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IT maturity self-assessment

does a quantitative survey get it right?

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IT maturity self-assessment: does a quantitative survey get it right?

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Abstract: It has become increasingly recognized that IT organizations must ensure that the IT services are aligned to the business needs and actively support them. Therefore, the internal IT service management processes are under constant improvement. Information Technology Infrastructure Library (ITIL) is the most commonly adopted framework for IT service management.

It is recommended to start an ITIL implementation or improvement process by defining a baseline of “where we are today” (current state). This helps identify the gap to a wanted future state and will become the basis for an ITIL implementation or improvement plan. One of the most commonly used methods to define the current state is to do a maturity assessment using a quantitative self-assessment approach.

The purpose of this thesis is to empirically understand how well a quantitative self-assessment defines the as-is state and thereby the maturity of an IT organization.

The research was carried out by conducting a quantitative self-assessment in an IT organization. To understand if the self-assessment produced viable results a meta-evaluation of the survey was conducted through means of interviews and a document study.

This resulted in the conclusion that the use of a quantitative self-assessment does not define the as-is state and maturity well enough.

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1 Introduction

In this introductory chapter we provide a background (1.1) to the thesis. The problem (1.2) identified is then presented and thus the research question (1.3) is formulated. The chapter is then continued with the purpose (1.4) and delimitations (1.5) of the study and finally a section with terms, definitions and abbreviations (1.6, 1.7).

1.1 Background

There is a high demand on IT organizations today to deliver value added IT services. IT services constantly need to become better, faster and cheaper (Leopoldi, 2015). Therefore, the improvement and optimization of an IT organization's service processes is an ever-ongoing work in progress. It is important to have well-working IT service management processes in order to gain edge and maintain competitive advantage. IT Service Management (ITSM) is the discipline that strives to improve the alignment of information technology efforts to business needs and to manage an efficient providing of IT services with guaranteed quality (Lloyd, Wheeldon, Lacy, & Hanna, 2011). Information Technology Infrastructure Library (ITIL) is the most widely used "best practices" framework for implementing ITSM and for managing information technology services and processes (Behr, Kim, Spafford, & Information Technology Process Institute., 2005)

The main purpose for implementing ITIL, is to deliver value-adding services reliably, fast and to a low cost. However, ITIL is an extensive framework covering a large number of processes, it is complex to implement and it is not uncommon that implementations fail, or they are substantially delayed so the organizations end up implementing ITIL long after the expected implementation time. Empirical evidence shows that most organizations underestimate the time, effort, and risks – not to mention the cost – of implementing ITIL (Nicewicz-Modrzewska & Stolarski, 2008).

Before starting an ITIL implementation, an organization needs to understand "where we are today" (current state) in order to know "where do we want to be" (future state). The gap between the current and future state will become the basis for an ITIL implementation plan (Lloyd et al., 2011). Weill and Ross also underline the importance of defining the current state and the desired state before initiating any improvement initiatives (Weill & Ross, 2004). It is important to emphasize that since every IT organization is different, ITIL recommends each organization to implement ITIL from their specific context and needs (Lloyd et al., 2011).

To define the current state and starting the ITIL implementation by establishing an 'as-is'-baseline, several different methods - or a combination of methods - are available (Addy, 2007). One of the most commonly used methods is to do a maturity assessment, which will determine the IT-processes maturity level in an organization compared against a best-practice reference set of processes (Marquis, 2006a). IT maturity is the organization's ability to perform and deliver value added IT services. Marquis (2006a) further claims that in order to im-

plement ITIL successfully, an organization must use a *maturity model*. A maturity model defines different maturity levels and the higher up on the maturity scale an IT organization is, the better it performs. Defining an IT organization's maturity compared to best-practice like ITIL, the maturity indicates how much of ITIL to implement, and where to start. Thus, assessing organization maturity is critical to ITIL implementation (Marquis, 2006b).

The authors got interested in understanding why ITIL implementations fail or why time and effort is underestimated. It was considered whether the complications of implementing ITIL could be starting already in the initial phase of the implementation project, when defining the current state with the help of a maturity model. The authors came in contact with a global company with more than 20 000 employees. The company has a global IT organization spread over four countries. In early 2000, the IT organization implemented IT process management, based on ITIL. The IT organization is now planning to move to the next version of ITIL. Before starting the ITIL implementation, as a first step they would like to assess their ITIL maturity level.

1.2 Problem

Maturity assessments are used to understand the as-is state of an organization and critical to get the correct improvement priorities (Lloyd et al., 2011). It aims to measure the degree to which an organization uses its people, processes, tools, products, and management. Assessments show opportunities to improve, identify required standards, processes and procedures, and facilitate continuous improvements (Oehrlich, Mann, Garbani, O'Donnell, & Rakowski, 2012). The assessment also highlights needed tools, techniques, and technologies (Lloyd et al., 2011).

One way of performing a maturity assessment is qualitatively through conducting interviews. This is however a long and costly method, why it can be more appealing to an organization to do a quantitative self-assessment, using questionnaires where the audience is answering a number of questions on a numeric scale (Lloyd et al., 2011). From a business perspective, the notion that it is easier to convince top management when a large quantity of people has had a say can also weigh in favor of a quantitative approach. The authors were proposed to assist the IT organization mentioned in the background chapter with a self-assessment in which the quantitative approach using survey questionnaires was the method of choice. When presented with the opportunity the authors reflected on the choice of a quantitative approach and did not feel convinced that it would produce the most relevant results. Although not applicable directly to the IS field of study, the accuracy of self-assessments has been questioned within other disciplines, such as health sciences (Ward, Gruppen, & Regehr, 2002). It was however the authors' previous personal experiences with quantitative self-assessments that they do not always produce a satisfactory result. The results of a maturity assessment are used to establish the as-is baseline, hence they have a big impact on an IT-organization's improvement roadmap. If the results do not align with reality and fail to present an accurate as-is baseline further assumptions and decisions will be made on an erroneous basis (Lloyd et al., 2011).

1.3 Research question

The choice of the organization to use a quantitative approach for conducting the maturity assessment raised a question that the authors wanted to explore further and try to address:

- How well does a quantitative self-assessment define the as-is state and thereby the maturity of an IT organization?

1.4 Purpose

The purpose of the thesis is to increase the understanding of the effectiveness of using a quantitative maturity self-assessment model. Since the maturity assessment is one of the first steps in an ITIL implementation and it is a commonly employed approach it is of importance that it is executed as good as possible (Lloyd et al., 2011). It is the authors' belief that the possible research findings of this thesis can contribute with valuable reading to organizations planning to conduct a maturity assessment. The intention is not to provide a right or wrong answer to whether a quantitative self-assessment produces the most accurate result, but rather to highlight whether the outcome gives a fair picture of reality. Herein lays the further intended purpose that the findings will be a contribution of interest to future academic research revolving around the ITIL and ITSM field of study.

1.5 Delimitation

Assessing all processes described in ITIL would be a gigantesque task, requiring substantially more time than what was at the disposal for this thesis. It is also not a common approach to take on a full ITIL assessment – normally a few processes are chosen at a time (Lloyd et al., 2011). The scope of the research was hence limited to three processes within the service operation volume of ITIL: Incident Management, Request Fulfilment Management and Problem Management. These are the only three processes being implemented by the IT organization; hence the choice of processes was based on the scope of the organization's assessment.

The aim of the research is to evaluate the quantitative self-assessment survey as a method and not evaluating the figures and result as such.

Several process maturity evaluation frameworks exist – all with their advantages and disadvantages. In order to have finer instruments different frameworks can be combined (McNaughton, Ray, & Lewis, 2010). There are even procedural models for developing new evaluation frameworks available (J. Becker, Knackstedt, & Pöppelbuß, 2009). Since the main focus is the evaluation and the framework is merely a means to an end it was concluded that combining or developing new frameworks would not add value in parity with the effort required, hence one that was considered best suited for the task at hand was chosen; the Capability Maturity Model (CMM).

1.6 Terms and definitions

In this section, some of the specific terms used in the thesis are defined. Main terms directly applicable to the theoretical framework are described in chapter 2.

Assessment

Inspection and analysis in order to evaluate whether a standard or set of guidelines is being followed, that records are accurate, or that targets of efficiency and effectiveness are being met (Official-Site, 2011).

Benchmarking

A process responsible for comparing a point of reference data set with related data sets such as a more recent snapshot, industry data or best practice. The term is also used in the meaning of the creation of a series of benchmarks over time, and comparison of the results in order to measure progress or improvement (Official-Site, 2011).

Best Practice

Activities or processes that have been proven successful through use by multiple organizations (Official-Site, 2011).

Gap Analysis

A process to compare two sets of data and identify the differences between them. Gap analysis is commonly employed to measure how a delivery compares to a set of requirements (Official-Site, 2011).

Maturity

Maturity is a measure of the reliability, efficiency and effectiveness of an entity such as a process, function or organization. ITIL literature states that the most mature processes and functions are aligned to business strategy and objectives, and have a framework to support continuous improvement (Official-Site, 2011).

Service

A service is something that provides value to customers. Services that customers can directly utilize or consume are known as business services (Arraj, 2010).

1.7 Abbreviations

KPI Key Performance Indicator

SLA Service Level Agreement

2 Theoretical framework

This chapter will present theories and models that have been applied in the research. It starts on a high level with theories of IT Governance (2.1) drilling further down via ITSM (2.2) and ITIL (2.3) to describe the contextual frameworks. In 2.4 and 2.5 the methodological theories applied in the research are introduced. Finally in 2.6 the framework used for the evaluation is presented.

2.1 IT Governance

When in the last decades IT has become an increasingly important part of any organization's spending (Meyerson, 2011) it has become increasingly important for the organization to make sure the right IT-decisions are made at the right business level. Organizations need to formulate strategies for effective IT Governance (Weill & Ross, 2004b) making sure IT delivers the right business value. Gartner (2013) defines IT governance as "...the processes that ensure the effective and efficient use of IT in enabling an organization to achieve its goals." In order for an organization to be successful in governing its IT, different approaches can be applied. Implementing IT Governance successfully will bring benefits like lower costs, greater control, and overall increased efficiency and effectiveness (ISACA, 2015).

This thesis will not delve into IT Governance and further exploration of its surrounding theories is not within the scope of the study, but rather the concept of IT Governance and some of its definitions is used as a starting point for the discussion underlining the importance of an organization's effective management of IT services.

Effective IT governance aligns IT investments with overall business priorities, determines who makes the IT decisions and assigns accountability for the outcomes. (Weill & Ross, 2004)

The model proposed by Weill and Ross identifies five key IT decision areas which they refer to as IT decision domains. Those define the scope of the governance of IT and are (Ross & Weill, 2005):

- IT principles: High level decisions on the strategic role of IT in the business. For example: agile development, only use standard and no customization.
- IT architecture: Set of technical choices that guides the organization. For example one single ERP instance, only on premises solutions.
- IT infrastructure: Centrally coordinated, shared IT services that provide the foundation for the enterprise's IT capability, for example, network and shared data centers
- Business application needs: How should needs and requirements be specified to meet business practices and operations.

- Prioritization and investment decisions: Decisions about how much and where to invest in IT. This includes for example project approvals, review of business case realization.

Weill and Ross further emphasize that part of the initial step in designing IT Governance is to determine *who* is accountable for each decision domain. They identify six what they call IT Governance archetypes (Ross & Weill, 2005):

- Business Monarchy: A group of or an individual senior business executive; can sometimes include the CIO. This group make IT decisions for the enterprise.
- IT Monarchy: Groups of or individual IT senior managers
- Federal system: Senior business executive and business representatives of all the operating units or process owners collaborate with the IT department.
- IT Duopoly: two-party decision-making, involving IT senior managers and a business unit or process owner
- Feudal system: A business area/unit or a process owner makes decisions for their specific area - allowing each business area to have specific business needs.
- Anarchy: The business areas or even users act independently. This is the most decentralized approach.

ITIL combines defined processes with IT Governance, through process control, process policies, decision making and accountability. Decision making and accountability is defined within all processes (Lloyd et al., 2011). It includes a complete responsibility matrix, following the RACI model, which is an authority matrix used to allocate roles and responsibilities for a process (Griffiths, 2009):

R(esponsible) – Who is responsible for actually doing it?

A(ccountable) – Who has authority to approve or disapprove it?

C(onsulted) – Who has needed input about the task?

I(nformed, kept) – Who needs to be kept informed about the task?

As the thesis is evaluating if quantitative self-assessment can define the as-is state and thereby the maturity of an IT organization, the IT Governance archetypes will be used to help understand in what manner decision making is made in incident management, problem management and request fulfilment management; all sorting under the decision domain of Business application needs.

2.2 IT Service management approach and frameworks

As for IT Governance, the overall focus of ITSM can be described as aligning IT with business. More specifically, ITSM is the process of aligning enterprise IT services with business and a primary focus on the delivery of best services to end user. ITSM deals with how IT resources and business practices together are delivered in such a way that the end-user experiences the most desired result. Mature business and IT alignment is critical and a mature alignment is where IT and other business functions adapt their strategies together, harmoniously. To be able to attain business and IT alignment, an organization needs to evaluate where it is and where it needs to go to sustain the alignment (Lloyd et al., 2011).

There are several ITSM approaches, but there is not much that tells them apart. A common approach identifies three evolutionary phases (Leopoldi, 2015):

- **Stabilization:** In this phase an organization stabilizes from a tactical standpoint. It defines business requirements and which IT initiatives are needed to support the business needs. In this phase, maturity is also determined.
- **Rationalization:** Based on the stabilization phase, the organization now focuses on doing the right things. Initiatives and activities that are not needed are removed and other initiatives are added to support the IT-business alignment.
- **Transformation:** During the transformation phase the new initiatives are applied and the real IT-business alignment is happening.

The research conducted for this thesis concerns the stabilization phase, to understand the current state and the maturity of the IT organization.

ITSM is a set of best practices, rather than instructions on how IT shall be implemented and applied. The aim of the ITSM best practices is to create an approach to manage organizations' IT resources. There are several best practice operational frameworks for ITSM to choose between such as ITIL and CobiT. There are also standards available such as ISO/IEC 20000 and ISO 9000. The standards give a more detailed description on how to implement and run the IT services (Cartlidge et al., 2007). ITIL, which will be described in section 2.3, is the most used framework for ITSM (Arraj, 2010), used by thousands of companies to stabilize, rationalize and transform the way they deliver IT to add more business value through IT-business alignment (Leopoldi, 2015).

2.3 IT Infrastructure Library

IT Governance is the general principle to ensure effective control and manage risk through decision making. ITSM is focusing on delivering value-adding services through standardized processes. The operational frameworks for ITSM, such as IT Infrastructure Library (ITIL), highlight a number of risk areas and how it is managed in the context of service management (Faber & Faber, 2010).

ITIL was developed by the British governments Central Computer and Telecommunications Agency in the late 1980s (Dabade, 2012). It is essentially a series of best practices that are used to aid the implementation of a lifecycle framework for ITSM (Arraj, 2010). ITIL is a customizable framework that defines how Service Management is applied within an organization. It is the most common ITSM best practice used. It defines the IT processes needed in an organization, their input, output, process control and as mentioned above, decision making in each process (Lloyd et al., 2011).

ITIL is a living framework and has to date been released in three different versions. The research conducted in this thesis is focused on the current ITIL version 3 which was published in 2007. For clarity a short discussion on the version history is provided. Version 1 is a limited framework focusing on few IT processes. As a growing number of enterprises showed interest in applying ITIL in their organization, the ITIL framework was developed into version 2. ITIL version 2, which really saw interest in ITIL soar (J. D. Becker & Schultz, 2007)

contains more service management processes than the initial release. Version 3 was mainly an extension of the previous version, but with some notable key differences being:

- ITIL version 3 adopts a lifecycle approach. The ITIL v2 framework was heavily process-focused, but with version 3 it is not only about a number of processes, but rather the full service lifecycle, from when a service is planned and designed until it is retired. One major structural change worth mentioning since it concerns elements addressed in this study is that ITIL version 3 separates incidents from requests (Clark, 2007).
- ITIL version 3 focuses on IT business integration and alignment. It is about bringing business value while version 2 was more about improving process execution (Clark, 2007).
- ITIL version 3 clearly defines the roles and responsibilities in each process (Clark, 2007).

ITIL is organized into five core areas – referred to as volumes – that revolve around the service lifecycle (Arraj, 2010). These provide best practice guidance for an integrated approach to ITSM. The ITIL process model visualizes and helps to explain how ITIL works at a process and detailed level. The standard ITIL reference process model contains designed process templates for each of ITIL's processes. It supports the processes with process control and process enablers (Dabade, 2012). There are several interpretations of the process model; the below figure 2.1 is constructed with inspiration from mainly one of those. Three volumes can be placed into a chronology; service design is followed by service transition, which in turn is followed by service operation as parts of the service lifecycle. The two remaining volumes – service strategy and continual service improvement – are present throughout the lifecycle (Official-Site, 2011).

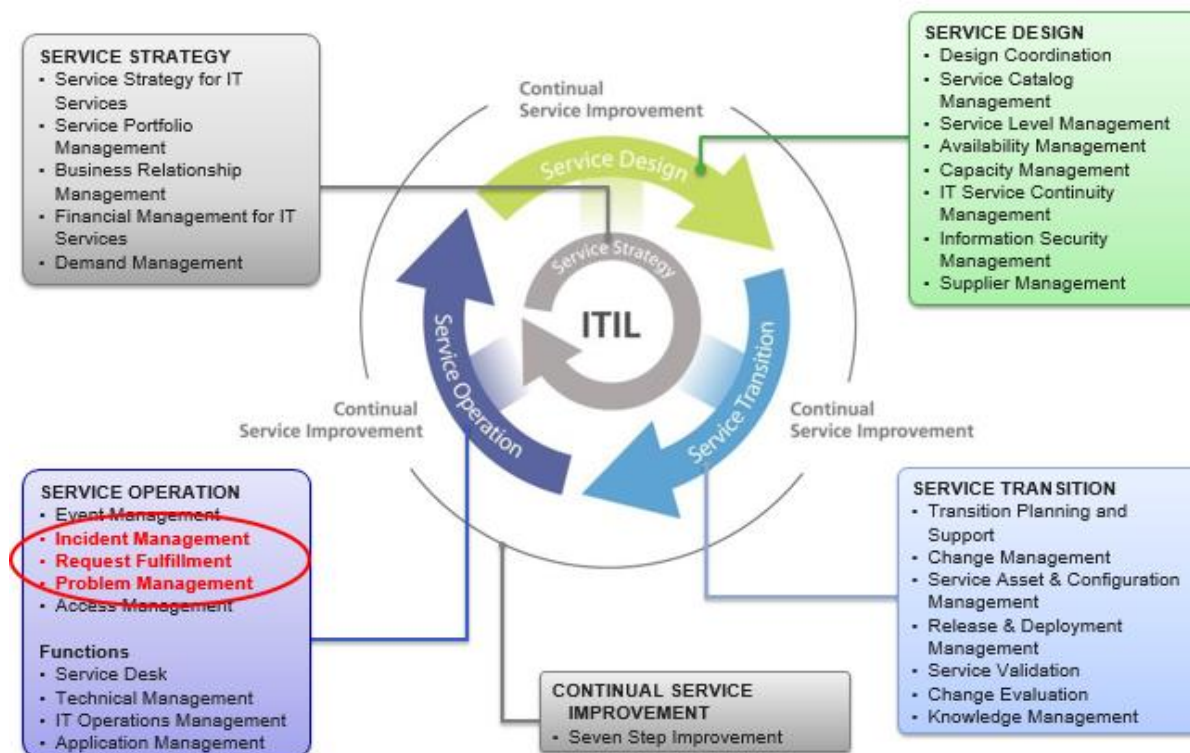


Figure 2.1 – The ITIL process model with the researched processes encircled. Adapted from Cannon (Cannon, 2011)

In the research conducted for this thesis, focus has been on processes sorting under the service operation volume, and since the nature of the study is an evaluation, continual service improvement which deals with evaluative matters, is also addressed. Summary descriptions of those volumes are given in the following paragraphs. However, in order to provide a broader context the remaining three volumes – service strategy, service design and service operation – are also described briefly below.

