Risk Management in public IT-related procurement

Master’s Thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Technology.

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Tiivistelmä


Avainsanat riskienhallinta, julkinen hankinta, benefits realization, kokonaisarkkitehtuuri, projektinhallinta
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**Abstract**

Public ICT procurement is a 50 billion euro market in the European Union, but results often fail to impress. As governments face austerity and spending cuts, how can maximum value and benefits be realized from taxpayer investment in ICT? This work examines three procurement projects in a Finnish university, and through them the explaining factors behind success and failure. Qualitative research is based on the grounded theory method. Successful project management, emphasis on strategy execution, clear governance, and organizational learning rose as success factors in the research. Procurement regulations impede organizational change.

**Keywords** risk management, public procurement, benefits realization, enterprise architecture, project management
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1 Introduction

Public ICT procurement is a 50 billion euro market in the European Union (2011), but results often fail to impress. Globally, ranging from a billion dollars lost in a failed ERP project (Charette, 2012) to the Finnish police wasting 25 million euros in a failed information system (Parliamentary Ombudsman, 2015), ICT projects rise to the headlines again and again. As governments face austerity and spending cuts, how can maximum value and benefits be realized from taxpayer investment in ICT?

To answer this, the core study question of this study is:

*How can public organizations reduce failure and unwanted results, and maximize positive outcomes in IT procurement?*

Application of the public procurement process on IT-related sourcing has proven in practice to be rife with complexity and challenges. Literature presents multiple explanations for this, ranging from underlying law to individual project management practices. This work examines three ICT procurement projects in a Finnish university, and through them the explaining factors behind success and failure. Qualitative research is based on the grounded theory method.

The results are discussed with a wider theoretical background of risk management, project management and benefits realization. The results show that while defining success might be trivial, actual achievement of successful outcomes often remains elusive.

As will be evident from the review into relevant literature, several important relationships between activities occurring during public IT procurement have little or no established body of knowledge, raising questions of the basis upon which the vast volume of IT procurement is established.

1.1 About the Author

The author studies Computer Sciences at Aalto University in Espoo, Finland. He has worked in IT with Aalto University since 2006, first in Customer Services, then as a Systems Administrator, and currently as a Development Manager, working with the service portfolio to more closely meet customer and user needs at the university. From 2014 onwards, he has also lead the team of Infrastructure Operations. In his free time, he enjoys motorcycling and American whiskey, though obviously not at the same time.
2 About this document

Chapter 3 describes the research question and the research design that will provide an answer to the question.

Chapter 4 introduces procurement as an activity to further the strategic goals of an organization, and describes the special challenges facing public procurement. History of procurement is discussed, as are recent developments, both in Europe and the US.

Chapter 5 introduces three central activities often co-occurring with public procurement: risk management, benefits realization, and organizational learning. These activities have a central role in case studies described in the following chapters.

Chapter 6 discusses the research methodology. The methodology consists of three parts: 1) structured literature review, 2) case studies based on grounded theory, 3) theory generation and validation based on the evidence gathered from the case studies.

Chapter 7 describes the case organization, its IT strategy and the case study projects chosen for this research.

Chapter 8 describes the theories generated during the course of the research, and validates these against the theoretical background established in chapters 4 and 5.

Chapter 9 contains final conclusions based on the theories generated, and suggestions for future research. Methodological weak points and their impact on the theories are also discussed.
3 Research design

Figure 1 shows the general structure of the research design used during the course of this study. As can be seen from the figure, the initial research question is used firstly to form a theoretical background of the state of art with the help of a structured literature review, and secondly to approach the subject from a qualitative perspective using the multiple case study method as a tool. The case study portion generates theories with the grounded theory method, and these theories are combined with the theoretical background to provide either confirmation or repudiation of the theories. Final conclusions are derived from the confirmed theories.
3.1 Research question
The core study question of the research is:

*How can public organizations reduce failure and unwanted results, and maximize positive outcomes in IT procurement?*

This core question deals with the *practical application* of procurement. However, it should be augmented with *theoretical background* as detailed in the following chapter.

3.2 Theoretical background questions
The theoretical background deals with the current scientific body of knowledge. The goal is to provide a basis on which to reflect the core study question. The following table contains the most important theoretical background questions, their method of research and the results.

<table>
<thead>
<tr>
<th>Question</th>
<th>Method</th>
<th>Results</th>
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<tbody>
<tr>
<td>What formal methods or frameworks there are for evaluating the risks of procurement activity?</td>
<td>Structured literature review, focus on risk management</td>
<td>Chapter 5.1</td>
</tr>
<tr>
<td>What formal methods or frameworks there are for evaluating the success factors of procurement activity?</td>
<td>Structured literature review, focus on benefits management</td>
<td>Chapter 5.2</td>
</tr>
<tr>
<td>What formal methods or frameworks there are for evaluating organizational learning inside an organization?</td>
<td>Structured literature review, focus on organizational and individual learning</td>
<td>Chapter 5.3</td>
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3.3 Application questions

The following table illustrates the application questions. These questions are formulated into actual interview questions as detailed in Appendix 1. The details of the case research can be found in chapter 7.

<table>
<thead>
<tr>
<th>Question</th>
<th>Method</th>
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<tbody>
<tr>
<td>How do public IT organizations manage risk in their procurement projects?</td>
<td>Case research, focus on risk management</td>
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<tr>
<td>How do public IT organizations evaluate results, learn from their mistakes and their successes</td>
<td>Case research, focus on organizational learning.</td>
</tr>
<tr>
<td>How do structures for decision making and preparation affect projects?</td>
<td>Case research, focus on decision making.</td>
</tr>
<tr>
<td>How do alliances affect procurement and the risks thereof?</td>
<td>Case research, focus on alliances</td>
</tr>
<tr>
<td>How is success and failure judged and rewarded in a public IT organization?</td>
<td>Case research, focus on incentives.</td>
</tr>
<tr>
<td>How do external influences affect the incentives and motives of actors?</td>
<td>Case research, focus on influences.</td>
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The detailed methodology for the theoretical background research and the case research is detailed in chapter 6.
4 Procurement as an Activity

4.1 Introduction and definitions

Figure 2 shows the taxonomy of procurement studied in this paper, starting with general procurement done by all organizations, containing public procurement done by public organizations, and ending with public ICT procurement.

Procurement is ‘the acquisition of goods or services at the best possible price, in appropriate quantity, at the right time and place’ (OED, 2015). Due to globalization, organizational decisions of whether to produce commodities and services in-house or source them from outside are increasingly strategically important (Spina, 2013).

Procurement is one case of sourcing, more generally defined as ‘to obtain from a specified source’ (OED, 2015). Sourcing includes additional means of acquiring resources other than traditional procurement. In this paper, the subject is restricted to the processes of traditional procurement. In the case of organizations either directly or indirectly operating in a government funded manner, more restrictive rules and processes apply, as described in chapter 4.5.

Depending on the nature of the organization, procurement may involve large resource flows and as such, any associated risks are equivalently amplified. Since procurement discussed here involves significant external actors not in direct control of the procurer, results and risk affecting them are unpredictable. In order to control risks involved, risk management is often used, as described in chapter 5.1.
4.2 Theories of procurement

Procurement is a well-studied field, with some foci detailed by Spina (2013) in their extensive literature research. Most research is focused on the perspective of the buyer, the most common content being practices, and least common being the role of the organization in the procurement process. Theories are not referenced often, but when they are, the two most common theories are the Transaction Cost Economics (TCE) and the Resource-Based View (RBV) theories (ibid.)

**Transaction Cost Economics theory** examines the overhead involved in making transactions. In procurement, this overhead comes from finding the right supplier, negotiating a contract, and maintaining supplier relations. Obviously, in public procurement, the added overhead of binding procurement legislation adds to this.

**Resource-Based View** theory was first developed and so named by Birger Wernerfelt in 1984. It stipulates that any enterprise derives its competitive edge from its resources (Wernerfelt, 1984). These resources must fulfill certain criteria (valuable, rare, in-imitable, and non-substitutable) in order to be considered in the theory.

While TCE sees procurement mostly as an overhead of a transaction, RBV sees procurement both as a capability to be taken advantage of in the competitive edge of an enterprise, and as means to acquire new resources. This strategic alignment is further discussed in chapter 4.3.

In addition to TCE and RBV, the *mechanism design* theory defines procurement as an asymmetric information problem, in which the buyer has the challenge of trying to figure out the price of a commodity from suppliers, who inherently have more information about the target of the procurement than the buyer (Tadelis, 2012). This theory has, after its inception, been attempted to merge with TCE, the core idea being that there is an inherent uncertainty in the project phase (after a contract has been awarded), and this uncertainty, if not taken into account during the design of the procurement, results in price premiums and cost overruns (ibid.).

This uncertainty has a significant impact on the final price of commodities and services being purchased. Recent research by Bajari (2014), studying highway projects in the US, estimates this uncertainty to have a cost effect of 8-14 percent of the total contract price.

4.3 Procurement and Strategy

While the mechanistic theories provide a glimpse into the internal workings of procurement, the larger question of how procurement interacts with the rest of the
organization is inextricably linked to strategy. Though strategy has been present in business planning for approximately 50 years, the modern strategy thinking emphasizing the co-development of organizational structures and strategy, and linking strategy to individual personal strengths and continuous development, originates in the work of Henry Minzberg in the 1990s (Iloranta, 2008). This thinking has two implications, firstly the emphasis on communication throughout the organization, and secondly the process of continuous improvement (ibid.).

