Higher IT controllability by introducing a sourcing plan for IT Operations at the Dutch Railways

Master thesis

Pim van der Toolen

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Unrestricted version

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Master Thesis Pim van der Toolen

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II. Management summary

1.1 Motivation

IT Operations and C&LM currently exist for two years, both arose from the centralization of different decentralized IT departments. Every former department had their own way of working, suppliers and contracts. Currently, there is no clear centralized IT policy within C&LM on how to select suppliers, manage them and judge them based on their performance. C&LM would like a sourcing plan that functions as a guideline to make the choice for specific suppliers; knowing which units of work should go to which suppliers. This plan should also support ways to manage and judge suppliers based on their performance.

1.2 Recommendations

C&LM should adopt the sourcing plan that this research has produced (appendix 10.1). This sourcing plan consists out of 26 guidelines that can be used for the sourcing questions IT Operations has. These guidelines are spread over different portfolios: a domain, a services, a supplier and a performance portfolio.

1.3 Argumentation

The guidelines contribute to a higher maturity of the core process of C&LM and letting the business units know this core process in order to have a better and deeper collaboration with them. The second contribution is that to the relationship of C&LM to the outside world: the suppliers. When the guidelines are followed, it will result in a better supplier portfolio and a higher maturity of C&LM with all the benefits that comes with it.

1.4 Consequences

When followed, the guidelines have the effect that processes regarding contracts are made more explicit and transparent towards the business units and between C&LM and concern procurement. The business units are also getting unburdened by showing them what C&LM can do for them, what the positive results are and where C&LM and all the sourcing rules can be found, including all the decisions made about what supplier does what. This will remove a lot of uncertainty and ambiguity as to why decisions are made. IT Operations will also have less strategic suppliers and more performance and development suppliers by carefully considering *what kind of* supplier is needed for every piece of work / system / activity.

III. Preface

In the last six months, I did my master thesis at the Dutch Railways. In this time I learned a lot about sourcing, sourcing strategies, IT governance, supplier landscapes, etcetera. But also what it feels like in a large public company that supplies a big need for the entire Dutch society: transporting people to and from work, to their friends and families, tourists that go on holiday or domestic people going on their vacation via Schiphol. This has been a great experience and I know I will benefit from it my entire career.

My time at the Dutch Railways was a good one and I would like to thank everyone at C&LM for quickly accepting me in the group and always being interested in my work. I had a great time with some interesting discussions and lots of laughter. Next to the employees of C&LM I would like to thank Eric, Pascal and Hilda for being my supervisors and giving me valuable feedback during my research and always quickly responding to my questions, even with the busy schedules everyone has. Last but not least I would like to thank Sandra, a good friend who helped me through all the fun and difficult times by providing feedback and fresh insights on the problems I encountered during my research. I hope can return the favor during the remainder of her master thesis.

The result of this thesis is a sourcing plan for Contract & Suppliermanagement of IT Operations. This sourcing plan will hopefully help them in growing in their profession and let them continue their work in selecting the best IT suppliers for NS Reizigers. I hope you like reading this thesis and that C&LM will benefit from all the work that has gone into it.

Pim van der Toolen

1 Introduction

1.5 The organization: Nederlandse Spoorwegen

In 1765 the steam engine was invented which leaded to the first train only a few years later. In 1835 the first railroads in the Netherlands were built between the cities of Amsterdam and Haarlem. These cities were most important for trade in those times. The railroads expanded and in 1917, during the first world war, they proved to serve an important strategic military purpose which lead to a domestic significance of the railroads. In that year a community with common interest between two parties was founded as a national entity; its name was Nederlandse Spoorwegen (Dutch Railroads, from here on referred to as NS). The railroads continued to expand until the 1960's. At that time the car became affordable for the average consumer and the NS struggled for their share in the transportation market. After a successful 'rescue operation' in 1970 they managed to grow again. It became a private company in 1995, where it was a national entity beforehand. Currently, the NS focusses on international transport of people, comfortable journeys, appealing train stations and reducing its carbon footprint. (Nederlandse Spoorwegen, 2013)

The Dutch railroad infrastructure is managed by a separate company: Prorail. The NS is allowed to use it among other carriers of people and goods. The Dutch railroads belong to the most busy networks in the world: only Switzerland and Japan are busier. In relation to the population of the Netherlands, it is one of the most dense railroad networks in the world (CBS, 2009) (Treinreiziger.nl, 2010).

1.5.1 IT Operations and C&LM

The NS consists of five divisions: Nedtrain, NS Highspeed, Abellio, NS Stations and NS Reizigers. The latter one is split up into multiple divisions as well, one of them is Transportation, which has an IT-Operations department. The organizational chart of IT-Operations is shown in figure 1. This research takes place in the Contract & Leveranciersmanagement department (C&LM), shown in orange.

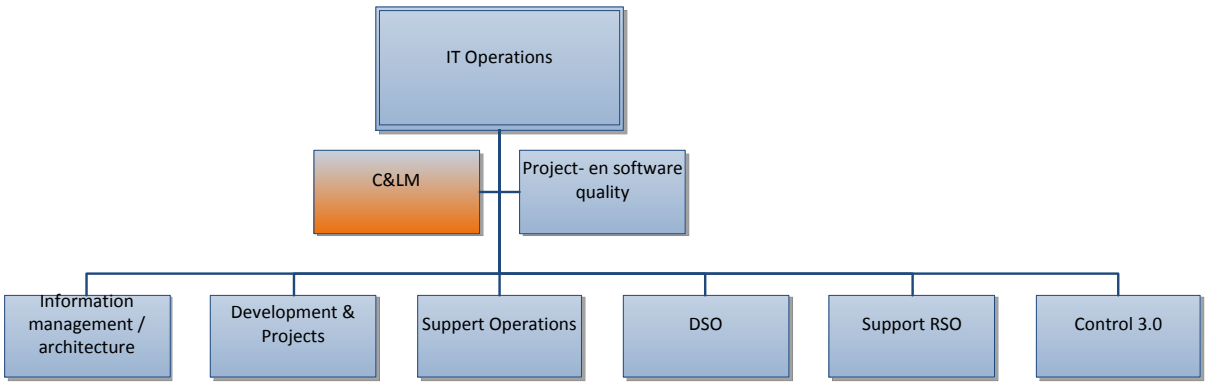

Figure 1 - Organizational chart of IT-Operations

IT-Operations was formed in early 2011 after realizing that the situation before that was not in the best interest of the NS; within NS Reizigers, the IT departments were decentralized which resulted in numerous problems:

- No central coordination regarding IT purchases.
- The application landscape was large and fragmented.
- Maintenance was not focused on the entire application chain but only on individual systems.
- Licenses were bought seperately on lower department levels of NS Reizigers and thus not profiting from volume licensing.
- There were no global IT goals.

Now, two years later, there is a clear vision, mission statement and specific goals: stable IT systems, transparent and controllable costs, predictable projects and using IT as a strategic instrument. C&LM assists with achieving these goals by being responsible for the supplier selection process for all the underlying departments.

1.6 Research approach

1.6.1 Terminology

In order to have clear what we are discussing we need to define three basic concepts used throughout this research. We are going to talk about a sourcing plan, as-is and to-be situations. Three definitions that can be interpreted differently depending on the context and the interpreter. To avoid this, we use the following definitions in this entire research.

Sourcing plan: The result of this research comprising of 26 guidelines. These guidelines are on different levels; some are strategic, some are more on an operational level.
To-be situation: A desired situation regarding the IT-policy based on literature and best practices.
As-is situation: The visions, goals, current IT-strategy and core processes of C&LM. This is used as a starting point for the to-be situation.

A visual representation clarifies the connection among these three terms, see figure 2. The circle represents the need to constantly evaluate, improve and revise the sourcing plan because of the constantly changing organization and its environment.

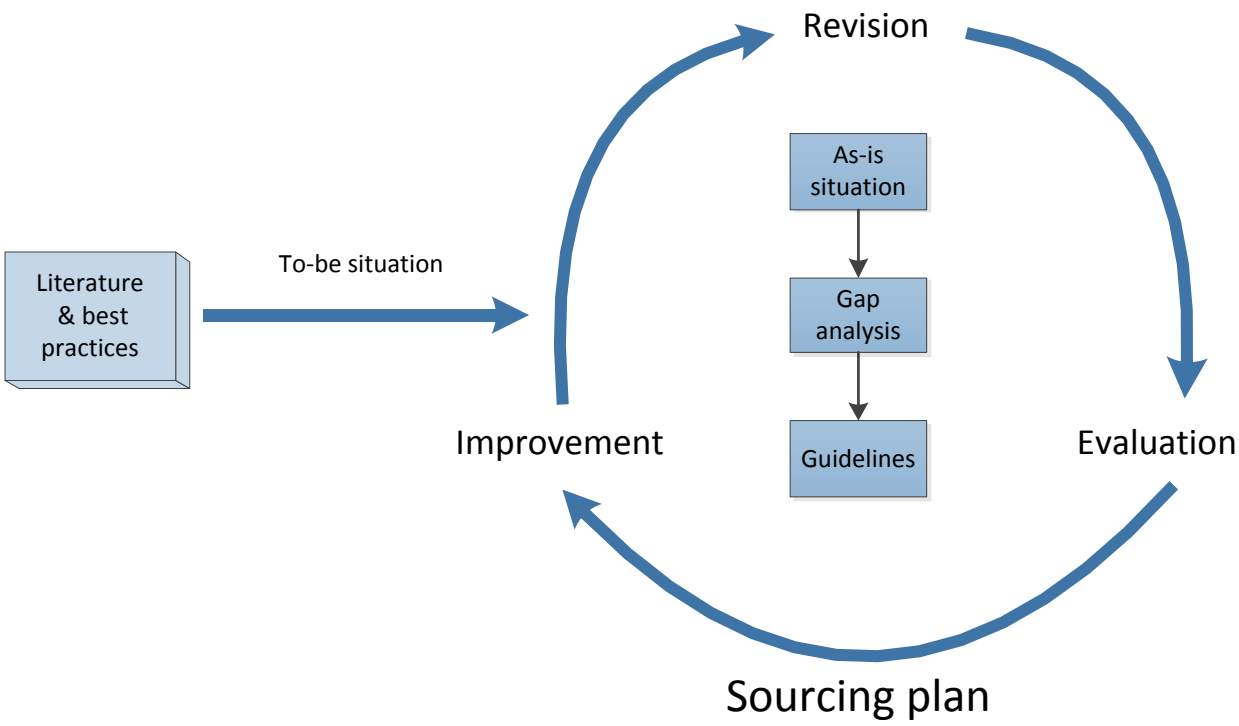

Figure 2 - Terminology and their connections

1.6.2 Problem statement

IT Operations and C&LM currently exist for two years, both arose from the centralization of different decentralized IT departments. Every former department had their own way of working, suppliers and contracts. Currently, there is no clear centralized IT policy within C&LM on how to select suppliers, manage them and judge them based on their performance. The main goals of C&LM are managing the portfolio of contracts and suppliers of IT Operations and to monitor and manage these suppliers.

The absence of this IT-policy gives the NS a disadvantage. Suppliers are having a very easy job to maintain the NS as their customer since the mechanisms to control those suppliers are not 'in place'; there is no performance driven obligation and triggers to perform better are nonexistent. This results in a monopoly position for the suppliers: all the knowledge lies with the suppliers and not at NS. This results in vendor lock-in's and it makes is very difficult for NS to switch suppliers if they want to.

C&LM would like a sourcing plan that functions as a guideline to make the choice for specific suppliers; knowing which units of work should go to which suppliers. This plan should also support ways to manage and judge suppliers based on their performance. Already domains and axes are thought of to divide suppliers over the available work and processes that are present at IT-Operations. The growth and maturity of the control of internal processes is also under evaluation.

C&LM wants:

- a portfolio approach regarding sourcing.
- to have clear guidelines for decision making regarding sourcing.
- to have a high IT controllability.
- to have lower costs.
- to have performance measurements for suppliers.
- to improve their internal control
- to improve their external control (towards suppliers)

1.6.3 Scope

To define a controllable scope, we use the engineering cycle, developed by R.J. Wieringa. (Wieringa, 2010-2011) This cycle consists of five steps from the investigation of a problem to the evaluation of the implementation that mitigates that problem (table 1).

Problem investigation	What is the problem?	
Treatment design	Which treatment alternatives are available?	
Design validation	How well are they justified?	Design cycle
(Design choice)		
Design implementation	Transfer to practice	
Implementation evaluation	How well did it solve the problem?	
		Engineering cycle

Table 1 - Engineering cycle (Wieringa, 2010-2011)

The problem investigation has already been done by C&LM itself. Now, a treatment needs to be designed and validated. Those two are explicitly part of this research; the sourcing plan will be the designed treatment and the validation consists of two parts: the literature rationale and the validation rationale of this research. What treatment is the best (the design choice) is also within the scope but the implementation and the corresponding evaluation are not.

A more in depth demarcation regarding the scope of this research and where it should focus on comes from within the NS regarding the (functional) application management. There are four layers:

Functional management	Application management	Technical application management	Technical management
• **Functional user support** • **Management of organizational data** • **Specifying functionality**	• Changing the code in applications • Functional maintenance • Preventive, corrective and perfective maintenance	• Deployment of changes in the application • Monitoring the availability of applications and databases • Technical optimizations	• Managing and support of technical infrastructure (servers, network, etc) • Monitoring the availability of technical infrastructure

Table 2 - When is something FM / AM / TAM / TM?

The scope of this research focusses on the application and technical application management, the functional management and technical management stays in-house according the strategy of the NS.

1.6.4 Goal

The goal of this research is compose a sourcing plan for the Contract & Supplier management (C&LM) department by analyzing their current situation regarding this subject, drafting a preferred to-be situation, combine this with best practices and apply this to-be situation at the current situation at C&LM in order to design a desired situation. This plan will provide improvements on both the strategic and the governance level.

1.6.5 Structure

The structure of the research is shown below and follows the technique by Verschuren & Doorewaard (Verschuren & Doorewaard, 2007).

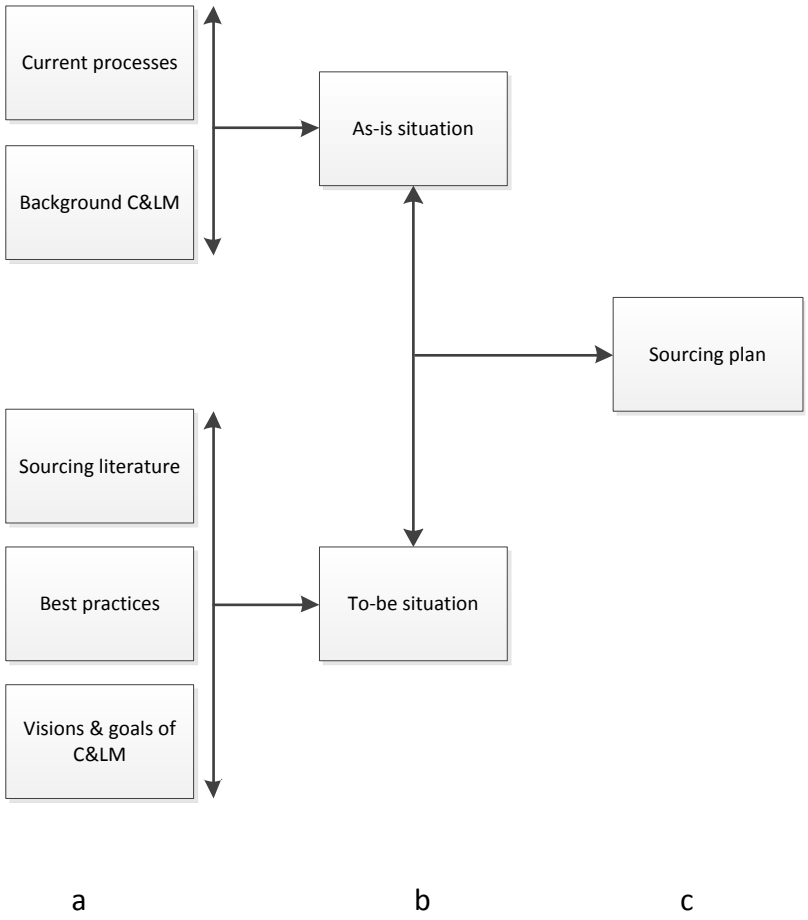

Figure 3 - Research Structure

The model can be formulated as follows:
(a) By analyzing the current processes and the background of C&LM and looking at both the literature about sourcing and best practices regarding sourcing together with the visions and goals of CLM we derive (b) the as-is and the desired to-be situation. (c) The confrontation of these two with each other result in a sourcing plan for C&LM.

1.6.6 Research questions

Central question 1: How can we describe the current sourcing situation of Contract- & Leveranciersmanagement?

1.1 What is the background of C&LM?
1.2 What are the vision and goals of C&LM?
1.3 On the basis of what strategy does C&LM work now?
1.4 What are the core processes of C&LM?
1.5 With what other units (people, business units, departments) does C&LM work?

Central question 2: What is the desired to-be situation for Contract- & Leveranciersmanagement?

2.1 What is IT-governance?
2.2 What is IT-sourcing?
2.3 What existing models and frameworks exist for IT sourcing?
2.4 What are best practices regarding sourcing?
2.5 Which of these models and practices can be applied on C&LM?

Central question 3: What is the needed / recommended sourcing plan for Contract- & Leveranciersmanagement?

3.1 What is a sourcing strategy?
3.2 How does C&LM goes from the desired to-be situation to a sourcing plan?
3.3 What needs to be considered when implementing the new sourcing plan?

Central question 4: What is the validity of this research?

4.1 What is the internal validity?
4.2 What is the outcome validity?

1.7 Research methodology

The abstract version of the research methodology is shown in table 3. This is the high level ratification of how we will answer the central and sub research questions. More details can be found in chapter 2.

(Sub) research question	Methodology
CQ1	Interviews, study of existing documents
SQ1.1	Interview with manager of C&LM, study of existing documents
SQ1.2	Interview with manager of C&LM, study of existing documents
SQ1.3	Interview with manager of C&LM, study of existing documents
SQ1.4	Structured interviews with employees of C&LM, study of existing documents
SQ1.5	Structured interviews with employees of C&LM and other units, study of existing documents
CQ2	Literature research
SQ2.1	Literature research
SQ2.2	Literature research
SQ2.3	Literature research
SQ2.4	Literature research; external company
SQ2.5	Structured interviews with employees of C&LM, literature research
CQ3	Interviews with C&LM manager, literature research
SQ3.1	Literature research
SQ3.2	Interview with C&LM manager, literature research
SQ3.3	Interviews with C&LM manager and other business units that work with C&LM
CQ4	Literature research regarding design science

Table 3 - Research methodology

2 Methodological justification

In table 3 we briefly stated what kind of methods we will use to find the answers to the research questions. In this chapter we justify how those methods will be used.

2.1 Literature Research

In order to find and acquire all the needed literature for this research, three search engines were used. The first two are Scopus and Google Scholar. They complement each other when it comes to accessing specific articles. The third one is the 'regular' Google to find less scientific articles since we were looking for as much best practices as possible to complement the scientific research.

2.2 Interviews

In order to acquire the information we needed, different interviews were held. For the as-is situation and to understand the relationships between the business units and C&LM, we interviewed numerous managers / employees of IT Operations. For the to-be situation we were looking for best practices out of the industry and therefore invited a manager from Sogeti to share their experience and knowledge on this matter with us. The interviews themselves were semi-structured interviews. This means that the questions are of a steering nature but not exhaustive: there was room for new ideas and questions based on what the interviewee responded.

2.2.1 As-is situation: IT Operations employees

The service manager of C&LM was interviewed first, discussing which business units have contact with C&LM regarding sourcing questions. In this interview, it became clear that some business units tend to work around C&LM and that there is often room for improvement in the relationship between them. This interview provided input for questions which should be asked in the later interviews with the business units.

After this interview, each business unit that works with C&LM was approached for an interview regarding their relationship with C&LM to find out why they sometimes work around C&LM and how they regard their relationship. Most of the time a senior or manager was the interviewee. The interviews (except the first one with C&LM) revolved around three questions:

1. How does your business unit regard the relationship with C&LM?
2. At what point in the process of supplier selection do you initiate contact with C&LM?
3. What do you think of the Shared Service Center (SSC)? Can it be regarded as 'just another supplier'?

The latter question or its corresponding answer was not always found to be relevant (some stakeholders do not work with the SSC) so it is omitted in some interviews.

2.2.2 Best practices: Sogeti

Our interview with Sogeti was with the portfolio manager of mobile solutions. In the past, he had a lot of experience with sourcing questions. The questions in this interview revolved around the following subjects:

1. How can an organization prevent vendor lock-in?
2. How to divide your architecture and relevant pieces of work to put in the market?
3. Where should you begin your sourcing efforts in order reach your objectives?
4. What questions do you need to ask yourself to find out what kind of suppliers you need?

After the interview, the best practices regarding sourcing were written down in section 3.9.2.

2.3 Rietveld questionnaire

In section 4.6 we try to identify the current landscape of suppliers using the model of Rietveld (Rietveld, 2009). We do this by using a questionnaire that is based on his model. The setup is described below.

Rietvelds model has two dimensions: *financial and / or business impact* and *vitality for the business model and influencability*. We set up the specific questions in such a way that they measure a specific dimension in order to make it easy to analyze. This questionnaire was then sent to the service delivery manager of the support RSO business unit and the ICT-manager of IT Operations. For every question, the respondents were allowed to fill in an answer that between 1 (strongly disagree / barely) and 5 (totally agree / a lot). For the financial impact, a spend analysis per supplier of IT Operations was arranged that came from the concern procurement department.

	Question	Rietveld dimension	Possible answers
A	Number of applications that this supplier maintains / delivers.	Business impact	
B	What kind of service do we get from this supplier?	-	FB / AB / TB / knowledge / etcetera
C	What is the relationship we have with this supplier?	-	Fighting, cooperation, etcetera
D	This supplier is a good partner to work with.	Influencability	1 (strongly disagree) - 5 (totally agree)
E	This supplier keeps to his agreements.	-	1 (strongly disagree) - 5 (totally agree)
F	Supplier has a goal to make the NS stronger and less dependent.	Influencability	1 (strongly disagree) - 5 (totally agree)
G	How dependent is the NS on this supplier?	Vitality	1 (barely) - 5 (a lot)
H	The applications of this supplier are of strategic importance to the NS.	Business impact	1 (strongly disagree) - 5 (totally agree)
I	This supplier takes care of business critical applications within the NS.	Business impact	1 (strongly disagree) - 5 (totally agree)
J	Total costs for this supplier per year.	Financial impact	Euros
K	It is easy to replace this supplier.	Vitality	1 (strongly disagree) - 5 (totally agree)

L	Other suppliers can easily take over the products / services from this supplier.	Vitality	1 (strongly disagree) - 5 (totally agree)
M	It requires special knowledge to maintain / develop the applications of this supplier.	Vitality	1 (strongly disagree) - 5 (totally agree)

Table 4 - Questionnaire Rietveld model

The answers from the respondents can be found in appendix 0. These answers are input for the graph in section 4.6.2 (supplier landscape of NS). Next, we want to plot these answers in a graph in order to segment the different suppliers in the Rietveld model. Rietveld himself doesn't supply any formulas so we had to create them using our interpretation of his book. The letters A through M in the formulas correspond to the rows in table 4. The formulas are set-up so that the final values will lie between 1 and 10 for scaling purposes. We did this by looking at the maximum and the minimum value the outcome could have and modified the formulas in such a way that these would lie between 1 and 10.

$$X = \frac{(D + F + G + K + L + M)}{6 \cdot 2}$$

The position of a supplier on the X-scale is determined by computing the average of the answers that say something about the vitality and influencability. The multiplication by 2 is for scaling.

$$Y = \frac{\frac{J}{Sum\ of\ all\ entries\ in\ row\ J} \cdot 10 + \frac{H + I}{2 \cdot 2}}{2}$$

The Y-position of a supplier measures the financial impact and the business impact. Using row J, we calculate the cost share of that supplier relative to all the suppliers combined. The second part of the numerator measures the average of row H and I (business impact). The multiplication by 2 and the plus 10 are for scaling. Then, both the business impact and the spend are averaged by dividing everything by 2.

$$Z = percentage\ on\ total\ spend\ of\ IT\ Operations = \frac{J}{Sum\ of\ all\ entries\ in\ row\ J} \cdot 100$$

The last dimension is the size of the bubble in figure 23. This is not something that is included in the Rietveld model but something that we think makes the graph clearer. It is the financial impact relative to all suppliers: it makes it clear what the big and small suppliers are in a glance.