2.3.1 Service strategy

Deals with general strategies for IT services in-line with overall business goals. Service strategy includes all aspects of strategy regarding IT services ranging from business relationship management, portfolio of services to financial management. The processes within the service strategy can be said to live along the other volumes of ITIL throughout the service lifecycle as illustrated in figure 2.1 above (Official-Site, 2011).

2.3.2 Service design

The Service design volume deals with how the IT service offerings should be designed and presented. Under service design, the service catalogue and service level as well as availability of services and information security management is designed (Official-Site, 2011).

2.3.3 *Service transition*

Implementation of services in the business processes. The service transition volume outlines processes filling the gap between design and operation – what enables taking services from design to operation. Processes included are management of change, testing and validation, release and deployment (Official-Site, 2011).

2.3.4 *Service operation*

Service operation carries out operational tasks. Service operation coordinates and carries out the activities and processes required to deliver and manage services at agreed levels to business users and customers. Service operation also manages the technology that is used to deliver and support services. The Service operation volume includes the below five processes. Number 2 through 4 are the processes addressed in the research of this thesis (Official-Site, 2011).

1. Event management – managing the handling of events and notifications.
2. Incident management – process responsible for managing incidents throughout their lifecycle. An incident is defined as a not foreseen happening. Incident management is there to ensure an incident's impact on business is minimized and that normal service operation is restored as quickly as possible.
3. Request fulfilment management – process for handling service requests. By request is meant a standard change of minor character like a password change or a request for a new software.
4. Problem management – a problem is basically an incident, the difference being that a problem is of a nature that can be expected to be foreseen. The logical effect of that is that proactive action can be taken to prevent and/or minimize damage inflicted by incidents.
5. Access management – focuses on managing user access and rights.

2.3.5 *Continual service improvement*

Similar as for the service strategy, Continual Service Improvement (CSI) encompasses all other volumes of the lifecycle since improvement of service delivery is at the very heart of ITIL. In order to be able to improve it is imperative to be familiar with methods of measure; knowing what to measure and how the results of measures are to be analysed and used. CSI is about defining the vision and then measuring to improve and accomplish the vision (Lloyd et al., 2011).

The main tool available for measurement available in the CSI volume is ITIL process maturity assessments. Through conducting assessments an organization's ITIL processes can be compared to best-practice industry performance standards and thereby identifying gaps and differences. These measures then help identify further improvement activities within CSI that can improve process maturity and the organization's overall IT service management capability (Lloyd et al., 2011).

The output of the assessment can be used for several parts of CSI as illustrated in figure 2.2 – the assessment provides the baseline for the step of 'Where are we now'. The comparison with standards provides a maturity benchmark for 'Where do we want to be'. Bridging the

gaps helps providing the plan of ‘How do we get there’. For ‘Did we get there’ a new assessment can be conducted to highlight how well change has been adopted from the first baseline assessment. The ability to measure improvements and provide a ‘pre and post’ comparison is key to being able to demonstrate the benefits of CSI and the value delivered (MacDonald, 2010).

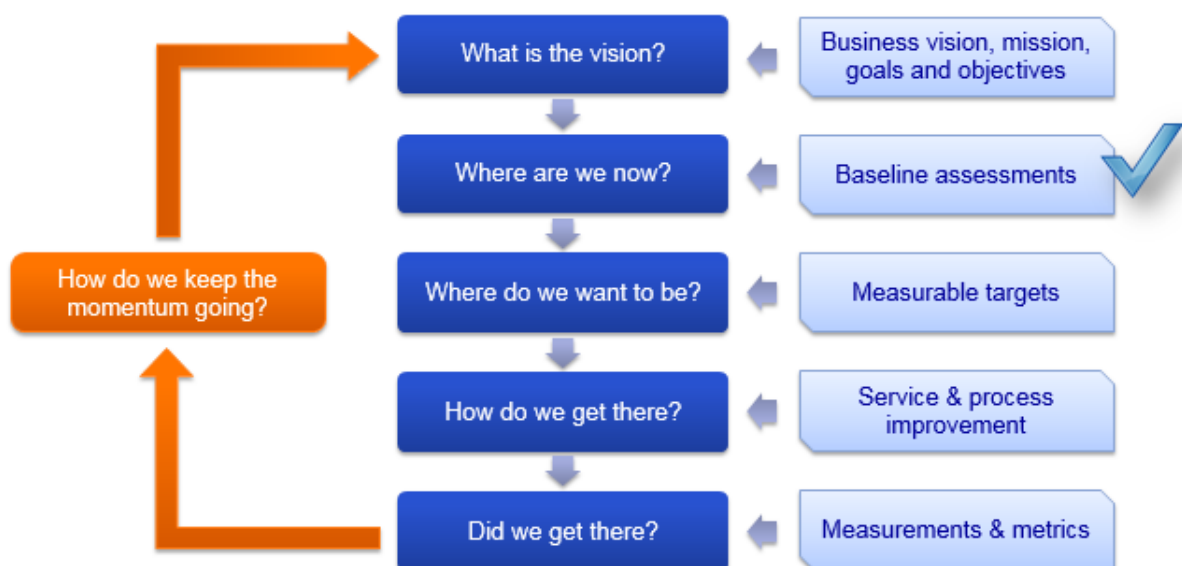


Figure 2.2 – The ITIL CSI model (Lloyd et al., 2011)

2.4 IT maturity

The degree to which an organization makes use of IT resources is a measure of its IT maturity. Most maturity models define evolutionary levels that an organization go through in order to become more mature. At each maturity level organizational competence increases. The more mature an organization becomes, the more repeatable processes exist. The organization can secure that the processes bring business value and are more efficient, effective and economical (Marquis, 2006b).

The term maturity however has a relatively broad meaning, spanning such areas as process maturity, IT/Business alignment maturity and technology maturity. The maturity assessment studied in this thesis has a process focus but to measure the maturity by looking solely at the process is not sufficient. Hammer and Champy (2009) point out the importance of looking also at process enablers, see figure 2.3. They recognize that process maturity is heavily dependent on the maturity and capability of the overall organization. Process enablers are defined differently by different maturity models - ITIL is focusing on process resources (people) and process capabilities (supporting tool).

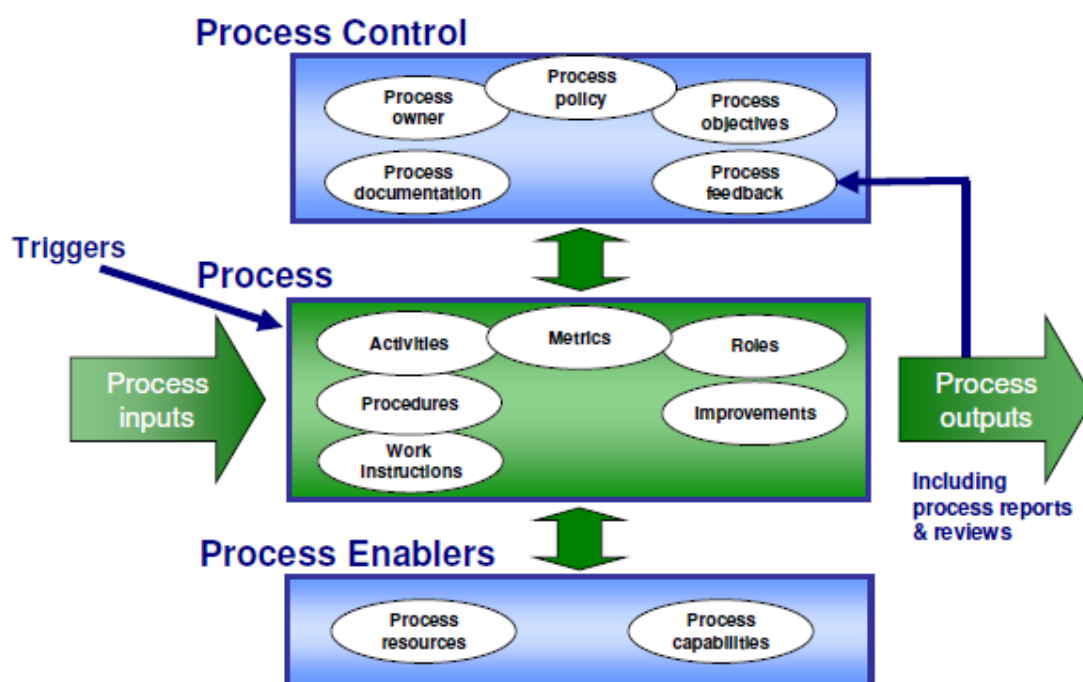


Figure 2.3 - Generic process model, adapted from Cannon (Cannon, 2011)

Capability Maturity Model, which is another maturity framework that will be further described in section 2.5 recommends that the assessments consider the following five dimensions (MacDonald, 2010):

- Vision and steering
- Process
- People
- Technology
- Culture

Forrester organizes their maturity framework into four dimensions (Oehrlich et al., 2012):

- Oversight
- Technology
- People
- Process

There are a large number of maturity frameworks, or models, available – one inventory presented findings of more than 50 different models (von Wangenheim et al., 2010), other claims over a hundred (De Bruin, Freeze, Kaulkarni, & Rosemann, 2005). People, process and technology are common dimensions for a lot of them and therefore these three dimensions were chosen to attain a finer level of measurement of the maturity. However the slightly more including term tool was used in favor of technology. The dimensions can be defined thus:

- People

The right staff for the right job is employed. They are appropriately trained and certified on industry standards. Process owners should be accountable for processes.

- Process

Well documented processes and objectives for processes; what are they for? Are process instructions in place and being followed?

- Tool

Tools can help automate and provide self-service. It can also help improve the maturity of people as well by maturing training, access to information, and the quality of that information. Tools should support processes adequately.

Even though there is a relatively rich flora of maturity frameworks it is hard to find one best-performing framework for evaluation of ITSM. It has for this reason also been argued that it might be useful to combine different frameworks in order to attain a more fine-tuned framework (McNaughton et al., 2010). One of the pioneers on IT maturity is Watts S. Humphrey, who in the 1980s on assignment from the U.S Department of Defense led the work at the Software Engineering Institute (SEI), Carnegie Mellon University in producing a maturity framework (Humphrey, 1988). This framework was later reworked into the Capability Maturity Model which is described in the next chapter.

2.5 Capability Maturity Model

One of the most commonly used general purpose process maturity evaluation frameworks is the Capability Maturity Model (CMM) (Mesquida, Mas, Amengual, & Calvo-Manzano, 2012), which was developed by the SEI, in 1986 (Baškarada, 2009). CMM is a framework that describes the key elements of an effective process and provides a foundation for process improvement. The model describes an evolutionary improvement path from an ad hoc, immature process to a mature, disciplined process. CMM is often referred to as the main framework, but its further refined framework; Capability Maturity Model Integration (CMMI) is more frequently used since some of the flaws of the original model have been eradicated in the latter. Although initially developed specifically for the software development industry, the maturity level scheme has been adopted and reworked and is often seen in maturity analysis work for IT support processes (Elephant, 2004). The increased adaptation of the model in areas other than development has resulted in specialized model versions for three fields; development (CMMI-DEV), acquisition (CMMI-ACQ) and services (CMMI-SVC) (Team, 2010).

2.5.1 The CMMI Process Maturity scoring definition model

CMMI can be used as a tool for helping organizations in process improvement and optimization, but also – as in the case of this thesis usage of it – for validating process maturity.

At the core of CMM and CMMI is five levels of maturity relating to process effectiveness and efficiency:

- Level 1 – Initial
- Level 2 – Managed
- Level 3 – Defined
- Level 4 – Quantitatively Managed
- Level 5 – Optimizing

Figure 2.4 below visualizes the different maturity levels for CMMI via a stage model. The model demonstrates the different maturity levels and how momentum is gained from the previous level.(Godfrey, 2008).

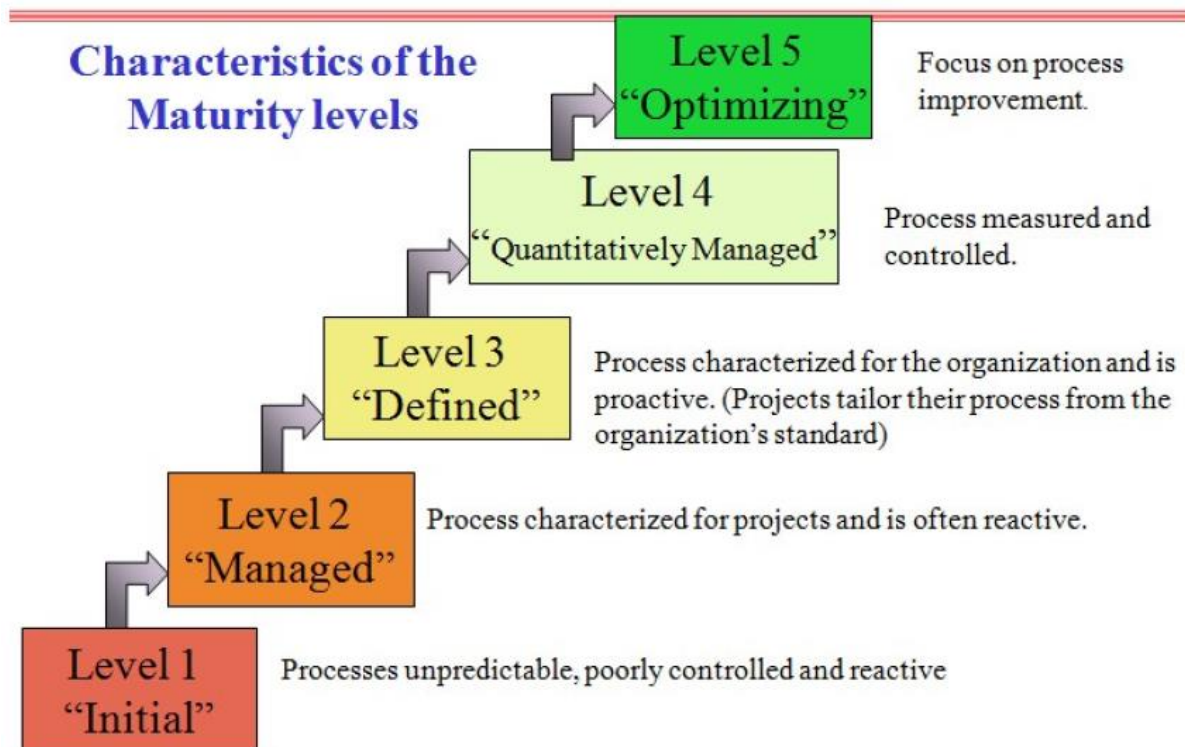


Figure 2.4 – The Capability Maturity Model (Godfrey, 2008)

Each maturity stage is defined in detail in appendix A. In the research conducted for this thesis CMMI’s five levels of maturity has been used as the primary framework for assessing the derived maturity of the empirical examinations. By using the same maturity framework throughout the study and for the different data collection methods the aim is to produce results that are well aligned for comparison and hence provide relevant input to address the research question.

2.6 Meta-evaluation

In essence, meta-evaluation is an evaluation framework for evaluating evaluations. The methodology can with a broad definition be described as “the process of delineating, obtaining, and applying descriptive information and judgmental information - about the utility, feasibil-

ity, propriety, and accuracy of an evaluation and its systematic nature, competent conduct, integrity/honesty, respectfulness, and social responsibility - to guide the evaluation and/or report its strengths and weaknesses” (Stufflebeam, 2001, p. 185). Since the focus of the thesis is to try and measure how well a quantitative self-assessment evaluation performs, the meta-evaluation was identified as a viable methodology to use in the process. Meta-evaluation methodology does not provide a strict step-by-step approach, but rather check lists and tasks for how to successfully apply it. This was also how it was used; as guidance and support when performing the evaluation of survey results or target evaluation with meta-evaluation terminology. One such check list for meta-evaluation key characteristics (Olsen & O’Reilly, 2011) was used and completed, it can be seen in table 2.1 below.

Table 2.1 - Meta-evaluation key steps identified

Key step	
Design	It is recommended that the assessment framework is developed based on evaluative standards such as the Joint Committee’s Program Evaluation Standards (Yarbrough, Shulha, Hopson, & Caruthers, 2010). Standards applicable were used as a guiding light when designing the meta-evaluation.
Sampling	The self-assessment survey conducted for the organization.
Data Collection	Interviews with survey participants and stakeholders in combination with a documentation review.
Analysis	CMMI will be used for coding and analyzing the data collected. By applying the same framework and dimensions as for the survey the idea is to gain results that are more easily comparable.

A meta-evaluation can have the nature of formative or summative (Stufflebeam, 2000). A formative meta-evaluation has a more pro-active aim to support decision-making on the design and execution of evaluations, while a summative ditto has the focus of accountability – confirming the validity of results of evaluations executed. Even if a meta-evaluation is done for one of the main reasons it normally, however, is two-fold; providing both insights. As for this thesis, the main outcome is of formative character; providing insight into how to achieve most relevant results from a self-assessment. On the other hand the derived nature of the evaluation is more summative since it is conducted after the self-assessment evaluation has already taken place. Meta-evaluation is relatively widely used in international development by UN-organs and other Non-governmental-organizations, hence more elaborate guidelines and quality proformas exist for this field (Olsen & O’Reilly, 2011). The application of the methodology in Information Systems (IS) research however is rather limited why no clear IS-specific best-practice guidelines exist. The meta-evaluation being a very flexible framework in terms of what tools and models to use (Cooksy & Caracelli, 2008) evaluation models applicable to the study could be used.