Iloranta argues that the procurement strategy can, in addition to being a necessary component of business unit strategy, act as competitive edge. Several industry examples demonstrate the value of a streamlined supply chain management and sourcing process.

Iloranta identifies the following success factors for successful procurement practice:

- Recruitment of people having talent, analytical skills and specialized skills in the target of procurement
- Clear goal-setting and monitoring of goal achievement, not just in terms of money saved
- Close co-operation between procurement units and other functions

The opposite (seeing procurement just as a support function, no emphasis on recruitment, loose co-operation, performance measures based only on money saved) is logically linked to poorer procurement outcomes (ibid.)

This link between strategic goals and procurement is also formalized with the Kraljic Matrix, developed by Peter Kraljic in 1983, setting two dimensions for the grouping of procurement targets: the business impact of the procurement target (high/low) and the controllability of the marketplace (buyer’s market vs. seller’s market) (Figure 3).

When using this matrix, Iloranta warns not to be too fast in deciding a market to be a seller’s market based on the current situation of the organization. Oftentimes organizations are blind to the competitive opportunities of a given market.
From the defining factors of strategic procurement we can see the two challenges posed therein:

- Managing high business impact, for example by means of risk management (see chapter 5.1) and benefits realization (chapter 5.2).
- Managing low controllability of marketplace through mechanisms of procurement, such as alliances and global sourcing (see Table 1 in chapter 4.5).

Open and fair competition is an integral component of any tendering-based procurement process. However, the connection between competition and lower acquisition prices is not clear, even in standardized procurement (Anton, 1990).

The relationship between procurement and strategy is more deeply investigated in the case research portion of this study, starting from chapter 7 onwards.
4.4 Competitive advantage

Deepening the strategic connection, the concept of competitive advantage is key to strategic management and to understanding the success and failure of organizations (Barney, 1991). This concept has been since 1960s most often encapsulated in a four-part model describing the strengths, weaknesses, opportunities and threats in the context of an organization as described in Figure 4. While competitive advantage has multiple definitions, Barney (1991) eloquently defines it as ‘implementing a value creating strategy not simultaneously being implemented by any current or potential competitors.’ Most research on competitive advantage and the resource based view concentrate on the private sector, but there are few inherent limitations that would prevent a similar view of a public sector organization. Matthews (2005) expands the private-sector competitive advantage view to public sector, and attempts to tackle the fundamental paradox with regard to non-profit activity: how can competitive advantage be pursued, when the added value is not retained by the organization, but instead is distributed to the community? Matthews argues that competitive advantage can be partly pursued when resource dependency is taken into effect, but this would seem to require organizational restructuring in a traditional public organization.

While full competitive advantage is admittedly inherently incompatible with current-day public organizations, some elements of free competition can be argued to exist. Taking the higher-education sector as an example, even in a fully state-subsidized system (that is, free to the student in this case) there remains customer selection power in the form of picking which institution provides the best teaching and studying services. Naturally, this is not a perfectly free selection, as other issues

![Figure 4. Traditional view of competitive advantage as described by Barney (1991).](image-url)
(e.g. the field of study, geographical location, and entrance requirements) limit customer choice.

Using the perspective of the resource-based view described in chapter 4.2, resources define the advantage an organization has over its competition. In traditional goods-intensive organizations (such as manufacturing), procurement has a natural role in the early stages of the supply-chain process, but the view on procurement need not be limited to this. In organizations mostly using human resources (such as education) procurement is needed to support the processes of the organizations, and therefore indirectly affects the operation of the organization.

4.5 Public Procurement

Being a special case of procurement, public procurement involves the use of public funds and is therefore more strictly controlled than private procurement. McCue (2001) presents multiple definitions for public procurement, including “the function of responsibility for the acquisition of equipment, materials, supplies, and services” and “purchasing encompasses the total process of supplying goods and services to user agencies and disposing of surplus property.” United Nations defines it from a more lifecycle point of view as “an overall process of acquiring goods, civil works and services -- from the identification of needs – though the end of – the useful life of an asset.” (emphasis added) (UNDP, 2005)

Public procurement involves significant cash flow. In the European Union, public sector procurement amounts to approximately 1000 billion euros per year, representing 16% of the combined GDP of EU. In individual member countries, this percentage varies between 10% and 25%, Finland being at 17% (European Commission, 2014). In United States, government purchasing alone accounts for over 20% of the GDP (Matthews, 2005).

For the most part of the 20th century, public procurement was seen as a clerical function by some, and a limiting factor by others (Matthews, 2005). This traditional model took a simple view of procurement as a supply process, mostly involved with maintaining inventory, tracking purchase orders, and focusing on reducing cost.

In 1970s and 1980s, both in Europe and the US, privatization and the transfer of once state monopolized sectors into private markets profoundly affected how governments provide services to citizens, and in the process, procurement as well. The supply-side economics frenzy of those decades, on both sides of the Atlantic, gave way to a series of major setbacks in the 1990s, somewhat destroying public trust on private market solutions (Lawther, 2005). Outsourcing and downsizing were the themes of the day, putting a heavy burden on traditional procurement
functions (Matthews, 2005). During these decades, both extremes proved to be unsuitable for the complex needs that a society represents.

<table>
<thead>
<tr>
<th>Tactical (Historic)</th>
<th>Strategic (Leading)</th>
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<tr>
<td>Purchase order issuance</td>
<td>Supplier alliances</td>
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<td>Vendor file maintenance</td>
<td>Cost management</td>
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<tr>
<td>Excess inventory</td>
<td>Global sourcing</td>
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<tr>
<td>Order tracking</td>
<td>Life cycle costing</td>
</tr>
<tr>
<td>Unit cost focus</td>
<td>Procurement planning</td>
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<tr>
<td>Local vendors</td>
<td>Spend management</td>
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Table 1. Evolution of purchasing activities as described by Matthews (2005)

Beginning in the 1990s, public procurement has been identified as a more strategic activity in organizations (McCue, 2001). Undoubtedly this was encouraged by rapid advances in technology, and the rise of e-procurement and e-commerce (Matthews, 2005). Table 1 shows the evolution of activities from historical sourcing to modern day procurement as analyzed by Matthews. The leading theme behind the activities is clearly the move from individual, volume and process based purchases into more holistic activities taking into account full lifecycles, not just for the goods and services being purchased, but for the procurement relationships as well.

McCue (2001) presents a general model for public procurement in Figure 5:

![Figure 5. Public procurement model as described by McCue (2001).](image-url)
This model, also referenced by Matthews (2005), contains four phases. In *procurement planning*, the target of procurement is defined, and different models of sourcing can be discussed. In *procurement formalization*, formal documents, such as a request for proposal, are issued. After this, the actual procurement is executed with the winner, and finally, in *procurement evaluation*, the process is evaluated for future improvement.

Thai (2008) illustrates some key tradeoffs usually present in public procurement:

- **Quality vs. cost**: What quality is sufficient for procurement?
- **Timeliness vs. cost**: How much value should be placed on quick delivery?
- **Risk vs. cost**: Should a premium be paid for a supplier with lower risk of non-delivery?
- **Socioeconomic objectives vs. cost**: Should e.g. domestic suppliers be preferred for a premium?
- **Competition vs. cost**: As competition always introduces overhead, what amount of competition is sufficient to guarantee an economically advantageous result?

These tradeoffs have no generally agreed optimum, and their individual application depends on the market conditions, target of procurement and societal goals.

In addition, ethical considerations form a defining factor for the limits of public procurement. Insofar as legislation attempts to codify a fair approach to procurement, separate ethical frameworks, such as the codes of ethics of National Institute of Governmental Purchasing, and Institute for Supply Management, attempt to draw the lines more clearly (Matthews, 2005). These frameworks emphasize personal conduct, honesty and integrity.

It is clear that ethical guidelines alone are not sufficient to guarantee fairness and neutrality, which is why the procurement process is usually heavily standardized and regulated by law. The open bidding model, used widely in public procurement, can be argued to clearly prevent corruption. However, research indicates that this kind of regulation has a negative efficiency implication (Tadelis, 2012).

Aside from the obvious function of public procurement to procure goods and services required for the operation of the public sector, there has recently been a push, both on European and individual national levels to leverage public procurement as a tool for innovation (Georghiou, 2014). This has been codified in law on EU level in 2000s with attempts to steer procurement frameworks to a direction, which would allow greater freedom to pursue innovation. Regardless of this, empirical research of the outcomes of this momentum is lacking (ibid.).
From 2000s onwards, the concept of *public partnerships* has emerged as a tentative solution to the aforementioned challenges. Instead of traditional public procurement, where the interest of the state is to transfer risk as much as possible to the supplier (Lawther, 2005), public partnerships aim to share risk and provide a symbiotic, dependent relationship.

In partnerships, risk management takes a different dimension. Lawther (2005) argues that it is advantageous to differentiate between risks relating to project goals and partnership goals, the latter being more involved with the planned outcomes of the service provided. In this way, risks can be measured on both the dimensions of *process certainty* and *project goal measurability* (Figure 6).

![Figure 6. Goal and process risks, as described by Lawther (2005).](image)

As is usually the case with procuring IT systems, both the process certainty and project goal measurability are low, resulting in both high goal and process risk according to this framework.

### 4.5.1 Public procurement of ICT

The volume of public ICT procurement in European Union is large. Definitions for ICT procurement vary, but European Information Technology Observatory defines it to include “industries of hardware for office machines, data processing equipment, data communication equipment, software and services”, and estimates the whole market (public and private) in 2004 to have been 297 billion euros, of which public procurement represented approximately 60 billion euros (Nyiri, 2007).