The question arose what would happen if we used other numbers for scaling, if that would significantly influence the graph and thus our conclusions. We experimented with this by changing the numbers but found out that this yielded no significant change. The suppliers would shift around a bit but they stayed relatively the same to each other. And again, this model is mostly meant to start the discussion in the organization so it wouldn't mind if one or two suppliers are a couple of millimeters on the left or on the right of a specific line.

2.4 Maturity models

The term maturity relates to the degree of formality and optimization of processes, from ad hoc practices, to formally defined steps, to managed result metrics, to active optimization of the processes (Wikipedia, 2013). There are five levels within the maturity models (Bowen, 2009):

1. **Initial:** This is where all new processes start. Processes are chaotic and often ad hoc.
2. **Repeatable:** This happens when a company has developed a process to produce repeatable outcomes.
3. **Defined:** At this point, the process is defined and has been chosen as a standard business process.
4. **Managed:** Someone manages the process according to metrics defined during stage three.
5. **Optimized:** The management procedure includes process optimization.

When the organization scores low on a specific maturity practice which is essential for implementing the sourcing plan, that practice needs to be addressed in the roadmap with practical steps in order to succeed with the plan. Another benefit of a maturity model is to withhold the organization to jump too far and only move forward one step at a time thereby carefully planning resources along the way.

There are a number of maturity models, the most known is the Capability Maturity Model Integration (CMMI) model (CMMI Institute, 2013). It was developed by the Carnegie Mellon University in the nineties and has had a couple of revisions in the years after. Another model made by the same university is the eSCM (eSourcing Capability Model) (ITSqc, 2006) which is specifically for the (sourcing) relationship between clients and their suppliers. For each side of the relationship, there is a specific model, both are consistent, symmetrical and complementary with each other. eSCM has more or less the same maturity levels as CMMI but links each of them to good practices in the area of sourcing. The client version has the following maturity levels:

1. Performing Sourcing
2. Consistently Managing Sourcing
3. Managing Organizational Sourcing Performance
4. Proactively Enhancing Value
5. Sustaining Excellence

SURF Sourcing Maturity Model

Both the CMMI and eSCM are complex models and it can take quite a long time for an organization to assess its maturity using them. SURFnet is therefore developing an alternative which is more lightweight and more pragmatic (Bakx, 2012). This SURF Sourcing Maturity Model (SSMM) is a simplified, lightweight version that can be used for a self-assessment. It is based on existing maturity models like CMMI and eSCM. The model doesn't pretend to be a complete one, rather it tries to initiate the internal dialog about sourcing maturity. The model isn't finished yet, but in cooperation with SURF, we were allowed to test it within the NS environment.

The model describes 25 aspects of sourcing maturity divided into five phases, depicting the entire sourcing process. The five phases are:

1. Preparations and preconditions
2. Needs assessment
3. Market research and decision making
4. Supplier selection
5. Control and evaluation

For each of the aspects a maturity level is assigned by the respondent. The average scores per phase are then plotted in a radar diagram to supply input for maturity enhancing measures. We approached C&LM, concern procurement and the managers of the business units underlying IT Operations. We got responses from four different people. While it would be ideal to get more respondents, because of the nature of the current ones (managers with lots of experience) we believe it is enough to give a good starting point. In section 4.7 we apply the model to IT Operations.

2.5 SWOT analysis

Different literature sources are suggesting a SWOT analysis to identify the strengths, weaknesses, opportunities and threats of / to the sourcing plan in order to give a good representation of the as-is situation and assist in the creation of 'bridging the gap' between *as-is* and *should*. It is important to define the subject of a SWOT analysis before starting it; for this research there are two possible possibilities:

- C&LM: this way we can look at how the plan can be brought across to the employees of IT Operations, how it should be implemented, etcetera.
- The sourcing plan itself: here we can identify potential threats to the plan and use them to make the sourcing plan stronger by mitigating them in advance. It is also a good way to see what the employees of C&LM think of a sourcing plan and what is can do for them.

Because the second option will yield the most usable results for our research, we chose that as a subject for the sourcing plan. The external environment was identified as IT Operations and its suppliers; the internal environment was C&LM.

Almost all the employees of C&LM attended the SWOT-workshop we organized for them. We started by explaining what the sourcing plan is intended to do so the participants could get a good idea of what the workshop was about. Then, every quadrant was discussed (strengths, weaknesses, opportunities and threats) and the participants would give their opinion about the quadrant and the sourcing plan. At the end of the workshop, the participants were asked to identify up to three aspects per quadrant that they found more important than others. This prioritization makes it easier to select aspects to address in the sourcing plan because of their cost / benefits impact (such as time constraints in the organization). The results of the SWOT-analysis can be found in section 5.1.

2.6 Gap analysis

Our goal is to produce a sourcing plan with practical guidelines for the NS that are based on a theoretical foundation and the current situation. We therefore compare the as-is and to-be situation with each other in order to analyze what these guidelines should be. An example is the supplier landscape: we use the theory of Rietveld of what such a landscape should look like in a normal, healthy organization and we use our as-is situation to describe the landscape of the NS. By comparing these with each other, we can form a guideline that helps the NS from going to their current landscape to a more mature one.

Parallel to the to-be situation, we use the maturity model and the SWOT-analysis as input for the gap analysis. The maturity model identifies specific practices to improve in the organization and the SWOT is used to identify possible threats and opportunities for the sourcing plan. In figure 4, this is visualized.

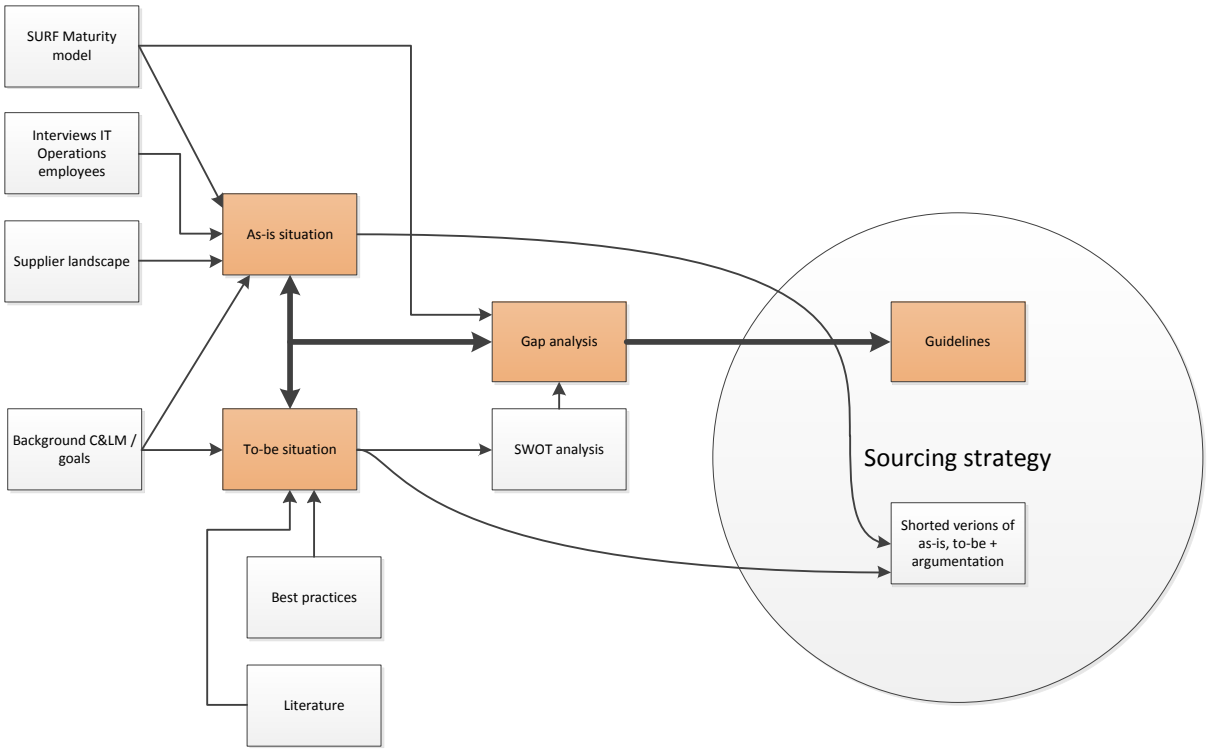

Figure 4 - How the gap-analysis follows in the sourcing plan

3 Literature based 'to-be situation'

In this section we seek to find models and / or frameworks that can help us with the sourcing questions of the NS. How do we select suppliers? How do we keep grip on them? How do we measure performance? What kind of questions do we need to ask ourselves in this process? In section 3.1 and 3.2 we define IT sourcing and IT governance. In section 3.3 we describe what a sourcing plan is and in 3.4 we see how such a plan should be introduced. Then we describe the three global levels of sourcing an organization can has and in section 3.6 we identify the questions that need to be asked in the sourcing process. In 3.7 we regard the portfolio approach to sourcing and in 3.8 we regard different templates for a sourcing plan. In section 3.9 we look into best practices that are found in literature and an external company.

3.1 What is IT sourcing?

It is not our intention to present a full systematic literature study, which is too much work within the timeframe of this research. Instead, we want to give an overview of IT sourcing.

Before 1995, outsourcing was primarily a tool to lower IT costs and it was not recommended when external IT was more expensive or when the in-house supplier could achieve similar results without a vendor's help. Now, the term is being used for all kinds of external procurement decisions (Cronk & Sharp, 1995).

3.1.1 Definitions

There is a broad variation of definitions in the literature regarding the exact meaning of IT (out)sourcing. *Traditionally, outsourcing is an abbreviation for 'outside resource using'* (Dong-Hoon, Seongcheol, Changi, & Ja-Won, 2007). In business*, the word sourcing refers to a number of procurement practices, aimed at finding, evaluating and engaging suppliers of goods and services* (Wikipedia, 2013) and according to SourcingMag, *outsourcing is contracting with another company or person to do a particular function* (SourcingMag, 2013). Willcocks et al. describe IT outsourcing as *handing over the management of some or all of an organization's information technology (IT) systems (IS) and related services to a third party* (Willcocks, Fitzgerald, & Feeny, 1995). All of these

definitions refer to a third party where the organization goes to in order to get something done they don't want to do themselves.

We find the definition of SourcingMag to be the most comprehensive so we will use that definition in our research.

3.1.2 What to outsource

In the early days of automation, IT was not viewed as being able to be of strategic use to an organization but as means to an end, to automate human tasks or just a new technology. It was regarded as a commodity and not as a strategic instrument which made the decision to hand it over to a third party an easy one. This entails a number of risks, especially in modern days, where IT *is* of strategic importance. For instance, the business can lock itself into the 'commodity viewpoint' by handing over the complete control of IT to the vendor, thereby not being able to identify future opportunities to use IT as a strategic advantage and competitive differentiation. This means that an organization should think about what specific IT functions it wants to outsource, why it wants to and realize that it should stay in control of the IT, whether it is outsourced or not (Willcocks, Fitzgerald, & Feeny, 1995).

So how can an organization identify what to outsource and what to keep in-house? A useful tool is to make use of the value chain. In this chain, the different value added activities for a specific product or service are described and linkages among those activities are explained. Competitive advantage may be obtained by optimizing and coordinating these linkages. Within the chain, there are support activities (procurement, technology development, human resource management, firm infrastructure) that run alongside the primary activities (Porter, 1985). Within this context, outsourcing should be viewed as a value-added tool. This means that the focus should be on the long term and external results (such as the value proposition or how the organization is positioned in the market) and not on, for example, saving a few extra percent on costs for an internal administration process (Chan & Pollard, 2006). Also, outsourcing can make use of economies of scale and it should therefore not be allowed that individual divisions control their individual outsourcing. Instead, it should be the company as a whole that reaches out to the market.

Willcocks *et al*. researched 30 cases and identified which decisions should be made regarding what to outsource and what not. Their conclusion was that IT supply and service (including operational management of the service) can be delegated to a vendor but the IT strategy, responsibility and control should not. This means that when outsourcing occurs, the organization should never hand over complete control to the vendor with the message 'good luck with it' but has to keep the conversation alive regarding performance of the vendor and keep the vendor close to be able to control the IT in a strategic way (Willcocks, Fitzgerald, & Feeny, 1995).

Another type of outsourcing is business process outsourcing: the delegation of one or more IT-intensive business processes to an external provider that in turn owns, administers and manages the selected process based on defined and measurable performance criteria (Dong-Hoon, Seongchelo, Changi, & Ja-Won, 2006). Usually, back-office processes are suitable for this kind of outsourcing such as finance, accounting, helpdesks and human resources.

3.1.3 How to outsource?

Because of all the risks involved and the impact it can have on the company (positive or otherwise), outsourcing should not be undertaken without a sound sourcing strategy. If such a strategy is absent, the risk is high that outsourcing remains incremental and ad hoc circumstances driven, thereby producing only minor costs savings and not focusing on the long term competitive advantage of the company with potentially higher yields.

There are three paths that can be followed when using outsourcing according to Willcocks *et al.*: incremental, hard learning and strategic. *Incremental* involves starting small in a discrete area in the organization, usually because there is a lack of internal expertise regarding outsourcing or when there are clear cost saving targets. *Hard learning* can be described as the organization being pushed or drifted into a quite large-scale outsourcing without the managing experiences that are required to handle those projects. Many mistakes are made and it took them four to eight years to realize that a strategy was needed and to identify what the business needed from information systems. That brings us to the third path: the *strategic* approach. Here, an organization has already realized that IT should be put to use where it can serve the business, what the business wants from the IT and how outsourcing can be managed (Willcocks, Fitzgerald, & Feeny, 1995).

Further on in this research we will go into more depth regarding how to outsource, but the global idea is that outsourcing should follow market logic: getting rid of IT out of despair with the in-house IT or just trying to cut costs is generally not a good strategy.

3.2 What is IT-governance?

The goal of this research is to create an IT sourcing plan. To make a solid and sound plan we need to base it on best practices and literature. We seek existing models and best practices that fuel the sourcing plan for the NS, as depicted in figure 2.

But first, we must define what an IT governance is. Let us first define it by using existing literature. Peterson uses the following definition: *The distribution of IT decision-making rights and responsibilities among enterprise stakeholders, and the procedures and mechanisms for making and monitoring strategic decisions regarding IT* (Peterson, 2004). Rau uses another: *The set of responsibilities and practices exercised by senior management of the enterprise designed to establish and communicate strategic direction, ensure realization of goals and objectives, mitigate risk, and verify that assigned resources are used in an effective and efficient manner* (Rau, 2004). There are two similarities that stand out from these definitions. The first one is that both name *strategic decisions*, implying that an IT governance is something that comes from the top and should not be created on an operational level. The second similarity is that both refer to monitoring and / or verification of the decisions / resources that are made / assigned which implies a constant cycle of evaluation and improvement.

These two definitions give a correct, but rather broad vision on IT governance, another way to regard it, is to review what it is nót. Peterson describes exactly that in five statements (Peterson, 2004). We only wrote down a summary of his statements; for the entire reasoning, see his paper.

IT governance focuses on specific IT functions: IT governance does not specify what specific IT decisions are made but *who* them should make and *how*.

IT governance is the responsibility of the CIO: While a CIO is an important element in a governance structure, he is not the only stakeholder. Pointing the finger at IT / the CIO does not help; the entire business is responsible for IT.

IT governance is concerned with organizing the IT function: IT is not homogeneous, it is a versatile instrument throughout the organization so there is not just 'one function'.

IT governance is a new form of 'old school' management: IT governance faces the dual demand from serving the business as well as positioning the IT for future business demands. It is both internal and external oriented.

IT governance focuses on the (de-)centralization of IT: IT governance is about a lot more than the discussion whether to (de-)centralize.

IT governance is about decisions that IT people shouldn't make, but should lay with management: How much should we spend on IT? Which business processes should receive our IT euros? Which IT capabilities need to be companywide? How good do our IT services really need to be? What security and privacy risks will we accept? Whom do we blame if an IT initiative fails? (Weill & Ross, 2002)

3.3 What is a sourcing strategy?

Let's start with the definition of a sourcing strategy: an information technology (IT) outsourcing strategy is a plan derived from assessing which IT functions are better performed by an IT outsourcing service provider than by an organization's internal IT department (Rouse, 2011). The words 'derived from' imply that there has already been thought about what IT functions serve the organization better outside than inside.

The NS is looking for a document that gives pointers on both the strategic and the governance level, comprising of both literature and industry best practices. So not only shall we address on how to choose what IT functions should be outsourced but also what kind of suppliers are needed and how to manage them. Because such a document comprises of more than strategic guidelines, we use the term sourcing plan and not sourcing strategy.

3.4 Introduction into the plan: maxims

In order to create a sourcing plan, we need a set of guiding principles that clarify the implications for the organization's strategy, called *maxims*. A maxim is a simple statement that specifies a practical course of conduct. The most important thing is that a maxim should provide a clear direction and must be commonly understood so there is no place for difficult jargon (Cohen & Young, 2006). There can be business maxims, IT maxims, HRM maxims and sourcing maxims. They form the bridge between business strategy, sourcing strategy and sourcing actions, see figure 5 where the sourcing maxims are drawn.

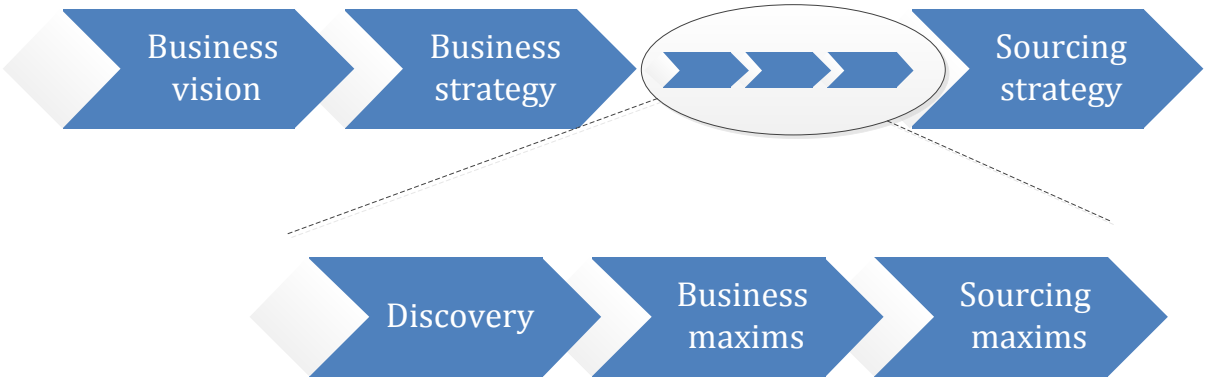

Figure 5 - The location of maxims to ensure alignment (Cohen & Young, 2006)

So the difference between a maxim and a strategy is that a strategy states how an organization is going to compete in its chosen market whereas maxims state a shared understanding of what needs to happen in order to successfully execute the strategies.

Regarding the scope of this research, we won't describe Cohen & Young's explanation of maxims into too much detail, but it is important to note that there are six categories of business maxims which in turn can create sourcing maxims. These categories and examples of maxims can be found in table 5.

Maxim category	Business maxim	Sourcing maxim
Cost focus	Price products or services at the lowest cost.	To maintain market pricing leadership, always select sources that offer continuous improvement in operational efficiencies.
	Drive economies of scale through shared best practice.	Select service providers that drive standardization and mass customization to enable scale and economies of scale.
Value differentiation	Meet client expectations for quality at reasonable cost.	Services must be sourced from providers that meet client quality expectations at the lowest operational cost.
	Provide all information needed to serve any client from any service point.	Services that are involved with client information must meet enterprise standards for availability, security, integration, and distribution.
Flexibility and agility	Grow in cross-selling capabilities.	Internal sales and product-integration capabilities will be maintained at a high level.
	Develop new products and services rapidly.	Service providers must be able to scale quickly, be willing to adapt to changing requirements, and develop innovative delivery capabilities.
Growth	Expand aggressively into international emerging markets.	Service providers must be able to deliver scale quickly in target markets.
	Target growth through specific product and customer niches.	Service providers must deliver innovation and customization for specific growth targets.
Human resources	Retain professional and technical expertise differentiation over competitors.	Service providers must provide best-in-class professional and technical expertise and provide opportunities for internal knowledge transfer and knowledge management.
	Divest competencies that do not provide competitive differentiation.	All nondifferentiating services are externally sourced for best price to meet requirements.
	Identify and facilitate the movement of talented people.	Create opportunities for career development through both internal and external sources.
Management orientation	Maximize independence in local operations with a minimum of mandates.	Source for flexibility and adaptability to localized initiatives; local operations may opt out of enterprise sourcing decisions.
	Make management decisions close to the product line.	Sourcing decisions will be directed by line operations.

Table 5 - Examples of business maxims and sourcing maxims that might be created from them (Cohen & Young, 2006)

The goal of these maxims is to enable organizations to link their sourcing goals all the way back to their long-term business goals and strategies. But, as with everything in and around an organization, these goals change and maxims should be changed accordingly. Therefore, it is a good idea to keep reviewing the maxims, say, annually.

3.5 Levels of sourcing

According to CIPS, three sourcing strategies can be identified: reactive, tactical and strategic (CIPS, 2012). These are comparable with the three sourcing paths from Willcocks *et al.* (incremental, hard-learning and strategic) (Willcocks, Fitzgerald, & Feeny, 1995). *Reactive* sourcing is the procurement approach where there are no pro-active sourcing strategies in place and responses to unexpected requirements are entirely reactive. This low level response might be professional but not necessarily enhance the purchasing and supply profession. An example of *tactical* sourcing is working with colleagues in marketing and sales to support one another but still manage business requirements that cannot be planned in advance in a reactive fashion. The *strategic* sourcing strategy is a process that involves the application of tools and competent people to pro-actively analyze and plan the selection of suppliers to deliver and satisfy the pre-determined and agreed business needs.

3.6 Multisourcing questions

According to Gartner (Gartner, 2007), there are five questions that define what they call 'the disciplined multisourcing approach'. This is a discipline that takes organizations beyond 'quick-fix' cost cutting to enable capability building, global expansion, increased agility and profitability, and competitive advantage. As such, multisourcing requires a new mind-set and frameworks for communicating, interacting with, and overseeing service relationships both inside and outside the organization.