3 Research method

This chapter will present and explain the methodology used in conducting the study. It starts with introducing the IT organization in order for the reader to have a somewhat richer context (3.1). A description of how the survey was constructed and conducted follows (3.2) before the two research steps for evaluating the survey and enabling the address of the research question – interviews (3.3) and documentation review (3.4) are elaborated. The chapter closes with a discussion on research quality (3.5).

3.1 Introduction of the IT organization

The organization for which the survey was conducted is a global company with more than 20 000 employees. The company has a global IT organization with support centers in Singapore, India, Sweden and the US. The IT organization consists of approximately 600 people, all distributed equally, except for in India where only 40 employees work.

The IT organization has a global service desk, operating the first-line support. The global service desk receives all calls and e-mails for which they register a service ticket. All tickets are logged and distributed via the global ticketing system. If the global service desk does not have the ability or access to solve the ticket, it is escalated to second line support. If second line support cannot solve the ticket, it is escalated further to backbone support, which can either be an internal team or an external vendor.

There are 16 service delivery teams, each responsible for one or several areas. These teams can be divided into two main groups: the service team supporting business applications and the service teams supporting the technical infrastructure (network, computers, software, servers and so on).

In early 2000, the IT organization implemented IT process management, based on ITIL version 2. The processes were implemented with a ticketing system in the form of a module in the ERP system rather than a service management tool.

The IT organization is now planning to move to ITIL version 3 and also extend the ITIL process scope. Before starting the ITIL implementation, as a first step they would like to assess their current maturity level.

3.2 The survey

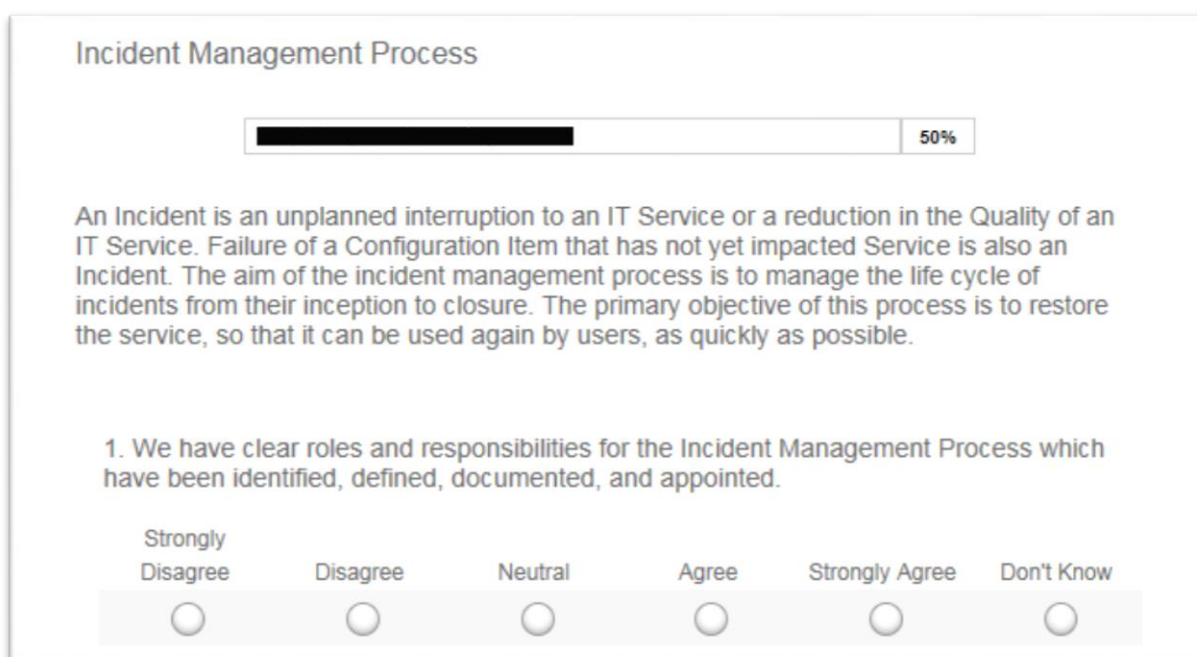
In order to be able to evaluate how well a self-assessment using a survey tool defines the as-is state the first research effort was to conduct a full self-assessment survey on the three ITIL processes in scope. This would result in the perceived IT-maturity level of the organization and provide the sampling for the meta-evaluation.

3.2.1 The assessment

The survey was conducted as an on-line survey that provided 11-12 questions for each of the three processes in scope: Incident Management, Request Fulfilment Management and Problem Management. A short description of the process in focus was given in the beginning of each survey in order to clarify the survey terminology, since respondents were on different degrees of knowledge regarding that. Each question was formulated in the form of a statement which the participants were to rate on a scale from 1 to 5:

- 1 – ‘Strongly Disagree’
- 2 – ‘Disagree’
- 3 – ‘Neutral’
- 4 – ‘Agree’
- 5 – ‘Strongly Agree’

0 – ‘Don't Know’ was also a possible rating option which was not weighed into the resulting score. A screenshot from the survey is found in figure 3.1.



The screenshot shows a survey interface for the 'Incident Management Process'. At the top, there is a progress bar indicating 50% completion. Below the progress bar, the text defines an incident: 'An Incident is an unplanned interruption to an IT Service or a reduction in the Quality of an IT Service. Failure of a Configuration Item that has not yet impacted Service is also an Incident. The aim of the incident management process is to manage the life cycle of incidents from their inception to closure. The primary objective of this process is to restore the service, so that it can be used again by users, as quickly as possible.' The question being asked is: '1. We have clear roles and responsibilities for the Incident Management Process which have been identified, defined, documented, and appointed.' Below the question, there is a horizontal scale with six radio buttons corresponding to the following labels: 'Strongly Disagree', 'Disagree', 'Neutral', 'Agree', 'Strongly Agree', and 'Don't Know'.

Figure 3.1 - Screenshot from the on-line survey

Each of the numbers on the scale translates into the defined maturity level of CMMI as shown in table 3.1. This is what CMMI defines as process maturity scoring definition (Oehrlich et al., 2012). Each statement was scored according to a definition and comments were allowed for each statement (Team, 2010).

Table 3.1 - Score mapping with CMMI maturity stage

Answer	Maturity level
1 – ‘Strongly Disagree’	Initial
2 – ‘Disagree’	Managed
3 – ‘Neutral’	Defined
4 – ‘Agree’	Quantatively managed
5 – ‘Strongly Agree’	Optimizing

Target audience for the survey was directors, service delivery managers, service leads, sub-set of analysts and the ITSM team. This translates to 90 people. The reason for 90 people was to be able to collect data from all levels in the organization as it might have an impact on the result. Further, the goal was to have several people attending from each level to avoid one individual’s opinion.

Each person included in the survey answered questions on 1-3 of the processes. The respondents had to have some level of interaction and knowledge about the process they were assessing. In order to make sure the right people assessed the right processes, a people/process mapping was made together with the ITSM team of the organization. Figure 3.2 illustrates what the mapping looked like.

Area	Service/Sub-Area	Role	Incident Management	Problem Management	Request fulfillment
Customer Management and Reporting systems	Customer Management and Reporting systems	Director			x
Customer Management and Reporting systems	Customer Management	SDM	x		x
Customer Management and Reporting systems	e-Business	SDM			x
Customer Management and Reporting systems	Reporting systems	SDM	x	x	x
Customer Management and Reporting systems	Business Warehouse	Service lead	x		x
Customer Management and Reporting systems	Business Warehouse	Service lead	x	x	x
Customer Management and Reporting systems	eBusiness	Service lead			x
Customer Management and Reporting systems	iAvenue	Service lead		x	
Customer Management and Reporting systems	MDM	Service lead	x	x	
Global IM	Global IM	Director	x		
Global IM	Global IM	Director			
Global Process	Deliver Service	ITSM team	x		x
ISP	Easy Design & Legacy	SDM	x		
ISP	e-HR & Recruitment	Service lead		x	x
ISP	ISP	Director		x	
ISP	ISP Infrastructure	Service lead		x	x
ISP	ISP service	SDM		x	
ISP	ISP User Access	Service lead			
ISP	ISP2	SDM	x		x
ISP	Legal projects	SDM			
ISP	Manufacturing systems	SDM		x	
ISP	Darwin C & Darwin TS	Service lead	x	x	
ISP	OFCE	Service lead			
ISP	OFPM	Service lead		x	x
ISP	OFSP	Service lead			
ISP	Supply Chain Management Systems	SDM	x		x

Figure 3.2 – Excerpt of the people/process mapping

The participants had two weeks to complete the assessment survey and after one week a reminder was sent out.

3.2.2 Structuring of questions

Between the three maturity dimensions of people, process and tools, there is a big selection of questions available in different libraries. Questions were selected from three main question library sources: Forrester's Service Management and Automation Assessment Framework, Pink Elephant and CMM. The questions were selected based on standard ITIL processes. Some organizations have implemented variants of ITIL. In order to secure that the IT organizations maturity really is compared against a best-practice reference set of ITIL processes rather than the IT organization's ITIL variant, the questions are purely based on the key elements of each ITIL process. The maturity assessment and questions were then grouped into the three dimensions described and motivated in chapter 2.4; people, process and tool. Thereby both the ITIL process and the process enablers were evaluated (Cannon, 2011). This is according to the recommendation of Hammer and Champy; to include process enablers in a maturity assessment (Hammer & Champy, 2009). This is further a common way to group maturity, which also had the effect that the presentation was more structured and comprehensible to the participants.

3.2.3 Data processing

The results were scored against CMMI and its Process Maturity scoring definition model (see appendix A).

Each question gets an average maturity score. This is drilled up to its group/dimension (people, process, tool) and each group within a specific process will also get a maturity score. Finally the full process will get a maturity score. The comments made will provide support to understand which gaps exist in the service management organization. Based on this different recommendations can be made depending on the desired to-be state of the organization.

The survey was made available to participants through the tool SurveyMonkey and results were transferred into QlikView for data analysis.

3.3 The Interviews

After the assessment survey was completed, summarized and understood, the actual research aim of the thesis - to understand how well the survey results correspond to reality - could start. The first data collection step for the meta-evaluation was to conduct the interviews. Three interviews with survey participants and with stakeholders at the ITSM team in the organization were conducted. Based on the comparison between the results of the self-assessment survey and the final results of the meta-evaluation, the aim was to determine how well the self-assessment corresponds to reality and how well it can state the maturity of the IT organization.

For qualitative data, interview is the most significant source (Denscombe, 2009). The format of semi-structured interviews (Kvale & Brinkmann, 2009) was chosen, which enabled exploration of the research questions in greater depth by asking follow-up questions. This meant that the interviews became more of discussions – the initial order of the questions and even the questions could change during the interview. When needed, follow-up questions were

formulated to nourish the discussion and allow the interviewees to elaborate their answers even further.

3.3.1 Selection of interviewees

The semi-structured, personal interviews were conducted with two survey participants and one member of the ITSM team who didn't take part in the survey. By concentrating on few people, but still with different profiles in order to catch views from people with different perspectives, the interviews could be done more in-depth and thereby be sources of more detailed information. The decision to interview survey participants was to have interviewees knowledgeable both of the specific survey questions and of ITIL, the latter of which not all survey respondents were. Initially, the intended number of interviews was three to five. There were two factors impacting the decision to do in total three interviews:

1. As the results showed consistency amongst the answers, it was concluded that three provided sufficient material.
2. As the interviews would be complemented with a deep analysis of existing and documented IT processes and ITSM tool, it was decided this would be enough data to draw a conclusion.

Since the purpose of the research relies on an organizational perspective rather than an individual perspective and since ITIL consists of very specific terminology, interviewees that were chosen had to meet the following criteria:

- A senior service management employee, which in this IT organization requires minimum five years of experience. The seniority is important to secure a broad understanding and not only understanding for a specific group or area.
- ITIL V3 educated to evaluate with ITIL as a framework
- Basic understanding of process maturity

The profiles of the final interviewees can be found in table 3.2 below.

Table 3.2 - Interviewee profiles

Interviewee	Role and seniority	Years of experience	ITIL education	Process Maturity experience
Interviewee 1	Analyst, working operational with incidents, requests and problems	11	ITIL V3 certified and ITIL service operation certified	Yes
Interviewee 2	Senior Manager and responsible for the ITSM department	14	ITIL V3 certified, CSI certified and Service Catalogue Management certified	Yes
Interviewee 3	Service Delivery Manager and responsible for the group handling 55% of all incoming tickets	8	ITIL V3 certified and CSI certified	Yes

3.3.2 *Preparation of interview questions*

The questions used for the interviews were constructed and summoned in an interview guide (see appendix C). This guide was used as a framework when conducting the interviews – with the survey participants as well as the member of the ITSM team. They were formulated quite similarly and with the clear idea that they would provide a starting point for constructive discussions rather than alluring short answers. Having a meta-evaluation perspective, the questions were formulated with the result of the survey in mind. The questions merit – is it sound – and worth – is it relevant to the evaluation – was also held in mind, those being fundamental considerations when constructing questions for a meta-evaluation (Stufflebeam, 2001). Since the interview questions were set up based on the survey a further effect was that the interview guide was structured in the same manner as the survey and the questions, hence following the three processes in scope with a further subdivision into the three dimensions:

- Incident Management
 - People
 - Process
 - Tool
- Request fulfilment
 - People
 - Process
 - Tool
- Problem management
 - People
 - Process
 - Tool

The questions of the interview were focused on understanding if the scores from the survey matched the reality. As ITIL is very specific – it was also of interest to get a notion of whether the participants had a clear understanding of the terminology.

3.3.3 *Interview technique and execution*

The interviews were conducted face-to-face, recorded and transcribed in written copies. The interviews were first prepared. In the preparation phase, the profile and position of the interviewee was reviewed. Depending on profile and position, it was decided if there was any area where focus should be concentrated. After the preparation, the interview was conducted. The most significant advantages of this format are the flexibility and the capability of exploring the reason behind the survey answers in order to support in trying to decide what maturity level it actually corresponds to. After conduction of the interview a high-level summary was made. Further, an evaluation of whether any information was missed out and if any improvements would need to be done for the next interview.

3.3.4 *Transcription of interviews*

After the interview execution, transcription was started. A good start is to summarize the recorded interviews in written form. This summary facilitates the processing of the collected

data. It is recommended to use a column on the paper for comments which represent a question, a subject or a content (Denscombe, 2009).

According to Kvale and Brinkmann (2009), there are no standard procedures for doing transcription and the method of transcription should be carried out depending on how the transcription shall be used.

All three interviews were recorded and the transcription was divided between the authors. In the transcription process pauses and expressions such as ‘hm’ or ‘um’ was deliberately left out. When the name of the company was used it was replaced with ‘the company’ or ‘the organization’. Thereafter, both authors went over the coding and transcription. To increase the quality of the transcripts, the transcriptions started as soon as the last interview was completed. All interviews and transcription work was completed within one week. The transcribed interviews can be found in appendix D.

3.3.5 Coding of interviews

After transcribing, the material consisted of almost 8000 words in total, making it hard to get an overview. The raw data from the interviews need to be analyzed and interpreted. To do this, the data has to be categorized to become meaningful for the researcher (Bell & Nilsson, 2000). Therefore answers from the transcribed interviews were re-categorized into the process/dimension matrix used as the interview guide.

To make the data manageable for further analysing it has to be coded. For this purpose a selective coding technique was chosen (Recker, 2012). Kvale and Brinkmann (2009) refers to attaching one or more keywords to a text segment in order to permit later identification of a statement. This was useful since the interview questions were based on categories and the answers should reflect on these categories.

The main idea of the data analysis was to compare the empirical findings from the interviews with the survey results referring back to the theory part of the thesis. In order to simplify the comparison process the CMMI model was used for coding. Five different codes were used; each one of them referring to a maturity stage of CMMI, see table 3.3. The interviewee answer was linked to a maturity stage of CMMI to later on conclude if there was a correlation with the results of the survey.

Table 3.3 - Codes related to CMMI levels used when coding interviews

Maturity Stage	Code
Initial	INIT
Managed	MAN
Defined	DEF
Quantitatively Managed	QM
Optimizing	OPT

Both authors coded the interviews separately to later compare and align results in order to avoid that different readings of transcripts can result in different interpretations (Kvale &

Brinkmann, 2009). Thereby, two perspectives on the interviews were gained as opposed to one.

A problem with the above method is that the meaning is decontextualized; when the interviews are coded, they are taken out of its context (Denscombe, 2009). In an effort to reduce this effect, the audio files of the interviews were replayed immediately after the interview had taken place and coding was done. The coded interviews are found in Appendix E.

3.4 Documentation review of current processes and tool

The second data collection step of the meta-evaluation of the survey results was a documentation review of the organization's global IT-process documentation and their current ITSM tools. The findings were first documented in a table and mapped to the survey question. Thereafter a coding was done for ease of comparability with the other results. As was done with the raw data from the interviews, the findings of the documentation review were assigned a code corresponding to the perceived CMMI maturity level using the process maturity scoring definition that can be found in appendix A. This was also conducted by both authors separately before discussed and merged.

3.4.1 Process analysis

The IT organization's IT processes are documented in SharePoint and accessible for all employees. The approach to evaluate if the survey results corresponded to the process documentation was to compare each survey statement to the documentation. If a statement claimed that a priority was done based on certain criteria, that statement was compared to what was in the process documentation. It was noted in a table if the statement was correct, partially correct or incorrect by describing what the process documentation said about the statement.

The results of the analysis were communicated to the organization's management team in order to validate the findings and minimize missed aspects or misunderstandings.

3.4.2 Tool analysis

As stated in the presentation of the IT organization in 3.1 they have one main tool to support ITSM; the ticketing system. This tool was also examined as a part of the documentation review, using the following two approaches:

1. Five analysts were asked to run the three processes in scope through the system. Each applicable survey tool statement was then compared to what was actually performed in the system
2. Data from the tool was extracted to Microsoft Excel and compared to each applicable tool statement of the survey.

The reason for picking five analysts was to see that there was no deviation from individual to individual.

3.5 Research quality and ethics

When designing the self-assessment survey questions as well as the interview questions, the terms of validity and reliability were considered. Validity means that the research is measuring what it is supposed to measure (Svenning, 1996). Reliability is a measure on that the measurement will give the same result on repeated trial (Bell & Nilsson, 2000).