On a similar scale, a 2011 study by the European Union estimates public ICT procurement at about 50 billion euros (European Commission, 2011), with the following largest categories:

- 32% of expenditure in IT services
• 16% of expenditure in radio, television, and telecommunication
• 9% of expenditure in software packages and information systems

Approximately 60% of expenditure is on services contracts, 25% on supplies (ibid.) with considerable national variation.

Nyiri (2007) explores several factors currently affecting ICT procurement. The role of small and medium sized enterprises is solid in most forms of public procurement, but in ICT procurement their involvement may prove to be challenging due to limited capacity and resources. Life cycle cost assessment is noticeably absent: in 2005, 50% of studied public organizations claimed to do it, but a document check revealed that only 1% actually do so (ibid.).

Nyiri further discusses the issue of functional specification, and how deeply technological solutions are specified in the tendering documents. Too much emphasis on technology may prevent innovative solutions from being offered. In addition, innovative solutions may entail business risk to the tenderer, and businesses may be reluctant to offer innovative solutions without some form of risk sharing.

4.5.2 Regulatory limits

Public procurement in the European Union follows the spirit of the establishing contract of the European Economic Community (EEC), the Treaty of Rome, signed in 1957, emphasizing the free movement of workers, capital and services (Burden, 2001). Procurement is based on the principle of fairly selecting the most economically advantageous choice of bidders interested in providing a particular good or service. Where price is the sole discriminating factor, this choice is trivial. However, when there are other factors involved, any comparison must be based on clear and fair criteria (ibid.).

This regulation has two implications. Firstly, in a market economy, public funds and the use of them is not subject to the same driving forces as private money. Whereas private investments (and therefore private procurement) are in a vast majority of cases used to support the creating of financial value (such as shareholder value) in the other end of the value chain, public funds are primarily used to create and support the activities of a society (either directly or through a longer chain of value), which is a nonfinancial entity and operates on a wholly different set of principles and values. This also means that the guiding mechanisms of an organization are completely different; whereas a private corporation can eventually fail on the basis of bad financial decisions, a government has no such comparable risk.
Secondly, there is an inherent asymmetry in any situation involving a public procurement from a private company. In normal business-to-business procurement, companies operate from a principally equal role (even though they may differ in size). Both companies are free to select their procurement partners, and usually do this by evaluating a partner on the basis of reputation, apparent capability to deliver, previous procurements, other existing relationship and other factors that predict how successful procurement will be.

A public procurer cannot easily use such a holistic and flexible approach and is therefore limited in the ways it can evaluate and predict the outcome of procurement with a particular supplier. As such, the critical component is the procurement process itself, which much, to the extent allowed by law, attempt to emulate the way a freely operating organization evaluates its partners.

On the supplier side, the uncertainty discussed in chapter 4.2 limits supply as well. As the public procurement process is heavily regulated, suppliers do not enjoy the same kind of freedom of offering as they do in a freer private market situation.

4.6 Procurement and Enterprise Architecture

While there is no common, widely accepted definition, enterprise architecture can be defined as ‘the organizing logic for business processes and IT infrastructure’ (Ross & Weill, 2006). It describes a practice of organizing the inner workings of an organization to answer strategic needs. Having its roots in mid-20th century theories on how to organize information in an organization, the practice itself emerged in late 1990s.

Regardless of the precise definition, there is consensus that the enterprise architecture describes the structure of the organization on a functional level. As to the question of EA’s relation to the rest of the organization, Ross & Weill (2006) demonstrate their view with the following structure (Figure 7):
Ross & Weill argue that the *foundation for execution* (core processes and infrastructure) should be built from the *operating model*, with *IT engagement model* providing the governance interface to make sure projects achieve their objectives. In this model, enterprise architecture act as the blueprint, or organizing logic, for providing future capabilities.

Where is procurement in relation to the enterprise architecture of an organization, then? This question does not have an obvious answer. If procurement is seen as part of an operating model, then it should be noted that inside an operating model, Ross & Weil (2006) sees standardization and integration as two separate yet important issues, as illustrated by the following diagram (Figure 8):
It should be noted that model can be separate for an enterprise and its subunits. Standardization is achieved by identical execution of processes regardless of actors involved, whereas integration is achieved when information is shared across business functions efficiently and transparently.

With the assumption that procurement is an element of an operating model, it can be argued that the two dimensions of standardization and integration result equally in four modes of procurement. On the other end, low standardization and low integration results diversity and variability, which emphasizes the flexibility and adaptability of procurement. In the opposite end, the quadrant of high standardization and integration is fertile ground for highly volume-centric, process-optimized procurement activities.

Using the two-dimensional model of business process integration and standardization, the research detailed in chapter 7 concentrates on an organization belonging most strongly to the lower left quadrant of diversification.
4.7 Concepts relating to procurement

The following concepts are summarily defined as they usually coincide with the activity of procurement.

**Sourcing strategy** is an outline of how an enterprise plans to source commodities and services that it needs to deliver value to its customers. Sourcing strategy may include strategic choices on partnerships and alliances with particular suppliers, outsourcing or insourcing aims, and financial considerations. Procurement is directly linked to sourcing strategy in parts where commodities and services are bought from outside suppliers.

The role of sourcing strategy in defining procurement activities is acknowledged, but the process of developing and executing a sourcing strategy is not part of the research. Sourcing strategy is mentioned while examining the IT strategy of the target organization in chapter 7.2.

**Decentralized IT** refers in this document to a form of organizational design where internal IT services are not produced by a centralized entity under a unified command structure. The target organization of the case research employed (during time of the research) a model of partly decentralized IT, which is posited by this paper to have an impact on the projects in question as detailed by the theories proposed in chapter 8.

**Project management** is “the process of controlling the achievement of the project objectives. Utilizing the existing organizational structures and resources, it seeks to manage the project by applying a collection of tools and techniques, without adversely disturbing the routine operation of the company” (Munns, 1996). Any enterprise investing effort outside its daily operation and processes does so through projects, that is, through coordinated units of effort with individual goals, starting and ending points. These projects, like any element of an enterprise, must be managed and are most often done so with more or less standardized tools, roles and practices of project management.

Project management issues formed one focus of the case research, and a major theory proposition as detailed in chapter 8.2.
5 Activities of interest in public procurement

5.1 Risk Management

A risk can be defined as ‘an event or action that may adversely affect an organization’s ability to achieve its objectives and execute its strategies’ (McNeil, 2015). Another definition is ‘exposure to the consequences of uncertainty’ (Cooper, 2005). Furthermore, the concept of risk includes a component of randomness, in which a risk has a known or unknown probability of occurring.

An interesting point of view presented in Cooper et al is the extension of the definition of risk into positive outcomes as well – in which case risk management becomes the practice of attempting to identify and maximize the occurrence of positive, random events. In this definition, risk management approaches the benefits realization practice more closely discussed in chapter 5.2.

Risk management is the wide discipline of anticipating and preparing for risks. Kloman (1990) defines risk management as “a discipline for living with the possibility of that future events may cause adverse effects”. How risks are managed in practice depends on the nature of activity and the risks involved. Some industry standard practices for risk management include the Project Management Institute’s PMBOK Chapter 11 and the IEC 62198 standard for risk management (Cooper, 2005).

The study of risks in management and operations research is abundant, but supply risk management has a more limited body of knowledge (Zsidisin, 2000). Regardless of the type of good or service being procured, Davidson (2011) proposes a general set of predictable risks:

- Proposal risks
- Surety and liability risks
- Schedule risks
- Contractual risks
- Performance risks
- Price risks

In addition, Davidson argues that each of these risks consists of problems, which on the other hand correlate with the type of contract in question.
<table>
<thead>
<tr>
<th>Type of risk</th>
<th>Description</th>
<th>Applicability to public ICT procurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategic risk</td>
<td>Affects business strategy implementation.</td>
<td>Applicable to public ICT procurement as is.</td>
</tr>
<tr>
<td>Operations risk</td>
<td>Affects business operations</td>
<td>Applicable to public ICT procurement as is.</td>
</tr>
<tr>
<td>Supply risk</td>
<td>Affects inward flow of resources</td>
<td>Applicable to public ICT procurement as is.</td>
</tr>
<tr>
<td>Customer risk</td>
<td>Affects demand for products</td>
<td>Partly applicable, customer demand may be flexible or fixed depending on circumstances.</td>
</tr>
<tr>
<td>Asset impairment risk</td>
<td>Reduces utility of an asset</td>
<td>Applicable to public ICT procurement as is.</td>
</tr>
<tr>
<td>Competitive risk</td>
<td>Affects differentiation on the market</td>
<td>Partly applicable, depending on existence of competition.</td>
</tr>
<tr>
<td>Reputation risk</td>
<td>Affects reputation, erodes customer confidence</td>
<td>Applicable to public ICT procurement as is.</td>
</tr>
<tr>
<td>Financial risk</td>
<td>Financial loss due to markets or e.g. debtor default</td>
<td>Applicable to public ICT procurement as is.</td>
</tr>
<tr>
<td>Fiscal risk</td>
<td>Changes in taxation</td>
<td>Applicable in a different sense, as change in public funding.</td>
</tr>
<tr>
<td>Regulatory risk</td>
<td>Changes in regulation affecting business</td>
<td>Applicable to public ICT procurement as is.</td>
</tr>
<tr>
<td>Legal risk</td>
<td>Exposure to litigation</td>
<td>Applicable to public ICT procurement as is.</td>
</tr>
</tbody>
</table>

Table 2. Types of risks as detailed by Harland (2003) and their suggested applicability to public ICT procurement as proposed by this paper.