1. Why? (business outcome)
2. What? (differentiation and competency)
3. Who? (provider)
4. How? (delivery)
5. Where? (location)

The first question can be answered by using the maxims, described above. The second question is a matter of knowing what you want to outsource, what pieces of work. We will describe that in section 3.9.1 (decision model). The who-question is also an important one that falls within the scope of this research: section 5.3 shows a method on how to answer that question. The fourth and the fifth question is something that C&LM should answer for themselves when they are presented with a sourcing issue.

3.7 A portfolio approach to sourcing

The goal of C&LM is to have a portfolio approach that specifies their desired way of sourcing instead of the current less structured approach. C&LM regards four portfolio's in which various tools and guidelines can take their place: domain, service, supplier and performance portfolio's. These portfolio's will be used as a way to structure the gap analysis and the sourcing plan.

3.7.1 Domain portfolio

In the domain portfolio, the organization is split into multiple 'pieces' wherein work can be offered to the market. An example is to divide the work between run (such as the maintenance of applications) and change (such as corrective support or adding functions to software).

3.7.2 Service portfolio

The service portfolio is the one where it is decided what specific piece of the domain that it falls under is kept in-house or external people are hired to do this work. The NS has as a strategy that application support and technical application support is outsourced.

3.7.3 Supplier portfolio

After it is clear what kind of services at what domains have to be outsourced, a supplier needs to be selected. All the suppliers together form the supplier portfolio. The NS needs to know what kind of suppliers they need for their services: partnerships or commodity? Suppliers that have a big impact on the business model of the NS or not? Etcetera.

3.7.4 Performance portfolio

What are the key performance indicators for our suppliers? How and when do we evaluate them? Do we measure core and strategic suppliers a different way than our commodity suppliers?

3.8 What does a sourcing strategy looks like?

In appendix 10.1, our sourcing plan for the NS is attached. Before this plan can be created, we had to find out what the structure of such a document is. The document has to be both informative and guiding for the NS. Because the structure of our plan is basically the same as for a sourcing strategy, we searched for known publicly available sourcing strategies or templates for a strategy, resulting in numerous documents. One was from Gartner which outlines ten key steps for the beginning part of the sourcing life cycle (Flinders, 2011). SURF made a sourcing template that describes how a strategy should look like and what steps need to be performed in order to write it (Bakx, 2012). The Saudi Arabian Government also took a big leap of sourcing with their e-government program called *Yesser* and wrote “Best practices for IT sourcing” which includes a section about sourcing strategies (Yesser, 2007).

These three documents are combined in table 6 to show the differences and similarities of what a strategy should look like.

	Gartner	SURF	Yesser
1	Set context and objectives	Objectives and basic principles (to be)	Organizational objectives
2	Assess service delivery (as is)	Existing situation (as is)	Existing and potential sourcing areas (as-is)
3	Assess service and multisourcing management capability		
4	Evaluate constraints and opportunities		
5	Analyze gaps	Changes to be implemented (gap bridging)	
6	Analyze external markets	Sourcing options and choices	Sourcing models and suppliers roles therein?
7	Conduct scenario planning		
8	Analyze risks		Risk management
9	Develop business case	Roadmap and resources	
10	Construct action plan		
11		Evaluation of strategic results	Evaluation

Table 6 - Different sourcing strategy structures

The documents agree on most levels on setting objectives, defining the current situation, gap analyzing, sourcing models / market analysis, risk management, making a business case and evaluating. Taking these things into account together with the whishes of the NS and experiences we had during our research, we come to the following structure of the sourcing plan. The purpose of this plan is that it can be used without first reading this research, resulting in some necessary duplication between these two documents. First, we start with stating the context and objectives by using the SCQ (situation, complication, question) framework (Minto, 1996). This powerful approach helps to quickly set the scene and motivation behind the plan. Secondly, the current (as-is) situation will be shown by means of the current supplier landscape and the maturity of IT Operations. After that, the points of improvement that can be derived from it will be shown. Fourthly, the plan goes into the best practices from of the industry and the academic theory that can be (partially) used within the NS. After that, we show the core of the sourcing plan: practical guidelines that the NS can use with their sourcing questions. These guidelines are based on this thesis: the as-is situation, the to-be situation and the gap analysis. The list below (section 3.8.1) is not exhaustive, more guidelines will be added. Most of the contents will be explained in the rest of this research.

3.8.1 The sourcing plan for the NS

1. Context & objectives
    - Situation (background)
    - Complication (motivation for this research)
    - Questions
        - How do we increase the maturity of IT Operations end C&LM together?
        - How do we succeed in a portfolio approach for our sourcing questions?
        - How can we be more in control, both internal and external?
        - How do we decrease our costs?
        - How to increase our agility?
2. As-is situation
    - Supplier landscape and what kind of application they facilitate.
    - Maturity of IT Operations.
3. Points of improvement based on SURF maturity model and SWOT analysis.
    - What should the process look like from business, demand, supply and suppliers?
4. Industry and literature-based best practices and tools
    - How to improve upon our points of improvement?
    - Growth models
    - Processes
    - Lotting possibilities (verkaveling)
5. Guidelines
    - **Guideline 1:** Setting maxims
        - A maxim is a simple statement that specifies a practical course of conduct.
        - The business should make these, it creates support for the sourcing plan.
    - **Guideline 2:** Decision model, what to source?
        - Can be used to transparently decide what to outsource and what not to.
            - What kind of supplier do we need?
            - Take into account whether a performance, strategic or development supplier is needed.
    - **Guideline 3:** Business case per sourcing question.
        - Benefits
        - Costs
        - Impact (personnel, business, legal, etcetera)
        - Risks
    - **Guideline 4:** Key performance indicators (KPI's).
    - Guideline … n

3.9 Best practices

By looking at existing frameworks, models and practices, we are searching for a foundation to base our sourcing plan on. There doesn't appear to be any one framework or otherwise, specifically suited for the NS or a similar company so we looked for a wide range of sources to be able to combine their best practices to end up with enough data for this research. In this search, we limited our selection of literature to frameworks that are useable for the NS. This means that we looked for practices that would help in answering C&LM's questions and that are useable by the employees of C&LM / IT Operations in some form. This also means we looked for models that are practical to use. For instance, it can take months of work to get an organization certified for a specific maturity model, which is outside the time scope of our research.

Our search didn't stop at the literature. There are other companies that struggle with sourcing questions every day. We therefore also looked for sourcing experiences and contacted numerous companies to see if they were willing to share some insights, best practices or even tools we could use.

In the following sections we discuss a decision model (of what to outsource and what not to outsource), an interview with Sogeti, how to divide work into pieces, the eSCM-CL model, ten IT Governance principles by Weill & Ross, the sourcing toolbox from SURF and the lessons learned from the MeLo case study.

3.9.1 Decision model

In our sourcing plan, we are looking for specific questions that can be asked for every work unit or process in order to determine whether it should be outsourced or stay in-house. Those questions need to be of good quality and well thought through. There are a couple of existing models in the literature that address this issue.

Ordoobadi developed a decision model that helps decision makers in their outsourcing policy and consists of three phases: strategic evaluation, economic evaluation and decision analysis. In each phase, the regarded activity is qualified for outsourcing or staying in-house or when the decision for either is only marginal, it goes to the next phase, until a clear decision can be made (Ordoobadi, 2005). In the strategic evaluation phase the technological position of the company relative to its competitors and a core competency check of the activity is checked. Certain activities that are a core competency (determined via a small but comprehensive questionnaire) stay in-house, others are checked against the position of the company and are then taken to the next level of analysis. Here, in the economic evaluation phase, a rate of return analysis is performed to determine the return on investment, on both the keep in-house decision as well as the outsourcing decision. After that, a decision can be made by plotting all the relevant analyses in a two-dimensional matrix and, depending on the position in that matrix, an activity is outsourced or kept in-house.

An advantage of the model of Ordoobadi is its comprehensibility and practicality: the questions that need to be asked and the matrices their answers need to be plotted in, are ready for use. There is however a downside: the model is made for the manufacturing industry, thereby stating questions that are not directly applicable to service oriented companies and activities. Also, in the economic evaluation phase, the costs of goods sold is calculated using formula's given by the model, whereas the costs for services are obviously calculated differently than for a specific tangible product. A third unclear aspect is that the chucks of work or activities that can be fed in the model are not defined by Ordoobadi. When used for the NS, these issues need to be addressed.

Core versus commodity

Ordoobadi is not the only one that tries to answer the question 'how can the management of an organization decide which, if any, information technology to outsource'? Cronk & Sharp try to identify the difference between *core* and *commodity* IT services by dividing the IT services between *infrastructure* & *service* and between *value adding* & *essential*, the latter two related to the business processes where they belong to. This way, units of competitive advantage are identified (that should be kept in-house) and a decision can be made about the value-adding or essential services (Cronk & Sharp, 1995). This framework is less comprehensible than Ordoobadi's but it could provide a good way of linking certain IT services to business processes and rate them at their added value.

Resource-based theory

Another way of creating a sourcing model is using the resource-based theory. With this framework, it is possible to explain information system sourcing decisions in relation to the resources the firm has in its possession and the strategic value of those resources as measured by the strategic value of the system itself (Roy & Aubert, 2002). Resources can be knowledge, technology, experience with change management, competencies, etcetera. Generally, when on the diagonal, the situation is a stable one. When the organization has a lot of resources but their strategic value is low (lower right quadrant), it should try to sell these resources / find higher strategic uses for them. In the partner quadrant, the organization needs resources that aren't there and should find a partner, and when the partnership is successful, acquire these resources and move in a horizontal fashion towards internal governance. This framework is easy to use in practice and easy to understand. The strategic value of a resource is reflected in the value added to the product. In the case of an information system, the added value of the companies resource can be estimated in relation to the anticipated value the information system has resulting from the development activity the resource takes part. The entire added value for the future system can therefore be used to estimate the value of all the resources that play a part in its development.

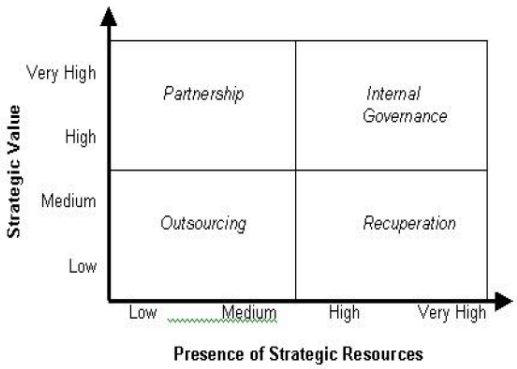

Figure 6 - Resource based framework (Roy & Aubert, 2002)

Risk based decision model

Outsourcing is not something that is without risk but risk is largely ignored in management and IT studies due to it being hard to measure, define and understand. If a sound decision has to be made to outsource a specific system, risk has to be weighed in that decision. But when is risk acceptable and how do you compare it to the benefits? For this purpose, Jurison made a model based on transaction cost theory and financial theory (Jurison, 1995). The author shows that almost all outsourcing decisions can be considered as a tradeoff between financial benefits and risk. By determining the difference between economic value and risk of the insourcing and the outsourcing possibilities and plot the relationship between them in a graph, it can be determined whether the economic benefits outweigh the risks of the sourcing solution.

Costs are calculated by determining the production costs and coordination costs. Production costs are the costs of producing goods or services, including labor, capital and materials. Coordination costs consist of controlling and monitoring workers if the task is performed internally. When the task is performed externally, coordination costs become transaction costs and arise from the need to define, negotiate and enforce contracts and to monitor and coordinate activities throughout the organization. Usually, the market has lower production costs (because of economies of scale) but higher transaction costs because vendors tend to be opportunistic and require constant activity monitoring. Internally, there are lower coordination costs because employees have less opportunity

for opportunistic behavior (Jurison, 1995). So, the most economic choice between outsourcing and keeping it in-house, should be made with a trade-off that includes both the production and coordination costs.

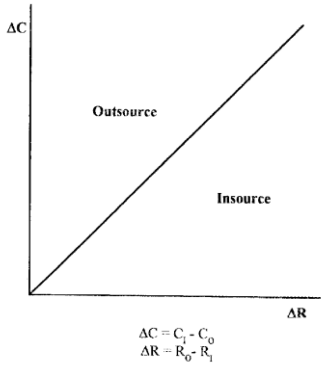

Figure 7 - The risk / reward graph

In the risk based decision model, risk is determined on a low, medium or high scale. How this is quantified is up to the management or steering board that makes the decisions. This way, management can use their own proven tools to assess the different types of risks that are present in the organization.

When the functions, activities or chunks of work are plotted in the risk-reward-graph it becomes clear what to outsource and what not. However, when the risks are too high but the potential costs savings are high as well, it is easy to see in the graph how that can be mitigated, by moving horizontally to the left, reducing risk along the way. This can be done by drafting a well-defined contract that specifies service levels, cost structures, key performance indicators and measures, termination clauses, etcetera. This way, risks can be reduced, and although it may cost slightly more, become a candidate for outsourcing by moving left of the diagonal.

A decision model for the NS

We choose to use the model of Ordoobadi as a starting point since this is the most practical model we could find in literature and is also he the model that fits the requirements of the NS the most. However, it is made for product-based instead of service-based organizations, meaning that the model has to be adapted at some points. The model consists out of three phases.

1. Strategic evaluation
2. Economic evaluation
3. Decision analysis

The purpose of the strategic evaluation phase is to determine whether the activity is a candidate for outsourcing using a core competency chart and a process significance matrix. When an activity is not directly a candidate, costs are being compared to these outcomes to determine the decision (economic evaluation). When it is still not clear whether it should be outsourced or not, a rate of return on the reinvestment is performed (decision analysis). Now, two of these analyses need to be adapted for usage within the NS: the costs comparison and the return on investment. The cost comparison in de model of Ordoobadi is about labor, material, capital and overhead costs. NS is a service oriented organization and has therefore other cost drivers. We use the risk / reward model of Jurison as a replacement for this part (Jurison, 1995). This model also incorporates the risk of outsourcing that is not present in the model of Ordoobadi. This risk and the costs (of the in-house as well as the outsource option) are both weighed to make a sound decision. The model of Ordoobadi expects single variable but the risk / reward model has a two-dimensional graph so this is something that needs to be dealt with. We achieve this by creating an overlay for the risk / reward model (figure 8) that results in this single value variable.

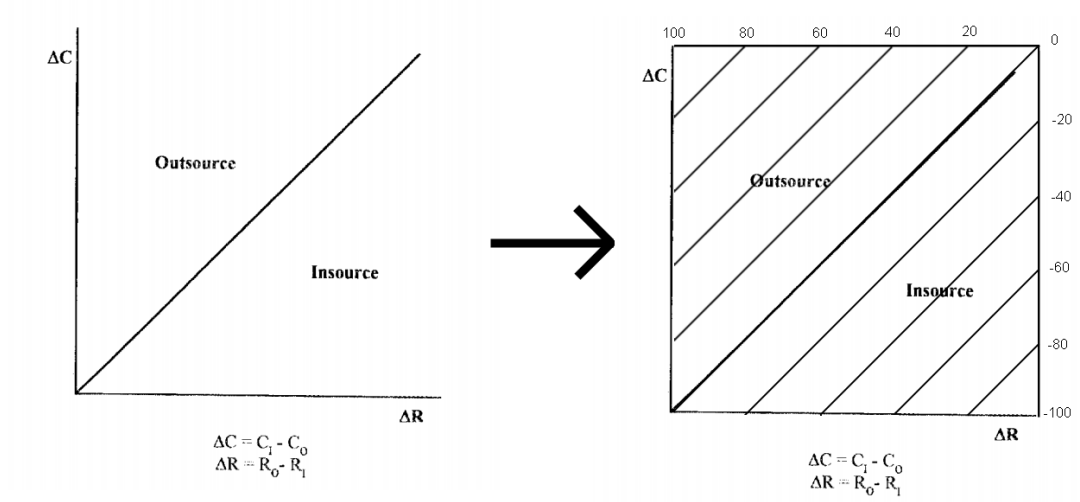

Figure 8 - Overlay for the risk / reward model

The second analysis is the return on investment, here Ordoobadi uses fixed assets, again because of the product-based organization he refers to. Some questions in this analysis are “can equipment be used in other activities” and “can equipment be cannibalized for parts”. This obviously doesn’t apply to an organization that uses people as its main asset. Also, in consultation with the manager of C&LM, it is not feasible to include this analysis because the share of personnel costs with regard to potential costs savings is negligible. This means that decision matrix 2 needs to be adapted to ensure that the model ends there and there is no possibility for a dead-end in the model.

Activities are fed into the model. This can be any activity, system, chain, etcetera but we will give some guidelines as to what activities are useful for this in section 3.9.6. Figure 9 is the basis for the decision model and figure 10 through figure 13 show the decision matrices and flowcharts that figure 9 refers to. First, it is determined whether the activity is a high, medium or low competency or peripheral activity using four questions:

1. Does activity need highly specialized skills and knowledge?
2. Does activity have a high impact on what customers perceive as the most important?
3. Does activity provide potential access to a wide variety of possible future markets?
4. Is the activity difficult for other competitors to imitate?

Question three regards the public tenders going on in the Netherlands: when a specific piece of railroad track is offered in a public tender, different transporters (such as Veolia, Connexxion, NS, etcetera) can apply to exploit that track. Having a good system in place for travel information, wireless internet in the train or other IT abilities can help the NS in winning such a tender. Therefore, it is important to recognize the competitive advantage for a specific activity.

Peripheral activities are immediately outsourced. The other activities are fed into the process significance matrix where three questions are answered and plotted accordingly in the matrix: 1) what is the maturity of the technology? 2) what is the significance of the process technology for competitive advantage (today or in the future)? 3) what is the process technology relative to my competitors? The resulting region of this matrix of this matrix is needed later. First, the resulting ‘risk / reward’-analysis is combined with the determined value of the core competency into the first decision matrix. The result of this matrix is also a value from I to VI. This result is then compared with the result from the process significance analysis in decision matrix 2. Here, it is decided what to outsource and what to keep in-house, depending on the location in the matrix.