By using interviews as a complementary research method, deep and detailed information is acquired and the validity of the interviews increases as the correctness and relevance of the data is controlled as it is collected (Denscombe, 2009). To certify the validity of the information sought after, the questions and how they were formulated were discussed, first between the authors and then with the ITSM team of the organization who is knowledgeable in the subject.

Interviews were transcribed shortly after completion and coding was done by both authors. The interviews were recorded, to allow the interviewer to concentrate on getting the most out of the interview and to diminish the risk of the interviewer being biased. (Kvale & Brinkmann, 2009).

When doing research that includes people as first-hand sources ethical issues also need to be reflected upon (Booth, Colomb, & Williams, 2003). Kvale and Brinkmann (2009) have formulated ethical guidelines, which include informed consent, confidentiality and consequences. Before conducting interviews, potential interviewees were contacted and asked whether they wanted to contribute to the research. It was clearly communicated in the request that contribution was voluntary and that identities of interviewees would be kept anonymous.

In many check-lists for meta-evaluation the importance of using evaluation standards is emphasized. It is often referred to 'The Program Evaluation Standards' which in its abstracted format is a list of 30 guidelines formulated by the North American Joint Committee on Standards for Educational Evaluation (JCSEE). Since those evaluation standards are written for the educational field they are not all applicable to the meta-evaluation conducted in this thesis, but through reflecting on ones that are applicable it have hopefully helped ameliorate the quality and ethical level of the research conducted.

4 Results

This chapter will first present the results of the self-assessment survey (4.1), followed by the results of the data collection steps for the meta-evaluation; results of the interviews (4.2) and results of the documentation review (4.3). All results are structured following the three processes of incident management, problem management and request fulfilment management. The exception is the results of the documentation review on the tool dimension since that does not separate the different processes in a clear way.

4.1 Self-assessment survey result

There were three different surveys, one separate survey per process, sent out to in total 90 participants. Depending on the participants role in the organization he or she received the survey for the applicable area. This also meant that some participants were sent two or all three surveys. A summary can be found in Table 4.1.

Table 4.1 - Response rate for the surveys

Survey	Number of surveys sent out	Response rate
Incident Management	49	92%
Request fulfilment	51	94%
Problem Management	62	89%

The self-assessment survey was available for the participants to answer during 14 days. A reminder was sent after 7 days. When this time had passed the response rate reached in average 92% which can be considered a high number (Baruch & Holtom, 2008). The fact that the survey was made available on an organizational intranet and followed up by e-mail reminders are contributing factors to the high rate.

When the results were gathered the Incident Management process and Request Fulfilment Management process both got an average score of 3.6. Problem Management got an average score of 3.0.

All three processes scored highest on the people section. Second highest score was on the process section and finally the tool section scored the lowest in all three processes.

Looking at the result per role of the respondent, there is a clear tendency that the more senior the respondent, the more likely to be positive around the statements, as can be seen in table 4.2.

Table 4.2 - Mean score per process and respondent role

Role	Incident management, mean score	Request fulfilment management, mean score	Problem management, mean score
Analyst	3.4	3.4	2.8
Service Lead	3.5	3.5	2.9
Service Delivery Manager	3.6	3.7	3.1
Director	4.0	3,8	3.3

Detailed scores can be found in the following three sections.

4.1.1 Incident Management

The Incident Management people and process section scored very close to the CMMI maturity stage ‘Quantitatively Managed’. People got a 3.9 score and process got a 3.7 score. According to CMMI, this means that the incident management process is implemented and efficiently running. Comprehensive SLA:s are in place and all incidents are proactively tracked and escalated to ensure SLA agreements are met. To be at a ‘Quantitatively Managed’ maturity level, the people are educated to execute the process and there are clear roles and responsibilities (Team, 2010). Roles and responsibility definition is essential to be able to make the right decisions at the right level (Weill & Ross, 2004). With a high maturity level for roles and responsibilities, there would be defined IT domains and IT Governance archetypes.

The Incident Management tool got a score of 3.2, which is a score close to the CMMI maturity stage ‘Defined’. From a system standpoint, this means that all incidents are logged, classified and tracked in a common system. There is a well-functioning system in place that supports the right priority of incidents (Team, 2010). A summary of the scores is found in table 4.3.

Table 4.3 - Mean survey results for Incident Management

Incident Management	3.6
People	3.9
Process	3.7
Tool	3.2

4.1.2 Request Fulfilment Management

Just like the incident management process, The Request Fulfilment Management people and process section score very close to the CMMI maturity stage ‘Quantitatively Managed’. People got a 3.9 score and process got a 3.8 score. This implies that the Request Fulfilment Management process has defined services that are standardized and automation is applied. Users

are able to access information and services easily (Team, 2010). Normally this is done via a self-service portal (Godfrey, 2008). The ‘Quantitatively Managed’ also implies that the service provider verifies that their service offerings meet the needs of the customer and end user (Team, 2010). The decision domain “business application needs” must be in place to define how the service needs and requirements of the business align (Weill & Ross, 2004).

The people are educated to execute the process and there are clear roles and responsibilities defined in each step of the process (Team, 2010).

The Request Fulfilment Management tool section got a score of 3.0. This score is close to the CMMI maturity stage ‘Defined’. From a system standpoint, all requests are registered in the system. Technology is used to assist in providing Request Fulfilment services - such as self-help portals and automation of standardized service requests (Team, 2010). A summary of the scores for Request Fulfilment Management is found in table 4.4.

Table 4.4 - Mean survey results for Request Fulfilment Management

Request fulfilment	3.6
People	3.9
Process	3.8
Tool	3.0

4.1.3 Problem Management

The Problem Management process got the lowest average score. The people section scored the highest, with a score of 3.5. According to the CMMI maturity stage model, this is between the ‘Defined’ and ‘Quantitatively Managed’ maturity stages (Team, 2010). Just like for the above two processes, this would mean that roles and responsibilities are defined for the process, which in ITIL is defined with the RACI model but alternative ways can be used (Griffiths, 2009). Weill and Ross for example would use IT Governance archetypes to state who is responsible for which decision (Weill & Ross, 2004).

The process section got the score 3.1. This implies that there is an established Problem Management process in place. Problems are logged and dedicated problem management teams are working with problem resolution. It further implies that it to some extent is integrated with other ITIL process (Team, 2010).

The Problem Management tool section got a score of 2.4 which is between the ‘Defined’ and ‘Managed’ CMMI maturity stages, but slightly closer to the ‘Managed’ stage which implies there is basic tools functionality in place to support Problem Management, but it is not used in a more ad hoc fashion (Team, 2010). A summary of the scores for all dimensions of the process is found in table 4.5.

Table 4.5 - Mean survey results for Problem Management

Problem Management	3.2
People	3.5
Process	3.1
Tool	2.4

4.2 Interviews – results

In the following subchapters every process/dimension combination is assigned a maturity level as identified when coding the interviews. Quotes from the interviews are included to highlight and motivate the assigned maturity levels. The coded interviews in its entirety can be found in appendix E. This is also where the number in brackets after a quote is referencing to.

4.2.1 Incident Management

Reviewing the **incident management** interview results for **people**, there are some differences in the answers. The answers of the first interviewee were the most pessimistic. According to his answers, incident management people area should have a maturity stage between ‘Managed’ and ‘Defined’. This maturity stage is mainly motivated by the fact that there are no incident management roles defined:

“The reason why this is too high and according to me rather below than above a 3 is that we today lack a proper Incident process and Incident roles” (1)

Further that there are very few employees that are ITIL and service management trained:

“Most of the people are not ITIL and Incidents Management trained. I know two in the full organization that are ITIL certified.” (1)

Interviewee number two and three had very similar results. Their answers pointed to that the incident management people dimension should have a stage of ‘Defined’. The answer of interviewee number three indicated that the incident management people dimension was between ‘Defined’ and ‘Quantitatively Managed’, but this was more related to his specific team than the whole organization:

“But yes I think we are more familiar with ITIL and the need of ITIL and a new tool in the service desk than the others” (57)

Regarding Incident Management roles interviewees two and three are referring to the lack of incident management roles and responsibilities in the organization. They are referring to the roles as that the processes can be improved rather than that they are non-existent as interviewee number one did:

“We don’t have formal and documented incident management roles but here in in the global service desk we have tried to structure the ownership of the incidents. And I think also the service delivery teams have made a try to implement what they call a mailbox coordinator.”(58)

“We don’t have incident management roles and responsibilities at a global level, but I would say that many of the individual services do have. So once again, 3.9 is way too high, but I wouldn’t say it is non-existing.” (29)

According to CMMI, if the best practice does not apply to the full organization, it is at the maturity state “defined”. Further, ITIL defines roles and responsibilities on each step of the process to minimize risk. ITIL proposes to use the RACI model as their governance model (Lloyd et al., 2011).

They are also mentioning the competence of Incident Management and ITIL as outdated. Just like with the roles and responsibilities, the competence must increase, but it is not non-existent:

“People’s knowledge is outdated in a number of fields.” (28)

“We in the service desk are both ITIL v1 educated -- or at least some of us - and we see the need for ITIL as it would reduce our workload dramatically. I know there are some in technical infrastructure that are also ITIL v1 certified but in the business application areas, they have probably never heard about it.” (57)

Already at maturity stage 2 in the CMMI model, there needs to be elements of education on how to run the process (Team, 2010).

In the interviewee’s comments about the **incident management process**, they are very consistent and aligned. They all would agree that the incident management process is at a maturity stage between ‘Managed’ and ‘Defined’, however closer to ‘Defined’. They are all referring to a lack of defined and complete incident management process:

“I would rather say that a fairly poor Incident process has been implemented.” (4)

“The score for Process dimension should have been lower given lack of adherence to process steps.” (30)

“If we want to take our incident management process to the next level we need to start to work on integration. This is what is missing now.” (65)

The three interviewees are further referring to the lack of ability to separate incidents from requests:

“All Incidents and requests are treated in a similar way, they are Tickets” (1)

“A high number of tickets categorized as Incidents were in fact service requests.” (30)

“I think our incident management process is well defined, even if it does not separate Incidents from Requests.” (61)

A third area of the incident management process, which all interviewees mention, is categorization and prioritization of incidents which exists but it is not done according to best practice:

“Incident and Request are using same process and priority “ (13)

“Major incidents are treated in a similar manner as any other incident. Incident classification was limited and had no linkage to a configuration database” (30)

“We are not really prioritizing our tickets. We have a field in the tool called prioritization but this is not really based on any logic.” (63)

The priority setting of an incident is one of the basic elements of ITIL. The priority of an incident should be based on impact and urgency to meet the business needs. Because of this, the priority is also important from an IT governance standpoint which is about allocating IT decision rights so that individual IT decisions align with strategic objectives (Weill & Ross, 2004a).

In the **incident management tool** area, the answers are also consistent. Two of the interviewees consider the tool to be at the maturity level of ‘Managed’. The answers of the third interviewee place the tool at a maturity level between ‘Managed’ and ‘Defined’. This has the lowest score in the survey results and it also ends up on a low stage according to the answers of the interviewees. According to all interviewees, there is a tool, but it is very basic. It is a ticket handling tool rather than a full service management tool, which can record the tickets, close the tickets, send resolution to the users and give basic statistics:

“If we had had a knowledge management database, we could have automated the solution of some of the incidents and we would not be so depended on each individual and also on having so senior staff.” (6)

“The tool functionality is more appropriate and in line with the needs of a call center, not a service management help desk.” (32)

“Not having a proper service management tool is very time consuming.” (67)

Further, all three interviewees agreed that the tool does not have any advanced features and does not support integration and automation which results in a lot of manual work.

“So, all incidents are solved manually and we are dependent on the individual knowledge. If we had had a knowledge management database, we could have automated the solution of some of the incidents and we would not be so depended on each individual and also on having so senior staff.” (6)

“The tool has no workflow capabilities and lacks completely reporting capabilities.” (32)

“Yes, like I mentioned before; if we could use knowledge management to help us solve incidents, we would save a lot of time” (69)

Summary:

All three interviewees had in common that the people area was the most mature area of incident management. The process was second highest and finally the tool as the least mature area of incident management.

People: The people area of the incident management process is close to the ‘Defined’ maturity stage. Two of the interviewees hold the maturity stage to be ‘Defined’ and one to between ‘Managed’ and ‘Defined’.

Process: All three interviewees place the incident management process at a maturity stage between ‘Managed’ and ‘Defined’, however closer to ‘Defined’.

Tool: Two of the interviewees place the tool at the maturity level of ‘Managed’. The answers of the third interviewee indicate the tool to be at a maturity level between ‘Managed’ and ‘Defined’.

4.2.2 Request Fulfilment Management

Reviewing the **request fulfilment management** interview results for the **people** dimension, most answers can be matched to the maturity stage defined. A few answers from interviewee number one are a bit lower than defined and one answer from interviewee number three rates between ‘Defined’ and ‘Quantitatively managed’. All three interviewees are stating that the people area of incident management has the basic elements but there is improvement potential. The defined maturity stage is motivated by a number of factors. According to all three interviewees, there is knowledge about request fulfilment in the organization, but it is not advanced enough:

"The same as for incident management, the people are not ITIL trained and certified." (9)

"And once again, the same as for the incident management process, 3.9 is too high of a score considering the lack of competence development in the area of service management." (36)

"Not too far from reality but considering that not all know the difference between incidents and requests and that not all are educated in this area, close to a four is a bit too high." (73)

Two of the interviewees are referring to lack of request fulfilment roles and global ownership:

"As we don't have a separate process defined for request fulfilment, we don't have any global roles and responsibilities defined. We don't have a global ownership." (12)

". What could be better would be if each service had a defined owner. This owner would make sure the service is running as optimal as possible and he could also make sure we in the global service desk are properly trained in the service" (75)

The interviewees are referring to lack of education and lack of some roles. Roles, responsibility and education are necessary to reach both the "Defined" and the "Quantitatively managed" maturity state (Team, 2010).

In the **request fulfilment process** area, two of the interviewees' views can be translated to a maturity level between 'Managed' and 'Defined'. The third interviewee leans more toward 'Defined', with the motivation that the process is defined, but the separation between incidents and requests is missing:

"Yes I think this is quite ok. The request fulfilment process is well-defined. Just like for incidents we are missing a separation between incidents and requests." (76)

Two of the interviewees also state that there are services defined, but not *all* services in the organization:

"Compared to incident management it is maybe a bit higher in general in the organization as some teams have actually started to define their requests and some have even started to fulfil them in a standardized way. And now when I think about it, they have actually automated the software distribution." (11)

"And maybe we should score request fulfilment slightly lower considering not all service delivery teams have defined their services yet." (73)

There is a global process for handling requests which is one of the criteria for CMMI "Defined" maturity level. Only parts of the services are defined, however the lack of defined services argues against the 'Quantitatively Managed' CMMI level. At this maturity level, the service provider verifies that their service offerings meet the needs of the customer (Team, 2010). Weill and Ross mean that the decision domain "business application needs" must be in place to define the service needs and requirements of the business. If the services are not defined, the business needs are not fully taken care of (Weill & Ross, 2004a).

In the **request fulfilment management** dimension for **tool**, the answers are consistent. All define the request fulfilment tool as a 'Managed' maturity state. This is mainly motivated by the same as for incident management - the tool is basic and without advanced features, no automation or workflow can be implemented.

"The tool we have does not provide self-service and even if we had standardized request processes, the system could not automate it for us." (17)

"Considering that Service Requests are the highest volume of any service and the lack of automation provided by the tool, a score of 2.0 would have been more appropriate." (40)

"We have basically no automation or workflow possibilities in the tool so we have to do all these tasks manually." (78)

Summary:

All three interviewees had in common that the people area was the most mature area of request fulfilment management. After that came the request fulfilment management process and finally the tool as the least mature area of request fulfilment management.

People: The request fulfilment management people interview results are mostly defining the dimension at the maturity level of 'Defined'. A few answers from interviewee number one are a bit lower than 'Defined' and one score from interviewee number three is between 'Defined' and 'Quantitatively managed'.

Process: In the request fulfilment process area, two of the interviewees hold the maturity level to be between 'Managed' and 'Defined'. The third interviewee thinks of it as 'Defined'.

Tool: In the request fulfilment management tool area, all interviewees defines the request fulfilment tool as a 'Managed' maturity state

4.2.3 Problem Management

The **problem management people** dimension is mapped to a maturity level between 'Managed' and 'Defined'. Some areas are 'Managed' and some are 'Defined' and some are in-between these two maturity stages. It is mainly motivated by lack of knowledge and roles and responsibilities from the first two interviewees:

"We don't have any ITIL trained personnel so our knowledge also in problem management is limited. And we don't have any roles defined for problem managements." (20)

"Once again, we are lacking competence in the service management area and thereby also in the problem management area. And as I will explain in the process section, we don't have a global process defined in our organization. This leads to lack of knowledge in the area by itself." (44)

There are some differences in the answers. The two first interviewees make an assessment of the full organization, whilst the third interviewee is acknowledging that despite the lack of a global or central problem management process, some teams have implemented problem management on their own. Assessing the people area at a global level, there is a lack of problem management knowledge and roles and responsibilities:

"But I wouldn't say it is non-existent. For the teams working actively with problem management, I think they are at a good level. Others probably understand the basic concepts. But where I really think we have the problem is to have it in the back of everyone's heads." (83)

The maturity level is managed when there is a lack of education and roles and responsibilities (Team, 2010).

The **process** dimension of **problem management** is described similar to the people area; some areas are 'Managed', some are 'Defined' and some are in-between these two maturity stages. All three interviewees are acknowledging that there is no global process defined but some individual teams are following a problem management process:

"We don't have a global problem management process defined and documented so looking at your scoring model this would be a two." (22)

"There are isolated service teams that on their own behalf has implemented a problem management process. Some according to ITIL standard, other to another standard or possibly to their made-up standard. But the fact is that we do not have a global problem management process and this gives the impression that it is not recognized as an important process. A score of 2.5 would have been more appropriate." (46)

"I think this is fairly ok. Maybe I would lower it to a 3, but maybe that wouldn't make a difference. What we are missing in s documented process. As I mentioned earlier, we are having processes defined and probably also documented but it is one per team and it is not all teams." (85)

There is an indication from interviewee number one that incidents and problems are not separated:

"But a second reason is that they are confusing what a problem is, they are confusing it with an incident. Because for them an incident is also a problem that has to be solved." (23)

As there is no global process defined, the process is at a "Managed" maturity level.