Table 2 shows the different categories of risks presented by Harland (2003). It also includes a suggested applicability of each category to public ICT procurement. As can be seen from the table, most risks encountered in the private markets are directly or somewhat modified applicable to public ICT procurement as well. In fact, some categories take on a larger role in public procurement: legal risk includes not only the same risk of civil litigation that any private enterprise faces, but also
the risk of procurement-related litigation arising from the actual tendering process, a risk most private enterprises do not face. In a similar way, the fiscal risk faced by most private enterprises takes on a different nature: as most public organizations rely on government funding, any unanticipated change in funding results in an impact to the organization.

The Finnish Advisory Committee on Information Management in Public Administration (JHS) has written a recommendation on how to manage risks in developing ICT services. This process includes identifying threats, classifying the risks they cause based on severity and probability, and deciding on mitigation activity (JHS, 2012). No strict categorization of risks is presented, only an advisory list of examples.

Outside academia, the independent research company Gartner provides an interesting categorization of public procurement risks in its 2003 research paper (Kost, 2003). Gartner organizes public procurement risks in three categories, and follows each one with rather honest concerns. The categories include political risks (“Will I be embarrassed by the decision?”), contractual risks (“Will I get sued?”), and programmatic risks (“Do I understand what is the correct solution?”). While not scientific research by any means\(^1\), this rather exquisite categorization undoubtedly reflects the personal experiences of people associated with procurement projects more than rigorously prepared, theoretical frameworks.

### 5.2 Aiming for the Best: Benefits Realization

IT projects are notoriously unreliable in providing value. The percentage of IT projects failing to reach their goals has remained in the 70-90% range as established by multiple studies throughout the past four decades (Ashurst, 2008).

Hoping to change that, benefits realization (BR) is “(t)he process of organizing and managing such that the potential benefits arising from the use of information systems/Information Technology are actually realized” (Ward, 2006). As such, it is seen as an activity taking place through the entire life cycle of an investment, from conception to termination. There are practical methods of benefits realization are varied, and there is no single dominant framework for implementing benefits realization (Hellang, 2013).

Practical development of methods for BR started in the 1990s, but studies into empirical results of actual use of those methods have been minimal (Hellang, 2013).

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\(^1\) Gartner publicly discloses its research methodology, which includes gathering information from its 60 000 clients from approximately 10 000 organizations worldwide. It employs internal peer review. As an independent organization, its views can be said to represent industry mainstream concerns.
The research into actual results of BR practices has mostly focused on *analytical* methods, such as tracking return on investment. *Interpretive* methods, estimating e.g. effectiveness or strategic goals, have not been significantly studied (Braun, 2009).

While there are several frameworks for BR, a general model presented by Ward (2006) is often quoted in literature and presented in Figure 9. It shows the general cycle of how a selected method of benefits realization can be used in an iterative way. It should be noted that this framework is method-independent, and can be applied equally to analytical and interpretive methods.

![Figure 9. The Benefits Realization cycle, as depicted by Ward (2006).](image)

There has been a noticeable drive in the public sector to implement benefits management. In United States, the Clinger-Cohen Act\(^2\), passed in 1996, federally mandated a more strategic view of government IT investment. In the United Kingdom, the Best Value act of 1999\(^3\) laid out ground rules for how to evaluate value of government investment.

The Finnish Advisory Committee on Information Management in Public Administration (JHS) includes suggestions on benefits management as part of their recommendation of best practices for developing ICT services. Their approach is

\(^2\) Officially the Information Technology Management Reform Act. This act resulted in the creation of the US Federal Enterprise Architecture, describing the business, data, applications and technology architecture of the federal government.

\(^3\) Officially the Local Government Act 1999, Chapter 27, Part I. The act does not limit itself to technology, but rather applies to practically all government functions, such as social services and housing.
based on the Balanced Scorecard, and includes defining benefits and the performance indicators based on them, but does not include any form of continuous or cyclical process to actually use this information for improvement (JHS 171).

To a degree, these kinds of top-down initiatives have an obvious harmonizing effect, but it can be argued that the actual effect on an individual organization is deeply connected with the operating model of the organization as discussed in chapter 4.6. In the case of an organization demonstrating low standardization and integration, nationally defined boundaries for procurement activity may prove inadequate. It is not unreasonable to suggest that the tradeoff between flexibility of individual public organizations and the need for harmonized procurement on a national level has no defined optimum.

5.3 Organizational and individual learning

Organizational learning refers to the way an organization improves its activity in order to excel in its field of substance. Huber (1991) divides organizational learning into four distinct areas:

1. knowledge acquisition, the process of obtaining knowledge
2. information distribution, the process of sharing information inside the organization, leading to more information or understanding
3. information interpretation, where received information is given meaning
4. organizational memory, where knowledge is stored for future
The crucial first step in learning is therefore the acquisition of knowledge. As
detailed in Figure 10, main methods for this are *experiential learning*, and *searching*
and *noticing*. Whereas experiential learning involves analyzing the experiences of
the people in the organization (when done experimentally, connected with *action research*,
and when using self-appraisal, connected with double-loop learning
discussed below), searching and noticing involves actively looking for information
of use inside an organization, either through monitoring performance through a
standardized set of measurements (*performance monitoring*), or intently looking
for information from data already gathered (*focused search*).

Even assuming useful information is gathered through these methods, it still needs
to be distributed and interpreted in order to have any effect on the organization
(Huber, 1991). While distribution of non-routine information is relatively
unstudied, standardized information can be distributed efficiently through
predefined processes.

Daft & Weick (1984) defines information interpretation as ‘*the process through
which information is given meaning*’. Without interpretation information is
meaningless. According to them, the two dimensions of an organization that decide
the mode of interpretation are *intrusiveness* (an organization’s propensity to
actively search the environment for answers) and *assumptions* (the view that the
environment is either stable and analyzable, or dynamic in a sense that any
interpretation is bound to shape the environment as it is formed).
While the previous paragraphs describe a rather formal and deterministic model in organizational learning, some authors, such as Vince & Broussine (1996) suggest that in many cases, learning—and the change that should follow—is more a result of complex interplay between individuals, surfacing in tension and accidents. The question then becomes how these can be harnessed to actuate change in an organization.

As opposed to organizations, individual learning is subject to the personal experiences, attitudes and models of action of individuals. Many methods for this have been suggested. Double-loop learning, introduced by Chris Argyris in the 1970s, describes the two loops of learning of the theory: the first loop being the iterative process of attempting to reach a goal, and the second loop being the actual adjustment of the goal itself. This distinction is crucial, as professionals in any field are usually excellent in the first loop learning (Argyris, 1991), but fail on the second one. This is partly due to the following for universal human tendencies (ibid.):

1. To remain in unilateral control
2. To maximize winning and minimize losing
3. To suppress negative feelings
4. To be as rational as possible

These tendencies are evident in most human activity. The tendency of maximizing winning and minimizing losing has an important parallel in organizational competition and co-operation, and plays a role in the case research portion of this research, from chapter 7 onwards.

Organizational learning in the context of procurement refers to how an organization learns and improves its activities during procurement. It is a new and little studied field (Schneider, 2013). As such, it was selected as a focus point for the case research. Reflected both in the interview template (Appendix 1) and the theories emerging from the case research, organizational learning may play a major role in public procurement projects. Due to the field being relatively unstudied, this topic constitutes mostly original research.
6 Research methodology

Figure 11 Process of research.

Figure 11 shows the theoretical and case study portion of the research design. The methodology of this portion is more deeply discussed in this chapter.

6.1 Epistemology of research

Epistemology, or the theory of knowledge, examines the concept of knowledge and how it relates to the concept of truth. With regard to this research, we are interested in the following questions:

1. What constitutes knowledge in the research field in question?

2. How is this knowledge gathered, analyzed and formulated into cohesive theories?

In relation to the first question, knowledge is traditionally divided into a priori knowledge (known before or without experience), and a posteriori knowledge (known as a result of experience). As the research field is a complex interconnected system of people and organizations, knowledge is mostly limited to a posteriori knowledge.

This knowledge is traditionally further analyzed and condensed into theories providing support for decision-making, and often called by terms such as ‘good practices’ or ‘best practices’. This condensation may be done on a level of an
individual organization, or more widely in the industry, where often such a condensation is elevated to the role of a 'standard' or 'framework'.

6.2 Ontology of research

Ontology is the study of existence, properties, and relations of objects. The relevance of ontology relates to the research in questions such as:

1. For the purposes of research, what objects can be thought to exist independently and what are merely properties of other objects? Is a 'project' an independent object, or just a term used to categorize work? Are roles in an organization objects, or just properties of human beings, or vice versa?
2. Do people share a common view of the ontology of an organization, or is the perspective of a single person inherently personal?
3. What is the ontological view of an organization? Is an organization group of people, processes, values, or physical objects?

As the target of this research is project activity in an organization containing IT functions, it is evident that the target is a contemporary phenomenon operating in a real-life context, and one could argue that, especially in a larger organization, the boundaries and interfaces between a project and the organization in which it operates can be hazy.

In this research, ontology has more of a utilitarian role of helping to coherently describe the existence of entities in the sphere of research, and to ensure that the whole process of research, from end to end, is conducted with a single ontological model.

As this research focuses on the project activity of an organization, and as the method of research is an interview-based case review, it is practical to adopt a people-centric ontological perspective of the organization. In this perspective, we examine the organization mostly as a group of people, attempting to reach a common goal while being influenced by internal and external forces.