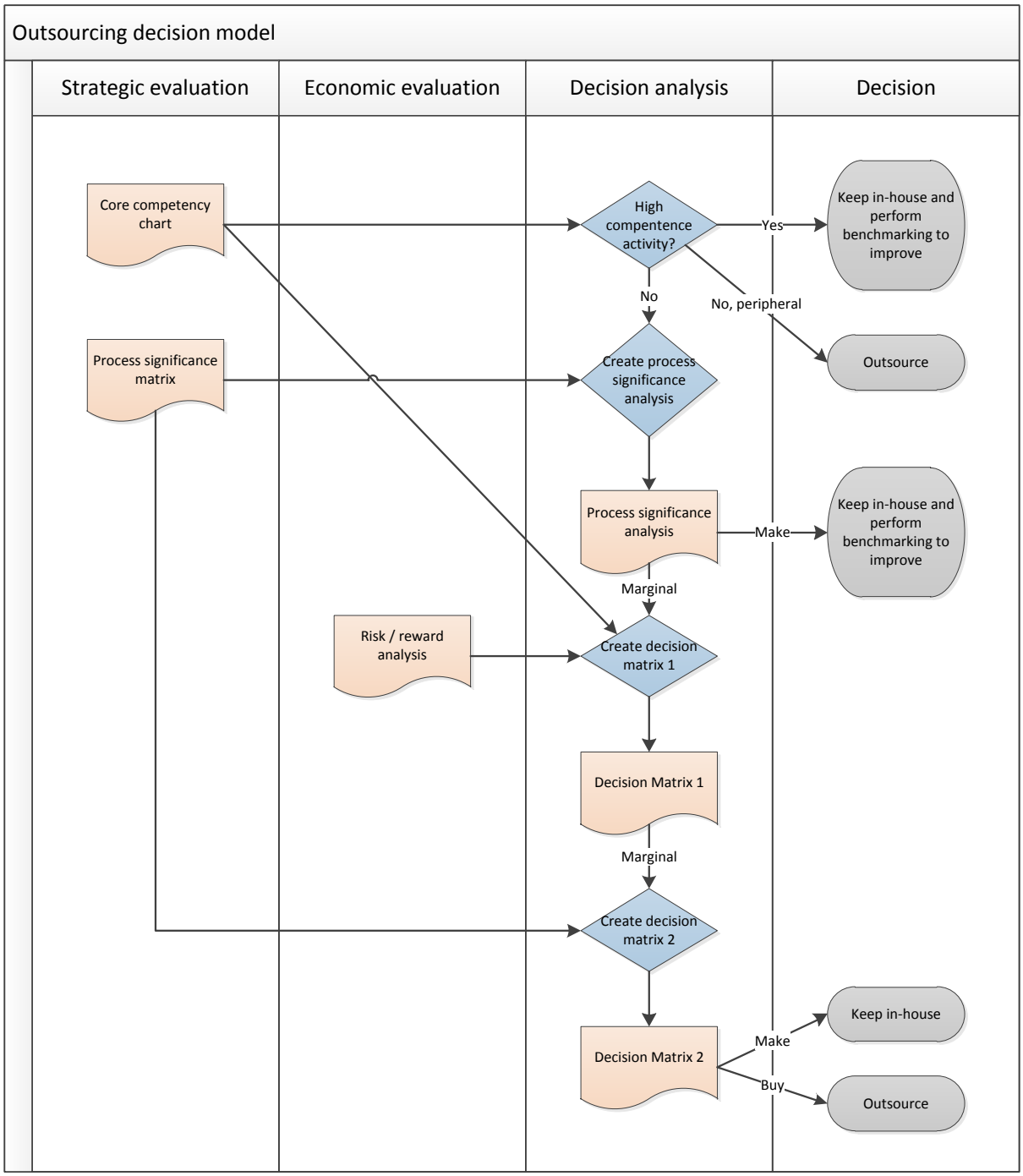

Figure 9 - Outsourcing decision model

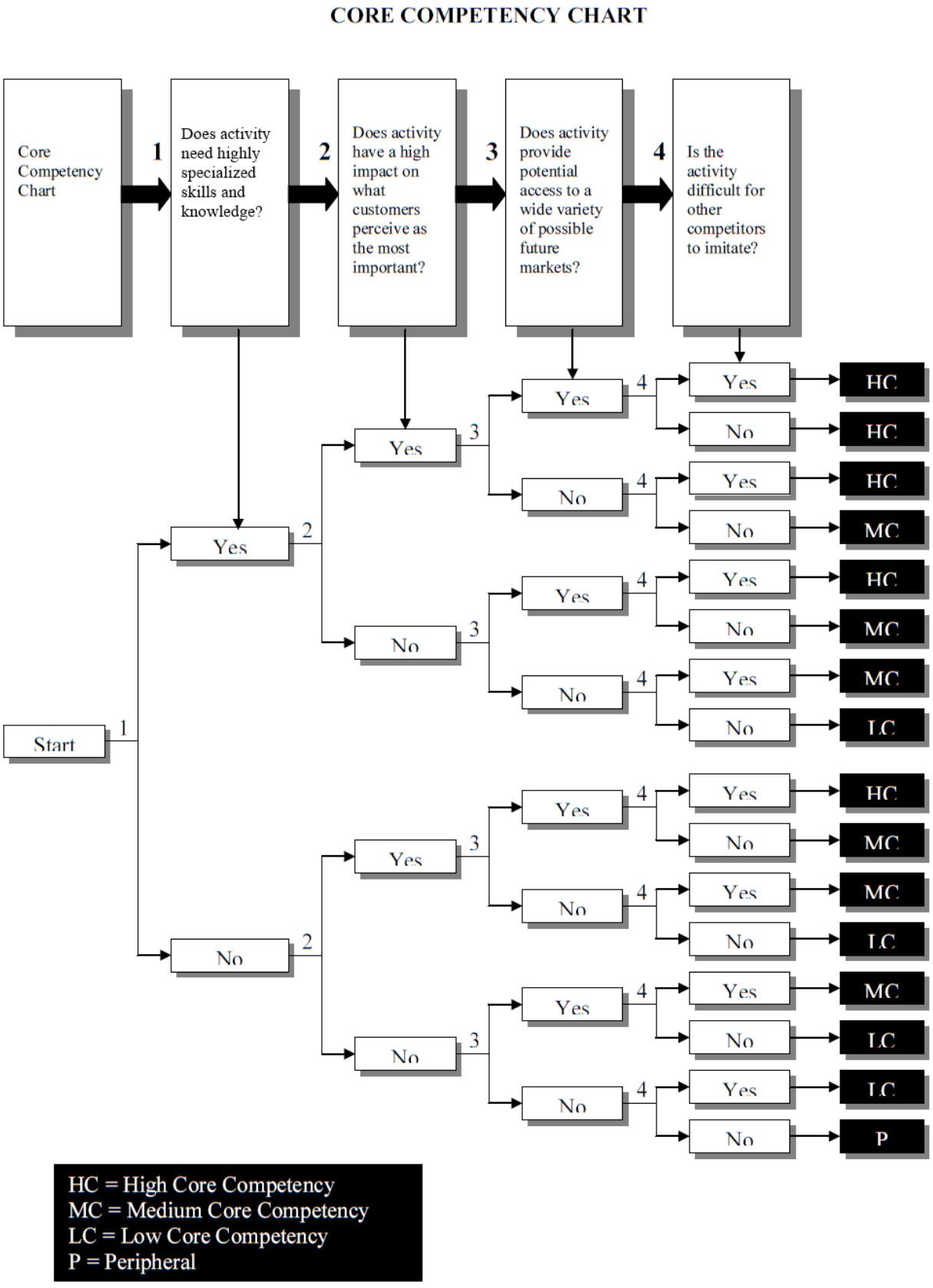

Figure 10 - Core competency chart, adapted for usage within the NS

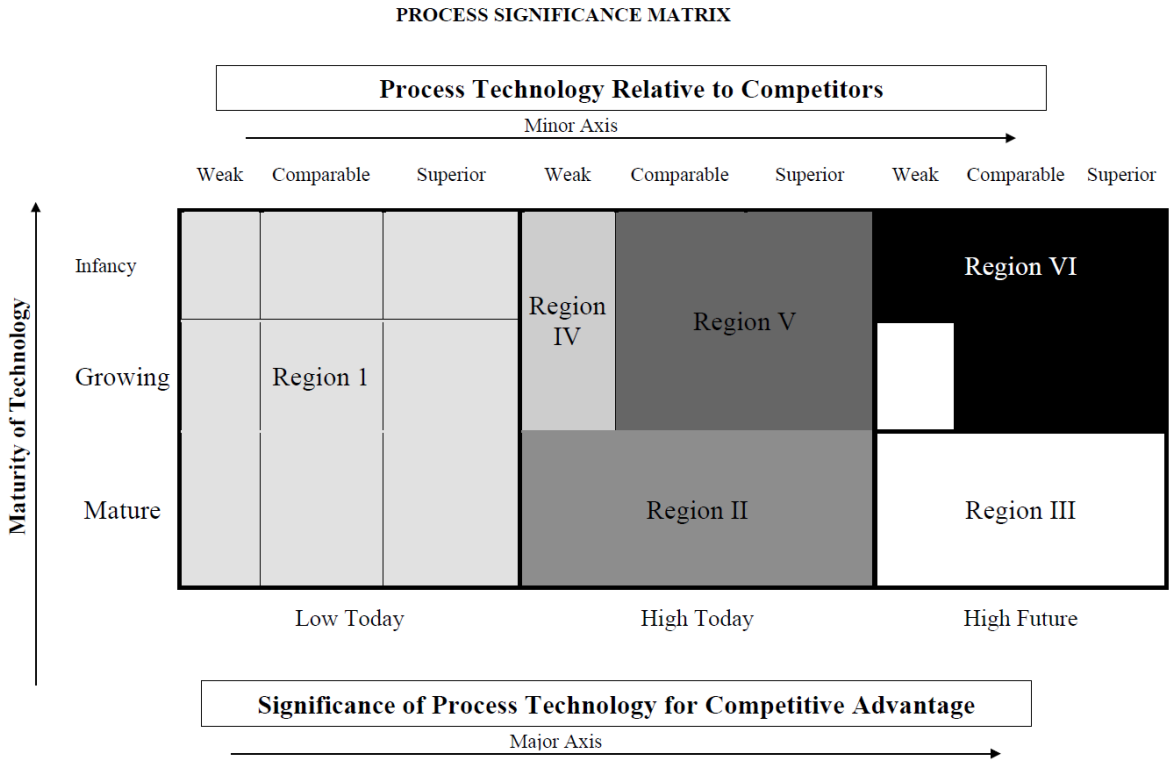

Figure 11 - Process significance matrix

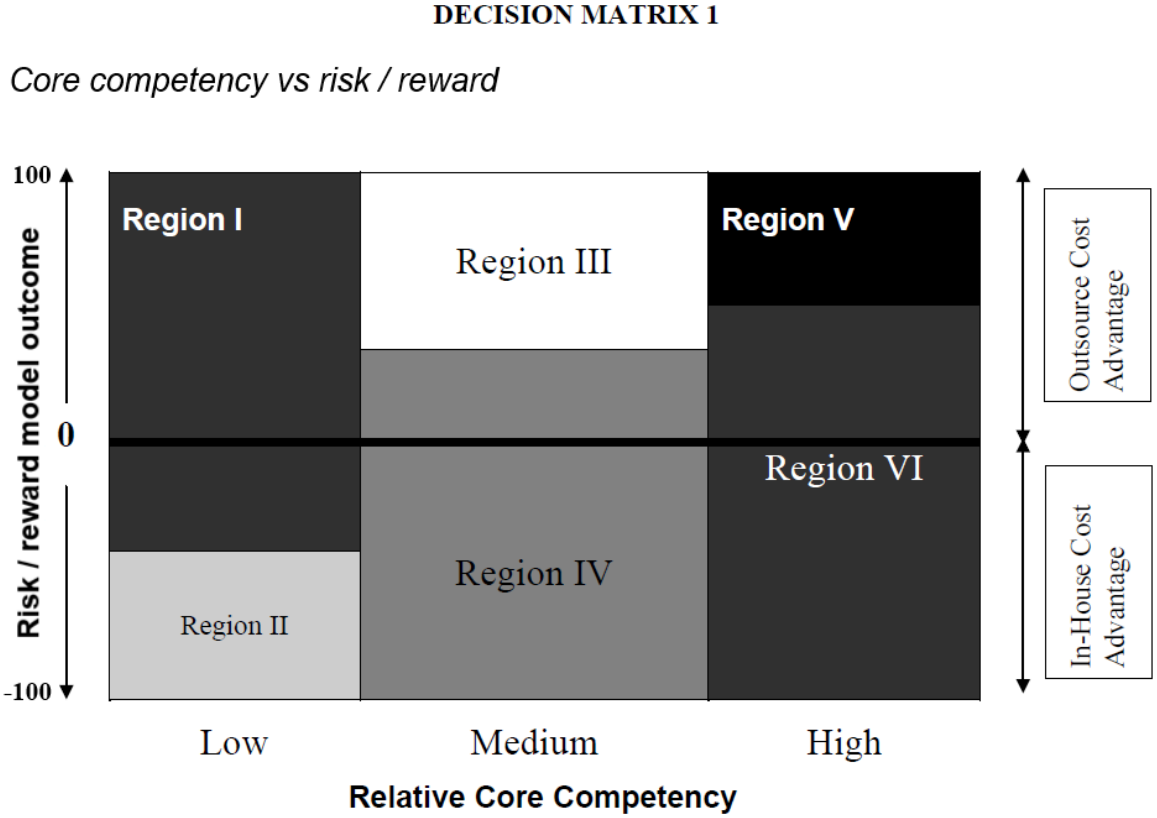

Figure 12 - Decision matrix 1, adapted for usage within the NS

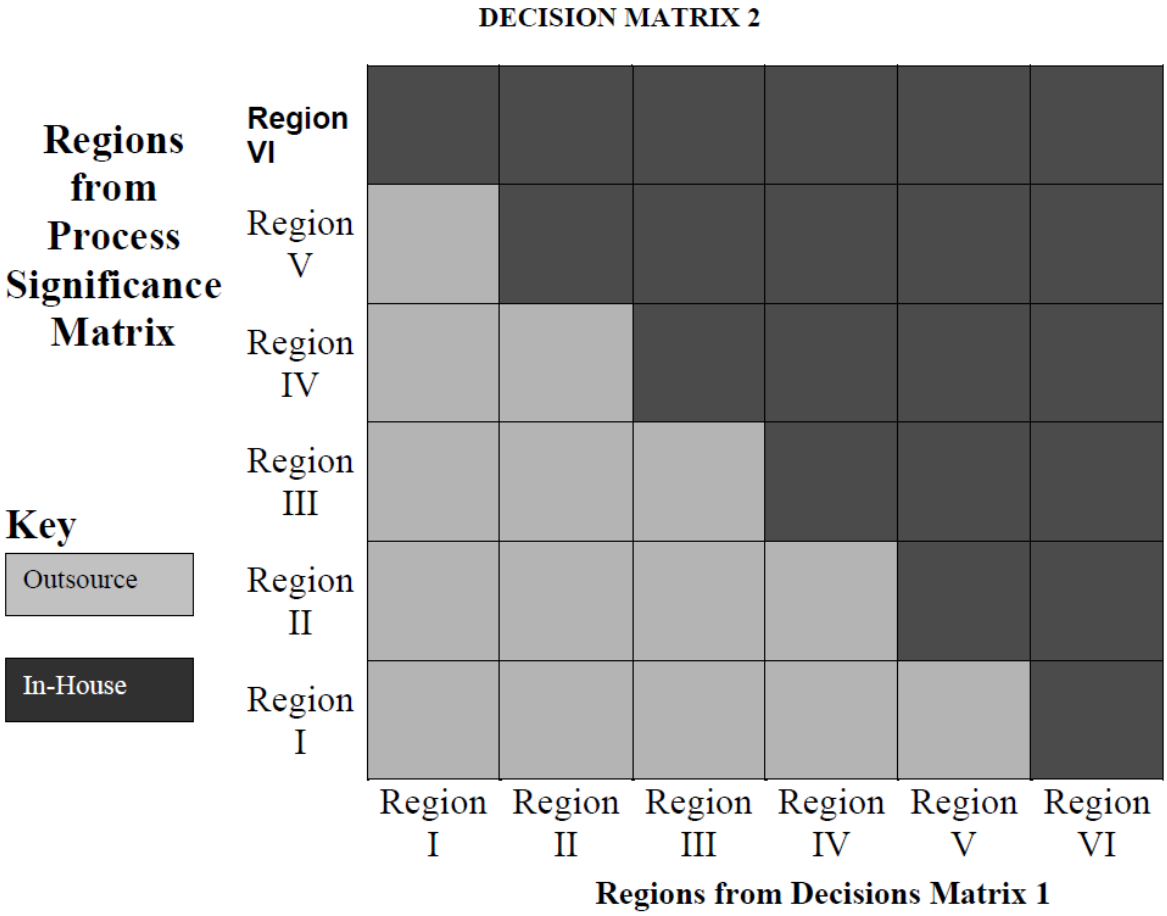

Figure 13 - Decision matrix 2, adapted for usage within NS

3.9.2 Best practices out of the experiences of Sogeti

In our search for best practices regarding sourcing questions, we found that these are scarce in literature sources. They are mostly about case studies and not valid for the kind of company that NS is or they fall outside the scope of this research. We therefore contacted an outside company that has experience with specific sourcing questions at their own customers. This company is Sogeti; an international IT consulting company. Because of his experience with sourcing questions in the past, we invited the portfolio manager mobile solutions for an interview about Sogeti's experience with lotting[1], vendor lock-in's, supplier selection, etcetera. It was a semi-structured interview with a few guiding questions and lots of room for new insights and follow-up questions. During the interview, multiple statements and ideas were vented by the interviewee which are stated below. Because of this rather random structure, the text below is more of an enumeration rather than a storyline. For more information about the interview, see section 2.2.2.

According to Sogeti, you should never outsource your primary processes or any process that defines the organization if possible: that is your right of existence, that is what you are good at and what distinguishes you from the competition. By outsourcing this, you hand the fate of your company over to a third party and potentially losing your competitive advantage. But stay pragmatic!

[1] Dutch: verkaveling

You should look out for meta-management. For instance, during the years, someone was hired to manage the managers and this can work against you in the outsourcing process by making it very bureaucratic. You should try to work around this at some points to get things done quicker or try to break down this structure.

While sourcing, keep an eye on the soft side of things: there are more advantages to outsourcing than monetary ones, such as a higher flexibility and being more agile.

Always remember the organizational goals and how the sourcing process contributes to that. In the case of this research, those are the goals of IT Operations. To aid in the process of eliciting what activity contributes to what goals and how, a simple diagram can be used (figure 14). This diagram, when filled in, elaborates the line from the activity with its short-term goals and how it contributes to your long-term, organizational goals

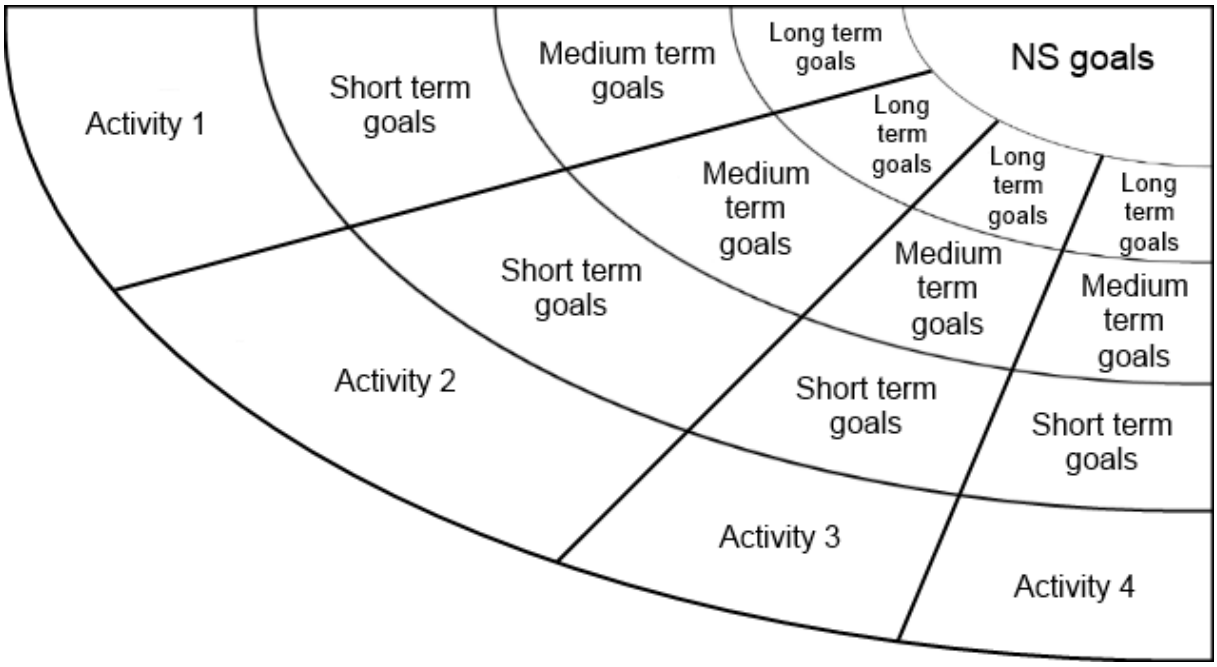

Figure 14 - The Sogeti goal diagram

Vendor lock-in

Do not let multiple suppliers do exactly the same work but put two or three on the same piece of work to keep each other sharp and focused, but keep the knowledge of your organization in-house! This knowledge is one of the things that makes your organization valuable and competitive and should never leave the organization by outsourcing.

Some niche companies cannot guarantee continuity for large customers, they are too small for that. The management of their applications (together with other small applications) can be outsourced to bigger companies.

Regarding SLA's[2]: make pragmatic ones. Demanding very much of your supplier while you aren't functioning at that level yourself isn't very productive. But one can also ask himself if the high service levels are réally needed for the application or that they just cost more money than they potentially save. Again, stay pragmatic and realistic.

[2] Service level agreements

When acceptance among employees is hard or when IT people don't fully understand what they are working on and what the final purpose is for the business, they can be stimulated to work with the business people for a day or two. This way they get a feeling of what is important for the system they are developing and / or maintaining and deliver better results.

3.9.3 eSCM

The eSCM model is developed by the Carnegie Mellon University, specifically for IT service providers and their customers in order to improve their relationship. It consists of a client (eSCM-CL) and a supplier (eSCM-SP) model. The two models are consistent, symmetrical and complementary for each side of the client-provider relationship, which makes this model strong and unique (ITSqc, 2006). We focus on the client model since this is the one applicable on NS. The eSCM-CL contains 95 practices grouped into 17 groups, described as capability areas:

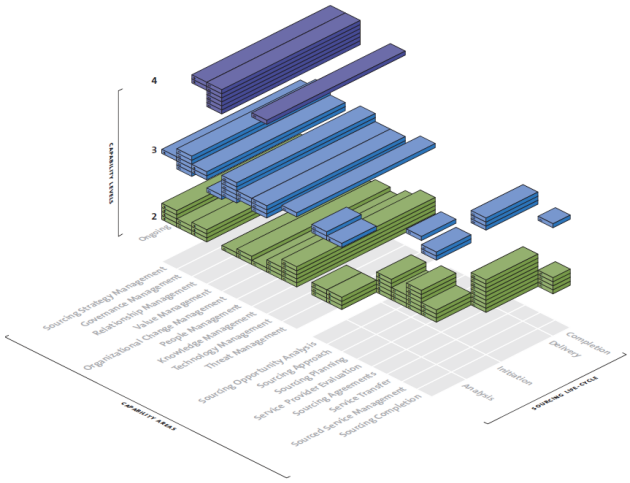

Figure 15 - An overview of the eSCM-model (ITSqc, 2006)

1. Ongoing
    1. Sourcing Strategy Management
    2. Government Management
    3. Relationship Management
    4. Value Management
    5. Organizational Change Management
    6. People Management
    7. Knowledge Management
    8. Technology Management
    9. Threat Management
2. Analysis
    1. Sourcing Opportunity Analysis
    2. Sourcing Approach
3. Initiation
    1. Sourcing Planning
    2. Service Provider Evaluation
    3. Sourcing Agreements
    4. Service Transfer
4. Delivery
    1. Sourced Services Management
5. Completion
    1. Sourcing Completion

Examples of practices are: "define, communicate and maintain the sourcing strategy of the client organization", "Establish and implement procedures to identify, assess and manage sourcing risks". These practices are divided over a third dimension: capability levels, of which there are five, but only the second, third and fourth levels have practices:

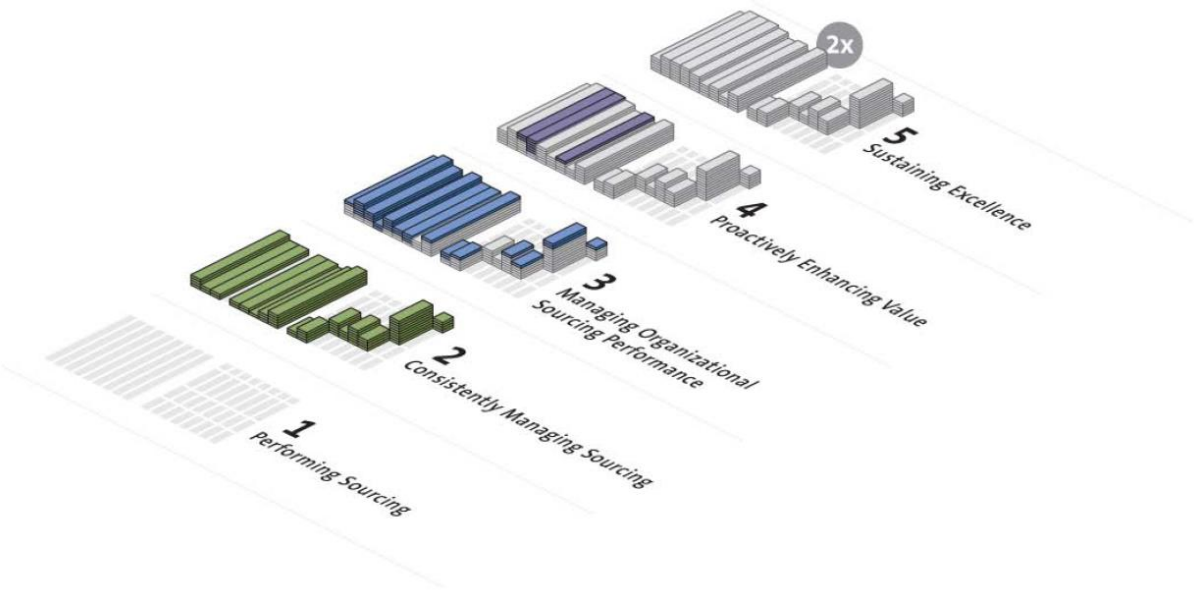

Figure 16 – eSCM and its capability levels

It is possible for an organization to get certified in using the eSCM model but this can take a long time and cost a lot of money. We are looking for some specific guidelines that can get the NS started without going through an entire certification process. Out of the 95 practices, we would like to use around 7 to 10 in our sourcing plan. In the gap analysis, chapter 5, we will determine which practices are suited best for the NS.

3.9.4 Ten IT Governance principles

Investing in technology is one thing, but where is the payoff? Weill & Ross worked with hundreds of organizations and many outstanding leaders and distilled ten principles of IT governance in order to use them to create greater value from IT (Weill & Ross, 2004). We summarize their findings below.

1. Actively design governance

Don't be on the defensive side with regard to designing governance as this limits the opportunities for strategic impact from IT. Governance should be designed with the organizational objectives and performance goals in mind.

When designing governance, focus on having the lowest number of mechanisms possible and focus on reviewing the mechanisms often. Early on, these mechanisms may require a large amount of managers. Typically, as senior managers understands the IT value and the role of IT better, a smaller set of managers can represent the enterprise's needs. One should have as a goal to consolidate this large amount of managers.

2. Know when to redesign

Weill & Ross recommend that a required change in behavior is a prerequisite for a change in governance. In other words, there has to be a good reason for the new governance to be designed, such as to encourage change.

3. Involve senior managers

Firms with more effective IT governance had more senior management involvement in committees, the approval process and performance reviews. These committees should be broad and include managers outside IT to ensure senior management attention to IT in the context of the whole enterprise.

4. Make choices
Governance requires choices: not every goal can be met so governance should highlight conflicting goals for debate. Some of the most ineffective governances Weill & Ross observed were the result of conflicting goals. The results was confusion, complexity and mixed messages so the governance was ignored. Managers that tried to satisfy all the goals became frustrated and ineffective.