The **tool** dimension of **problem management** gets a level of 'Managed'. The main motivation for this maturity stage is that a problem management process could not fully be implemented in the tool due to lack of functionality:

"We can use problem management very limited in our current tool but it wouldn't support the full problem management process for sure." (25)

"The reason why it relates more to how it actually is, is because important functionality is indeed missing. Differentiation between a problem and a root cause missing. No linking of incidents to problems possible. No linking of RFCs to problems possible. No linking of Configuration Items from the configuration management database possible." (48)

"We don't really have a dedicated tool support for problem management. However, the teams using problem management have found their own unique way to use the tool. I also know one team that is using SharePoint as their problem management tool." (88)

Summary:

People: The problem management people area ends up at a maturity level between 'Managed' and 'Defined'. Some questions are answered as 'Managed', some as 'Defined' and some are in-between these two maturity stages.

Process: The process area of problem management is described similar to the people area; some questions are answered as 'Managed', some are answered as 'Defined' and some are answered as in-between.

Tool: The tool area of problem management is positioned at 'Managed' by all three interviewees.

4.3 Documentation review – results

4.3.1 Analysis of documentation on dimensions people and processes

The organization implemented a limited scope of ITIL processes early in 2000 and they are based on ITIL version 2. Since there are differences between version 2 and version 3 they are not directly comparable. The organization has implemented and documented incident management and request fulfilment, however this is based on ITIL version 2, where this is merged into one process (Van Bon et al., 2008). The organization has only partially and on a very high-level documented and implemented problem management and event management. The Problem Management process is also a part of the Incident and Request Fulfilment process. The organization has divided their processes into levels going from high-level down to details describing in detail how each step in the process should be executed. This is documented in a

Microsoft Visio process schedule with the ability to click an object and thereby drill down to the next level. What this looks like is illustrated in figures 4.1 through 4.3.

At the highest level, the IT organization has divided their full IT organization into four parts, where the IT service Management processes are called ‘Deliver service’

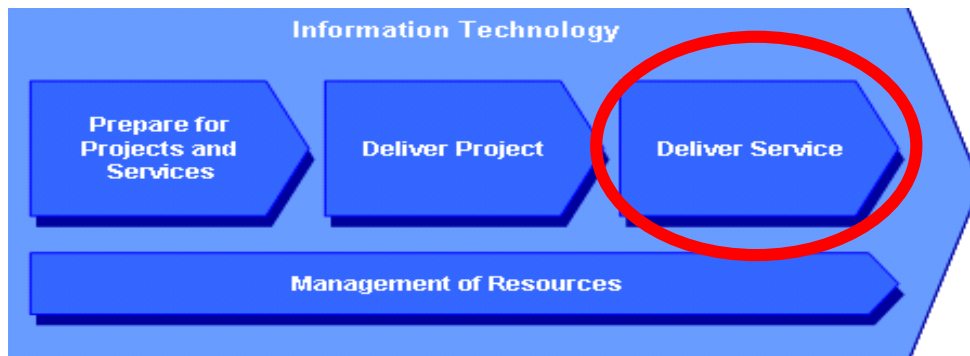


Figure 4.1 – The organization’s highest level view of IT

At the next level, they are dividing their IT Service Management process into ‘Maintain Service’, which is mainly the ITIL event management process and ‘Manage call’, which includes all three of the researched processes; incident management, request fulfilment management and problem management.

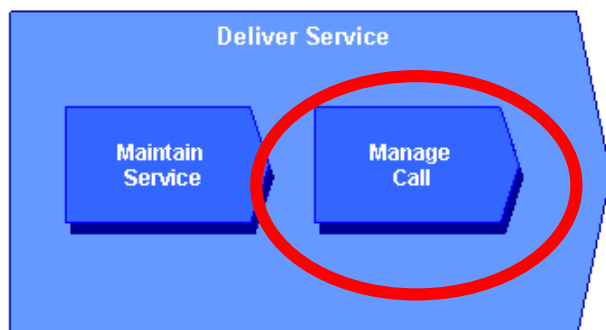


Figure 4.2 – The ‘Deliver service’-process at the second level of abstraction

On the third level, the activity flow is showing, meaning each step that should be performed and by whom in order to execute the process. To each step there is also a Microsoft Word document linked, describing all details of each step.

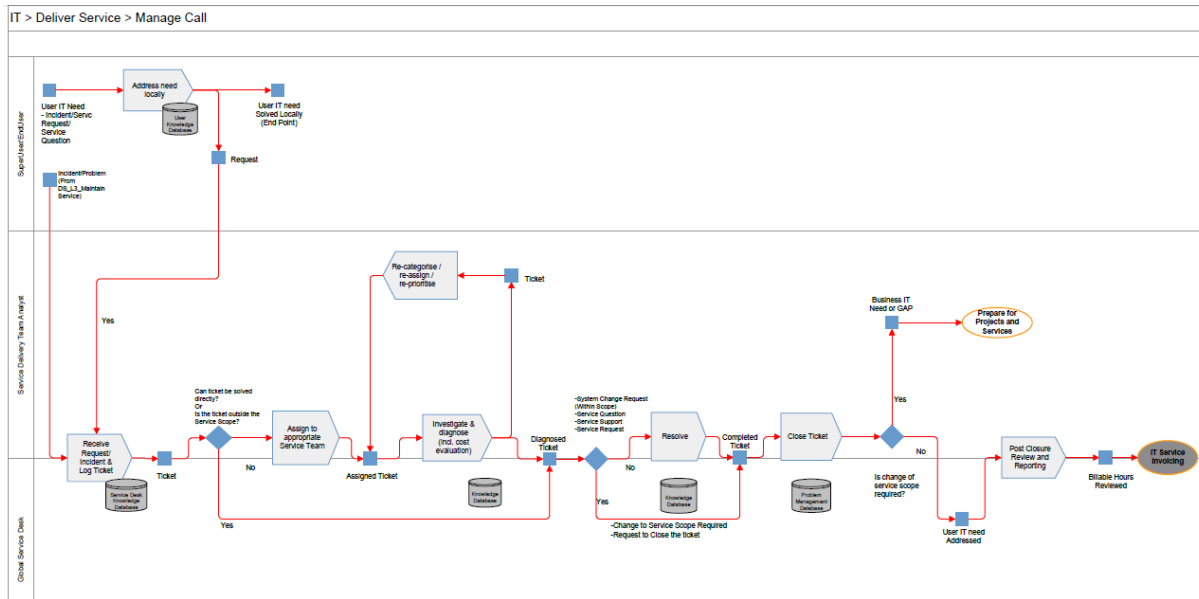


Figure 4.3 – Detailed activity flow for the ‘Manage Call’-process on the third level

The approach was that for each survey question try and find how it compared to the documentation. For example, on the question “We have clear roles and responsibilities for the Incident Management Process which have been identified, defined, documented, and appointed” a comparison could be done with the process documentation to see if there were roles defined and appointed. Another example; on the question “We have clearly defined process goals, objectives, policies and procedures for the Incident Management Process” it could be compared whether goals, policies etc. were documented in the process documentation.

The findings were transcribed and entered into tables per process; this data can be found in appendix F. As a second step the results were coded; this is summarized in table 4.6 below.

Table 4.6 - Results from documentation review

Area	Documentation review analysis findings	Perceived maturity stage
IM People	<ul style="list-style-type: none"> • No incident manager or incident owner defined or implemented. • The process is not separating incidents from requests. • Very few ITIL-educated employees. 	Managed
IM Process	<ul style="list-style-type: none"> • No separate incident management process. • No documentation or process separating incidents from problems. • The definition of an incident is not documented. • Incidents are closed by back-bone support rather than by the service desk. • The incidents are not assigned a priority based on impact and urgency. 	Defined
RF People	<ul style="list-style-type: none"> • No request fulfilment manager or request owner defined or implemented. • No documentation on standardization of requests and no automation targets. • The SLA's are not decided in alignment with the customers. 	Managed-Defined
RF Process	<ul style="list-style-type: none"> • No separate request fulfilment management process. • Request model execution step in the 'Manage Call' process is missing. • No statistics or measurements to see how much automation is done. 	Managed-Defined
PM People	<ul style="list-style-type: none"> • No roles globally defined. 	Managed
PM Process	<ul style="list-style-type: none"> • There is no global problem process implemented. • The definition of a problem is not documented. • No process goals documented and no integration with other ITIL processes. • The problems are not assigned a priority based on urgency and impact. • No measurement or KPI framework for problem management. 	Managed

4.3.2 Analysis of documentation on dimension tools

Every day, users at different levels and functions in the organization report service issues - referred to as tickets – to the IT-organization. The IT-organization has a ticket handling tool, with the aim to support the 'Manage call' process mentioned in the previous chapter. It was implemented early 2000 as a module in the ERP system. All tickets are reported either via phone or via email. A ticket record is manually created by the service desk dispatcher and then forwarded to a global service desk. The ticket record contains basic information, such as who logged the ticket, date, how many hours the ticket has been open etc.

As the current ‘Manage call’ process is based on ITIL version 2, it is not separating incidents from requests (Van Bon, 2011). Furthermore, problem management was not a part of the organization’s initial implementation in early 2000. Therefore, an incident, a request or a problem are all created in the same record type in the tool. Post implementation of the system, some service teams saw a need for separating incidents from requests and also to start to work with problem records. Therefore, there is a field in the ticket record called request type that can separate the three. Apart from these three types, the field can also be set to one of several service types. The request type should state what kind of ticket it is and the following selections are available:

- Incident
- Problem
- Service: Access
- Service: BasicDataM
- Service: Information
- Service: Installation
- Service: Purchase
- Service: Scheduled
- Service: Training
- Service: Request
- Non Request

The request type has some delimitations - statistics tell that the request type is used in an ad hoc manner and only few teams are separating incidents from requests. Furthermore problems are used in a different manner than intended to: a problem ticket does not show up in the resolution time KPI reporting, so there is a tendency to categorize a ticket as a problem if its resolution time lies outside the resolution time target. A problem is a cause of one or more incidents and the problem management process is responsible for identifying the root cause (Cartlidge et al., 2007). Another aspect is that when a service desk analyst is creating a ticket, the system defaults the request type value to incident instead of forcing the analyst to actively choose the proper request type. Ross and Weill (2005) stresses the importance of IT governance to decrease risk and to align IT decisions with the business. ITIL stresses the importance of responsibility and accountability in each step of an ITIL process (Lloyd et al., 2011). When not separating incidents, requests and problems, there cannot be clear responsibility and decision making rules in place.

Apart from setting request type, tickets can also be categorized. The categories define where in the technical platform the ticket resides – it is about where the problem occurs rather than which team should handle the ticket. There are four levels, hence four category dimensions:

- Category 1: global, local or business service
- Category 2: the service family, for example the e-business service, the computer exchange service or the network service.
- Category 3 and 4: further hierarchical level of where the problem occurs, if applicable.

This is a necessary structure to enable problem management. If it is understood where the problem occurs, problem management can be applied (Cartlidge et al., 2007). An example of what the ticketing tool looks like is found in figure 4.4 below.



Figure 4.4 - Screenshot from the ticketing tool

According to ITIL version 3 (Van Bon et al., 2008), priority should be based on impact and urgency and is used to identify required times for actions to be taken (Behr et al., 2005). For example, the Service Level Agreement may state that priority 2 incidents must be resolved within 12 hours. The tool does have a priority field and four priority levels exist: low, medium, high and emergency. However, the priority is not based on impact and urgency; it is rather the user deciding which of the four priorities the ticket should have based on own judgement.

The organization lack clear processes and system support for knowledge management. This has the effect that self-help and ticket resolution automation is very limited. Knowledge management can be said to be used in two manners:

1. For the users to solve their incidents or requests themselves by using existing knowledge articles
2. For the IT organization to solve incident and requests in an automated way.

Automation is a driver of better efficiency (Oehrlich et al., 2012). In general, the system's support for automation is low. There are a couple of teams that have implemented automation in the technical infrastructure area. However, as the ticketing system does not support automation, there is a separate tool used for the limited automation implemented. The system has one automation possibility; to integrate incidents and problems, but it is not used. For example, if there are 20 incidents logged around the same issue, the system does not group them into one problem for root-cause analysis. According to CMMI (Baškarada, 2009), to be at the 'Quantitatively Managed' maturity stage, the processes should be closely integrated with other ITIL processes.

There is furthermore no support for ticket dispatch automation. For this reason, the IT organization has four fulltime employees dispatching tickets to the correct teams. Neither is there

support for workflow and approvals automation, meaning all approvals are done via email outside the ticketing system

The tool does not include a portal for user self-service. Instead, a separate self-service portal has been built, with linkage to the ticketing system. The existing self-service portal offers the users to request basic things, such as folder management, software and distribution lists. The software distribution is automated. The other services requested from the self-service portal are manually solved by the IT organization.

When it comes to capabilities in the business intelligence (BI) field the ticketing tool is on a relatively basic level. There is no graphical interface for analytical or reporting functionality, but it is possible to extract information on all tickets that have been solved within a certain time frame, including all details from the ticket record, in the format of Microsoft Excel sheets. There is support for one sole KPI; the aforementioned resolution time compared to agreed service level agreements.

Based on the above facts regarding the tool and ticket record data extracted from its underlying database a mapping of the survey statements was made. The mapping is also found in appendix F and table 4.7 below presents the processes with coding applied.

Table 4.7 - Results from documentation review on dimension tool

Area	Documentation review analysis findings	Perceived maturity stage
IM Tool	<ul style="list-style-type: none"> • Incident, requests and problems are all created in the same record type in the tool and separation of the three is used in an ad-hoc manner. • Not possible to prioritize according to impact and urgency. • Limited knowledge management. • No integration to problem management. 	Managed-Defined
RF Tool	<ul style="list-style-type: none"> • No automation and workflow • No service catalogue. • No self-service. 	Managed
PM Tool	<ul style="list-style-type: none"> • Problems are used in a different manner than intended to. • It is not possible to prioritize according to impact and urgency. • No known-error database. • No integration to incident management. 	Managed

5 Discussion

This chapter sees a discussion on the findings derived from the research efforts conducted. The first chapter establishes the maturity level as perceived through the self-assessment (5.1). After that the results from the evaluation are discussed (5.2) and the findings of the latter are compared to those of the former.

5.1 Findings from the self-assessment

The overall maturity self-assessment from the survey can be concluded as being on a maturity level between ‘Defined’ and ‘Quantitatively managed’ according to CMMI. This is a level above average, and even though there is still a journey to be made in order to reach a higher level it is a good result as far as maturity goes. This level implies that there are centrally defined and documented processes used in the same manner across the organization. There are defined integration points between the processes and there are initiatives to measure process performance. The organization is working with identifying and meeting customer needs (Team, 2010), meaning the decision domain business needs has been defined (Weill & Ross, 2004b). Roles and responsibilities have been defined which is important from an IT governance standpoint (Weill & Ross, 2004b) and also to make the process efficient and effective (Lloyd et al., 2011).

In the results chapter the outcome was presented per process. Looking at the three processes, Problem Management received a somewhat lower score than the other two, however the result of all three processes qualify as above average. If the perspective is changed to a per dimension view it can be stated that in general the maturity level was assessed lowest for the tools dimension.

Another finding is that when once again changing perspective and looking at the scores per respondent role it is obvious that the more senior the respondent the higher the score. The higher up in the organizational hierarchy a respondent is the closer he or she is to the decision making process and likely feel more responsibility for the organization. In order to compensate for this effect and receive a more aligned result it might be feasible to identify factors enabling a weighing of the results.

The general self-assessment survey result between ‘Defined’ and ‘Quantitatively managed’ is, as mentioned above, a relatively elevated maturity level. In the following chapter it will be examined if this level is confirmed by the evaluation.

5.2 Evaluation of the self-assessment

After conducting the meta-evaluation of the survey through the results of the interviews and the documentation review, some conclusions and observations have been made to be able to answer the research questions defined in this research, which is how well a quantitative self-assessment survey can define the maturity level of an IT organization.

It was evident when summoning the interview data that it all pointed in the same direction; the interviewees were all of the impression that scores attained in the survey were too high. Same as for the survey, there is more correlation to be seen between the three dimensions of people, process and tool than between the separate process and it was therefore decided to structure the discussion chapter along the dimensions.

In order to get an overview and an easily quantifiable view for comparison, the CMMI levels proposed from the interview results were translated into its corresponding numerical value. When summarized in table 5.1, column 3, it is clear that all areas got a higher score in the quantitative self-assessment survey than the maturity level proposed by the interviews.

Table 5.1 - Overview of maturity

Area	Survey score	Interview maturity stage	Doc. Review maturity stage
IM People	3.9	3	2
IM Process	3.7	2 – 3	3
IM Tool	3.2	2 – 3	2 – 3
RF People	3.9	3	2 – 3
RF Process	3.8	2 – 3	2 – 3
RF Tool	3.0	2	2
PM People	3.5	2 – 3	2
PM Process	3.1	2 – 3	2
PM Tool	2.4	2	2

The proposed CMMI mappings from the documentation review, where the documented processes and the current tool were analyzed, verified this picture, which is illustrated in column 4 of table 5.1.

5.2.1 People

The largest deviation between the survey score and the meta-evaluation results is in the people and process dimensions. The people dimension in the survey scored close to quantitatively managed both for incident management and request fulfilment management. Considering that very few of the respondents are ITIL educated and certified and also that all important roles are not in place, the survey score is too high. Comparing with the interviews it is almost one maturity level higher. Without a complete set of clear roles and responsibilities, the correct level of IT governance is not in place (Weill & Ross, 2004a). Having roles and responsibilities defined in an authorization matrix is of importance for ITIL (Griffiths, 2009). Being at a

maturity level close to quantitatively managed, it is a competent organization where authorizations are defined (Team, 2010).

The problem management people dimension also displayed a considerably lower level in the meta-evaluation. Similar to incident management and request fulfilment, it is almost one maturity level higher in the survey where it gets a score between defined and quantitatively managed, whilst in the interviews and the documentation review, it is rather between the managed and defined maturity stage. As there are no central problem management roles defined and documented and the problem management competence is very low in the IT organization, the maturity level would correspond to between managed and defined (Team, 2010), as implied in both the interviews and the documentation review.

A possible factor influencing the significant deviation in the people dimension between the survey answers and the evaluation thereof is that the service delivery teams are working very separately and there is limited communication amongst the teams. One team does not know what the others do. The maturity assessment should measure the maturity of the entire organization rather than the individual service delivery teams (Lloyd et al., 2011). There is a likelihood that the survey participants when answering the questions are referring to how work is conducted in their team, rather than in the entire organization. The larger the IT organization, the more likely that all service teams are not working closely. It will further depend on if the nature of the work in the different service teams noticeably differs, the cooperation between the service teams is most likely lower.

