer picture of standards of judgment used when finding accommodations in order to act purposefully. A topic of further research could be studies that lead to a better understanding of the characteristics of the different benefits judgment dimensions. The <u>third</u> proposed contribution is the notion of benefits negotiation. The theoretical lens of strategy making was found to be relevant in an IS benefits management context. This has contributed to a richer picture of the characteristics of negotiations and the process when key stakeholders negotiate which potential IS-benefits to pursue. A suggested area for further research is to study if and how an irrationally driven negotiation could be turned into a state of rational drive. The <u>fourth</u> proposed contribution to theory is the notion of valuescape. Valuescape is a new and additional value configuration to complement existing ones and it introduces the notion of scape to the field of IS-research and value creation. Suggested areas for

further research is to study the notion of valuescape as a value configuration in several different settings in order to better understand its composition and how it differs from other value configurations. It could also be of interest to study organisations acting in highly competitive environments in order to better understand this dimension of the valuescape value configuration.

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John Jeansson

In Search of Information Systems Value

A case study of the EHR benefits realisation efforts of three Swedish hospitals

As organisations invest in IS they embark on a journey of value-creation and capture. A journey where a cost-based approach towards their IS-investments is replaced with a value-centric focus, and where the main challenges lie in the practical day-to-day task of finding ways to intertwine technology, people and business processes. In this thesis the benefits realisation efforts of three Swedish hospitals within the same county council are studied. The thesis focuses on the participants of benefits analysis projects; their perceptions, judgments, negotiations and descriptions of potential benefits. The purpose is to address the process where organisations seek to identify which potential IS-benefits to pursue and realise, this in order to better understand what affects the process, so that realisation actions of potential IS-benefits could be supported.

A qualitative case study research design is adopted and provides a framework for sample selection, data collection, and data analysis. It also provides a framework for discussions of validity, reliability and generalizability.

Amongst the findings of the study are:

- A benefits fluctuation, which showed that participants' perception of what constituted potential benefits and value changed throughout the formal benefits management process,

- Five dimensions of benefits judgment used by participants when finding accommodations of potential benefits and value to pursue,

- Six types of benefits negotiations divided into two main categories depending on participants' drive when initiating and participating in negotiations.,

- A discrepancy between how IS-benefits are spoken of and how actions of IS benefits realisation are understood. Introducing the notion of IS Valuescape.