5. Clarify the exception-handling process
Exceptions are how organizations learn. Weill & Ross found that for a governance to be successful, exception procedures should have three elements in them:

1. The process is clearly understood by all.
2. The process has a few stages that quickly move the issue up to senior management.
3. Successful exceptions are adopted into the enterprise architecture, completing the organizational learning process.

6. Provide the right incentives
It is hard to overestimate the importance of aligning incentive and reward systems to governance arrangements. If well-designed IT governance is not as effective as expected, the first place to look is incentives.

7. Assign ownership and accountability for IT governance
Like every initiative, IT governance must have an owner and accountabilities. In choosing this owner, three aspects need to be considered:

1. The owner of the IT Governance must have an enterprise-wide view that goes beyond IT, as well as credibility with all the business leaders.
2. IT governance cannot be implemented alone. The board needs to make it clear to everyone that all the managers are expected to contribute to the governance, just as, for example, financial governance.
3. The symbiotic connection between IT and strategy must be well-understood by the owner. Technical details are not important, as long as it is clear what the technology can and cannot accomplish for the business.

8. Design governance at multiple organizational levels
By creating a matrix of governance arrangements throughout the entire organization at all its levels makes the connection and pressure points explicit.

9. Provide transparency and education
There cannot be too much transparency when it comes to IT governance. Many firms Weill & Ross investigated use portals or intranets to communicate IT governance, often including lists of approved or recommended products. The less transparent governance processes are, the less people follow them. This results in lower confidence which leads to less willingness to play by the rules designed to lead to increased firm-wide performance. The firms that had highly effective documentation also had a successful governance.

An interesting opportunity is presented when senior managers, especially those in business units, demonstrate lack of understanding of IT governance. When working with those managers that don't follow the rules, it is an opportunity to understand their objections. These discussions provide insight on whether the rules need refinement as well as a chance to explain and reinforce the governance.

10. Implement common mechanisms across the six key assets
When designing IT governance, review the mechanisms used to govern the other key assets (human, financial, physical, intellectual property and relationship) and consider broadening their character to IT rather than creating a new, independent IT mechanism.

3.9.5 Tools for successful sourcing

Universities in the Netherlands work together on IT through SURF, an institution that also realized that those universities have sourcing questions. SURF cooperated with sourcing experts within the universities and made a sourcing toolbox including thirty tools that would help to determine a sourcing plan. While the context of this toolbox is universities, some can also be used in the context of the NS. These tools are easy to adopt and well thought through (SURF, 2012). The tools that are likely to be useful within the NS are highlighted below. The numbering is kept intact for reference purposes.

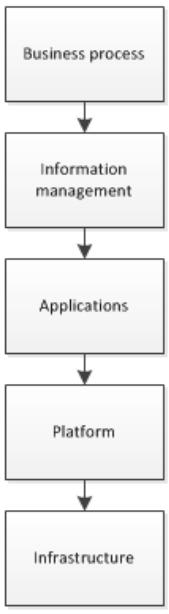

Figure 17 - Vertical layers

Lotting for sourcing purposes (T008)

There are two ways to look at sourcing: horizontal and vertical. Both can be used to identify the lots in the IT landscape. For horizontal lotting, a good process description is needed. These processes need to be loosely coupled with other processes so that they can be seen as individual source-able units. An example is the payment process of employees. When a process stands on its own, outsourcing is relatively easy. However, when two processes share the same resources, these two processes need to be untwined first, which can be quite a challenge. When a process can be outsourced, it is known as business process outsourcing (BPO) of business process as a service (BPAAS).
Vertical lotting is also a possibility: then the individual layers under the process are regarded for sourcing (an example is shown in figure 17).

The need for a good business case (T028) & template for a sourcing business case (T010)

Business cases are frequently used for a cost-benefit analysis and don't pursue anything else. It should be more like an enumeration of facts that help the organization make a well thought through decision about outsourcing issues, because the true reason for outsourcing should not only just lay in a cost benefit. These tools lead to insights regarding the decision making process and structures them using a business case template.

Strategic sourcing (T019)

There are more answers to sourcing questions then outsource or insource. Backsourcing, cosourcing, shared service centers, etcetera are all valid solutions as well. By using a graph with two axis (internal performance versus strategic added value), different sourcing solutions and scenario's that wouldn't have been thought of before emerge.

Bonus-malus agreements with suppliers (T023)

The bonus-malus tool describes the do's and don'ts when performance agreements are made with suppliers. These agreements help to decouple the contracted service from the person who originally bought it and to keep them clear. KPI's should be relatable to the business impact and influenceable by the supplier. They should be formulated in a 'SMART' way and bandwidths should be built in to prevent the measures from being too tight.

Lessons learned on the legal side of outsourcing (T018)

In this tool, outsourcing contracts are reviewed as well as the lessons learned from in outsourcing specialized legal people. It could help in raising the quality of the process as well as the final contract.

3.9.6 Lotting

We have seen a number of models that want to guide an activity or process through a decision making process regarding its outsourcing potential. These models however, do not address how to define a process or activity. This is also the question that NS has: how do I divide my work into chuncks that are logical and suitable for outsourcing? Not much literature exists that addresses this issue because it is, of course, very specific per organization. In 1999, Finlay & King tried to answer the question "*How should an organization select the 'chunks' of IT that are to be considered for*

independent sourcing?". They realized that you can't just divide everything up on the basis of IT systems (ignoring the business processes they support), nor on the basis of business processes (ignoring the interconnectivities of the IT systems) (Finlay & King, 1999).

Using Porter's value chain (Porter, 1985), they realized that the IT function is not only just part of the technology development (as used by Porter in that chain) but that this IT function can has its own value chain and that this chain can be used to identify the chucks of work that we need. Let's first shortly review the five main contents of Porter's original value chain:

1. **Inbound Logistics** - involve relationships with suppliers and include all the activities required to receive, store, and disseminate inputs.
2. **Operations** - are all the activities required to transform inputs into outputs (products and services).
3. **Outbound Logistics** - include all the activities required to collect, store, and distribute the output.
4. **Marketing and Sales** - activities inform buyers about products and services, induce buyers to purchase them, and facilitate their purchase.
5. **Service** - includes all the activities required to keep the product or service working effectively for the buyer after it is sold and delivered.

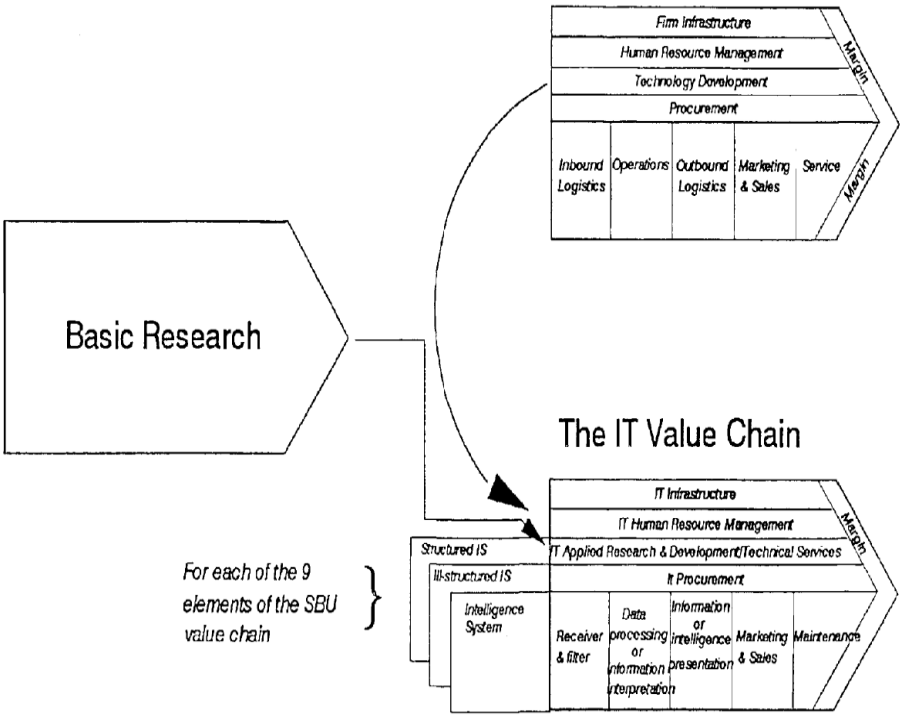

Figure 18 - The IT value chain (Finlay & King, 1999)

For each of the nine elements in the original value chain (the large top right arrow in figure 18), an IT value chain can be identified that should serve that specific element in the value chain (the large lower right arrow). This means that the IT should serve the business and using these value chain combinations, it becomes explicit what is meant by that. When the two chains are combined, it becomes clear what kind of chunks can be identified (figure 19). Here, we see the primary IT activities linked to the IT procurement and IT research. These arrows that are drawn represent the relationships that should be addressed when deciding which 'IT chunks' to consider in sourcing decisions. For instance, there are activities / IT systems that are responsible for human resources for inbound logistics department or activities / IT systems for IT maintenance for the marketing and sales department.

While this pragmatic approach helps in identifying chunks of IT, managerial judgment remains paramount for there is not abstract way of doing this, which is valid for every organization. Also, when it is too much work to make a value chain for every IT system out there, it is at least useful to

understand the most important message from Finlay & King: let the business (processes) drive the decision of what to outsource and not the IT systems by themselves: look at how IT supports the business.

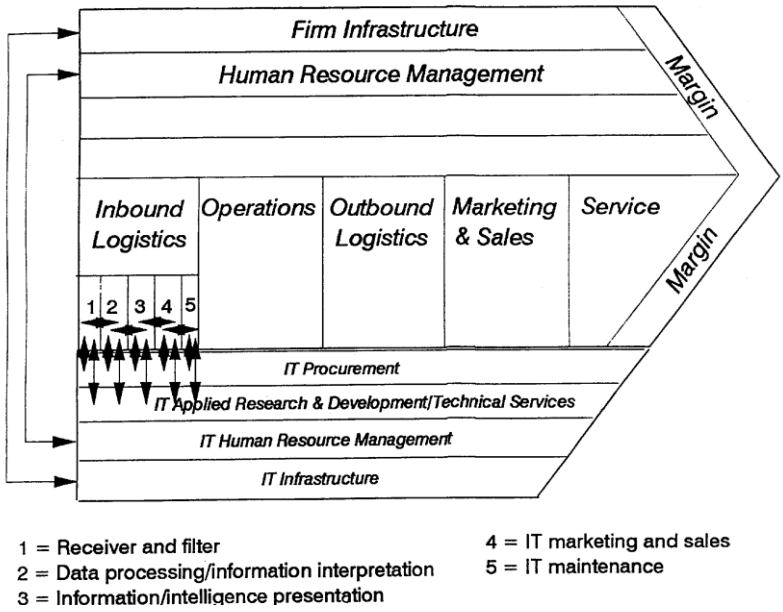

Figure 19 - One of the organizational models using the IT value chain (Finlay & King, 1999)

Interview with information architect

An interview with an experienced information architect from the NS was conducted to see what his opinion was about lotting. His first response was that the applications within the NS require a lot of domain knowledge and that acquiring that knowledge can take a long time. Combined with a long relatively long lifespan, it is hard to make sound sourcing decisions in order to decrease vendor lock-in. If you have to start somewhere regarding the sourcing of systems, he reckons it is the easiest to start with the outside systems (the 'view'). Systems such as the travel planner, information boards over the platforms, etcetera. These systems don't process data and probably have the fewest amount of interface to other systems, making them good candidates to decouple from the architecture. He also suggested that if new systems are to be introduced or old systems to be adapted, that it should be easy to be decouple them (i.e. not making them too dependent on the lower-end and / or service-bus systems). That also makes them easier to outsource, and gives the new vendor has a less steep learning curve to get to know the system and its surroundings.

3.9.7 Lessons learned from an outsourcing decision project in a large public organization

Some time ago, a large public organization in Sweden, called MeLo, went through a large outsourcing decision project regarding its ICT and IS. MeLo focusses on Messaging and Logistics (MeLo). The outsourcing project was one mean of a large organization-wide initiative, called EffectIT, aiming at increasing effectiveness and efficiency of MeLo's ICT, including ICT use, governance, management, and operations. MeLo's board decided to launch the EffectIT initiative and project; and the outsourcing project became one part of this initiative. The organization of EffectIT is depicted in figure 20 (Carlsson & Johansson, 2011).

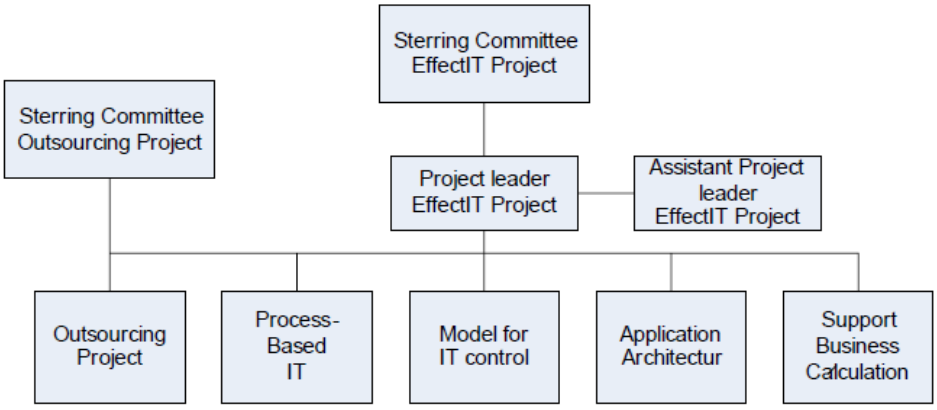

Figure 20 - Organization of the EffectIT project (Carlsson & Johansson, 2011)

Carlsson & Johansson reviewed the entire decision making process in that project and highlight different phases, critical steps and issues. These lessons learned can be used in this research to help NS not to make the same mistakes as MeLo made.

There were two conclusions about outsourcing decision projects that were made by the authors. First, it is extremely important that both the reason for starting such a project and its aim is clear. When this is not the case, there will be a high level of ambiguity and uncertainty which will probably lead to decreased commitment. This is also dependent on having an 'agreed' and shared view of what the project is about. By defining every important aspect and by letting everyone agree with it, it makes sure there is commitment on the outcome from the project and trust in the project during its run time.

Second, a well-developed IT governance and management is also important for the success of the process. Decision makers should know what applications are used in the organization and how they are developed, hosted and maintained. Figures about the IT operation are needed as well. This knowledge should be gathered before an outsourcing decision project starts.

A lot of MeLo's problems were related to time in the form of delays in presenting results and related to costs in the form of extra activities that were forced to be done. There were different meanings of what the decisions were about, among executives as well as the employees that were influenced by the decisions. Even among the external providers that were supposed to deliver the services needed in the future the meaning was unclear, making the relation between providers and customer harder to manage: it was unclear what services were supposed to be delivered and what services could be expected.

3.10 Summary on the to-be situation

In this chapter we reviewed different subjects in the existing literature from the definition of IT sourcing, to maxims and other best practices that we can adopt within the NS. This section summarizes this chapter.

The NS is looking for a document that gives pointers on both the strategic and the governance level, comprising of both literature and industry best practices. We identified how such a document should look like, using three templates from Gartner, SURF and Yesser. Combined with the wishes of the NS, it resulted in a template for our sourcing plan comprising of an as-is situation, to-be situation, points of improvement and best practices and guidelines (see section 3.8.1 for the entire template).

In order to start with a sourcing plan, a set of guiding principles (maxims) are suggested. Maxims are simple statements that specify a practical course of conduct. They form a bridge between the business strategy and the sourcing strategy and explain in short what needs to happen to connect one strategy to the other. This resulting sourcing strategy is not this research, our research resulted in a more broad document with management guidelines, not only souring guidelines.

Gartner identified five questions that organizations should ask themselves in sourcing questions to take them beyond the 'quick-fix' cost cutting. These questions are: why? (business outcome), What? (differentiation and competency), Who? (provider), How? (delivery) and Where? (location). These questions are answered in our research and / or sourcing plan when applicable.

We searched the literature and interviewed experts in the field to identify best practices used in sourcing questions similar to the ones NS has. In this search we found a way to structure the lotting of IT systems using an IT value chain to link IT activities to business activities. This way, chunks of work can be identified by combining the IT value chain to the business value chain. Next to this we made a decision model in order to ascertain which activities need to be outsourced and which to keep in-house. This model is made-up out of two existing models in the literature, which we combined and adapted for usage within the NS.

Other best practices include the eSCM model, a well-known best-practice model used in sourcing questions; in the gap analysis we identify specific practices of this model for usage within the NS. Furthermore, ten IT Governance principles from Weill & Ross are adopted.

Next to the literature, we contacted two companies (Sogeti and SURF) to elicit best practices they learned. This resulted in an interview with a manager from Sogeti and tools for sourcing from SURF. Surf also provided us with a maturity model, but that is discussed in another section.

4 The as-is situation of C&LM

In this chapter, the outline of the current situation ('as-is') of C&LM will be drawn. In the previous chapter we outlined the to-be situation, but in order to define how to 'get there', the starting point has to be known. We identify this starting point in this chapter by looking at different aspects of C&LM. In section 4.1 the background on the current strategy and decision tree within IT Operations is outlined, followed by the visions and goals of C&LM in 4.2. We then zoom in on the core process of C&LM (section 4.3), what the different business units are that work with C&LM, where in the core process they initiate contact with C&LM (both in section 4.4) and what the current sourcing strategy is of C&LM (section 4.4.11). All of this is done in order to get a good feeling about how C&LM currently does its work and how this work is regarded by the business units. This valuable information will be used as input for our gap analysis and the sourcing plan.
In section 4.6 we analyze the current landscape of suppliers and how these are categorized (are there a lot of strategic suppliers or a lot of development suppliers? And is this good or bad?). After that we apply the maturity model of SURF (section 4.7) in order to objectively identify points of improvements and which points need to be taken care of first. We conclude with an overview of the as-is situation in section 4.8.

4.1 Background

The business units of IT Operations wanted to start working on new ways of supplier management, so C&LM already started working on first steps to make up a '1.0 version' of a sourcing plan. Parallel to this, this research started to draft a '2.0 version' that would have better literature support. At the end of the research period, the intention is that this second version will replace and / or complement the first one.

4.1.1 Who decides what?

There are a couple of models that describe the way by whom IT decisions are made (Weill & Ross, 2004). IT Operations uses a combination of the IT monarchy and the IT duopoly models.

IT monarchy / centralized
IT monarchy is used in smaller businesses: the IT managers control all the IT related decisions in an IT monarchy. They are responsible for standards, policies, technology, etcetera. In larger organizations, they are usually represented via a CIO.

IT duopoly
In an IT duopoly there is a partnership between the centralized IT committee and the individual business units. Usually the committee submits proposals to the business units based on their requirements. Usually, the business units are owner of the government process. This model is outsource friendly in that companies maintain control over their processes but can easily outsource specific IT functions.

Federal model
Next to the duopoly and the monarchy, a federal model also exists. This model describes how at the company-level, executives work together with the mangers of the business unit and together they collaborate with the IT department. This is not the case at NS, since there is more than one IT department and there is not (yet) much steering from the top regarding IT decisions.

IT Operations
All the business units that fall under IT Operations have a manager and all those managers come together in the management team. The head manager of IT Operations also participates. This way, the different units can share their experiences, ways of working and points of improvement while adhering to the strategy and plans that are laid out by upper management (IT monarchy). The NS does have a CIO but only at the corporate level, where numerous 'IT Operations' fall under (IT duopoly).

4.2 Visions and goals

We studied existing documents within IT Operations and C&LM to deduct the goals that are set for both departments. We then related the two to each other so we could visualize which goals of C&LM contribute to the ones of IT Operations. By doing this, we get a better understanding of C&LM's works and how our sourcing plan should contribute to those goals.

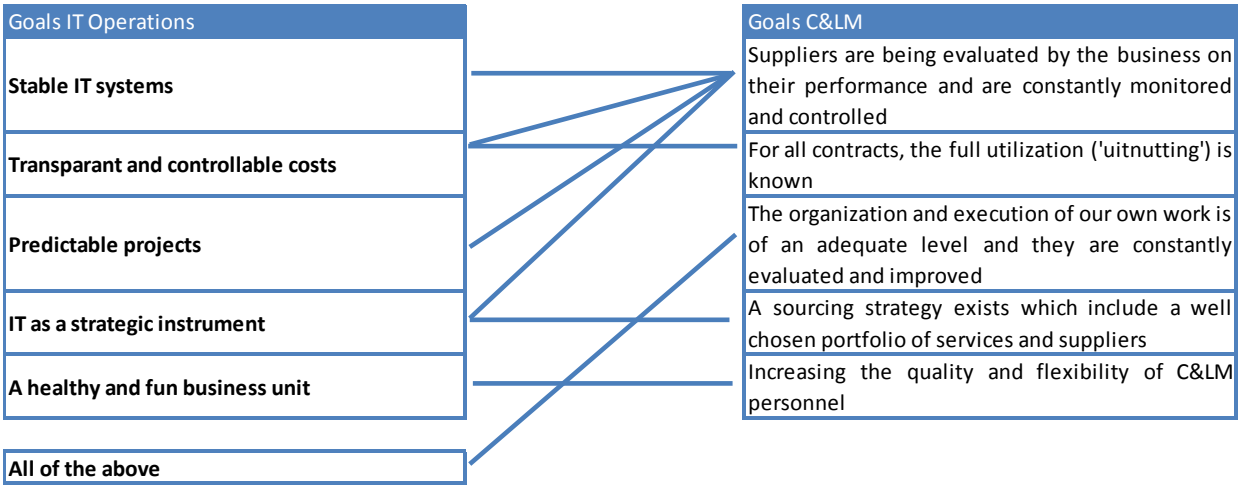

Table 7 - C&LM goals related to IT Operations goals

4.3 Core processes

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4.4 With which other business units does C&LM work?

In the ideal situation, every business unit that wants anything that involves suppliers or contracts should involve C&LM from the initiation of that process and start with the request step. However, sometimes the BU's start with selecting the supplier themselves, thereby circumventing C&LM. This is not always done on purpose but because of historical reasons or because selecting suppliers is considered good fun. A lot of knowledge about selecting suppliers is present, but not tangible. (Core) processes are not written on paper but exist only in people's minds. Since this process is not an assembly line that you can observe, we must derive it from employees using interviews. The goal of the interviews is to find out when the business units and C&LM initiated contact with one another. This way, we can get clear if they find each other in the beginning of the contract management process or in a later stadium.

The design of the interviews is elaborated in section 2.2. The interview with the service manager of C&LM was held first. Here it was discussed which business units have contact with C&LM regarding sourcing questions. In this interview, it became clear that some business units tend to work around C&LM and that there is room for improvement in the relationship between them.
After this interview, figure 21 was constructed and each stakeholder was approached for an interview regarding their relationship with C&LM to find out why they sometimes work around C&LM and how they regard their relationship.

The functions of the interviewees are stated in brackets.