A second factor is that it is obvious that not all survey participants have adequate ITIL education. Considering the very specific ITIL terminology, there is a high risk for misunderstanding the questions. Additionally, the questions are short and concise with none or very little explanation of their meaning. The survey participant might have a tendency to interpret the question into his or her own terminology. The ITIL education is expensive and also very specific; hence it is more likely that a process team or a service management team is educated rather than the entire organization.

A final factor can be that the survey participants might experience that *they* are being evaluated rather than the people pertaining to the processes. In order to contribute to a positive image of the own work they might therefore score higher than reality. This was highlighted by one of the interviewees.

5.2.2 Process

Same as for the people dimension, the process of both incident management and request fulfilment show a considerable difference between survey score and results of the meta-evaluation. The survey does not score the process maturity as high as the people maturity, but still the incident management and request fulfilment processes score between defined and quantitatively managed in the survey. Comparing this with between the managed and defined maturity stage of the interviews and the documentation review, this is also one maturity stage between the interviews and the documentation review. The problem management process maturity deviates with half a maturity stage.

The survey maturity level implies that all service teams are following the same processes and policies and that there are clear integration points between the processes (Team, 2010). Ac-

According to the interviews and the documentation review there are no integration points defined at all. The problem management process is not really documented and the few teams using it have made up their own processes. The incident management and the request fulfilment processes are defined in one common process which prevents the processes to be optimized. This would according to CMMI rather correspond to a maturity level between managed and defined (Team, 2010)

A further important aspect of a mature process is how it is governed. ITIL reinforces the importance of incorporating governance into the process. For incident and problem management the most important governance element is the prioritization based on impact and urgency (Faber & Faber, 2010). The IT organization is using the governance archetype anarchy when assigning ticket priority (Weill & Ross, 2004b) – users independently decide what priority his or her ticket has, rather than basing it on impact and urgency.

An important factor influencing the higher score of the survey is just as in the people dimension; the ITIL terminology is very specific and the employees are not familiar with ITIL as a framework. If the survey participant is not ITIL educated, there is a risk for misunderstanding. It was noted that the IT organization of study is using the same terminology as in ITIL in some areas but it is not corresponding to what is meant by ITIL. For example, according to ITIL, all incidents, problems and requests should be categorized in such a way that the categorization answers the question *where* the problem occurs (Behr et al., 2005). The IT organization is categorizing their tickets into four different levels, so for an employee it is natural to state that they are in fact categorizing their tickets. However, as the categories are referring to what team the ticket belongs to or what kind of ticket it is rather than where the problem occurred, the categorization cannot be considered mature.

5.2.3 Tool

The meta-evaluation also showed a deviation with the survey on the tool dimension, but not as considerable as for the people and process dimensions. The tool in incident management deviates with half a maturity stage. The tool in the request fulfilment process deviates one maturity stage. Finally, the tool in the problem management process deviates less than half a maturity stage.

According to Forrester, automation is a driver of efficiency (Oehrlich et al., 2012). Reviewing the IT organization's automation capabilities, they are very limited and would correspond to a maturity level of two. Their services have not been defined in all areas and the service requests have not been standardized, the requests cannot be automated. There is not automated ticket dispatch.

Once again, the tool does not allow prioritization based on impact and urgency and this reinforces the governance archetype anarchy to set ticket priority (Weill & Ross, 2004b).

A factor that might also influence the survey results on the tool dimension towards a higher score than it should have is that as the current ticketing tool is obviously not sufficient, other solutions are created. These solutions are used by the individual service delivery teams and are not globally deployed. The current ticketing tool is very basic and doesn't support ITIL V3 or automation and self-service. There were a number of examples of different problem management databases and knowledge databases. One team had automated software distribu-

tion in a separate tool that no one else was using. This can create confusion on what tools are actually implemented and supported by the IT organization. It can further give the impression that the existing ticketing tool is supporting the ITIL processes more than it actually does.

A second factor, once again, is the very specific ITIL terminology and people interpret the questions in a different way than intended.

6 Conclusions

In this chapter the proposed research question is answered in 6.1. This is followed by a discussion on implications of the research (6.2) before final suggestions for further research are given (6.3).

6.1 Research question

The primary goal of this research is to evaluate how well a quantitative self-assessment survey can define the maturity level of an IT organization. From the studies, it is evident that the results and discussions above lead to the conclusion that the use of a quantitative self-assessment will show a deviation between survey results and the actual maturity stage concluded when doing a deeper analysis of an IT organization. There is a tendency to score maturity higher than it actually is, especially in the people and process dimensions, but also in the tools dimension, which all require knowledge of the ITIL terminology.

From mainly the interview results it would be fair to argue that a quantitative self-assessment survey defines the maturity level better when the participants are ITIL educated. Further the participants should have knowledge about the full organization rather than one sole or a few specific teams.

In answer to the research question – a quantitative self-assessment does not define the as-is state and maturity well enough.

6.2 Implications

The maturity assessment will conclude the “as-is” state which according to Continual Service Improvement is a necessary step before defining the direction forward and improvement initiatives. It is not possible to fast forward through a maturity stage; an organization has to complete one maturity stage before moving to the next. The organization might miss to implement the basics before the advanced elements and without the basics the advanced elements will not work. For example, without standardizing processes (CMMI level ‘Defined’), automation is not possible. It is hence of substantial importance that the right decisions are made on how a maturity assessment is conducted.

Assessments attempt to be as objective as possible, but ultimately the assessments are still subject to the opinion of the survey participants. When doing a quantitative self-assessment survey, those personal opinions cannot be separated from how it works in reality. This can only be done through interviews.

When a quantitative self-assessment survey is considered for a maturity assessment, the authors suggest that the advantages of the survey – such as lower cost – are balanced with what

have been found in this thesis. Using the wrong maturity stage as base for an improvement program will lead to implementation of the wrong activities. Therefore it is suggested that a quantitative self-assessment is complemented by other methods of data collection. The optimal composition of those is another study that has yet to be conducted.

ITIL is a widely used framework that has been around for over 25 years and really has gained momentum the last decade. Since the self-assessment survey format is often used as a best-practice for parts of an ITIL implementation the resistance to change might however be quite elevated. It might be hard to reach out and gain attention for the findings in the thesis and have them turned into practice.

6.3 Further research

This research has been done in a global big size company environment. It is possible that studies in different contexts such as smaller or local companies or companies in a different industry would give different results. We believe that more research could be done on this by looking at different contexts.

It would also be interesting to further examine the area of combining the quantitative self-assessment with other methods of data collection.

7 Appendices

7.1 Appendix A - The Process Maturity scoring definition

Definition from CMMI Product Team (Team, 2010, pp. 26-29)

Score	Description
Initial	<p>At maturity level 1, processes are usually ad hoc and chaotic. The organization usually does not provide a stable environment to support processes. Success in these organizations depends on the competence and heroics of the people in the organization and not on the use of proven processes. In spite of this chaos, maturity level 1 organizations provide services that often work, but they frequently exceed the budget and schedule documented in their plans. Maturity level 1 organizations are characterized by a tendency to overcommit, abandon their processes in a time of crisis, and be unable to repeat their successes.</p>
Managed	<p>At maturity level 2, work groups establish the foundation for an organization to become an effective service provider by institutionalizing selected Project and Work Management, Support, and Service Establishment and Delivery processes. Work groups define a service strategy, create work plans, and monitor and control the work to ensure the service is delivered as planned. The service provider establishes agreements with customers and develops and manages customer and contractual requirements. Configuration management and process and product quality assurance are institutionalized, and the service provider also develops the capability to measure and analyze process performance. Also at maturity level 2, work groups, work activities, processes, work products, and services are managed. The service provider ensures that processes are planned in accordance with policy. To execute the process, the service provider provides adequate resources, assigns responsibility for performing the process, trains people on the process, and ensures the designated work products of the process are under appropriate levels of configuration management. The service provider identifies and involves relevant stakeholders and periodically monitors and controls the process. Process adherence is periodically evaluated and process performance is shared with senior management. The process discipline reflected by maturity level 2 helps to ensure that existing practices are retained during times of stress.</p>

Defined	<p>At maturity level 3, service providers use defined processes for managing work. They embed tenets of project and work management and services best practices, such as service continuity and incident resolution and prevention, into the standard process set. The service provider verifies that selected work products meet their requirements and validates services to ensure they meet the needs of the customer and end user. These processes are well characterized and understood and are described in standards, procedures, tools, and methods. The organization's set of standard processes, which is the basis for maturity level 3, is established and improved over time. These standard processes are used to establish consistency across the organization. Work groups establish their defined processes by tailoring the organization's set of standard processes according to tailoring guidelines. A critical distinction between maturity levels 2 and 3 is the scope of standards, process descriptions, and procedures. At maturity level 2, the standards, process descriptions, and procedures can be quite different in each specific instance of the process (i.e., used by a particular work group). At maturity level 3, the standards, process descriptions, and work procedures are tailored from the organization's set of standard processes to suit a particular work group or organizational unit and therefore are more consistent except for the differences allowed by the tailoring guidelines. Another critical distinction is that at maturity level 3, processes are typically described more rigorously than at maturity level 2. A defined process clearly states the purpose, inputs, entry criteria, activities, roles, measures, verification steps, outputs, and exit criteria. At maturity level 3, processes are managed more proactively using an understanding of the interrelationships of process activities and detailed measures of the process, its work products, and its services. At maturity level 3, the organization further improves its processes that are related to the maturity level 2 process areas. Generic practices associated with generic goal 3 that were not addressed at maturity level 2 are applied to achieve maturity level 3.</p>
Quantitatively Managed	<p>At maturity level 4, service providers establish quantitative objectives for quality and process performance and use them as criteria in managing processes. Quantitative objectives are based on the needs of the customer, end users, organization, and process implementers. Quality and process performance is understood in statistical terms and is managed throughout the life of processes. For selected sub processes, specific measures of process performance are collected and statistically analyzed. When selecting sub processes for analyses, it is critical to understand the relationships between different sub processes and their impact on achieving the objectives for quality and process performance. Such an approach helps to ensure that sub process monitoring using statistical and other quantitative techniques is applied to where it has the most overall value to the business. Process performance baselines and models can be used to help set quality and process performance objectives that help achieve business objectives. A critical distinction between maturity levels 3 and 4 is the predictability of process performance. At maturity level 4, the performance of processes is controlled using statistical and other quantitative techniques and predictions are based, in part, on a statistical analysis of fine-grained process data.</p>

Optimizing	<p>At maturity level 5, an organization continually improves its processes based on a quantitative understanding of its business objectives and performance needs. The organization uses a quantitative approach to understand the variation inherent in the process and the causes of process outcomes. Maturity level 5 focuses on continually improving process performance through incremental and innovative process and technological improvements. The organization's quality and process performance objectives are established, continually revised to reflect changing business objectives and organizational performance, and used as criteria in managing process improvement. The effects of deployed process improvements are measured using statistical and other quantitative techniques and compared to quality and process performance objectives. The defined processes, the organization's set of standard processes, and supporting technology are targets of measurable improvement activities. A critical distinction between maturity levels 4 and 5 is the focus on managing and improving organizational performance. At maturity level 4, the organization and work groups focus on understanding and controlling performance at the sub process level and using the results to manage projects. At maturity level 5, the organization is concerned with overall organizational performance using data collected from multiple work groups. Analysis of the data identifies shortfalls or gaps in performance. These gaps are used to drive organizational process improvement that generates measurable improvement in performance.</p>
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7.2 Appendix B - Survey questions with final scores

The mean value per question was calculated by adding all scores for one question and dividing with the number of respondents for each question. The result was rounded to one decimal. When calculating mean value per dimension, scores for all included questions were added and divided with the number of question times the number of questions for the dimension and rounded to one decimal. For total process mean value, scores for all process questions were added and divided with the number of respondents per question times the number of questions for the process and rounded to one decimal. The rounding has the effect that there can be a decimal difference when trying to aggregate mean values in the tables below.

7.2.1 Incident Management

Dimension	Question	Mean score		
People	We have clear roles and responsibilities for the Incident Management Process which have been identified, defined, documented, and appointed.	4.1	3.9	3.6
People	Employees have the understanding that an incident has to be resolved fast, without the need for root cause investigation.	3.9		

People	The personnel responsible for Incident Management are suitably trained.	3.8	3.7	
Process	We have a clearly defined, repeatable incident management process across the organization to manage the life cycle of incidents from their inception to closure. This process helps us to restore the service, so that it can be used again by users, as quickly as possible. We have clearly defined process goals, objectives, policies and procedures for the Incident Management Process.	3.9		
Process	The definition of an incident is clearly understood and is applied across the organization. An incident is understood as being different from a problem.	3.6		
Process	Incident records are maintained for all reported incidents.	3.9		
Process	All incidents are analyzed and classified by the Global Service Desk prior to handing them over to backbone support.	3.4		
Process	All Incidents are assigned a priority based on impact and urgency.	3.5	3.2	
Tool	An incident database is maintained to document details for all reported incidents, including resolutions and workarounds. We have a shared repository of Incident	3.2		
Tool	There is a searchable Knowledge Database that contains workarounds, resolutions and known-errors, as well as work instructions regarding how to apply these resolutions.	2.7		
Tool	Resolved and closed incidents are updated and clearly communicated to the Global Service Desk, customers, and other parties.	3.6		

7.2.2 Request Fulfilment Management

Dimension	Question	Mean score		
People	We have clear roles and responsibilities for the Request Fulfilment Process which have been identified, defined, documented and appointed.	3.8	3.9	3.6
People	The employees are actively working towards replacing manual, repeatable IT tasks with technology solutions that can automate the tasks.	3.8		
People	The employees understand and have the mind-set that a request fulfilment is about providing timely and effective access to standard services.	4.1		

Process	We have a clearly defined, repeatable Request Fulfilment process for effectively delivering normal service requests from request to delivery. This process helps us satisfy users' requests in an effective and timely manner. We have clearly defined process goals, objectives, policies and procedures for the Request Fulfilment Process.	3.8	3.8	
Process	The process helps us to replace manual, repeatable IT tasks and processes with technology solutions that can automatically carry out steps and check for any issues or errors that might have occurred in the process.	3.3		
Process	Service request records are maintained for all reported service requests.	4.0		
Process	The definition of a service request is clearly understood and is applied across the organization. A service request is understood as different from an incident.	3.8		
Tool	We have a tool that accommodates the necessary fields for capturing the Request details. E.g., the service, who raised the request, who the request will be assigned to, priority, status, closure details.	3.8	3.0	
Tool	The tool provides the capability to establish self-help access to predefined lists of services.	2.6		
Tool	We have a tool that includes automation/workflow capabilities, so that easily repeatable tasks can be approved and implemented without intervention of IT staff.	2.4		

7.2.3 Problem Management

Dimension	Question	Mean score		
People	We have a role that is responsible for analysing incident records, incident trends, and for reviewing the problem records.	3.5	3.5	3.0
People	We have clear roles and responsibilities for the Problem Management Process which have been identified, defined, documented, and appointed.	3.4		
People	There is management commitment to support staff allocation in sufficient time for problem solving activities.	3.6		
Process	We have a clearly defined, repeatable Problem Management process to prevent incidents from happening and to minimize the impact of incidents that cannot be prevented. We have clearly defined process goals, objectives, policies, and procedures for the Problem Management Process.	2.8	3.1	
Process	The definition of a problem is clearly understood and is applied across the organization. A problem is understood as being different from an incident.	3.5		

Process	There is a procedure by which potential problems are classified in terms of category, urgency, priority and impact and assigned for investigation and root cause analysis.	3.2	
Process	We have a mechanism for tracking problem resolution.	3.2	
Process	A measurement framework has been established for Problem Management that identifies, measures and reports on metrics aligned to KPIs.	2.5	
Tool	There is a tool supporting problem management reporting. We have a shared repository of Incident Management documentation in place.	2.5	2.4
Tool	There is a problem database maintained to record details for all reported problems.	2.6	
Tool	The tool allows the linking of Incidents to Problem records.	2.1	

7.3 Appendix C - Interview guide

Introduction:

The interview will be divided into three separate processes; incident management, request fulfilment management and problem management. Each process contains 3 sections; people process and tool. We would like to ask a number of questions on each process and section. You are welcome to develop and explain your answer as much as you would like.

Incident management – people received a score of 3.9

Does this result correspond to your perception of how it works? If not, could you please comment on the parts that differ?

Incident management – process received a score of 3.7

Does this result correspond to your perception of how it works? If not, could you please comment on the parts that differ?

Incident management – tools received a score of 3.2

Does this result correspond to your perception of how it works? If not, could you please comment on the parts that differ?

Anything else you would like to add for incident management?

Request fulfilment management – people received a score of 3.9

Does this result correspond to your perception of how it works? If not, could you please comment on the parts that differ?

Request fulfilment management – process received a score of 3.8

Does this result correspond to your perception of how it works? If not, could you please comment on the parts that differ?

Request fulfilment management – tools received a score of 3.0

Does this result correspond to your perception of how it works? If not, could you please comment on the parts that differ?

Anything else you would like to add for request fulfilment management?

Problem management – people received a score of 3.5

Does this result correspond to your perception of how it works? If not, could you please comment on the parts that differ?

Problem management – process received a score of 3.1

Does this result correspond to your perception of how it works? If not, could you please comment on the parts that differ?

Problem management – tools received a score of 2.4

Anything else you would like to add for problem management?

Thank you!

7.4 Appendix D – Interview transcripts

7.4.1 Interviewee 1

Conducted on: 2015-04-27

Duration: 34 minutes

Jessica/Jacob: This interview will be divided into the separate processes; incident management, request fulfilment management and problem management. Each process contains 3 sections; people process tool and we would like to ask a number of questions on each process and section and you are welcome to develop and explain your answer as much as you'd like. So, let us start with incident management. Here you can see the result after data collection via the survey. As you can see in the picture, People score the highest on the maturity scale, with a point of 3.9. Thereafter comes the process with a score of 3.7 and finally the tool of 3.2. Before we start our questions, we would like to show you what the score means in terms of maturity according to the CMMI definition.

The Interviewee gets some time to read the ITIL Process Maturity Model (Appendix B)

Jessica/Jacob: Looking at the incident management people section: Does this result correspond to your perception of how it works? If not, could you please comment on the parts that differ?

The Interviewee: If ok, I would first like to give a general comment.

Jessica/Jacob: Of course, you can speak freely.

The Interviewee: The result is too high for all 3 areas. My scores should be closer to 2 rather than to 3 for all areas. The reason why the people have answered the survey very optimistic is probably due to lack of ITIL competence. And I also think that people think this survey is an evaluation of them as individuals and if they are doing a good job. This comment is valid from managers to analysts.