6.3 Theoretical background: structured literature review

For the theoretical background research questions, a structured literature review was used to assemble a complete picture of the current body of knowledge of the research topic. Based on the guidelines of Webster (2002), the review was conducted on the following databases:

- Elsevier ScienceDirect
- EBSCO, all databases available to Aalto University including Academic Search Elite and Business Source Complete
- IEEEExplore
• **Google Scholar**, a meta search engine of multiple databases

The following practical steps were taken:

• The review was limited to academic journals, scientific literature, article reviews, and editorials, from 1990 to present day to establish status quo of research.

• Literature was evaluated for actual relevance to the research based on 1) Title, 2) Abstracts, 3) In case of vague abstract, the full text of the literature in a speedy manner.

• If a search resulted in more than 100 results, the first 100 results, sorted by relevance by each service, were evaluated.

The review was done using the following permutations of the keywords: ‘public procurement’ ‘risk management’; ‘public procurement’ ‘project management’; ‘public procurement’ life cycle; ‘public procurement’ strategy.

The following criteria was used to evaluate the suitability of found literature to this research:

• **Subject matter.** Does the literature discuss public procurement in the context of risk management, the realization of benefits, project management or organizational strategy?

• **Geography.** Does the literature discuss procurement in EU context? Sources discussing other locations are not automatically ruled out, since the basic principles of public procurement are often similar outside EU as well.

• **Target of procurement.** Does the literature discuss the procurement of ICT related products and services?

• **Publication date.** Does the literature reflect status quo or an historical perspective?

• **Width of perspective.** Is the literature a case review of an individual organization, or does it discuss procurement in a wider context?

• **Nature of literature.** Is the literature a review of literature, original research, an editorial, or something else?

The literature review (1st pass) identified 38 pieces of literature relevant to the research, divided into sources and searches as shown. Note that literature found in multiple searches is included in the first encounter only.
<table>
<thead>
<tr>
<th>Sources in Sequence</th>
<th>ScienceDirect</th>
<th>EBSCO</th>
<th>IEEEXplore</th>
<th>Google Scholar</th>
<th>Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Searches in Sequence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>‘public procurement’</td>
<td>8 / 131</td>
<td>4 / 35</td>
<td>1 / 21</td>
<td>3 / 3890</td>
<td>16</td>
</tr>
<tr>
<td>‘risk management’</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>‘public procurement’</td>
<td>4 / 170</td>
<td>5 / 55</td>
<td>0 / 46</td>
<td>5 / 3920</td>
<td>14</td>
</tr>
<tr>
<td>‘project management’</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>‘public procurement’</td>
<td>0 / 1229</td>
<td>4 / 497</td>
<td>0 / 220</td>
<td>3 / 17700</td>
<td>7</td>
</tr>
<tr>
<td>strategy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>‘public procurement’</td>
<td>1 / 79</td>
<td>0 / 49</td>
<td>0 / 81</td>
<td>0 / 12600</td>
<td>1</td>
</tr>
<tr>
<td>life cycle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sum</td>
<td>13</td>
<td>13</td>
<td>1</td>
<td>11</td>
<td>Total 38</td>
</tr>
</tbody>
</table>

Table 3. Summary of the structured literary review.

These 38 pieces of literature, summarized in Table 3, along with other sources found through other methods, will be used to establish a picture of the status quo of scientific research in relation to the research question. In addition to the results of the literature review, individual articles were also found by examining the references of the articles found in the review, and through other mediums.

6.4 Application: the multiple case study method

For the application research questions, the case study method was chosen. Yin (2013) describes case study as an empirical inquiry that 1) investigates a contemporary phenomenon in depth and within its real-life context, especially when 2) the boundaries between phenomenon and context are not clearly evident.

In addition, the defining factors for a case study are 1) coping with a multitude of variables which are more numerous than actual data points that can be used, 2) reliance on multiple evidence sources that provide converging data, and 3) uses theoretical propositions to guide data collection and analysis (ibid.). It should be noted that the third defining factor is partly excluded in the method of grounded theory, described in the next chapter.
Yin also posits that the case study inquiry can go beyond qualitative research into the field of quantitative analysis, especially when case studies are conducted comparatively. In this research, the scope of the work unfortunately precludes the possibility of major quantitative comparative analysis.

The topic of the research is to study the success and failure of information technology procurement with a limited scope. The research questions focus on the how and why of executing projects. The focus of research is also a contemporary practice, and control of behavioral events is not required for research. It can also be argued that the boundary between the activity studied and the surrounding context is not clearly evident. As a result of these conditions, case study is a suitable method of research for this project. A single case study is justified when the case is critical, unique, typical or revelatory, or it is studied in a longitudinal way (Yin, 2013). In this context, individual procurement projects cannot be considered critical or unique, since procurement is a continuous and frequent activity in public organizations. However, they can be considered typical. The scope of the research precludes any longitudinal study.

With multiple cases, the question of the how the cases compare to each other (replication) is critical. In successful case research, the cases either predict similar results (literal replication) or contrast each other with an underlying explanation (theoretical replication) (ibid.). It also should be remembered that cases do not represent samples in a statistical sense, and methods of sampling should not be used.

Based on this, a multiple case study was selected as a research method, with an aim of 2-3 cases, replicating each other either in a literal or a theoretical way, depending on the individual cases.

6.5 Theory generation: grounded theory

Case research can be founded on either the concept of theory testing, where a pre-developed theory or hypothesis is tested on real life cases, and its validity is either confirmed or disputed by the case research, or on theory generation, where the research begins without a pre-determined theory and aims to derive the theory out of the data gathered during the course of the research. The latter has the advantage of being able to generate novel theories, and theories that are likely empirically valid (Eisenhardt, 1989). Due to the scope of the research and the nature of the research question, no master hypothesis or theory can reasonably be proposed before the actual research, which is why theory generation is the chosen method for this research.
As the observed phenomenon is complex, with multiple actors and a network of causes and effects, a hypothesis formulated before data gathering would have the danger of limiting or misleading the actual research. Considering the scope and the research question, Action Research, Design Research or other similar methods are not suitable as methods for this research. Therefore theory generation in this research was chosen to be based on the grounded theory method.

The original grounded theory was made popular by Barney Glaser and Anselm Strauss in their publication *The Discovery of Grounded Theory* in 1967 (Kelle, 2007). The main point in grounded theory was to challenge the at the time prevailing emphasis in social sciences on verification of theories, and instead propose that theories can emerge from empirical data by themselves (ibid.). While such proposal was radical in the 1960s, it has its roots in positivist epistemology already present in the 17th century, and advocated by philosophers such as John Locke and Francis Bacon. A central idea in grounded theory is the *tabula rasa* approach to research, in which data should be approached without preconceived theories, prejudices or ideas.

As eloquently described by Sutton (1995), data alone is not sufficient to form a theory, especially in the case of limited sampling present in qualitative research. Theory generation in this paper is based on logical reasoning in addition to evidence gathered by case research, and is further discussed in chapter 8.2.

### 6.6 Case Analysis: Constant Comparative Analysis

![Diagram of data analysis process](image)

Figure 12. Processing of data as synthesized by Merenheiro (2014) from Locke (2003) and others (abridged diagram).

The method used to analyze and derive conclusions from the qualitative interviews is constant comparative analysis. CCA is based on the idea of constantly comparing the data gathered from the interviews on multiple levels, and during the whole process of research. Originally proposed by Glaser and Strauss to provide tools for the grounded theory method, the guidelines for exact practical implementation of CCA have been vague in science. However, the framework proposed by Boeije (2002) will be used in this research as detailed in Table 4.
<table>
<thead>
<tr>
<th>Type of comparison</th>
<th>Activities</th>
<th>Aim</th>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Comparison within single interview</strong></td>
<td>Open coding, summarizing, finding consensus</td>
<td>Develop categories understanding</td>
<td>What is the core message? Relations? Contradictions?</td>
</tr>
<tr>
<td><strong>Comparison between interviews (same group)</strong></td>
<td>Axial coding, formulating, hypothesizing</td>
<td>Conceptualization</td>
<td>Combination of concepts? Interpretations? Similarities and differences?</td>
</tr>
<tr>
<td><strong>Comparison between interviews (different groups)</strong></td>
<td>Triangulating</td>
<td>Complete the picture</td>
<td>Differences, similarities? Nuances?</td>
</tr>
</tbody>
</table>

Table 4. Steps of CCA as detailed by Boeije (2002), abridged and adapted by author.

### 6.7 Conclusions: putting it all together

Figure 13 shows the hierarchy of information leading to the research conclusions in this project. The final conclusions are arrived to by combining the theoretical basis explored with the in-depth case studies conducted.

![Figure 13. Hierarchy of research conclusions in this research](image)
6.8 Research interviews

Based on the three main application research questions (chapter 3.3), the following preliminary interview topics were designed:

- Personal project viewpoint (influences, incentives, commitments, decisions)
- Risk management
- Investment life cycle and benefits realization
- Procurement and organizational strategy
- Organizational and individual learning

The more detailed interview template is included in Appendix 1.

6.8.1 Practical arrangements and ethics

Subjects were approached by phone and email, and briefed on the scope of the research, and the ethical guidelines were discussed. Each of the interview subjects was interviewed at his or her place of convenience. The instructional length of an interview was set at one hour, but was deemed dependent on the actual content of the interview. Most interviews were between one and two hours. Several subjects were interviewed twice.

The main data gathering method during the interview were field notes, as encouraged by the grounded theory methodology.