4.4.1 C&LM (service manager)

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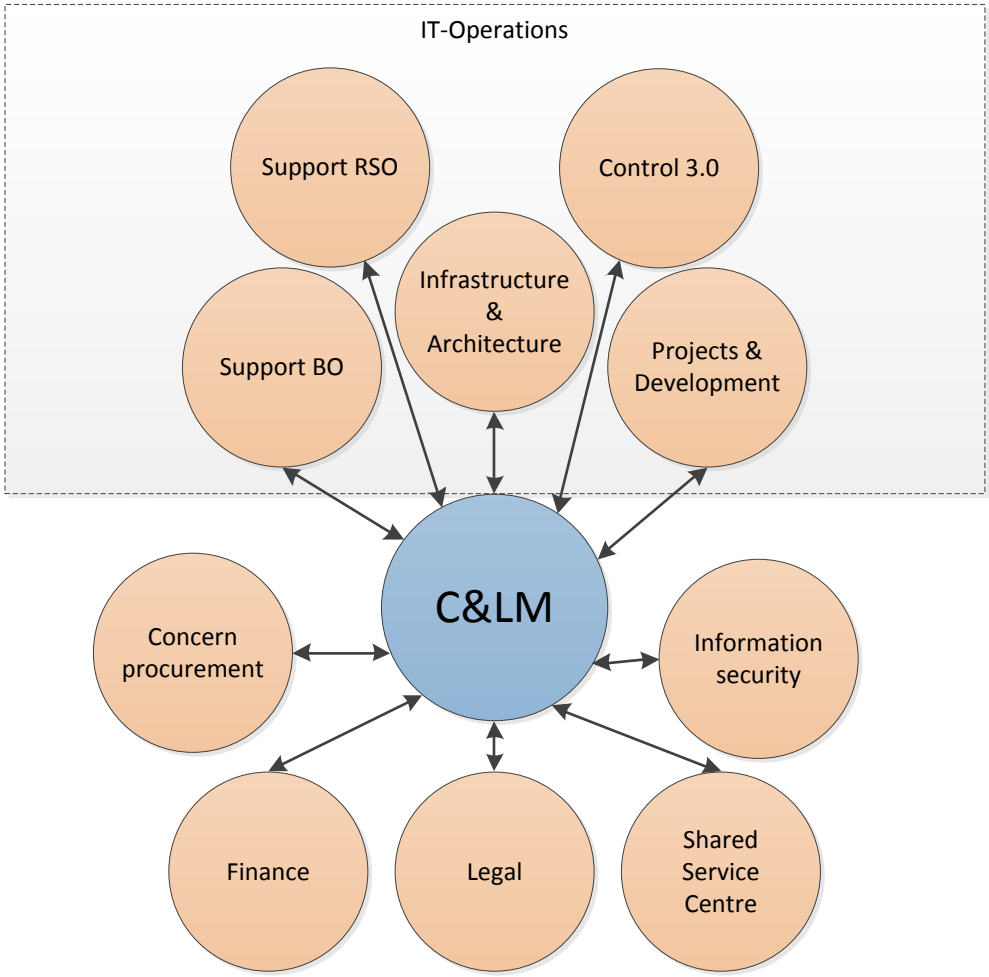

Figure 21 - Stakeholders of C&LM

4.4.2 Concern procurement (senior procurer)

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4.4.3 Information security (information security officer)

Confidential.

4.4.4 Control 3.0 (program manager *Control 3.0*)

Confidential.

4.4.5 Support operations (project manager support)

Confidential.

4.4.6 Infrastructure & architecture (manager I&A)

Confidential.

4.4.7 Projects & development (manager P&D)

Confidential.

4.4.8 Support RSO (service delivery manager)

Confidential.

4.4.9 Shared service center (service delivery manager)

Confidential.

4.4.10 Summary of the interviews

The interviews were analyzed and the entire workflow of all the business units with C&LM was deducted from them. This workflow is shown on page 47. Each arrow indicates an entry-point: a point where the first contact between the connecting business units is initiated. This does not mean that later on in the process the two don't communicate anymore; those arrows are omitted for clarity.

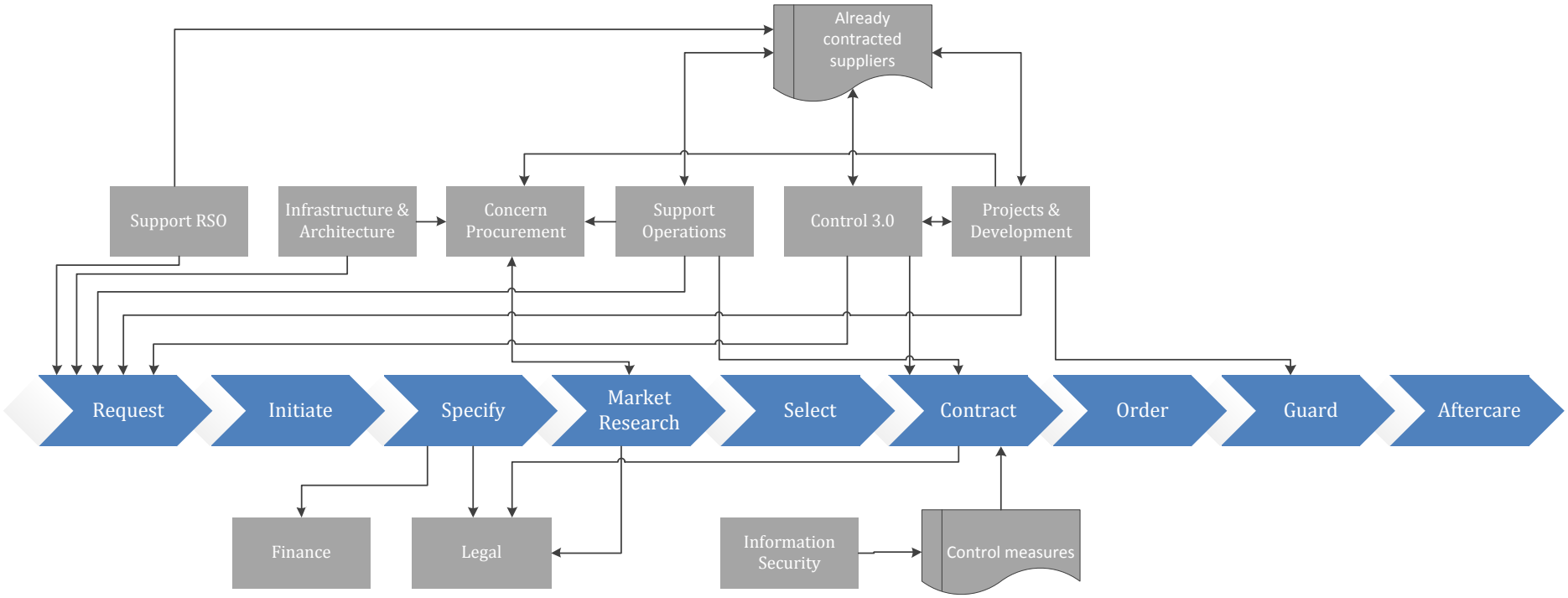

Figure 22 - Core process of C&LM with stakeholders and their corresponding entry-points

4.4.11 Interpretation of the interviews

In the first interview with the service manager of C&LM it was thought that business units often involve C&LM in a rather late stage when it comes to supplier selection. But according to the interviews and the resulting image on page 47, a lot of business units contact C&LM in the initial 'request' phase. It could be that not in all the cases C&LM is contacted but only sometimes. The BU's also indicate that the relationship with C&LM is slowly getting better but sometimes they don't see what C&LM can do for them or is doing for them. They want to be unburdened but that doesn't always come across.

Their opinions about the shared service center is divided. Some say the SSC is 'just another supplier' and others think it shouldn't be treated that way.

4.5 What is the current strategy of C&LM?

Our goal is to make a sourcing plan that would be an improved version of the one that already exists, if any. When asking around for 'the current strategy' of C&LM and IT Operations, there was not much to find. According to C&LM, a current worked-out strategy doesn't exist at the moment. Most of the suppliers that are currently contracted to IT Operations are there because of historical reasons and IT Operations just stays with them. The throughput time is also a reason for the lack of strategy: this is often quite a long time so new supplier selection processes aren't needed that often.

While the NS doesn't have a strategy on paper, they do have a guideline. In section 1.6.3 (scope) we explained the difference between functional management, application management, technical application management and technical management. The guideline is that functional management is done by the NS (in-house), application and technical application management is outsourced and the technical management is done via the shared service center.

4.6 What does the landscape of current suppliers looks like?

Since the supplier landscape of IT Operations grew throughout the years and there is no documentation regarding it, it is not clear what it currently looks like. Before we can do a gap analysis it is important to know what this landscape looks like and whether or not there is room for improvement. Instead of considering all suppliers separately, we can also take the amount of suppliers the NS has of a specific kind (strategic / development, etcetera) for our gap analysis.

4.6.1 The theory of Rietveld

Organizations tend to have a lot of suppliers that all need to be managed. In this area, differentiation is needed to be able to classify and segment suppliers. But why do we want to do this in the first place? It is important to point out that this segmentation is not a goal by itself. The point here is to get the conversation going about how to handle suppliers, what is a desired situation and where is an organization now regarding the segmentation of suppliers. In the end, it can make the supplier relationship more valuable for the organization.

Different portfolio models exist for this purpose, a wide-used model in procurement theory is the Kraljic matrix that has two dimensions: impact on the result and delivery risk. While this model is good in segmenting products that are bought to identify the type of supplier needed, supplier professionals came to the conclusion that these two dimensions were not enough to help organizations capture the essence of their relationship with their suppliers. To this end, Rietveld developed the supplier portfolio matrix, shown in table 8 (Rietveld, 2009).

Large financial and / or business impact	Performance suppliers	Strategic suppliers
Small financial and / or business impact	Miscellaneous suppliers	Development suppliers
	Non vital for the business model and / or not influenceable	Vital for the business model ánd influenceable

Table 8 - Supplier portfolio (Rietveld, 2009)

In this matrix, the most important suppliers can be classified (it is way too much work to do this with all the suppliers an organization has). One of the differences between this model of Rietveld and other models is that this model takes into account how the supplier regards the organization at hand: whether it can be influenced or not. It is quite possible that we see the supplier as strategically important but he sees us as exploitable or as nuisance; meaning that we want a good partnership with openness but he wants to take advantage and charge us as much money as possible. This is not a healthy situation so we want to be attractive for the supplier in order to influence him, thereby hopefully improving the relationship.

The two dimensions of the matrix are *financial and / or business impact* and *vitality for the business model and influencability*. Financial impact is the total cost per year of that supplier. Business impact is often regarded in a financial way but it is the cause of financial impact. Examples are protection of market value, new customers, improved products, better reputation, do more with less, less risk, etcetera. All these examples of business impact have a financial effect, but they are definitely not the same. Vitality for the business model means that suppliers score high on the following criteria mentioned by Rietveld:

- They play a key role in the services of public organizations.
- They possess critical capabilities, intellectual property, knowhow and competencies for the organization to reach a competitive advantage.
- The market where the supplier operates is not easily accessible because of legislation, technology and / or cost structures.
- There is a high interdependence between the organization and the supplier that gives the organization the possibility to influence the performance and the strategy of the supplier.
- There is a complex, multi-dimensional relationship across the entire organization.
- The supplier has a strong impact on our current and future cost structures, cash flows and financial performance.
- The supplier plays a crucial role with regard to risk management and exposure, reputation and durability.

The last, influencability, is how much we can influence the supplier to our needs. When a supplier cannot be influenced because the organization doesn't mean very much to it in terms of revenue and attractiveness and the organization classifies him as a strategic supplier, then this is a very dangerous situation: the organization will be exploited by the supplier with all the negative effects that come with it.

Making use of this matrix, the difference between contract management en supplier management becomes very clear. The upper two quadrants (performance and strategic suppliers) have the goal of *grip* and the tool for that is contract management where the two on the right (strategic and development suppliers) have the goal of *growth* and that is done via supplier management. The development suppliers have the potential to grow into strategic suppliers and strategic suppliers can grow into a well based partnership. However, they can only grow when their performance is good enough.

4.6.2 The situation at the NS

Using the Rietveld model, we started the process within the NS to identify the segmentation of the current supplier landscape of IT Operations, enabling us to make recommendations whether the current segmentation is desired or not. Rietveld explicitly mentions the involvement of all the important stakeholders in this process to prevent resistance of the outcome. We did this by involving multiple managers of IT Operations and providing them with feedback during the process.

Rietveld himself only provides the table itself (table 8) with a little argumentation but no ways of measuring these things in the organization objectively. We therefore interpreted his book the best we could and set up a questionnaire that measures the different dimensions of his matrix. For the set-up of this questionnaire and who we invited as respondents and a more specific explanation of figure 23, see section 2.3. The results are discussed below.

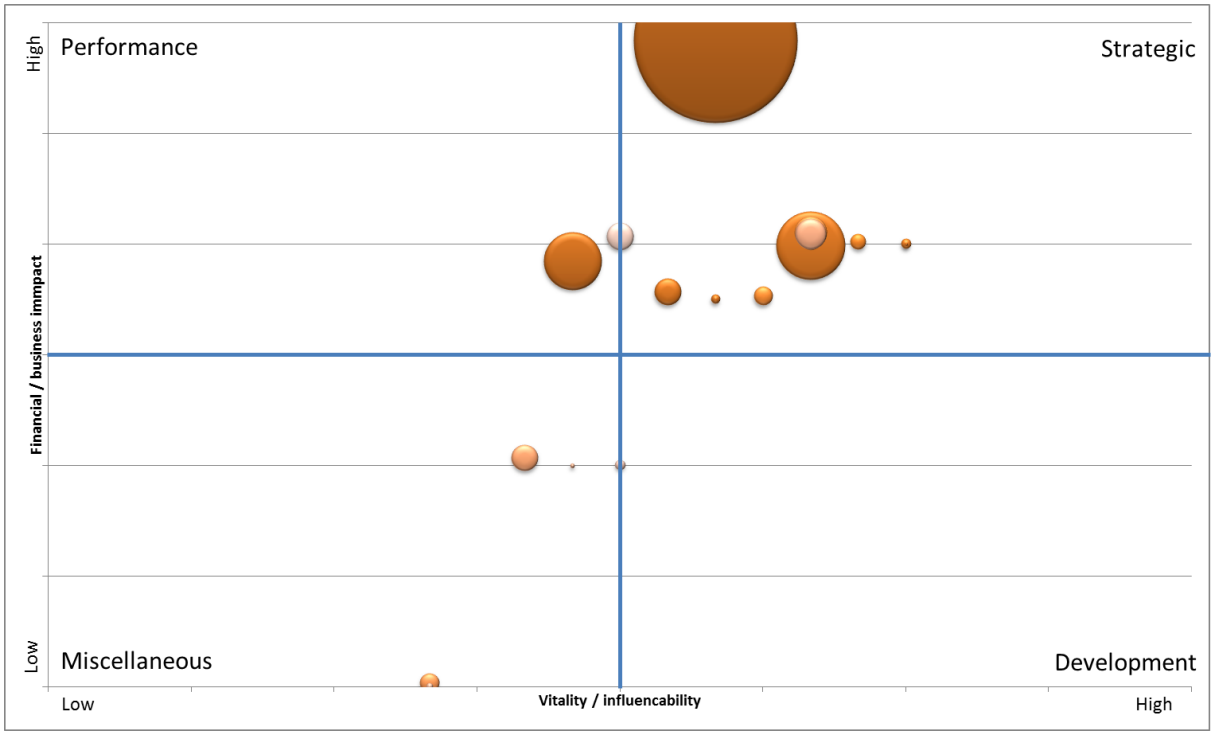

Figure 23 – Current landscape of suppliers of IT Operations (names of the suppliers have been removed in this unrestricted version)

Again, this segmentation is meant to start the discussion about suppliers and their role and is based on opinions. This means that the graph is an indication and might not be the 'accurate to the decimal'. As we can see from this graph, IT Operations has relatively a lot of strategic suppliers, virtually no development and / or performance suppliers and a few miscellaneous. But what does this mean and what kind of conclusions can we draw from this? Let's focus on the performance quadrant first. Suppliers in this quadrant tend to be commodity suppliers that have big contracts

with the NS and once those contracts are running, there is not much adjustment needed. These are suppliers that aren't too influenceable because they have a lot more customers besides the NS that are equally important to them.

The development quadrant then, also rather empty. Here should be some suppliers that don't have a very big impact on the business model of the NS yet, but they are very specialized and because the NS is a big customer to them, also very influenceable. Development suppliers have the potential to grow into a partner; suppliers that are worth the investment so they might become a strategic supplier. In the graph we can see that there are virtually none of such relationships. We can see some small contracts in the strategic supplier quadrant but these suppliers have way to big an impact on the business of NS to be in the development quadrant.

Most of the suppliers (64%) are in the strategic supplier quadrant. Rietveld mentions that an organization shouldn't have more than a handful of strategic suppliers and this is obviously a different case with IT Operations. This could indicate that a lot of work of C&LM goes to managing the important suppliers and there isn't much time to invest in the other quadrants. A good idea might be to move some of the work that these suppliers do to the performance quadrant in order to focus more on a few specific strategic partnerships.

Looking at the table in appendix 0, it is striking that suppliers that are not regarded as partners (that think along with the NS) as well as suppliers that don't keep to their agreements that these suppliers don't supply applications that are vital for the NS and that the supplier is easily replaceable. Almost all of these suppliers are in the 'miscellaneous' quadrant.

4.7 SURF Maturity model

Before the sourcing plan can be formed, the current, as-is situation, needs to be described. This is useful because after identifying the preferred way of working (i.e., the to-be situation), a 'roadmap' is wanted on how to get there. This roadmap can only be made when the 'starting position' is known (i.e., the as-is situation). There are multiple ways of defining the as-is situation according to the literature we found. One of the ways is the usage of a maturity model. In section 2.4 we described what a maturity model is and how the model we chose (SURF Maturity Model) can help us with defining the as-is situation. Here we show and discuss the results.

4.7.1 Results

A few key employees (managers of the business units that fall under IT Operations) were approached with the request to fill in this maturity model with IT Operations as the subject. Their average answers per category can be found in figure 24. A dotted line is also included, which gives the average of the answers of all the persons combined. The values of this combined average can be found in table 9.

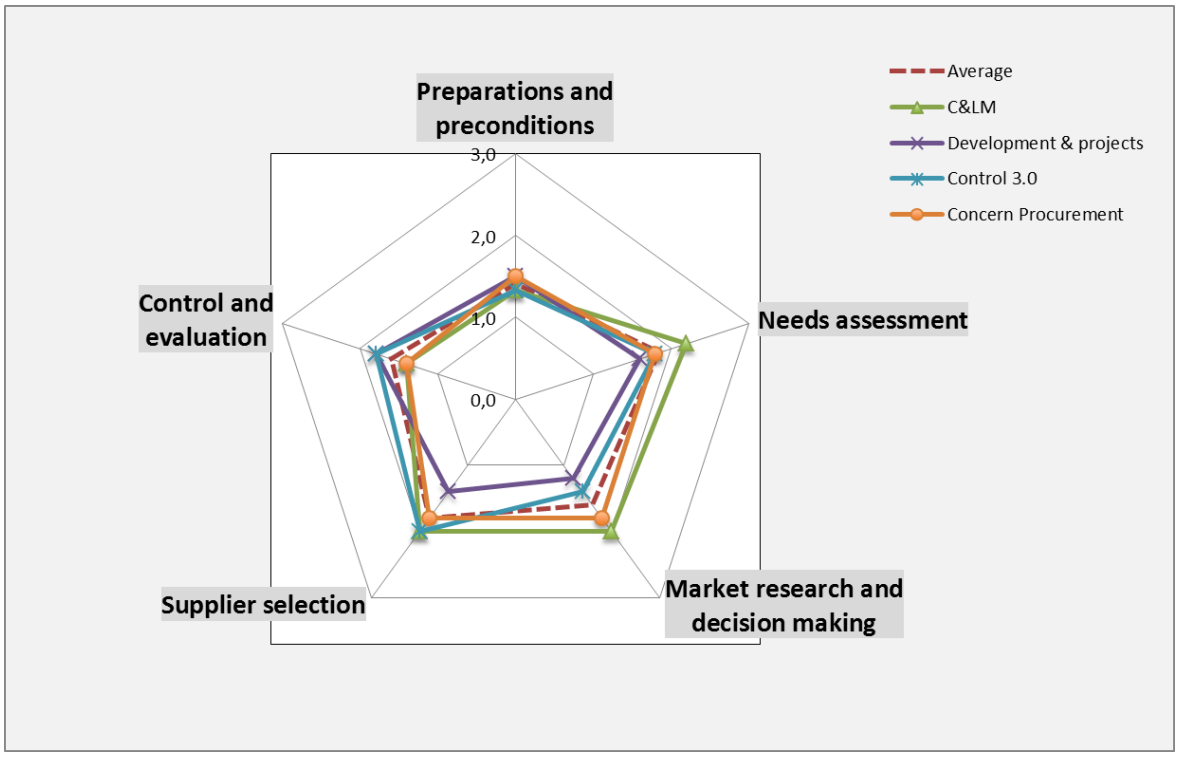

Figure 24 - SURF Maturity Model for IT Operations

Preparations and preconditions	**1,4**
Needs assessment	1,9
Market research and decision making	1,6
Supplier selection	1,8
Control and evaluation	1,6

Table 9 - Average maturity of IT Operations

What can be seen is that nowhere the maturity rises above level two and *preparations and preconditions* even tends to be more towards level one than two. In the original data however, sometimes maturity level three was addressed, so let's revisit the first three maturity levels:

1. Initial
   Ad-hoc, processes are recognized but not documented or designed, informal, not stable, unpredictable outcomes, lots of 'firefighting'.
2. Repeatable
   Repeatable but dominated by the informal. Goals are not defined, some stakeholders are involved, KPI's are not relevant, evaluations are sometimes performed.
3. Defined
   A professional and standard process is set up, documented and under control. Goals are understood, reports and measurements are valid, roles are formally defined and there is proactivity. Tools are used and risks are known.

When we analyze the original data (included in appendix 10.3 - maturity data), we see that there are four practices that score '1' for every person and three practices that are barely above that same score. Those are depicted in table 10, with a short explanation what that practice would behold for maturity level 5. These practices are prime candidates for improvement in the sourcing plan.

Phase	Practice	Explanation for maturity level 5	Average maturity score
Preparations and preconditions	Sourcing strategy	An explicit souring strategy that describes the vision and how that vision is realized.	1
	Conceptual framework	There is a widely used and known terminology within the organization.	1
	Life-cycle management	The entire life-cycle for relevant technology is documented and up-to-date. Relevant replacements, upgrades or contract renewals are timely announced.	1
Needs assessment	Lotting (Dutch: *verkaveling*)	There is an architecture on how to divide all the information services and this architecture is widely used. These services are non-intertwined.	1
Market research and decision making	Insight in own cost allocations	The organization has insight in the total IT costs and to what services they belong. This information is used in sourcing scenarios and risk analyses.	1,2
	Personnel consequences	Sourcing decisions do not only lead to cost and FTE consequences but also in terms of competencies and experiences needed for successful sourcing.	1,2
Supplier selection	Cultural matching	When selecting suppliers, the business culture of the supplier is considered as well to come to a good match.	1,2

Table 10 - Low scoring practices

What is interesting is that the scattering in phase one (preparations and preconditions) is very low (everyone agrees on the same maturity level) and the scattering in phase three (market research and decision making) is very high. One respondent even scored two practices in that phase with level 3 (knowledge of the market and support) where the other persons scored them with level 1. Furthermore, when looking at figure 24, 'the business' (control 3.0 and development and projects) scores the market research and decision making phase much lower than C&LM and concern procurement do. This could indicate that they believe these practices are performed better than perceived by the business. When looking at the original data we can compare the average maturity level between C&LM and concern procurement against the business:

	Average maturity level
C&LM & concern procurement	1,7
The business	1,6

Table 11 - Average maturity levels compared

The business does seem to score slightly lower (6%). However, we only have two persons per row so it is not safe to say that this sample size is accurate for the entire population. It could be a reason for future research to find out whether it is actual the case that one group perceives IT Operations more mature than the other on certain practices. We do not proceed on this any further because this is not in the scope of this research. It might be useful in change management scenarios (different perceptions might call for different change adoption processes).