Starting with the process aspect of incident management: The reason why this is too high and according to me rather below than above a 2 is that we today lack a proper Incident process and Incident roles. All Incidents and requests are treated in a similar way, they are Tickets. . Most of the people are not ITIL and Incidents Management trained. I know two in the full organization that are ITIL certified.

Jessica/Jacob: Is it that the process does not separate requests from incidents or is it really that people doesn't know the difference, meaning there is a competence gap?

The Interviewee: It is both. It is hard for me to make a statement for the full organization, but my impression is that people do not know the difference between requests and incidents. Thereby we are not working with improving the two. I think it is worse in the business application area than in Technical Infrastructure, so it probably differs a bit from service to service

Jessica/Jacob: You said that we today lack proper Incident roles. Can you explain that further?

The Interviewee: Yes, for example as we don't have an incident management process defined, we neither have an incident process ownership. There is no one being responsible for the overall incident process and not a clear ownership of the incidents. According to ITIL, all incidents should be owned by the service desk, but they are only owning the tickets they are solving and closing. So, there are no roles defined like incident process owner and incident process manager. Thereby we cannot run any improvements on the incident process.

Jessica/Jacob: Thank you! You have already mentioned a bit about the incident process, but we would still like to ask the same question here. The incident process gets a score of 3.7. Does this result correspond to your perception of how it works? If not, could you please comment on the parts that differ?

The Interviewee: Yes, I've touched upon it a bit in my previous answer, maybe I'm talking too much. I wouldn't say we don't have an incident management process, I would rather say that a fairly poor Incident process has been implemented. There is also a poor understanding of the difference between Incidents and Problems. We have one process covering tickets rather than separating requests from incidents and from problems. And as I said before, with a poorly implemented incident management process in combination with lack of knowledge of what an incident is and how it should be handled and act upon, I would score it below 3.

Jessica/Jacob: Ok, good, thank you. Then we come to the last section of the incident management process, which is related to how well the tool you are currently using is supporting your incident process and incident handling. This had a score of 3.2. Does this result correspond to your perception of how it works? If not, could you please comment on the parts that differ?

The Interviewee: Our current tool has the ability to store documented Incident details. We can log time, enter a solution, close the incident and send out a resolution or questions to the users. This is very basic. We have to manually dispatch all incidents. Incidents and requests cannot really be separated in a good way in the tool. So yes, we can do the basic stuff, but we cannot work with improvements, do statistics, categorize them properly and do proper communications.

Another problem is that the people doesn't use it in a proper way. Or maybe I should say that the tool doesn't allow people to use it in a proper way.

Jessica/Jacob: Can you explain that a bit further for us to understand?

The Interviewee: Well, there is for example no connection between Incident and knowledge management tools. So, all incidents are solved manually and we are dependent on the individual knowledge. If we had had a knowledge management database, we could have automated the solution of some of the incidents and we would not be so depended on each individual and also on having so senior staff.

Jessica/Jacob: Anything else you would like to add for incident management

The Interviewee: I would say that incident management is the most developed process we have in the organization today, but still we are far away from how the score four is defined. I

think where the score is correct is the ranking of people, process and tools. For sure, the people is the strongest of the four and then process and then tool. But I just can't understand that we got a 3.2 on the tool when it is so basic and limiting.

Jessica/Jacob: Why do you think that is?

The Interviewee: Hard to say really. I mean, people and process I can more understand. As I mentioned in the beginning, it is related to the individual himself. They feel it is them being evaluated. The tool is strange. I mean, I do not know anyone that wouldn't like to have a new tool. Everybody is complaining about it. And to say that a tool is bad is not evaluating any individuals. So no, I don't really know.

Jessica/Jacob: Ok great, thank you. Then I suggest we continue with the request fulfilment process.

The Interviewee: Ok

Jessica/Jacob: So, the request fulfilment scored similar to incident management. People score 3.9 on the people section, 3.8 on the process section and 3.0 on the tools section.

The Interviewee: Yes, that is quite similar to the incident management process. Which makes sense. Since we are treating the request fulfilment and the incident process in the same manner and for us we talk about tickets and a collective name for incidents and requests. Sorry, babbling again, please ask your questions.

Jessica/Jacob: It's good that you tell your thoughts, all information is helpful! So the people section of the request fulfilment process scores 3.9. Does this result correspond to your perception of how it works? If not, could you please comment on the parts that differ?

The Interviewee: I would refer back to my answer on the people section of incident management. You know, as the request fulfilment process and the incident management process today is one single process and is treated the same, treated as tickets, the answers will be very similar. The same as for incident management, the people are not ITIL trained and certified. I think there is one difference worthwhile highlighting. The requests in the technical infrastructure area where we have hardware, software, networks, servers etc. – are much easier to define than for the business applications.

Jessica/Jacob: Why is that?

The Interviewee: Well, they are by their nature much clearer. And if you look in all ITIL literature, it is very much related to the technical infrastructure area. So I would say that the people in the technical infrastructure area are better in defining what a request is, what requests they offer etc. But I'm not sure that I would say they are more competent, it is probably just easier.

Jessica/Jacob: So how would you say the knowledge level is around requests and the request fulfilment process?

The Interviewee: Compared to incident management it is maybe a bit higher in general in the organization as some teams have actually started to define their requests and some have even started to fulfil them in a standardized way. And now when I think about it, they have actually

automated the software distribution. But they couldn't do it in existing tool so they had to buy and external tool to do this. So, yes the competence in parts of the organization is probably above a score of 3. But 3.9 is too high. Then we have to have much more requests defined, standardized and automated.

Jessica/Jacob: And what about the request fulfilment roles and responsibilities?

The Interviewee: Well, here it is the same as for incident management. As we don't have a separate process defined for request fulfilment, we don't have any global roles and responsibilities defined. We don't have a global ownership. Having that said, there are some individual services working for defined, standardized and actively with requests, but it is individual service teams and they are in their turn not aligned.

Jessica/Jacob: Ok thank you, then we will move over to the request fulfilment process which got 3.8 as score. Does this result correspond to your perception of how it works? If not, could you please comment on the parts that differ?

The Interviewee: Yes, once again coming back to the incident management process. We have only one process handling both incidents and requests. And we are treating Incidents and Request in the same way by using same SLA for all tickets - Incidents and Requests that is. Incident and Request are using same process and priority.

Jessica/Jacob: Why is this a problem?

The Interviewee: But requests and incidents are two completely different things. An incident means that something is broken. They user cannot continue working. We are losing productivity. Incident resolution is about restoring the service as quickly as possible. A request is normally not urgent. I need a new computer, or a new software or I want master data to be uploaded in the system. And requests can be automated and optimally even be ordered in a self-service portal and then automatically solved. They are two completely different things.

Jessica/Jacob: So based on this, what do you think about the score?

The Interviewee: I mean it is similar to incident management. To get to a three, I think we need to have a request fulfilment process defined and we don't really today as it is merged with the incident process.

Jessica/Jacob: Ok good. And now we will talk about the last section of the request fulfilment process which is the tool. The tool got a score of 3.0. Does this result correspond to your perception of how it works? If not, could you please comment on the parts that differ?

The Interviewee: Yes, this is the same as for incident management. Or it is even worse I would say, so it is correct that the tool score shall be lower on request fulfilment than on incidents for sure.

Jessica/Jacob: Why is it worse when it is the same tool for the same process?

The Interviewee: Well it is the same as for incidents in the sense that it is only providing very basic support for the request fulfilment process. We can log the request, document it,

send a resolution and close it. And also in this case we cannot use knowledge management in order to solve the request. But what differs is that the nature of the requests allows for self-service and automation. The tool we have does not provide self-service and even if we had standardized request processes, the system could not automate it for us.

Jessica/Jacob: Anything else you would like to add for request fulfilment management

The Interviewee: To summarize, I think the score is too high with the same comments as for incident management.

Jessica/Jacob: All right, let's continue with the last process which is problem management and we will follow the same structure. Here we see a bit lower scores. People gets 3.5, process gets 3.1 and finally the tool gets 2.4. If we start with the people section: does this result correspond to your perception of how it works? If not, could you please comment on the parts that differ?

The Interviewee: I think I need to give some more overall comments to this if ok?

Jessica/Jacob: Of course!

The Interviewee: Incident management and request fulfilment management, we have as one common process, but it is still documented in our global process system and defined as a global process that everybody should follow. This is not the case for problem management. It is not a documented process at a global level. So if I start with the people side. It's the same comments as for incidents and request: we don't have any ITIL trained personnel so our knowledge also in problem management is limited. And we don't have any roles defined for problem managements. And normally when you work actively with problem management, you have dedicated teams working only with problems.

Jessica/Jacob: Is this a pure competence gap or is it a lack of organization structure?

The Interviewee: Both I would say. There are not many in the organization that would be able to tell the difference between a problem and an incident.

Jessica/Jacob: And what about the problem management process: does this result correspond to your perception of how it works? If not, could you please comment on the parts that differ?

The Interviewee: Yes, as I mentioned before, we don't have a global problem management process defined and documented so looking at your scoring model this would be a two.

Jessica/Jacob: But this gap is very high, can you help us to understand the score gap?

The Interviewee: Well, once again it is for sure related to the fact that people feel that they are being evaluated themselves. But a second reason is that they are confusing what a problem is, they are confusing it with an incident. Because for them an incident is also a problem that has to be solved. This is the problem with not having ITIL-educated personnel. They don't understand the difference and they for sure are mixing up the terminology.

Jessica/Jacob: You mentioned before there were local request fulfilment processes that the individual service team had implemented. Couldn't it be the same case here and therefore people score higher.

The Interviewee: That is correct. I don't know what all teams are doing, but I know one team that has been working with problem management for half a year and they are doing well. But I would say there are more local request fulfilment processes than problem management processes. On the other hand the process score in problem management is also lower than the one in request fulfilment.

Jessica/Jacob: Ok, thank you. And finally the tool that scores quite low. It gets a score of 2.4. Does this result correspond to your perception of how it works? If not, could you please comment on the parts that differ?

The Interviewee: Here I'm not surprised and I think this is a quite correct answer. We can use problem management very limited in our current tool but it wouldn't support the full problem management process for sure. And even the few teams working with problem management, can say that they get enough tool support. So this score I would say corresponds to reality.

Jessica/Jacob: Thank you very much for taking the time. If you want to complete any information later on, you have our email address.

7.4.2 Interviewee 2

Conducted on: 2015-04-27

Duration: 24 minutes

Jessica/Jacob: We will now ask you some questions around the results of the survey. We would basically like to understand if the survey corresponds to reality. It will take between 30 and 60 minutes. This interview will be divided into the separate processes; incident management, request fulfilment management and problem management. Each process contains 3 sections; people – process - tool and we would like to ask a number of questions on each process and section. You are welcome to develop and explain your answer as much as you'd like.

So, let us start with incident management. Here you can see the result after data collection via the survey. As you can see in the picture, People score the highest on the maturity scale, with a point of 3.9. Thereafter comes the process with a score of 3.7 and finally the tool of 3.2. Before we start our questions, we would like to show you what the score means in terms of maturity according to the CMMI definition.

The Interviewee gets some time to read the ITIL Process Maturity Model (Appendix B)

Jessica/Jacob: Looking at the incident management people section: Does this result correspond to your perception of how it works? If not, could you please comment on the parts that differ?

The Interviewee: The average result of the assessment for Incident Management in all three areas corresponds to 3.6. This score is not consistent with the situation experienced at that time. Based on an IT assessment of best practices for incident management the score would have barely made it to 3.0. The score for People dimension would have exceeded expectations in incident management (above 3.0) given the low scores in the process and tool areas. In other words, the Incident Management process works because the people, not because processes and the tools implemented. However 3.9 is too high of a score in light of the lack of competence development in the area of service management among other topics within IT. People's knowledge was outdated in a number of fields. Since people are responsible of their competence development and plan in a sense, a score ranging between 3.3 and 3.5 might have been more appropriate.

Jessica/Jacob: And what about roles and responsibilities?

The Interviewee: We don't have incident management roles and responsibilities at a global level, but I would say that many of the individual servers do have. So once again, 3.9 is way too high, but I wouldn't say it is non-existing.

Jessica/Jacob: Looking at the process score, which is 3.7. Does this result correspond to your perception of how it works? If not, could you please comment on the parts that differ?

The Interviewee: The score for Process dimension should have been lower given lack of adherence to process steps. A high number of tickets categorized as Incidents were in fact service requests. The process lacks consistent documentation. The main goal of the Incident management process is geared towards identifying root causes rather than restoring the service as soon as possible. There are no specific guidelines about communication. Major incidents are treated in a similar manner as any other incident. Incident classification is limited and had no linkage to a configuration database. Cause codes are not being used making impossible to trend proactively incidents within problem management. A score of 2.8 would have been more appropriate considering that having a process documented up to level 3 and having no one followed consistently or delivering its intended value does not meet expectations.

Jessica/Jacob: Thank you. And finally for the incident management process; the tool score was 3.2. Does this result correspond to your perception of how it works? If not, could you please comment on the parts that differ?

The Interviewee: The score for the Tool dimension should have been lower as well given that the tool does not support neither the process in place, the people using it or the service stakeholders. The tool functionality is more appropriate and in line with the needs of a call centre, not a service management help desk. All service records are managed by the tool in the same way, with the same fields even though the information maintained in these records, according to Service Management best practices, differ radically from one another. The tool has no workflow capabilities and lacks completely reporting capabilities. A score ranging between 2.0 and 2.3 would have been more appropriate given these facts.

Jessica/Jacob: Ok, good. Then we move over to the next process, which is the request fulfilment process. People score 3.9 on the people section, 3.8 on the process section and 3.0 on the

tools section. Does the result for people correspond to your perception of how it works? If not, could you please comment on the parts that differ?

The Interviewee: The average result of the assessment for request fulfilment Management in all three areas corresponds to 3.6. For me, this is too high. I would personally score the average on the process to a 3. The score for People dimension would have exceeded expectations in Request fulfilment given the low scores in the process and tool areas. Just the same as for incident management, the Request Fulfilment process works because the people, not because processes and the tools implemented. And once again, the same as for the incident management process, 3.9 is too high of a score considering the lack of competence development in the area of service management. I feel like I'm repeating myself now, but that is because incident and request fulfilment is the same process with us. So the roles and responsibilities are also lacking at least at a global level.

Jessica/Jacob: Thank you! So, moving into the process area. The request fulfilment process got 3.8 as score. Does this result correspond to your perception of how it works? If not, could you please comment on the parts that differ?

The Interviewee: The Request fulfilment process was rolled into the incident management process and used for both. Only a handful of service request types are available as a dropdown menu and used mostly for classification purposes. KPIs and SLAs related to request fulfilment only measured closure rate. SLAs used to track service request either non-existent or not meeting business expectations. A score of 2.5 would have been more appropriate considering that a process used for both incident and request fulfilment does not do a good job at neither.

Jessica/Jacob: Thank you! Final question on the request fulfilment process is about the tool support. The tool got a score of 3.0. Does this result correspond to your perception of how it works? If not, could you please comment on the parts that differ?

The Interviewee: The score on the tool is lower, which is correct, however it is still too high. An actionable service catalogue is not documented or missing. Service offerings non existent. Automatic escalation missing. No Self Service. Poor or non-existent knowledge management functionality. Considering that Service Requests are the highest volume of any service and the lack of automation provided by the tool, a score of 2.0 would have been more appropriate.

Jessica/Jacob: Ok we are getting closer to the end and we will now look at the last process which is problem management. Here we see a bit lower scores. People gets 3.5, process gets 3.1 and finally the tool gets 2.4. If we start with the people section: does this result correspond to your perception of how it works? If not, could you please comment on the parts that differ?

The Interviewee: Once again, we are lacking competence in the service management area and thereby also in the problem management area. And as I will explain in the process section, we don't have a global process defined in our organization. This leads to lack of knowledge in the area by itself.

Jessica/Jacob: And roles and responsibilities?

The Interviewee: Of course we don't have that neither due to a non-existent process

Jessica/Jacob: And now over to the problem management process: does this result correspond to your perception of how it works? If not, could you please comment on the parts that differ?

The Interviewee: There are isolated service teams that on their own behalf has implemented a problem management process. Some according to ITIL standard, other to another standard or possibly to their made-up standard. But the fact is that we do not have a global problem management process and this gives the impression that it is not recognized as an important process. A score of 2.5 would have been more appropriate.

Jessica/Jacob: Thank you. Final section is the tool which scores quite low. It gets a score of 2.4. Does this result correspond to your perception of how it works? If not, could you please comment on the parts that differ?

The Interviewee: This score is more realistic, the reason why it relates more to how it actually is, is because important functionality is indeed missing. Differentiation between a problem and a root cause missing. No linking of incidents to problems possible. No linking of RFCs to problems possible. No linking of Configuration Items from the configuration management database possible.

Jessica/Jacob: Thank you very much for this. It seems like you would score it lower than what the rest of the organization did. Do you have any thoughts why?

The Interviewee: I think they didn't fully understand the terminology. They are not ITIL educated and do not necessarily understand for example the difference between an incident and a problem. I think you would have to explain the terminology before they do a survey or have them ITIL certified in beforehand.

Jessica/Jacob: ok good, thank you very much for your time, please reach out to us if you have any additional comments you would like to add.

7.4.3 Interviewee 3

Conducted on: 2015-04-30

Duration: 38 minutes

Jessica/Jacob: This interview will take maximum one hour, but most probably it will go faster. As you know the organization has answered as survey and we would like your reflections on the results and how they correspond to reality according to you. We will split the interview into the three separate processes; incident management, request fulfilment management and problem management. Each ITIL process contains 3 areas; people process tool and on each area, we will ask questions. But we take it process by process. We want to keep the interview open so feel free to expand your answers and add whatever you'd like. All input is valuable.

Here you can see the result after data collection via the survey. As you can see in the picture, People score the highest on the maturity scale, with a point of 3.9. Thereafter comes the process with a score of 3.7 and finally the tool of 3.2. Before we start our questions, we would like to show you what the score means in terms of maturity according to the CMMI definition.

The Interviewee gets some time to read the ITIL Process Maturity Model (Appendix B)

Jessica/Jacob: Looking at the incident management people section: Does this result correspond to your perception of how it works? If not, could you please comment on the parts that differ?

The Interviewee: Seems a bit high. In parts of the organization I think we treat incidents and requests separately, but in many areas we do not.

Jessica/Jacob: Can you develop that a bit further? We are talking about how well people are executing the incident process now. Their competence and also if you have clear roles and responsibilities within the incident management process.

The Interviewee: I'm not sure if this is because people are not competent or because we don't do it basically. And in the system, incidents and requests are not separated really. It is really hard to talk for the full organization. In my team, which is the global service desk, the people have basic knowledge in the difference between incidents and requests. But they don't really care as they are not supposed to separate them. I have actually made an attempt to make them work with incidents and requests separately, but it is a struggle as first of all it is not really any support from our current tool and secondly, the service delivery teams are not separating incidents from requests, so it loses its value.