In executing the case interviews, the following guidelines were used:

- In the interviews, any comments associated by a remark that the comment should not be used in the research, was not used.
- The personal identities of research participants (such as project managers, solution providers) will not be included in the research nor provided to anyone except the overseer and the instructor of the research.
- In the final publication, any reference to individuals will be done in an anonymous fashion.
- Any other communication between the researcher (such as emails, text messages, phone calls or letters) are confidential, and not included in the research unless agreed to separately by the included parties.
- For the purposes of this research, contractual breaches by third parties will not be encouraged, but will be considered irrelevant from an ethical point of view. For example, information provided by violating a non-disclosure agreement is not considered unusable unless so decided by the third party providing the information.
7 Case studies

7.1 Introduction to target organization

The target organization in this research is a major technical university in Northern Europe. Founded in the early 2000s as a merger of three older universities, the organization has struggled to merge the functions and processes of its three ancestors.

From an operating model of view (see Figure 8, page 19), the target organization most strongly belongs to the diversification operating model according to Ross & Weill’s (2006) taxonomy. Individual units of the organization have control of most processes, and management is strongly autonomous. However, the IT strategy of the target organization, as detailed in the next section, has ambitious plans to move the organization more towards an operating model that can be described as one fitting the quadrant of replication, featuring improvement in the areas of operational similarity, standardized data definition and centrally mandated IT services.

7.2 IT Strategy at target organization

The target organization has an IT strategy, first formulated in 2011 but in current form formulated in 2012, that outlines how IT services are produced in the university (case organization, 2013). It outlines the strategy in the following dimensions:

- Demand/Control/Supply. Customers represent the demand for services, supply is represented by producing entities, and control is in the middle and contains the necessary investment lifecycle, governance and metrics in order to link the supply with the demand.
- Short/Mid/Long. The future is represented on three time periods, short being 2013-2015, mid 2015-2016 and long 2016-2020. It should be noted, that in the target organization, 2020 is considered a major milestone in the university-wide strategy.
- Roadmaps, representing a combination of the demand/control/support structures with the future goals.

While the university does not have a procurement strategy comparable to the IT strategy, the IT strategy contains the following implied connections to procurement activity in the university:

- Vendor management and trusted partners are mentioned in Service Development (section 3.1), but without further comment on what this means in practice.
• The Service Capabilities area (section 4.2) outlines the core services provided to the university; whenever applicable, these become targets of procurement unless produced in-house.

• The Enterprise Architecture area (section 4.4) contains the following guidelines for planning (ibid.), which directly control the scope of in-house production, and in case of procured services, the delivery model:
  o 1. Use custom built services or application only when they are university specific.
  o 2. Buy if services or applications are generic.
  o 3. Use cloud for scale and for ease of provisioning.
  o 4. Interoperability is mandatory and based on transparency for core services and applications.

• The People and Competencies area (chapter 4.6) details what can, among other things, be procured from external partners:
  o 1. Application development and implementation of packaged applications (available from software developers and systems integrators).
  o 2. Detailed technology and hardware competences (available from technology vendors and their partners).
  o 3. Detailed competences related to large-scale operations (available from hosting vendors and cloud service providers).

The chapter 4.7 deals with sourcing on a high level, emphasizing that sourcing must be based on strategic needs, and must take into account economic efficiency, ease of use and environmental considerations. To meet these goals, depending on the target of sourcing, the methods employed can include procurement co-operation, direct sourcing of commercial solutions, or customized solutions tailored for the organization (ibid.)

Chapter 6 is dedicated to risk management, focusing however on the risks related to the strategy implementation. Risks relating to e.g. acquisition are simply to be ‘handled as part of standard project management’ without further specification.

The IT strategy of the target organization focuses on laying out a plan to transform the IT service production of the organization by the year 2020. Sourcing, acquisition, and procurement are discussed only as a method for producing services deemed outside the scope of in-house production. Sourcing methods are discussed summarily; vendor management and trusted partners are simply mentioned.

Risks in sourcing (such as vendor lock-in, legal liability, and external regulatory requirements) are not discussed. While the investment lifecycle is discussed in detail, realization, realization of benefits is not discussed.
7.3 Procurement strategy at Target Organization

During the time of the research, there was no organization-wide procurement strategy in the target organization. While all service functions are required to interpret the university-wide strategy and its implication to the individual service units, no separate procurement strategy had yet been written.

As a recent development, the organization has compiled a guiding document, approved by the management in late 2014, mandating the transfer of all procurements to a common unit, and additionally clarifying the roles of the actors present in a procurement project. This development has happened after the case research projects, and coincidentally implements several of the key factors for improvement identified during the case research of this research.

7.4 Introduction to projects

In total, 14 separate procurement projects inside the target organization were evaluated for the possible inclusion as research targets. The following criteria were used to select the cases for research:

- Did the target represent a suitable ICT procurement target?
- Is the case large or unique enough? Was it conducted in a routine manner? What was the scope of the procurement?
- What known challenges were encountered during the project?
- How did they players of the procurement ecosystem (procurer, solution providers, legal help, etc.) interact?

Based on the criteria, three individual procurement projects were selected as targets for the case research part of the research:

**Project 1** was a project to procure a cloud-based platform to support a core process of a service function of the university. While procurement succeeded, the contract with the supplier was terminated soon after implementation. The procurement phase was executed in autumn 2011.

**Project 2** was a continuation of project 1, as it was a re-procurement of the platform. This procurement succeeded, and the resulting system is still in use in the organization. The procurement phase was executed in spring 2013.

**Project 3** was a project to procure an in-house system to support a core process of another service function of the university. This procurement succeeded, but at the time of research, it is still too early to judge the success of the actual procurement. The procurement phase was executed in winter 2012-2013.
In relation to these projects, and the outside reference organizations, 11 people were interviewed in total.

Figure 14 shows the chronological relationship between the three case study projects, and the organizational strategy and IT strategy in the target organization.

<table>
<thead>
<tr>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project #1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Project #2</strong> (continuation of project #1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Project #3</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Organizational strategy</strong></td>
<td>Formed in 2010</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>IT strategy</strong></td>
<td>First iteration in 2011</td>
<td></td>
<td>Second iteration in 2012</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 14. Timeline of project, organizational strategy and IT strategy in target organization.**

Figure 15 shows the sample of individuals by role interviewed in the case study portion. Roles from all levels (strategic, substance, project) level were interviewed for each of the three projects. In addition, 3 roles of strategic level were interviewed outside the target organization to provide a wider context to the topic of strategy.
Figure 15. Selection of interview targets based on role. Individual persons may be in more than one role.
8 Theory generation

8.1 Results of constant comparative analysis

Constant comparative analysis was used throughout the case study interviews as detailed in chapter 6.6. Data acquired from every interview was used as basis for the next interviews.

The quotes presented are reconstructions from interview field notes, and while faithfully representing the message of the interviewee, they are not verbatim.

8.1.1 CCA Focus #1: Project management

The early interviews consisted of project managers related to the case research projects. These interviews revealed numerous challenges in the project management aspects of the case study projects.

This focus was pursued in the next interviews by actively discussing project management issues and their impact on the project deliverables. This pursuit revealed that all projects, to a point, suffered from three project management issues:

- Scheduling issues. Two of the three projects had issues relating to project schedules failing. The stated reasons for these were numerous. Lack of resource commitment was common, as were changing requirements and surprises in the time requirement of individual project tasks.
- Governance and decision-making. Occasionally clear decision and leadership was needed, but governance groups were hesitant to make decisions.
- Requirements engineering. All case study projects included a requirements engineering phase, which revealed dependencies into information security, organizational issues and the market landscape.

The topic of risk management and benefits realization were discussed in the context of each of the three case research projects. While some forms of risk management were used, it was not based on a common framework, but rather done in an ad-hoc manner, seemingly heavily dependent on the individual project workers and their approach to risk management. When risk management
was done, it was done in a traditional mode of 1) identifying risks, 2) analyzing and categorizing their severity, and 3) mitigating risks when possible.

Benefits realization was also discussed in this focus. None of the three projects demonstrated a benefits realization process. Minor forms of benefits definition were practiced, mostly to justify investment propositions, but there was no evidence of a benefits tracking process that would extend beyond the procurement project phase.

8.1.2 CCA Focus #2: Relationship between centralized IT and other organization

The early interviews also revealed a perceived disconnect between the centralized IT in the target organization and the actual units handling the procurement. This disconnect manifested itself in two ways:

- The procuring unit felt in charge of the procurement, and ultimately judged for the success or the failure of the IT solution being procured. This resulted in a perceived power imbalance, where IT was seen only as a consulting body, notwithstanding the fact that the solution was to be delivered to the end users in co-operation with centralized IT.

- The procuring unit supplied the project manager in each case study project. Centralized IT also supplied a role named "IT Project Manager". This role was seen on both sides as mainly looking for the interests of the centralized IT. Depending on the project, this role was either sidelined or had to aggressively pursue inclusion in the project.

8.1.3 CCA Focus #3: IT Strategy and connection to procurement

In the early interviews, each project manager was specifically asked about the relationship of the project with the strategy of the organization. All project managers seemed to describe any strategic connection in an incidental manner. In several cases, interview subjects seemed to deduce the strategic importance of the projects with backwards reasoning.

For this reason, additional people intimately connected with the strategy and the IT strategy of the target organization were included.
They had no detailed knowledge of the individual projects, but had detailed knowledge of the strategy and its implementation in the target organization.

These interviews revealed a contradiction. From the point of view of the strategy makers, the organization had a complete strategy and an IT strategy, and these were actively used in decision-making. Furthermore, they posited that the organization was well aware of the strategy and in general, the staff knew how to take the strategy into account in decisions of importance.