Phase	Practice	Explanation for maturity level 5	Average maturity score
Needs assessment	Business analysis	The organization has experts that are able to translate the users' needs to needed services. They are called upon with every change.	2,2
	Business data	Knowledge of law and legislation is up-to-date and business data is modeled and coded according to the BIV coding.	2,2
Supplier selection	Contract negotiations	Contract negotiations are done by specialized employees.	2,5
	Plan-based approach	Changes are done using a project-based approach using skilled project leaders. This method is used organization-wide and under constant evaluation.	2,2

Table 12 - Higher scoring practices

In table 12, the higher scoring practices are shown. These maturity levels are the highest (on average) and indicate what the respondents believed IT Operations to be good in. These levels are probably not candidates for improvement at this time; it doesn't make much sense to improve hight scoring practices before improving the low scoring ones: it would create an imbalance in the organization.

4.7.2 Interpretation: what practices to improve upon?

So which practices should we try to improve? For one thing, a sourcing plan is being developed which includes lotting so those practices are already being developed that should result in a higher maturity level.

Conceptual framework

What became clear from the interviews (section 4.4) and the discussions heard by the researcher at his time with the NS, a lot of people don't agree on terminology within the organization, resulting in longer discussions than necessary and slow decision making processes. Furthermore, not knowing what others mean can result in errors and mistakes. An example is the difference between the application support and technical application support. Or the unclearness about the difference between run and change (as an example how to divide the lotting). Because this practice is in the preparation and precondition phase, it is important for the rest of the phases that this first phase is performed well and where everything is as clear as it can be in order to prevent errors and mistakes from moving on in the process.

Life-cycle management
The contracts that are in their normal life-cycle are documented in Excel and every time a contract is about to end, the business owner is notified. However, C&LM indicates that this can be much improved upon. For instance, the business can be involved more; not just at the end of the contract period but throughout the entire life-cycle of the contract.
When we look at the contracts themselves, they are mostly stored in a vault at concern procurement. However, some of the agreements are stored in a locked closet at the NS building. There is no clear process that describes which contract should go to what place. This creates confusion and it is not very safe in case of a fire. Most of them are digitalized, but only as a backup; there is no contract management software.

Cultural matching
It became clear that when selecting suppliers, the cultural match between the NS and the (potential) supplier is not considered. But not every supplier is equally qualified for the NS on a cultural level. For instance, the supplier can has different goals (e.g. on a social level) that the NS would like to see in him. Another effect could be that the goals are the same but that the supplier has a total different vision on how to reach those goals. This can cause friction resulting in a less smoother cooperation.
Besides matching on a cultural basis, there can also be matched on size and influence. Not every supplier is qualified to be a supplier for their customer. While we are dividing our suppliers into a matrix (figure 23), they can do the same for their customers (table 13).

Large revenue share	Exploitable customers	Core customers
Small revenue share	Marginal customers	Development customers
	Low growth potential	High growth potential

Table 13 - Customer portfolio (Rietveld, 2009)

It is important to realize what would happen when the NS views one of its customers as being ‘core’ while the supplier sees the NS as ‘exploitable’. As stated earlier, this would create an unhealthy relationship: the NS would try to get the best out of the relationship while the supplier just wants to get their money.

This is where cultural matching comes in. Although the above is not just about cultural matching, it is important to consider in what quadrant you fall at a supplier and how he sees the relationship to enable more transparency and find the best fitting supplier for the NS. This can be done with new suppliers as well as for suppliers that are already contracted. In the latter case, the information can be used when the contract needs to be evaluated and renewed.

Insight in own cost allocations
Confidential.

Personnel consequences
The aspect 'consequences for personnel' has two sub aspects: costs & FTE and competencies & experiences. At the moment it is not possible to know what costs are made for every specific application. Support for applications are invoiced on a function point basis next to a fixed amount of service costs per month. The variable costs come from change function points. What this holds for personnel at the NS is not known but C&LM is skeptical whether this is useful.
Regarding the needed competencies, the NS has a lot of personnel that is hired externally on a semi-temporary basis. This means that knowledge of the NS domain will be lost once these employees leave. An example is functional application managers: NS indicated that functional application management should be done in-house while these employees are external people. What can be improved is to specify the needs and demands of the NS (also on a management level) towards suppliers and employees shouldn't switch roles as often as they do. This way, a more transparent process regarding the deployment of personnel is needed regarding on what and who the NS needs, at which moments and at what place.

4.8 Overview as-is situation

We now give a summary of all the previous sections of this chapter to quickly get a birds-eye view of the as-is situation of C&LM and IT Operations regarding sourcing.

1. There are a lot of stakeholders that C&LM has to deal with of which 50% is within and 50% is outside IT Operations. The IT Operations stakeholders are able to find C&LM sooner and sooner but are still circumventing C&LM at some points. This is mostly due to the departments finding the relationship between them and C&LM not optimal or the quality of the work being too low.
2. The supplier landscape of IT Operations is divided in a way that there are many strategic and very few performance and / or development suppliers. This might be the cause of a lot of supplier management effort where contract management should be more in order, according to Rietveld.
3. Regarding the maturity of IT Operations, a number of practices are at level 1, most of them in the preparations and preconditions phase. This means that errors made in this phase, translate to errors in the next phases. These are therefore prime candidates for improvement.

These three 'conclusions' are input for the gap analysis. There we will dive deeper into the points of improvement we identified in this chapter, how these points are going to be improved and what we need to do that.

5 Gap analysis

In this section, we will review our work of the to-be situation and compare it with the current, as-is situation. By doing this, we can make choices about what kind of actions and guidelines are best for C&LM and IT Operations in order to meet their goals and the goals of this research. These choices and their argumentation lead to the sourcing plan that is included in appendix 10.1. Every time a guideline is deducted to be used in the sourcing plan, it is shown as following:

Guideline X: This is an example guideline to be used in the sourcing plan

In section 5.1 we discuss the SWOT-analysis we performed, in 5.2 we review what best practices and literature that we found in the to-be situation we want to implement and in section 5.3 through 5.6 we go into more specific guidelines for the domain, services, supplier and performance portfolios.

5.1 SWOT-analysis

Confidential.

5.2 What things to implement from the to-be situation?

We discussed numerous best practices and literature studies in the to-be situation. Together with the as-is situation, we can make an analysis of how they should or could be implemented in order to meet the goals of C&LM and this research.

The guiding principles, called maxims, that specify a practical course of conduct are very useful to implement in the sourcing plan. They are easy to use, easy to understand and help to create alignment between various business units. Not having alignment with the business units is a threat as identified in the SWOT analysis, which can be mitigated using these maxims.

Guideline 1: Use maxims as a practical course of conduct and create alignment

A strength of the sourcing plan, as identified in the SWOT-workshop, is to give a clear direction towards the goals at hand. The goal diagram of Sogeti gives this direction by letting you think about how every activity contributes to the formulated goals and how this contributes to the right of existence of the organization. By explicitly writing down these long-, mid- and short-term goals, it helps to create consensus about why certain activities are needed and what is expected from everyone.

Guideline 2: Use the goal diagram to identify how activities contribute to what goals

Guideline 3: Confidential

Guideline 4: Confidential

When making SLA's, make sure you have clear what kind of service levels are really needed. Demanding very high ones makes no sense when NS itself isn't operating at those high levels, which results in paying high prices for services the NS doesn't really need.

Guideline 5: Make realistic and pragmatic SLA's

5.2.1 eSCM best practices

As we stated in section 3.9.3, the eSCM-model has 95 practices on multiple maturity levels. While these practices are all very sensible and might be useful for the NS one way or the other, we aim to have a sourcing plan that has a practical amount of practices. We used the document from ITsqc where all the eSCM-CL practices are categorized and explained. We scanned all the practices in order to make a longlist out of it (Hefley & Loesche, 2006). Our criteria where that the practice could support the goals of C&LM and / or this research and that most of them should be fairly low-level since our maturity analysis showed that NS doesn't have a high maturity yet. Higher level practices can be implemented before a lower level one is, but that is generally not recommended.

What we need in getting from the longlist to a shortlist is criteria that will help us in ending up with about 7 to 10 practices. We do this by making use of the SWOT-analysis, the best practices that are already identified and points of improvements learned from the as-is situation. In table 14 the longlist is combined with the shortlist. The entire table is the longlist, checkmarks in the SL (shortlist)

column indicate whether the practice is on the shortlist and argumentation is provided for putting them there or not.

Practice number	SL?	Title + argumentation
Str04		*Sourcing objectives* Establishing clear sourcing objectives ensures that the sourcing activities are aligned with business objectives. We already implemented this practice by making use of maxims.
Str05		*Organizational sourcing strategy* We are currently in the process of making a sourcing strategy / plan.
Gov02		*Service provider management* This practices documents that procedures should be implemented in order to manage service providers with regard to performance, issue and dispute handling reviewing statuses, etcetera. While this is a very useful practice, C&LM is doing most of these things already.
Gov03	✓	*Internal stakeholder management* Establish and implement procedures to manage internal stakeholders in order to support the organizations sourcing objectives. As identified in the SWOT-analysis and in the as-is situation, stakeholders (such as business units) sometimes don't see the added value of C&LM or don't see how their unit benefits from sourcing strategies and its guidelines. They are also afraid that they will lose their say in the process. Using this practice will help with those issues.
Gov04		*Defined sourcing process* This practices describes how the sourcing processes are developed, documented and maintained across the organization and providing a cumulative, long-term benefit for the client organization. This is a higher level version of Str04 and the NS is not ready for this as of yet. First, the sourcing plan itself needs to be implemented and experience needs to be gained.
Rel02	✓	*Service provider relationships* Develop and manage relationships with service providers in order to foster long-term relationships and communicate to ensure a clear understanding of the client organization's requirements and (changing) needs. Because the NS has a lot of strategic suppliers (as identified in the as-is situation), handling these suppliers in a strategic way is a good idea.
Rel04		*Issue management* Issues can arise in any aspect of phase of the sourcing cycle and impact the relationship between the parties. These parties include, but are not limited to, end-users, client organization, service providers and partners. This might be a useful practices to use when issues are a big threat to the relationship but it doesn't help in accomplishing goals at this point.
Rel05	✓	*Cultural fit* Integrates the cultures of the client organization, the service provider and service provider's partners in order to support the coordination necessary to meet the client organization's requirements. Rietveld also identified that a cultural fit is very important (see page 55) in order to have a healthy relationship with your supplier so we put this practice on our shortlist.

Ocm02		*Stakeholder involvement* Identify and involve relevant stakeholders in sourcing activities. We already included Gov03 (internal stakeholder management) on our shortlist and while this is not entirely the same practice, we believe they overlap enough to exclude this one due to possible redundancy.
Ocm04		*Human resource changes* When the new sourcing plan is adopted, it might have consequences for the workforce and this needs to be managed. This is an interesting viewpoint but because this falls outside the scope of this research (after discussing it with the manager of C&LM), it is not included on the shortlist.
Ocm05	✓	*Communicate organizational changes* Establish and implement communications strategies and plans to support the client organization's sourcing actions. The purpose of this plan is to reduce fear, gain acceptance and share expectations. Because it is identified in this research that business units don't really see what the benefits are for them and they fear that they might lose their say, it is important to keep them in the loop of the sourcing plan and its changes inflicted upon the organization. But not only the business unit managers can benefit, all the employees of IT Operations might want to know what is going on.
Ocm06	✓	*Organizational change* Next to communicating the changes (Ocm05), it is also important to manage the changes themselves, especially when these changes have a large impact on resources and work processes. This also helps in creating acceptance and doing all this in a structured way. We therefore place it on the shortlist.
Ppl02		*Personnel competencies* Develop personnel competencies needed by individuals with sourcing responsibilities to perform their assignments. While it is identified in the SWOT-analysis that competencies are very important and more knowledge needs to stay in-house at the NS and competencies need to better specified, this is not one for the shortlist. The reason being that this practice focusses on people that are involved with the sourcing questions.
Thr01	✓	*Sourcing risk management* Establish and implement procedures to identify, assess and manage sourcing risks. This is particularly critical in the early stages of a sourcing initiative where requirements are being analyzes and service is being designed to meet those requirements. In the interviews with the business units and C&LM, it was clear that C&LM was not always contacted from the beginning to mitigate such risks. It is therefore a good idea to pay more attention to this, by putting it on the shortlist.
Opa02		*Sourcing options* Define the relevant criteria for identifying sourcing opportunities in terms of cost, value, complexity, direct customer contact, revenue risk and operational risk. It should align with the sourcing plan. This is a practice that might be useful in the future but is currently at too high a maturity level to be used right now.
App02		*Business case* Establish and implement procedures to develop and validate the business case for sourcing. We already have a template for a business case from both SURF and from the NS. There are quite a few handy activities specified in this practice but we believe we can succeed with the data we already have.

App04		Impact & Risk analysis Perform impact and risk analyses of the proposed sourcing action. We use the model of Jurison in the decision model we adapted for the NS where risk is plotted against reward. This eSCM practices has this risk analysis a bit better described but we believe the management of IT Operations is capable of identifying risks of sorucing decisions in their own way.
Pln02	✓	*Define the service definition* Define and document the services to be performed by the provider on behalf of the client and the service level specifications in order to set expectations and to allow effective comparison between potential providers. In the SWOT-analysis it was identified that IT Operations has a couple points of improvements regarding specifying what kind of work needs to be done by the provider. This practice is therefore very useful to aid in that process.
Pln05		*Prepare service requirements* Prepare requirements to communicate to prospective service providers according to documented procedures. It helps the organization to set communicate their demands for future services and these documents will be included in the public tenders. While this practice is very useful, it is closely related to Pln02, that is already on our shortlist.
Agr05		*Define SLA's and measures* Define the formal service level agreements and performance measures for the services and service conditions. C&LM is also quite capable of setting up SLA's. The performance part is rationalized in Mgt02.
Mgt02	✓	*Performance monitoring* Establish and implement procedures to monitor and verify that service commitments are being met. This practice is not about specific KPI's but about the process of what is needed on a high level to monitor performance of suppliers. Based on the need for a performance portfolio, this is also one for the shortlist.
Mgt08	✓	*Review service performance* Aligning the mutual understanding of the agreement's performance criteria and clearly defined client expectations over the sourcing life-cycle are critical to maximize the value derived from a sourcing action. Since KPI's and the way to measure them become more important in the future, this practice is for the shortlist as well.
Mgt09		*Stakeholder feedback* Collect, analyze and use stakeholder information in order to improve service delivery, sourcing management and relationship with stakeholders. This is valuable information that should definitely be done but not worth an entire practice on our shortlist.
Mgt11		Continuation decision Establish and implement procedures for making decisions about continuing the sourced service. This involves data collection and analysis, e.g. performance data. This is useful but not necessary for this research to implement it in an entire practice.

Table 14 – Longlist of eSCM practices plus argumentation which we want to use for the shortlist

We now have nine practices that are usable for the NS. For structural purposes, some practices will be discussed and explained in the section they belong to. For instance, Mgt02 – performance monitoring will be in the performance portfolio.

Guideline 6: Use eSCM practice Gov03 – internal stakeholder management

Guideline 7: Use eSCM practice Ocm05 – communicate organizational changes

Guideline 8: Use eSCM practice Ocm06 – organizational change

Guideline 9: Use eSCM practice Thr01 – sourcing risk management

Guideline 10: Use eSCM practice Pln02 – define the service definition

5.2.2 10 IT Governance practices

The ten principles of Weill & Ross are all very good ones. But if we look at what the NS needs at this point and how these principles can be of help, the focus needs to be on more collaboration between the business units and C&LM and the realization that C&LM can be useful for them.

That is why we choose to highlight one of their principles: *provide transparency*. When all the governance processes are as transparent as can be, it is likely that more people will follow them as opposed to when they are less transparent. This could be done by documenting all the processes that people should follow when they have sourcing questions and to whom they should go to and by actively spreading these documents within the business. This way the business units know what is expected of them and hopefully see what they can gain by following the rules that are laid out.

Guideline 11: Provide as much transparency as possible regarding the rules of sourcing, its processes and its advantages for the business

5.2.3 Contract management software

If we look at the points of improvement from the SURF maturity model, specifically insight in own cost allocations en life cycle management, there is a possible solution that can help with these practices: contract management software. There are four key elements in such a solution, according to a report of the International Association for Contract and Commercial Management (IACCM Research, 2009):

1. A central repository and an enterprise-wide, structured process to manage contract creation and execution
2. The ability to effectively manage contract milestones via automated alerts
3. Automated workflow for contract review and approvals
4. Obligations management capabilities and key performance indicators to improve contract compliance and performance

This solution helps to track all the contracts that exist for a specific application and is less error-prone than Excel where multiple people work in which helps to have better insight in the costs for every specific application and / or service the NS has. It also helps to improve the life-cycle management of contracts, including the business units in this process and in digitalizing contracts. Such a software solution might already exist elsewhere in the organization so it is useful to ask around.

Guideline 12: Implement a contract management software solution

5.2.4 SURF tools

Another example of transparency is the use of business cases. By stating all the facts constantly in the same way, decisions can be reproduced instead of decisions that are based on gut feelings or incomplete data. By reviewing decisions that made use of business cases, acceptance becomes higher as well. The business case template should be used by everyone with every major (sourcing) decision.

Guideline 13: Use the business case template for sourcing decisions

The bonus-malus agreements tool from SURF described the do's and don'ts when performance agreements are made with suppliers. It is therefore a good idea to review this tool and use it before signing contracts to see whether common pitfalls have been avoided. The guideline is mentioned in the performance portfolio section.

5.2.5 Lessons learned from an outsourcing decision project in a large public organization

MeLo, a large public organization in Sweden, had two conclusions they learned from their outsourcing project. Again, we are seeking alignment for the business units of IT Operations and more commitment. Their first conclusion supports this goal: make sure the goal for starting a specific project is clear as well as its aim. With it, define everything that is important and let everyone agree with it. This is something that also came out of the SURF maturity model, concluding that by adopting this guideline, commitment and trust rise and the outcome of a project is more certain.

Guideline 14: Define as much as possible before starting a project and write down the goals and the aim of the project at hand

5.3 Domain portfolio

In section 3.9.6 we discussed a way to divide the pieces of work that IT Operations has, that can be offered in the market by making use of Porters original value chain (Finlay & King, 1999). This chain consists out of 5 linear elements: inbound logistics, operations, outbound logistics, marketing & sales and service. Finlay & King argue that using the IT value chain, we can identify chunks of work for every activity in the original value chain by combining the two chains.

IT Operations is an IT department of NS Reizigers. The IT for, for instance, commercial and business systems falls under a different IT department. We therefore apply the original value chain on NS Reizigers. This means NS Reizigers has the following activities: inbound logistics, operations, outbound logistics, marketing & sales and service. Each of these activities can be supported by an IT department because they provided the IT systems for NS Reizigers. An example: NS Reizigers' objective is to transport people from A to B using trains. Inbound logistics is mainly personnel on the train and slots of 'rail time' (at what times can trains of the NS travel on specific pieces of rails). Operations is planning of this personnel and the trains. Outbound logistics is the duty rosters for personnel and time tables for the trains. Service is adjustment of these schedules during each day. Marketing and sales are the products that are sold to the customers such as subscriptions. So, not all these activities are specific for IT Operations, these are mainly here as examples.

Let's review the outbound activities for NS Reizigers, e.g. the duty rosters and train time tables. IT Operations supplies systems for these activities and the IT value chain identifies the five different kinds of systems: receive and filter systems, data processing / information interpretation systems, information / intelligence presentations systems, IT marketing and sales systems, IT maintenance systems (again, see section 3.9.6). This means that there should be an activity / system / chain for, for example, an information presentation system regarding the train time tables. This is indeed the case; there is the ns.nl website, the mobile apps, the API, etcetera. But there should also be a system for displaying the current delays for specific NS employees ('bijsturing' departments) in order to adjust the train tables in the coming hours. For every combination, activities and / or systems can be identified. These activities are suited to divide the work of IT Operations into pieces and, subsequently, input these activities in, for example, in the decision model we introduced in section 3.9.1.

A generalization of how the NS should put this to use. For every combination of the original value chain with the IT value chain (such as the above example), the NS should identify the IT activities / systems that belong there. An example scheme with some activities / systems filled in, is shown in table 15.

	Inbound logistics	Operations	Outbound logistics	Marketing and sales	Service
Receive and filter	Portal where whishes regarding work times for employees are entered				Information about current delays on the railroads
Data processing / information interpretation			Software that plans the personnel in the trains		
Information / Intelligence presentation			Applications that show the planned departures		Applications that show the current delays
IT marketing and sales					
IT maintenance	Maintenance and support for inbound logistics systems		Maintenance and support for outbound logistics systems		

Table 15 – Examples of lotting for IT Operations

Lots are not always mutually exclusive. Some systems can address multiple lots. For instance, a system for the working hours of employees can have the portal to enter the whishes for the employees, but also contains the logic to process and interpret the information and present it.

Guideline 15: Use the IT value chain to define lots

5.4 Services portfolio

The current strategy of IT Operations is that application and technical application support is outsourced. C&LM is open to new insights if their current strategy is a sound one or whether it could use some improvements. We therefore adapted two decision models that can aid in deciding whether an activity should be outsourced or kept in-house. This resulted in a decision model, specific for the NS with a very pragmatic approach that can easily be used by the NS.

Sogeti also had the tip of not only considering monetary terms for outsourcing decisions but soft terms such as being more agile, having a bigger competitive advantage, etcetera. This has been incorporated in our decision model where there are questions that are not only about the financial side, but also on the competencies of the activities.

Guideline 16: Use the decision model for sourcing questions if not sure if the activity should be outsourced or kept in-house

5.5 Supplier portfolio

As we have seen in the current landscape of suppliers (figure 23), the NS has a lot of strategic suppliers where this should be no more than a handful. This could indicate that a lot of work of C&LM goes to managing the important suppliers and there isn't much time to invest in the other ones. The guideline here is that C&LM should work towards less strategic suppliers in their portfolio and more development and performance suppliers. This can be done on two dimensions: suppliers

can move to the left (the supplier is less influenceable or it is less vital for the business model) or downwards (less financial and / or business impact) in figure 23. The goal here is that suppliers that are really critical for the business model of IT Operations, should become or stay a strategic supplier.

Practically, this means that C&LM should search for suppliers that cost less per year and / or don't have a profound impact on the business of NS or suppliers that are less vital for the business model. Examples of criteria that can reduce the vitality are in section 4.6 but also the following ones can be met when looking for new suppliers or changing the relationship with current ones:

- The NS should not be too dependent on this supplier.
- The supplier can easily be replaced.
- Other suppliers can easily take over the services / products from this supplier.
- It doesn't take special skills and knowledge to develop / maintain the applications / services from this supplier.