From the point of view of the project workers, strategy was described as a guiding document whose existence was known, but which was not used as a cornerstone in decision-making; most decisions were seen to cater to political will, issues of the day, or simply to consensus of the project workers.

To further explore this topic, two separate but comparable organizations were included in the interviews. People intimately connected with the IT strategy of their organizations were interviewed. A similar disconnect, albeit a milder one, was evident in both organizations.

8.1.4 CCA Focus #4: Organizational and individual learning

The subject of organizational learning was discussed in several interviews. Most subjects clearly demonstrated a desire to learn from past successes and failures, adjusting their approaches in future projects to reflect personal learning from history. However, formal frameworks for organizational learning were modest. There was evidence of structured information sharing based on interest groups, sharing information both electronically and through face-to-face meetings. Best practices were also occasionally shared through e.g. version-controlled boilerplate documents for procurement processes. Knowledge of failures and successes was disseminated in an anecdotal fashion through the interest groups.

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4 Both organizations are mostly public-funded enterprises, whose functions include providing IT services to a large and heterogeneous user group. These interviews did not include discussion of the three projects under research, as the interview subjects had no knowledge of the projects in question.
These structures did not reach everyone actively involved in procurement projects in the target organization.

In the case studies, there was clear and convincing evidence, from multiple sources, that lack of information flow had negative consequences for at least one project outcome. On the other hand, there was evidence of simple learning, where previous failures were used as guidance to improve future outcomes.

8.2 Emergence of theories
During the course of the case studies, four separate theories emerged from the case study data.

8.2.1 Theory proposal #1: Procurement projects are regularly disrupted by project management issues relating to scheduling, resourcing, and requirements engineering, and this is partly because of legal compliance to procurement regulations

Project management is the art of delivering a project to meet its goals in the time and resource constraints originally agreed to. All three cases studied had issues in the scheduling and resource planning aspects. Two of the three projects had issues in the requirements engineering phase, resulting from unexpected complexity.

For scheduling and resourcing issues, no particular reason relating purely to procurement activity was discovered or mentioned. This can be inferred to mean that scheduling and resourcing challenges were not a specific property of procurement projects, but rather a more general organizational issue. However, as noted in several of the interviews, procurement projects usually include tighter constraints than normal projects, especially in relation to legal compliance to official tendering processes. This particularity may result in scheduling and resourcing issues to have a more serious impact on procurement projects as compared to other, IT-related projects.

8.2.2 Theory proposal #2: Procurement of IT solutions in a partly decentralized environment results in power struggles and competing interests – unless organizational structures are adapted properly

During the execution phase of the projects studied, the target organization employed a partially centralized model of managing and producing IT services. This resulted in procurement projects where the business owner of the system being procured was not employed by centralized IT. Roots of this can be deduced from

“We did learn, the hard way.”
Project manager
the IT strategy of the target organization, which emphasizes distributed decision making, obviously intended offload system and service ownership outside centralized IT.

A consequence of this distribution was evident in the case studies: in two of the three cases studied, a severe disconnect between centralized IT and the business owning unit was discovered. As project ownership of the procurement projects was solely in the business owning unit, centralized IT was seen acting mostly in a consultant role. This division of work was further emphasized by centralized IT providing a role titled “IT Project Manager”, whose exact job function seemed to be unclear to most interviewees, including people acting in that very role.

In spite of this, decentralization itself arguably was not the root cause of this competition – it was the way organizational incentives and performance evaluations were built in the organization, in addition to murky role descriptions.

8.2.3 Theory proposal #3: The actual impact of strategy—and IT strategy in particular—is overestimated at the executive level

During two of the three projects, the target organization had completed a strategy process to create an organizational strategy and an IT strategy derived from the former. This strategy outlines the principles on which all services and activities are to be based. From the point of view of executive strategy makers, this strategy was seen as coherent, relatively well implemented and in practice being used in the operation of the organization.

From the point of view of project staff, the existence of strategy was evident, but the practical application of it was not clear. The strategic goals of each project were not explicitly communicated. Decision-making was not seen to be based on strategic needs. Requirements engineering was focused on the market solutions familiar to the project staff, and larger strategic questions seemed to lack emphasis.

8.2.4 Theory proposal #4: Impediments in organizational learning and information flow affect project outcomes

One of the case study projects presented a clear case where a lack of information flow inside the organization affected the end result of procurement. The case involved the knowledge of a simple fact, but the target organization lacked information sharing structures that would have enabled this fact to reach the proper target in a timely fashion. While the case organization had some forms of formal learning and information sharing structures in place, these did not prevent the occurrence of a negative result.
Individual learning was widely present in the projects studied, but the transition, storage and distribution of information from one project to another was not exercised in a structured manner.

8.3 Literature validation

8.3.1 Theory #1: Project management
While common intuition would suggest project management is critical in ensuring project outcomes, the relationship is not absolute (Munns, 1996). Projects fail even with exemplary managerial practices, and may succeed even with the opposite. Regardless, successful project management ensures a solid base on which project activity can occur.

From a project management standpoint, there are several factors affecting public sector IT projects and their successes. Public-sector projects often require complete scope and budget definition from the start, and are more likely to continue even though they have already failed. A natural response to this would be to eliminate complexity as much as possible, but this—along with process simplification—has proven much more challenging than in private sector (Carlton, 2014).

While not fulfilling the requirements of a scientific study, a white paper compiled by Celkee Oy, The Finnish Information Processing Association and The Finnish Software Entrepreneurs Association, details the status quo of procurement of IT systems in Finland (Celkee, 2013). In an online study of 104 respondents, the most critical success factors identified among buyers were resourcing and planning of the procurement project, and communication between the buying and the selling organization. Major crisis factors among buyers included scheduling failures and budget failures. As an online study, the paper suffers from sampling bias—and does not rigorously form an actual theory of the results—but as anecdotal evidence it describes common feelings present in persons exposed to IT-related procurement.

From this it can be clearly seen that project management issues are 1) seen as a common occurrence in public IT-related procurement projects, and 2) there is a relationship between successful project management and successful projects. The theory generated is plausible.

8.3.2 Theory #2: Decentralized IT and decision making
Decentralized IT is a common structure in organizations and from the point of view of the CIO, often seen as a nuisance, a challenge to standards, or as a security risk (Potter, 2013). As by definition decentralized IT is not under a unified command structure, competing interests may become disruptive.
Inside a multiunit organization, individuals and units usually engage in a model of simultaneous cooperation and competition, termed *coopetition*. For example, new skills and knowledge is acquired from other units, but at the same time, units and individuals are competing, as they will be compared to their peers in performance (Tsai, 2002).

It is therefore evident, that any combination of a decentralized IT structure, and organizational models of work that encourage competition, such as performance-based reviews, or financial allocation of resources based on performance indicators of individual units, has the danger of working against processes that attempt to unify IT inside organization, including the execution of strategy and enterprise architecture.

**8.3.3 Theory #3: Strategy**

Most companies struggle with strategy implementation, with failure rates between 60 and 90 percent being reported (Kaplan, 2005). The key factors affecting successful implementation are clear decision structures and quick flow of information (Neilson, 2008). On the other hand, executive groups are prone to erroneous self-assessments of their effectiveness and strategy execution (Schmidt, 2006). This a specialized case of a more common *illusory superiority bias* as described by e.g. Hoorens (1993), which causes most individuals to overestimate things in their normal life, including capabilities, personality traits, and life circumstances.

Literature supports the finding that while strategy *generation* may not be an issue in an organization, successful *execution* is rare. Executives also suffer from biases when evaluating their own effectiveness in executing strategy. It’s therefore plausible to claim that this disconnect more than likely exists – and while this does not necessarily have a connection with project success or failure *per se*, even when successful, projects may not reflect the strategic goals of the organization. When projects are executed without strategic guidance, any strategic advantage is purely coincidental.

The additional interviews conducted outside the target organization further confirm that the observed disconnect between strategy makers and strategy executors is not an isolated phenomena, but evident in other comparable organizations as well.

**8.3.4 Theory #4: Organizational learning**

As explored in chapter 5.3, individuals are usually and independently capable of single-loop learning (adjusting ways of working to achieve a predetermined goal), without organizational encouragement or formal learning structures. However, this
does not extend to organizational learning; coordinating sharing of knowledge is critical to enhancing the capabilities of an organization (Tsai, 2002).

Due to organizational learning in relation to procurement being a relatively unstudied field (see chapter 5.3), there is no direct literature confirmation of the effect organizational learning can have on procurement. The more general aspect of learning in relation to project outcomes can however be theoretically extended to include procurement projects.

It is therefore plausible that the modest amount of formal information sharing and learning structures observed during the case research in the target organization has a negative impact on the capabilities of the organization insofar as they are insufficient to guarantee a suitable level of information penetration.
9 Results and discussion

For the projects studied, the case studies indicate—and in a more general context, the literature validates—that in projects involving public procurement of IT systems, four key factors are crucial:

1) Organizational and project management practices that proactively prevent issues related to scheduling, resourcing, and requirements engineering.
2) Clear governance models that eliminate competing interests and unnecessary competition
3) Formal models of organizational learning that ensure proper information is shared with individuals who need it the most, and
4) An increased emphasis on strategy execution.

The public procurement process, as well as the procurement target being an ICT solution, complicate procurement projects. Inflexibility caused by current national and supranational procurement legislation can be argued to stifle innovation and force public organizations to either attempt to sidestep the boundaries or spirit of law, or to comply with unnecessarily rigid regulation.