Guideline 17: It should be the focus to reduce the number of strategic suppliers and increase the number performance and / or development suppliers

From the interviews we had with employees of IT Operations, it became clear that there is often a gap between the culture of the NS and the culture of the suppliers and that this does not contribute to a healthy relationship. Some suppliers even take advantage of this situation. Both the eSCM practices as well as Rietveld suggest that a cultural fit (e.g. wanting the same thing) is very important in order to have a good and trustworthy relationship and it also helps to prevent vendor lock-in. The maturity model of IT Operations also indicates that the matching of cultures is something that is to be improved. That is why we advise the following guidelines. The eSCM one dives into the actual culture of the supplier and the provider whereas the other one focusses on getting to know what the supplier wants from the NS.

Guideline 18: Use eSCM practice Rel05 – cultural fit

How can we ascertain what the supplier thinks of the NS? When it is an existing relationship, we can look at the way they deal with the NS, how 'customer oriented' they are. For new suppliers, the annual reports might give some clarity (how big a share will the new contract with the NS be on his revenue). When this all fails, another way is to just ask and keep asking follow up questions to ascertain how sincere the initial answer was.

Guideline 19: Find out how the (potential) supplier sees the NS as a client

Once we have selected suppliers, how do we handle them? Or how do we handle the suppliers we already have and are categorized as strategic? First of all, the basis needs to be in order, when a fighting relationship exists, it's not going to work to make that a strategic one with all of its aspects. Rietveld has an entire methodology to create an alliance with the core suppliers of an organization but that approach is too big to discuss here. Instead, we adopt a few of his ideas.

For one thing, the business should identify a select amount of 'core suppliers'. Note that this is not the same as a strategic supplier: the latter is based on the criteria used to construct figure 23 where the former one is based on the business that decides who gets that label. Usually, the business then immediately thinks about their biggest suppliers, but regarding figure 23, that is not the case. Core suppliers need to be influenceable and not all the suppliers are. With these core suppliers, the relationship can be made deeper; a few suggestions are made by Rietveld:

Transform a relationship with your supplier
It's not a bad idea to review the relationship once every couple of years by comparing it with other suppliers. Be sure to compare it using criteria that are important for the organization, not just the price: e.g. time, quality, contact.
Have an open dialog with the supplier regarding the goals of your organization, its challenges and how the supplier can contribute.
Be genuinely interested in the supplier. Ask open questions. How do they select their suppliers? What are the trends they spot?
Use existing suppliers to review your own organization. They have a unique perspective so invite them to tell us how they experience the relationship, what point of improvements do they see in our way of working, what should we do differently, etcetera.
Share information.
Be loyal! A relationship is a good relationship when the other party doesn't have the constant fear that he will or can be thrown out at the first sign of trouble. Have the intention that the relationship is a long-term one.

Selecting a core supplier is one way of the relationship; it would be great when the supplier recognizes us as a core customer as well. Usually, such a status doesn't come automatically from the supplier, we have to initiate it. A few suggestions:

- As with the core suppliers, we have to select the suppliers that we think our organization can be a core customer for.
- Using price, revenue and other financial motives is usually done but this is not a healthy way to deepen the relationship.
- Don't use negative assumptions in line of "is my supplier doing its job? We have to evaluate them using a lot of measurements". Instead, ask each other the following questions: What am I doing that cost the other party money and what can we do to stop that from happening? How can I make it more advantageous for the other party to work together with me?
- We can be extra valuable to our core supplier by:
    - Allowing the supplier to mention us on his public list of customers.
    - Being a reference to other customers of our supplier.
    - Give the supplier a preferred position in new public tenders.
    - Working together on lower costs and higher productivity.
    - Paying invoices immediately and maybe even finance certain activities of our supplier.

Guideline 20: Identify core suppliers and aim for a deeper relationship with them

We already identified eSCM practice Rel02 to use with the supplier portfolio:

Guideline 21: Use eSCM practice Rel02 – service provider relationships

Guideline 22: Confidential.

5.6 Performance portfolio

eSCM describes two practices regarding performance. Among others, it states an activity "track and monitor service provider performance". Measuring suppliers performance indicators can be done manually but this can take a long time and can be very inefficient, especially when we aim for more professionalism and maturity. Therefore, we can use software solutions that work between the suppliers and the NS. Suppliers can 'enter' the values of the contracted KPI's in this software and NS

gets notified of it. This software can also take care of relating these metrics to the bonus / malus agreements to see of the supplier lives up to its expectations.

Guideline 23: Use eSCM practice Mgt02 – performance monitoring

Guideline 24: Use eSCM practice Mgt08 – review service performance

If we regard the core suppliers as identified in previous guidelines, then we should also regard that normal KPI's won't work (Hughes, 2005). These kind of metrics don't measure the true value of the relationship and are mostly used by suppliers to fulfill just those KPI's according to the contract. Core suppliers need a different approach because of their different relationship with the organization. So, when these core suppliers have been selected, the principles in table 16 need to be used in order to guide the creation of performance indicators.

Measure the performance of core suppliers
Measure what is important, not simply what is easy to measure.
Develop and utilize predictive metrics as well as measures of outcomes.
Become comfortable with subjectivity and approximations – critical dimensions of measurement (the quality of the working relationship and strategic value) by definition require dealing with individual perceptions and the application of human judgment.
Situate metrics in a process that facilitates effective dialogue internally and with suppliers: about how to interpret metrics, about how to improve their performance, and about how to improve the quality of supplier relationship.
Define metrics jointly with suppliers and use them collaboratively, not (only) punitively. Use metrics to diagnose what you each did or didn't do to contribute to any problems, rather than simply to assign blame or decide whether or not to apply penalties – that is, use metrics to jointly diagnose and solve problems.
Share data with suppliers that shows how they compare to their peers.
Define metrics that enable you and your suppliers to assess the value they receive from the relationship. In the long run, you cannot succeed at the expense of your suppliers – and the long run may not be as long as you think.

Table 16 - Performance measurement of core suppliers (Hughes, 2005)

Guideline 25: When core suppliers are selected, use the principles of Hughes for performance management

SURF has a list of experiences that indicate the do's and don'ts when bonus-malus agreements are made with suppliers. This list is suited to use as a reference when dealing with these agreements. This list is shownin the sourcing plan 10.1.

Guideline 26: Agree on bonus-malus agreements with suppliers and use the SURF do's and don'ts as a best practice list.

6 Results

The main result of this research is the sourcing plan, included in appendix 10.1. The structure of this plan is based on the sourcing strategy template we came to in section 3.8.1 and is filled with context and goals, the as-is situation of IT Operations (including the supplier landscape and maturity of IT Operations), the points of improvement that we identified, best practices from the literature and experiences of other companies and guidelines of the gap analysis. In this chapter we review shortly what this result entails, what the implications are, how the result should be used and why some choices were made.

6.1 What is the recommended sourcing plan for C&LM?

While making this sourcing plan, we found out that C&LM is already doing very good and valuable work and that the business units that use C&LM frequently are happy with the results. However, not everyone knows what C&LM exactly does, making that one of the two directions that this research has focused on: a higher maturity of the core process of C&LM and letting the business units know this core process in order to have a better and deeper collaboration with them. The second direction is the relationship of C&LM to the outside world: the suppliers. It has been established which suppliers IT Operations currently has, how they can be divided into categories and what the future image of that categorization should look like. Of course, we also identified what needs to happen in order to make some relations deeper or more superficial (in order to decrease the amount of strategic suppliers). These two directions are depicted in different guidelines that, when followed, will result in a better supplier portfolio and a higher maturity of C&LM with all the benefits that comes with it.

6.2 The implementation of the new sourcing plan

Having this new sourcing plan, the question arises: where does the NS have to begin using it? Regarding the internal improvements, it is clear that processes regarding contracts need to be made more explicit and transparent towards the business units and between C&LM and concern procurement. These processes are not all discussed and improved explicitly in this research because of time constraints: business process modeling and improving can take a lot of time and this research has had a more abstract nature since we focused more on the global strategic and governance level.

Business units also need to have the feeling that C&LM actually unburdens them by showing them what C&LM can do for them, what the positive results are and where C&LM and all the sourcing rules can be found, including all the decisions made about what supplier does what. This removes a lot of uncertainty and ambiguity as to why decisions are made and people can more easily understand it.

The external improvements lie with the new categorization of the supplier landscape. IT Operations should have less strategic suppliers and more performance and development suppliers. This can be done by carefully considering *what kind of* supplier is needed for every piece of work / system / activity. Do we want to be very dependent on a supplier or not? How influenceable do we need the supplier to be? How does the supplier sees us as a customer and what can we do for each other? Which of our supplier do we want as core suppliers in order to deepen our relationship with them?

7 Validity of this research

The goal of this research is to provide a sourcing plan in order to meet the goals that C&LM has set and mitigate the complications that are experienced until now. But does this plan actually contributes to them? We can ascertain this beforehand by validating this solution. When is a solution valid? We want the right results, so a solution is valid when an implementation of that solution is likely to solve the problems. Wieringa states that "a solution design is valid if the designed solution is expected to reduce the gap between experiences and desires that it set out to reduce" (Wieringa, 2010-2011).

This chapter discusses the validity of the sourcing plan by evaluating and reviewing the research process and its outcome: the plan itself. In section 7.1 we discuss how a validation can be performed, in 7.2 we validate our process and our solution in 7.3. In 7.4 the conclusion of the validation is presented.

7.1 How to validate

There are two things that can be analyzed for validity: the product (the sourcing plan) using behavioral science that evaluates the truth of that product or we can use design science that evaluates the process of creating the product (Hevner & Ram, 2004) (de Jong, 2009). Behavioral science is very thorough: it tries to answer whether the designed solution is true or not and it even tries to prove it. This can take a long time and we will use a different way of validating the outcome of our research (see the next paragraph). Design science "creates and evaluates IT artifacts intended to solve identified organizational problems" (Hevner & Ram, 2004), which is exactly what this research does. We are also more interested in a pragmatic approach and nottruth. We therefore use the design science approach. We assume that if the research process is executed in a valid way, we can also assume that the final product reduces the gap between experiences and desires that it set out to reduce.

We also validate the outcome itself, the product: the sourcing plan. We use interviews with the business unit managers we already interviewed for the as-is situation. We showed them the outline of the sourcing plan and asked them if they agree with it on the structure, its intended goals and if those goals are going to be met this way. After these interviews, their feedback was used to improve the sourcing plan in order to mitigate any issues they identified in the first version.

7.2 Evaluation of the research process

Hevner & Ram identified seven guidelines that help in understanding, executing and evaluating design science research, of which this research also belongs to. In table 17, their guidelines are shown and in the sections after the table, we apply each guideline to this research in order to find out if the research process is valid.

Guideline	Description
Guideline 1: design as an artifact	Design-science research must produce a viable artifact in the form of a construct, a model, a method, or an instantiation.
Guideline 2: problem relevance	The objective of design-science research is to develop technology-based solutions to important and relevant business problems.
Guideline 3: design evaluation	The utility, quality, and efficacy of a design artifact must be rigorously demonstrated via well-executed evaluation methods.

Guideline 4: research contributions	Effective design-science research must provide clear and verifiable contributions in the areas of the design artifact, design foundations, and/or design methodologies.
Guideline 5: research rigor	Design-science research relies upon the application of rigorous methods in both the construction and evaluation of the design artifact.
Guideline 6: design as a search process	The search for an effective artifact requires utilizing available means to reach desired ends while satisfying laws in the problem environment
Guideline 7: communication of research	Design-science research must be presented effectively both to technology-oriented as well as management-oriented audiences.

Table 17 - Design science research guidelines (Hevner & Ram, 2004)

7.2.1 Guideline 1: design as an artifact

"Design-science research must produce a viable artifact in the form of a construct, a model, a method, or an instantiation."

This research has produced a sourcing plan, so this guideline has been followed.

7.2.2 Guideline 2: problem relevance

"The objective of design-science research is to develop technology-based solutions to important and relevant business problems."

The motivation for this research is based on business problems and our sourcing plan can be seen as a technology or guidelines for some technology-based solutions. We therefore believe this guideline has been followed.

7.2.3 Guideline 3: design evaluation

"The utility, quality, and efficacy of a design artifact must be rigorously demonstrated via well-executed evaluation methods."

Hevner has twelve different evaluation methods that can be used in order to follow this guideline. We did not evaluate the sourcing plan in its implemented form, that would only be useful after it has been used for some time. We did however kept stakeholders in the loop regarding our progress and direction so they could comment on it and steer us in the right direction if steering was needed. We also used a lot of relevant research that used case studies themselves to prove their argument in this research and made sure their context was applicable to the context of the NS.

We believe we have used one of Hevner's evaluation methods: "Informed Argument: Use information from the knowledge base (e.g., relevant research) to build a convincing argument for the artifact's utility" (Hevner & Ram, 2004). We believe we used this one by applying existing research to the situation of the NS and explaining how it is relevant. Further evaluation is necessary when the plan has been in use for some time but concluding, we believe we have followed the essence of this directive.

7.2.4 Guideline 4: research contributions

"Effective design-science research must provide clear and verifiable contributions in the areas of the design artifact, design foundations, and/or design methodologies."

In order to follow this guideline, Hevner states that the research contribution comes from either the design artifact itself, the foundations or the methodologies. The sourcing plan is the design artifact and it provides "a clear contribution to the business environment, solving an important, previously unsolved problem" (Hevner & Ram, 2004). Because of this, we believe we have followed this guideline.

7.2.5 Guideline 5: research rigor

"Design-science research relies upon the application of rigorous methods in both the construction and evaluation of the design artifact."

"Rigor is derived from the effective use of the knowledge base theoretical foundations and research methodologies. Success is predicated on the researcher's skilled selection of appropriate techniques to develop or construct a theory or artifact and the selection of appropriate means to justify the theory or evaluate the artifact" (Hevner & Ram, 2004).

We have used different sources in the 'knowledge base': literature, best practices and experiences of other companies and only selected those sources that we believe were appropriate enough to justify its usage in this research in the context of the NS. We therefore believe this guideline has been followed.

7.2.6 Guideline 6: Design as a search process

"The search for an effective artifact requires utilizing available means to reach desired ends while satisfying laws in the problem environment."

This guideline is about the iterative nature of design science because it is rare that a solution fits on the research domain one on one. We believe we have followed this guideline because we adopted different models out of the relevant literature for usage within the NS and we constantly iterated the sourcing plan based on reviews from the employees and managers of IT Operations.

7.2.7 Guideline 7: communication of research

"Design-science research must be presented effectively both to technology-oriented as well as management-oriented audiences."

Our research consists out of two parts: this masters thesis and the sourcing plan itself. The thesis has a more 'management-orientation' because there the rationales behind all the choices we made are explained in more detail and its audience is the manager of C&LM. The 'technology-orientation' can be found more in the sourcing plan itself if we regard the employees of C&LM that are going to use the guidelines in the plan as the technology-oriented audience. In this plan, the focus is more on usability for those technology-minded people. Since both audiences have a separate document to communicate our artifact, we believe this guideline has been followed.

7.3 Outcome validity

All the managers we had interviews with, were invited to give a response to our sourcing plan design. We sent out a total of eight invitations, unfortunately, due to the holidays and a very busy period within the NS, we only received three responses, despite earlier promises to respond. The responses we received are stated in table 18.

Respondent	Response
Manager Projects & Development	Give more thought to the process, i.e. how to shape the recommendations in the workplace. And, when identifying KPI's, be sure to address how to measure them, what we need and who measures them.
Manager Control 3.0	What does C&LM have to do to make me a happy customer? Customer satisfaction should be in the sourcing plan somewhere. When am I happy? When C&LM has unburdened me by using their expertise to purchase the right services: a right price for good quality. When C&LM does the work I also expect economies of scale, suppliers that think along with NS, have a good drive and commitment and a C&LM that has a monitoring system to review their performance. In short, when your guidelines have the effect that things get more professional (so that C&LM can perform their duties even better and we all purchase smarter), then I will be a happy customer.
Manager Support Operations	The initial design is good, I don't have a lot of comments on it.

Table 18 - Responses of managers to the sourcing plan design

The thing that became most obvious was that everyone wants to see how they benefit, as a manager and / or as a business unit. Next to these responses we got, we also discussed the sourcing plan ad-hoc with a handful of different employees in the hallways of IT Operations as a supplement to table 18. Sometimes it took some explaining before they understood what the goal of the plan was. After they got it, they were convinced that it could help IT Operations become more professional using this plan.
We used all the reactions and comments in our plan by improving specific guidelines: including how the business will benefit from that guideline and some practical things that C&LM should consider in order to achieve the desired effect from that guideline.

So what about the validity of the sourcing plan? The managers and employees all agree that the way the sourcing plan is structured is adequate and that the guidelines will make IT Operations (indirectly) more professional and mature. We also took the few doubts and improvements they had and used it as input for our plan in order to mitigate them. We believe that this is enough to achieve the desired results with our sourcing plan as stated in the beginning of this research. We therefore believe our sourcing plan has a valid outcome.

7.4 Conclusion

We have shown that we have followed the seven guidelines of Hevner which proves that our research process is internally valid. If we recall our assumption that when our research process is valid, our product (the sourcing plan) must also be valid. We also reviewed the outcome of our research with managers and employees of IT Operations and used their comments and input to improve our sourcing plan which made our outcome valid.

Because our research and its product is valid, it is expected that it will "reduce the gap between experiences and desires that it set out to reduce" in the words of Wieringa (Wieringa, 2010-2011).

8 Conclusions and recommendations

The goal of this research was to compose a sourcing plan for the Contract & Supply management (C&LM) department by analyzing their current situation regarding this subject, drafting a preferred to-be situation, combine this with best practices and applying this at the current situation at C&LM in order to design a desired situation. This sourcing plan has been delivered in the form of appendix 10.1 and we proved that this is a valid solution. In this chapter we shortly review the goals C&LM has set out in the beginning of this research (section 8.1), we look back at the research questions (section 8.2) and finally we review and discuss the limitations this research has (section 8.3).

8.1 Goals

The sourcing plan consists out of a number of guidelines that can be used in the various stages in the process of C&LM. But does this plan succeed in reaching the goals C&LM has set out for this research? The answer to this question is shown in table 19. The goals are the same as those in the problem description (section 1.6.2).

C&LM goals for this research	Has this goal been met?
A portfolio approach regarding sourcing	According to the whishes of the NS we aimed to have different guidelines for the various portfolios that C&LM liked to have: a domain, a services, a supplier and a performance portfolio. In our eyes, this goal has been met.
Have clear guidelines for decision making regarding sourcing	The sourcing plan is made up out of a selection of clear guidelines that can be used for specific pieces of the workflow of C&LM. Some guidelines are indeed useable for decision making. This goal has been met.
A high IT controllability	Currently, there is a lot of vendor lock-in which results in a lower IT controllability then C&LM would like to have. Following the sourcing plan and carefully selecting the kind of supplier needed for each activity, the suppliers in the supplier landscape would shift, reducing this vendor lock-in and increase IT controllability.
Lower costs	Our sourcing plan has not had the effect in immediately reducing the costs for IT Operations since that would only be measurable some amount of time has passed. However, since our sourcing plan aims to have a more efficient internal process for C&LM and select the suppliers for IT Operations more efficiently, we do believe this will result in cost reductions in the long run. This goal will hopefully be met in the future.

Performance measurements for suppliers	We focused mainly on the performance indicators for core suppliers and not on KPI's for 'normal' suppliers. We did this because we think IT Operations can select these generic KPI's on their own and because they are very skilled in doing this. KPI's for core suppliers is something different and differ from normal KPI's in the way that they are softer and lean more on the strategic relationship IT Operations has with the supplier. We believe this goals has been fulfilled enough regarding the scope of this research.
Improve their internal control	Every guideline in the sourcing plan has a heading 'application' which specifically describes how that guideline, which is most of the time on a strategic level, can be applied within IT Operations in order to make that guideline successful. Half of the guidelines are about the internal control: how do the business units practically benefit from the guidelines. We therefore conclude that this goal has been met.
Improve their external control (towards suppliers)	The other half of the guidelines are about external control: what kind of suppliers do we need where and what chunks of work can we source in the market? And how do we improve relationships with our strategic suppliers and what kind of performance indicators do we need for them? Following these external oriented associated guidelines, we conclude that this goal has been met as well.

Table 19 - The goals for this research and whether they have been met

8.2 Answers to the research questions

8.2.1 Central question 1: How can we describe the current sourcing situation of Contract- & Leveranciersmanagement?

We used multiple techniques and methods to describe the current situation of C&LM. We described the visions and goals of C&LM, their core process and with which business units they collaborate with. Then we looked at their current sourcing strategy and what the current supplier landscape looks like. Finally we used the SURF maturity model in order to ascertain the maturity of IT Operations. We drew the following conclusions:

There are a lot of stakeholders that C&LM has to deal with of which 50% is within and 50% is outside IT Operations. The IT Operations stakeholders are able to find C&LM sooner and sooner but are still circumventing C&LM at some points. This is mostly due to the departments finding the relationship between them and C&LM not optimal or the quality of the work being too low.

The supplier landscape of IT Operations is divided in a way that there are many strategic and very few performance and / or development suppliers. This might be the cause of a lot of supplier management effort where contract management should be more in order, according to Rietveld.

Regarding the maturity of IT Operations, a number of practices are at level 1, most of them in the preparations and preconditions phase. This means that errors made in this phase, translate to errors in the next phases.

8.2.2 Central question 2: What is the desired to-be situation for Contract- & Supplier management?

We have shown different kinds of literature and best practices, specifically the ones that are suited for the context of the NS. These practices consist out of models we adapted for usage within the NS to identify the chunks of work, a maturity model to ascertain the current maturity of IT Operations, literature on what a sourcing plan should look like, etcetera. We used these models and practices to compare them to the as-is situation later on to determine what kind of guidelines the NS could use at this moment.

8.2.3 Central question 3: What is the needed / recommended sourcing plan for Contract- & Leveranciersmanagement?

C&LM is looking for pointers in the right direction regarding professionalism, maturity and supplier selection in their sourcing process on a governance and a strategic level. We used the as-is and to-be situation to identify numerous practical guidelines that C&LM can use for their sourcing questions. These guidelines cover different aspects, to improve both the internal and external control for C&LM. The guidelines are collected in a separate document, the sourcing plan. In this plan, a background on this research has also been given so that it is a document on its own without the necessity to read this thesis beforehand.

What needs to be considered when implementing the new sourcing plan? Some business units are relatively skeptical regarding C&LM and how they benefit from the work C&LM does. This is also a threat as indicated in our SWOT-analysis: it is possible that business units don't have a good feeling that the plan will help them do their work better. That is why there are, for instance, guidelines that instruct to use transparency, to mitigate these threat. Nevertheless, it should be monitored how the business feel about the work C&LM does for them.

8.2.4 Central question 4: What is the validity of this research?

We reviewed the internal validity of our research process and the outcome validity of the sourcing plan and concluded that both are valid and this sourcing plan will help the NS in reaching the goals that were set out in the beginning of this research.

8.3 Limitations

While this research focused mainly on best practices and literature that is the same as the context of the NS and might be valid for other companies, the resulting sourcing plan is based on these practices as well as the current situation at the NS. This means that this research cannot be used one on one for other similar companies like the NS and achieve the same results.

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10 Appendices

10.1 Sourcing plan

[[THIS IS A SEPARATE FILE / DOCUMENT FOR CLARITY AND STRUCTURAL PURPOSES]]

10.2 Landscape of suppliers

Confidential.

10.3 Maturity data

Confidential.