From a qualitative viewpoint, human beings are adept in adapting to the rules—written or unwritten—of any system they are currently part of. This, along with numerous cognitive biases fundamental to the human mind, results in behavior that may be counterproductive to reaching a common goal. It can be argued that most structured activity models, including risk management, benefits realization and project management, are fundamentally attempting to create a system to encourage behavior that is seen as beneficial to the organization as a whole.

Insofar as this study provides a glimpse into the workings of a single organization at a set point in time, it shows that like any project, a procurement project is a complex interplay of individuals and priorities, and contains unpredictability and dynamicity far beyond most simple projects. The dedication and well-intention of each individual working in the projects studied became clear through the case interviews, but as shown, this does not alone guarantee a positive project outcome.

From an academic point of view, it is partly disheartening to witness the significant gaps in the scientific body of knowledge regarding some of the key relationships between activities discussed in this research. While individual methodologies of benefits realization are somewhat developed, a holistic view into the actual application of the methods is lacking, leaving individual organizations to find their own solutions in a best effort sense. Equally, the recent evolution of procurement into a more lifecycle-focused activity is somewhat accepted in the private sector, but the unavoidable challenges it poses for public sector remain unaddressed.
Regulatory frameworks of national and supranational entities such as the European Union have failed to address this issue, leaving individual entities to develop their own best value frameworks.

From a strategic point of view, the challenges of strategy development and execution are well known in all organizational sectors, and it does not come as a surprise that similar problems exist here.

9.1 Limitations of results

9.1.1 Limited scope
This qualitative research focused on three projects, with some overlap of personnel between the projects. While the inductive nature of qualitative research is fundamentally different to that of quantitative research, it should not be forgotten that the results described in this research are based on the three cases studied, and an extension of the theoretical basis formed from a study of relevant literature.

From a topical dimension, the topics discussed during case research were also intentionally limited. Because of this, there may be additional explaining factors behind project success or failure that fall outside the scope of this study. Such factors can be, for example, the competencies of project personnel, the quality of requirements engineering, or individual selections in project management methodology.

9.1.2 Fallibility of human recollection
A challenge of qualitative research is the relativity of the human experience, and the dynamic state of memories. Human memory can be divided into episodic memory (concerning autobiographical events an individual has experienced) and semantic memory (concerning the organized knowledge of symbols, their meaning and relations). Especially episodic memory is susceptible to deterioration, and the mere act of memory retrieval may cause this (Tulving, 1972). As time goes by, recollection of past experiences changes, and future events may affect the recollection of earlier ones.

Of the three case study projects, chronologically the first one was completed several years ago. This was evident in the case interviews, as the participants’ recollection of the project was at times incomplete. A common feature of the human memory was witnessed in the interviews: factual data (names, numbers) was easily forgotten, but the feelings and the experience was still vivid. It should not be however mistakenly assumed that a lucidity of memory is evidence of its accuracy: memories of feelings can be distorted as easily as memories of factual data.
In addition to lapses in memory caused by forgetting things, another danger in recollecting past events is the interpretation of actions of other persons. As humans tend to interpret individual actions in a wider context, which should usually be coherent, this interpretation can change based on later events. For example, a person seemingly acting in an inconsiderate way can later be exculpated by providing additional information about the background of the person, and this addition can change the recollection of the original event.

The same situation may occur with organizational changes. If people are suddenly more exposed to each other, for example after having been assigned to the same work group after a reorganization, their reciprocal knowledge of each other’s behavior and world view increases, and this provides a different basis on which to judge the actions of the person.

9.1.3 Methodological issues and researcher bias

As the qualitative research method—and grounded theory in particular—present heavy demands to the researcher, the question of researcher bias cannot be evaded. The grounded theory method relies heavily on the capability of the researcher to approach the subject with a tabula rasa mind, but at the same maintain some preconceived model of the subject which can be used as a neutral help in the form of theoretical sensitivity. Not only is this undoubtedly impossible, but the illusory superiority bias as mentioned in chapter 8.3.3 causes most individuals to overestimate their capabilities for qualities such as neutrality. As semi-structured case interviews are a complex interaction between the researcher and the subject, both the subjects and the researcher may be affected by researcher bias. Conscious or unconscious presuppositions may color the data and the end results.

As this is a fundamental cognitive bias, it cannot be disregarded, only recognized and mitigated through a rigorous scientific process, upon which this research has been built on.
9.2 Open questions

The following contains discussion about important questions that were left unanswered in the course of this research due to constraints in scope.

9.2.1 Strategy execution

An important question is that of successful strategy execution. Based on the information gathered in the interviews, none of the case studies demonstrated strong strategic drive. This means that the question of strategy execution could not be examined qualitatively. Expanding the case study pool into strategically successful and strongly driven projects would answer questions regarding the effectiveness of different strategic tools.

9.2.2 Project management

Another question is that of details of project management and their explaining role in success and failure. While occasional mentions of agility surfaced in the case interviews, all case study projects were fundamentally done in a traditional waterfall model of project management.

A traditional waterfall model of project management is a non-iterative, linear process with a definite beginning and end. Literature has linked the waterfall model to multiple serious issues in project management, including high effort and cost, reduced responsiveness to change, management of requirements, and quality problems (Petersen, 2009).

Considering the dynamic environment and the constantly changing requirements often present in IT procurement projects, novel methods such as agile project management may present a solution to some of the challenges being faced in projects. Expanding the case pool to include different project methodologies would have shed light on the issue.

9.2.3 Organizational structure

A third question worth answering is the relationship between organizational structure and project outcomes. While the partially centralized IT environment had an effect on the interaction between project workers, all case projects were done in an essentially similar organizational structure, which raises the question of how structures can impede or enhance project outcomes. Would a completely separated sourcing function prove advantageous? How about a completely assimilated function, with substance specialists handling procurement as well?
9.3 Final remarks

As ICT projects have a general and industry-wide tendency to fail, expectations for a public ICT procurement project—especially a large one—often reach comical lows. Not only do these spectacular failures slowly dismantle the promise ICT at least once held as a societal revolution agent, but from a financial standpoint they represent enormous waste of public funds.

There is hope, though. New ways of working, such as public partnerships and agile procurement, have promise. Governments are slowly drafting rules and recommendations for benefits management, life cycle costing and in general, a more holistic approach to procuring ICT. Slowly letting go of a historical mindset of procuring physical things, to be compared with a ruler and a scale—while trying to force suppliers to compete against each other on price alone—takes time.

What can be said for a single change agent trying to do his or her best in a public organization? Regulations (and the spirit thereof) cannot be violated, but many healthy practices, such as risk management, benefits realization and organizational learning are independent from regulation, and can be taken advantage of immediately.

Technology, and ICT in particular, is merely a tool, though. For centuries, technology has removed obstacles, created novel ways of working, and transformed society. It’s up to everyone to make sure it stays that way.

“Technology is nothing. What’s important is that you have a faith in people, that they’re basically good and smart, and if you give them tools, they’ll do wonderful things with them.”

10 References


## 11 Appendix 1: Interview template

The following is the general interview template used in the interviews. In individual interviews, certain topics were explored deeper than others. In some interviews, some topics were skipped as they were not applicable to the scope of the interview.

| Personal project viewpoint | Were you affected by external influences, such as other organizational units, solution providers or other actors? Were you pressured to act in a certain way or to make a certain decision? Were any hidden motives suggested during the project? Did you eventually care about the outcome of the project? What was your incentive in the project? Did your organizational unit benefit from the success of the project? How did the commitments, alliances or other limiting factors of the organization shape the project and its specifications and requirements? What were the 2-3 key decisions during the project? What information were the decisions based on? How fast were the decisions made? How was everyone informed of the decisions? How were decisions in the project actually made? Who had the official power, and who really made the decisions? Did the experience of the project change your approach to similar future projects? Given the chance to go back in time, what would you have done differently during the project? |

<p>| Risk Management (see chapter 5.1) | What risk management practices were used in this procurement project? Who was responsible for the risk management? What were the risks identified in the course of the project? Did any risks actualize? Considering the result of the project, what impact would deeper risk management have had? |</p>
<table>
<thead>
<tr>
<th><strong>Investment life cycle and benefits realization (see chapter 5.2)</strong></th>
<th>Was the intended outcome of the project made explicit at the start of the project? Was it adjusted during the project?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Was the criteria for evaluating the results of the project decided at the start?</td>
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<tr>
<td></td>
<td>What changes, if any, did the results of the project cause in the organization?</td>
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<tr>
<td></td>
<td>Is there any follow-up evaluation planned for the ended project?</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th><strong>Procurement and organizational strategy (see chapter 4.3)</strong></th>
<th>Where do you place procurement as an activity inside the organizational structure? [interactive demonstration]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Do you know what strategies, if any, applied to this project and to your work in general?</td>
</tr>
<tr>
<td></td>
<td>How was strategy used in the course of the project?</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th><strong>Organizational and personal learning (see chapter 5.3)</strong></th>
<th>How would you describe how actively your organization seeks knowledge, let it be from outside environment or from itself?</th>
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<tr>
<td></td>
<td>How would you characterize your organizations’ view of the environment? Stable or dynamic? Why so?</td>
</tr>
<tr>
<td></td>
<td>How do you go about solving problems in the course of your duties and projects?</td>
</tr>
<tr>
<td></td>
<td>How often do you question the goals you are trying to reach in your duties and projects? How do people react when you question the goals? Did you question any goals during the course of this project?</td>
</tr>
</tbody>
</table>