Jessica/Jacob: Can you explain that a bit more? Which are now the service delivery teams again?

The Interviewee: We are organized so that the global service desk receives all tickets. We solve about 55% of all tickets coming in and we have about 1000 tickets per day. If we cannot solve them, it is sent to the service delivery teams which have more expertise in a specific area. Now, if we categorize the ticket as incident or request, but not the service delivery teams, we cannot automate the requests, we cannot standardize, the statistics will not be correct and so on.

Jessica/Jacob: Are you saying that the service desk has more ITIL and service management knowledge than the service delivery teams.

The Interviewee: It is my team so of course. No, I'm only joking. But yes I think we are more familiar with ITIL and the need of ITIL and a new tool in the service desk than the others. I also think there is a difference between technical infrastructure and the business applications. I should probably say it like this. We in the service desk are both ITIL v1 educated - or at least some of us - and we see the need for ITIL as it would reduce our workload dramatically. I know there are some in technical infrastructure that are also ITIL v1 certified but in the business application areas, they have probably never heard about it. But I actually don't know many that are ITIL v3 certified. So I would say, there is competence and a will to run a proper incident management process but as this statement is not representing all in the organization

and very few are ITIL v3 certified would not score it as high as 3,9. I would put it to 3,3 instead.

Jessica/Jacob: And can you give your reflections on roles and responsibilities for the incident management process?

The Interviewee: We don't have formal and documented incident management roles but here in in the global service desk we have tried to structure the ownership of the incidents. And I think also the service delivery teams have made a try to implement what they call a mailbox coordinator.

Jessica/Jacob: If we start with the global service desk, can you explain what you mean with incident ownership and what you have done?

The Interviewee: First of all we have a dispatcher role and they are receiving all the 1000 tickets per day. They are distributing the tickets to where they belong. Then we have a coordinating role that is looking at all incident currently in our inbox to see if any ticket is about to get out of the SLA response time, if there any trends amongst the tickets and so on. And then we have 3 time zone leads that are looking at the incidents at a higher level and taking action in case of any emergency ticket coming in. So, it is not the traditionally incident management roles but that is not really possible as we have taken the choice to not let the Global Service Desk own all incidents.

Jessica/Jacob: And you also mentioned something about a mailbox coordinator?

The Interviewee: Yes, I don't know so much about it, but I think the business application teams have a mailbox coordinator that is overall responsible for their inbox of tickets. Similar to our coordinator role, making sure the tickets are solved in correct priority and not out of SLA's.

Jessica/Jacob: Ok, so now after also talking about incident management roles, do you still think 3,3 is a more realistic number?

The Interviewee: Yes I think so. We still have things to improve, but I think we have also gotten a bit on the way with one global service desk and so on. Or is that a wrong answer?

Jessica/Jacob: No, not at all. This is your personal view and that's what we are interested in. Excellent, let's go to the next area of incident management which is the incident management process. The incident process gets a score of 3.7. Does this result correspond to your perception of how it works? If not, could you please comment on the parts that differ?

The Interviewee: It also seems a bit high I must say. I think our incident management process is well defined, even if it does not separate Incidents from Requests. I would expect that most people at this point know the difference between an incident and a problem. The main area where we are behind is when it comes to the classification on impact and urgency. I would probably have this score similar to the people score. Maybe a bit lower. 3.1 or 3.2.

Jessica/Jacob: Why lower than the people score?

The Interviewee: I really think, at least speaking for the global service desk that we have great people. Both their attitude and their knowledge. We have quite high satisfaction amongst our users and I'm sure it is related to our users. I mean you can have great tools and processes, but if you don't have the people, the processes and the tools won't matter.

Jessica/Jacob: Can you elaborate a bit more with what you think about the score? You mentioned impact and urgency?

The Interviewee: We are not really prioritizing our tickets. We have a field in the tool called prioritization but this is not really based on any logic. We say it is the users picking the priority which can be low, medium, high or emergency. But when the users call or send an email to log a ticket we never ask what the priority is so the users don't know that they can decide. Instead the system is defaulting all tickets to medium. And even if the users would know that they can set the priority themselves, it is not a good idea to have the users deciding this. It should be based on impact and urgency.

Jessica/Jacob: Why do you think like that?

The Interviewee: If the users are going to set the priority, they will not see to what is best for the company. They will consider their computer not working as an emergency and we would not get the priorities correct. And we don't get the priorities right now neither. The problem with this is that we have to spend time on prioritizing the tickets instead of this happening by itself. This is really non-value adding time. Instead of spending out time on solving issues and helping users, we are trying to figure out what which tickets are most important.

Jessica/Jacob: Ok thank you. You also mentioned that you have a well-defined incident management process. Can you elaborate on this, please?

The Interviewee: Yes I think is well-defined in the sense that the steps on how an incident should be solved are documented in detail and we are following the same process for each incident. It is not separated from requests but except for that it is a good process.

Ah, actually one thing that is very important to mention here is that there is a strong reason why the incident process cannot be a four. If we want to take our incident management process to the next level we need to start to work on integration. This is what is missing now. How could I have forgotten to mention that?

Jessica/Jacob: Can you explain what you mean with integration?

The Interviewee: The whole idea is that the processes should integrate with each other. Take for example knowledge management and incident management. The perfect scenario is if we have an incident that we know can happen. Then we have documented the resolution of that incident in a knowledge article. When we get the incident, we can just import that knowledge article into the resolution of the incident and it will be very quick to solve the incident. Actually when it comes to the incident management process, knowledge management is probably the most important process to integrate with.

Jessica/Jacob: Ok, thank you. Anything else you would like to add?

The Interviewee: There probably is, but not what I can think of right now.

Jessica/Jacob: Ok, then we have one area left in the incident management area, which is the tool. The tool score was 3.2. Does this result correspond to your perception of how it works? If not, could you please comment on the parts that differ?

The Interviewee: The other two scores were a bit too high but not too far away from reality. The tool is what we are struggling the most with. Not having a proper service management tool is very time consuming. We would have saved so much time if we had better functionality. So on score I would rather put 2.5. We have a tool but it doesn't provide any of the advanced functionality.

Jessica/Jacob: Like what?

The Interviewee: Well, just take the dispatch. We have four full-time people working in the dispatch. That's very expensive. And it is not only four people. It is the most senior people as they need to have deep knowledge in order to interpret what the users are asking about. If we would have a more advanced tool, we would be able to automate big part of the dispatch. Other companies similar to ours have about one person in the dispatch. Imagine if we could have these other three people solving tickets instead!

Jessica/Jacob: Any other example?

The Interviewee: Yes, like I mentioned before; if we could use knowledge management to help us solve incidents, we would save a lot of time. And also look more professional towards our users. We could guarantee that everyone gets the same answer on the same questions. Today it is very people dependent. And it is not that people don't want to use knowledge management. It is just not enabled in the tool. But I should mention that in order to have some kind of knowledge database we have built a temporary knowledge management database in SharePoint. It is not integrated with our ticketing system, but at least the global service desk analyst can go there and find information and also copy paste into the resolution.

Jessica/Jacob: Is there anything that could justify a 3.2 score?

The Interviewee: Not really, but if you want to know what is good with the tool, it is that we at least can log our tickets and we can for sure get basic statistics. We can integrate with AD so we don't have to enter details about the users when they are calling. So the basics are for sure there, but that's it.

Jessica/Jacob: Ok, great. Thank you! Are you ready for the next process?

The Interviewee: Absolutely!

Jessica/Jacob: Ok, so next process is the request fulfilment process. People score 3.9 on the people section, 3.8 on the process section and 3.0 on the tools section. Does the result for people correspond to your perception of how it works? If not, could you please comment on the parts that differ?

The Interviewee: You know since we are running incident and requests through the same process, I'm thinking very similar about these two processes. This is also why they have scored very similar. But fine, let's give it a try. 3.9 is just like incident management a bit too

high. Not too far from reality but considering that not all know the difference between incidents and requests and that not all are educated in this area, close to a four is a bit too high. I think the difference here between incidents and request is the service definition. And maybe we should score request fulfilment slightly lower considering not all service delivery teams have defined their services yet.

Jessica/Jacob: Not all, does that mean that the majority have or have not?

The Interviewee: We in the global service desk are noticing this very clearly. The dream scenario is that all services are defined so let's say we have one hundred service offerings. Then we could standardize and automate several of these. And we would know our scope of knowledge. If we know there one hundred services, we would know everything we need to know about requests. The problem we are facing is that we have some services defined but others not and we get all kinds of requests that we have never heard about. It is very difficult to keep a good knowledge level. And of course, non-defined services cannot be automated.

But except for that I think the process is well-defined.

Jessica/Jacob: In the incident management process, you mentioned some roles that you have in the service desk. How does it look for request fulfilment?

The Interviewee: yes we have some roles for request fulfilment as well. I think on the roles and responsibilities side we are quite fine. What could be better would be if each service had a defined owner. This owner would make sure the service is running as optimal as possible and he could also make sure we in the global service desk are properly trained in the service. Else the roles are structured in the same manner as in for incidents.

Jessica/Jacob: Thank you. The request fulfilment process scored 3.8. Does the result for people correspond to your perception of how it works? If not, could you please comment on the parts that differ?

The Interviewee: Yes I think this is quite ok. The request fulfilment process is well-defined. Just like for incidents we are missing a separation between incidents and requests.

Jessica/Jacob: Any other parameters that could lower or make this score higher?

The Interviewee: No, not that I can think of right now.

Jessica/Jacob: Ok that was quick. Let's then move over to request fulfilment and the tool support for this process. It scored 3.0. Does the result for people correspond to your perception of how it works? If not, could you please comment on the parts that differ?

The Interviewee: No, this is too high. I explained in the incident section that the tool should have been more advanced. The nature of a service request is that it is a bit of "monkey job" you need to perform to solve it manually. Installation of a software, creation of a distribution list, resetting of password, access requests – it is all repetitive tasks that no one wants to do. Everyone in my team is overqualified to do these tasks. We have basically no automation or workflow possibilities in the tool so we have to do all these tasks manually. It is boring and de-motivating but worst of all, it has an impact on the users.

Jessica/Jacob: In what sense?

The Interviewee: There are no users that want to wait two days to have their password reset. And if they need a software, they need it now. It is so old-fashion to do these things manually, but what can we do? And it is the same here as for incidents. We need 4 full-time FTEs to distribute the requests.

Jessica/Jacob: So you have 4 people in the dispatch for incidents and four for requests?

The Interviewee: No, four in total, but still!

Jessica/Jacob: So compared to incidents, it is the same drawbacks plus lack of automation?

The Interviewee: Yes and then of course – we don't have a service catalogue and a self-service portal. Well, I should probably say that we don't have a service catalogue and we have a stand-alone self-service tool. Our existing tool does not come with neither service catalogue nor self-service portal. But even if our self-service portal is basic, I really like it. It is user friendly and clear. It is very easy to user and the users give good feedback on it. It is also integrated – to some extent at least – to our ticketing system so we can do some automation. But for a future tool it would be nice to have all in one tool.

Jessica/Jacob: Great! Anything you would like to add on why you think the score is too high on the tool?

The Interviewee: Nope, I think I said it all!

Jessica/Jacob: Ok, then we have reached the last process – the problem management process. Here we got lower scores. People gets 3.5, process gets 3.1 and finally the tool gets 2.4. If we start with the people area: does this result correspond to your perception of how it works? If not, could you please comment on the parts that differ?

The Interviewee: I'm not surprised about the lower score on problem management. First of all it is not as linked to incident management and request fulfilment as they are to each other. Secondly, when we implemented "Manage Call" some years ago, we focused on inking incident management and request fulfilment into the "manage call process". That was the scope. The last years, problem management has gotten a focus, especially within the technical infrastructure area. But it might also be that some business application services are using it. So I would say that problem management exist, it is just that people have taken it in their own hands and implemented it as it has not been driven centrally. Then of course what happens when people take it in their own hands is that each service delivery team does it differently. They are executing problem management differently; they are using different terminology and so on

Jessica/Jacob: What is the problem with what you just mentioned?

The Interviewee: This causes two problems. The first one is for us in the global service desk. We both want to create problems from repetitive incidents. Then we also want to get information from the problem management teams once there is a work-around or a solution to the problem so we can close all incidents related to the problem. If everyone does differently and uses different tools, it won't work. Secondly, we cannot on a global level measure the performance of the problem management process. How well are we performing? What can we improve? And so on.

Jessica/Jacob: So, if we go back to focus on the people – knowledge, roles and responsibilities etc.

The Interviewee: Regarding knowledge, I think we are less mature compared to our knowledge about incidents and requests, for sure. But I wouldn't say it is non-existent. For the teams working actively with problem management, I think they are at a good level. Others probably understand the basic concepts.

But where I really think we have the problem is to have it in the back of everyone's heads. We are so focused solving things fast, closing tickets, firefighting. It is a very reactive approach. We don't have the mind-set to work long-term and pro-actively. And this will take an effort to change. We have been working in the same manner for years.

I would give it a 3.

Jessica/Jacob: And what about roles and responsibilities?

The Interviewee: For those teams that have implemented problem management, they also have the standard ITIL roles and they have dedicated resources and teams focusing on real root-cause analysis. But all the rest, including my own team do not have any problem management roles in place.

Jessica/Jacob: Thank you! Anything you would like to add before we are moving to questions about the process

The Interviewee: Nope.

Jessica/Jacob: The process scored 3.1. Does this result correspond to your perception of how it works? If not, could you please comment on the parts that differ?

The Interviewee: I think this is fairly ok. Maybe I would lower it to a 3, but maybe that wouldn't make a difference. What we are missing is a documented process. As I mentioned earlier, we are having processes defined and probably also documented but it is one per team and it is not all teams. The best way forward would be to create a global problem management process and then roll it out to all service delivery teams. In that way we would all use the same terminology and tool.

Jessica/Jacob: So a missing global process rolled out to all services is what is missing?

The Interviewee: From a process standpoint yes. And I also think resource allocation. Problem management has an initial cost, which later on leads to a cost saving. Our management team would of course need to invest some time and money the first couple of year and I'm not sure we have that commitment.

Jessica/Jacob: ok noted, anything more on the process?

The Interviewee: No, that's it.

Jessica/Jacob: Ok last question in the last process.

The Interviewee: Great! I'm getting tired, ha ha.

Jessica/Jacob: The tool area of problem management gets a score of 2.4. Does this result correspond to your perception of how it works? If not, could you please comment on the parts that differ?

The Interviewee: Yes, I would say it is correct.

Jessica/Jacob: Would you mind evaluating your answer, why you think the score is correct?

The Interviewee: We don't really have a dedicated tool support for problem management. However, the teams using problem management have found their own unique way to use the tool. I also know one team that is using SharePoint as their problem management tool. So, I'm guessing that since we don't have a global process documented for problem management and no central push to implement it, then some teams have done it themselves and are probably using whatever platform is best for them.

Jessica/Jacob: Do you know how the problems are created when they are not in your ticketing system?

The Interviewee: It's a good question. Normally you would make a trend analysis in my team to see if there are repetitive incidents. From repetitive incidents a problem is created to solve the root cause. So now I think they do the analysis themselves as we are not doing it and then manually creating the problem.

Jessica/Jacob: How are they informing you that the problem is done so you can close the ticket?

The Interviewee: They don't really. You see, as I mentioned before we don't have the ownership of incidents in the service desk, so they have probably taken over the incident from us and are the owner. Then they would manually go in and close the incidents when the problem is solved. And this is exactly one of the reasons why I would score the tool below a three.

Jessica/Jacob: Because of the ownership?

The Interviewee: No sorry. Ok, I will explain. Problem Management is only functioning when it is fully integrated with incident management. The way it should work is that the repetitive incidents are automatically discovered by the tool and a problem is created. Once the problem is solved, all incidents are automatically closed. When a problem is known or has a work-around but isn't solved it should be logged in a known-error database so that my team can just link the incident to the problem and automatically send the work-around to the user. Now I'm probably talking about a 4, but we are very far from this scenario.

Jessica/Jacob: Ok great. Anything you would like to add?

The Interviewee: I just want to know if you will send your thesis to us when done. We are doing several maturity assessment surveys in this company and it would be interesting to read your view of it.

Jessica/Jacob: Yes of course! Ok, thanks a lot for your time!

7.5 Appendix E – Interview Coding

7.5.1 Interview 1

Number for reference	Question	Category	Follow-up question	Answer	Coding
1	Incident management – people received a score of 3.9	IM People		The result is too high for all 3 areas. My scores should be closer to 2 rather than to 3 for all areas. The reason why the people have answered the survey very optimistic is probably due to lack of ITIL competence. And I also think that people think this survey is an evaluation of them as individuals and if they are doing a good job. This comment is valid from managers to analysts. Starting with the process aspect of incident management: The reason why this is too high and according to me rather below than above a 3 is that we today lack a proper Incident process and Incident roles. All Incidents and requests are treated in a similar way, they are Tickets. . Most of the people are not ITIL and Incidents Management trained. I know two in the full organization that are ITIL certified.	MAN DEF
2		IM People	Is it that the process does not separate requests from incidents or is it really that people doesn't know the difference, meaning there is a competence gap?	It is both. It is hard for me to make a statement for the full organization, but my impression is that people do not know the difference between requests and incidents. Thereby we are not working with improving the two. I think it is worse in the business application area than in Technical Infrastructure, so it probably differs a bit from service to service	MAN DEF
3		IM People	You said that we today lack proper Incident roles. Can you explain that further?	Yes, for example as we don't have an incident management process defined, we neither have an incident process ownership. There is no one being responsible for the overall incident process and not a clear ownership of the incidents. According to ITIL, all incidents should be owned by the service desk, but they are only owning the tickets they are solving and closing. So, there are no roles defined like incident process owner and incident process manager. Thereby we cannot run any improvements on the incident process.	MAN DEF
4	Incident management – process received a score of 3.7	IM Process		Yes, I've touched upon it a bit in my previous answer, maybe I'm talking too much. I wouldn't say we don't have an incident management process, I would rather say that a fairly poor Incident process has been implemented. There is also a poor understanding of the difference between Incidents and Problems. We have one process covering tickets rather than separating requests from incidents and from problems. And as I said before, with a poorly implemented incident management process in combination with lack of knowledge of what an incident is and how it should be handled and act upon, I would score it	MAN DEF

				below 3.	
5	Incident management – tools received a score of 3.2	IM Tool		Our current tool has the ability to store documented Incident details. We can log time, enter a solution, close the incident and send out a resolution or questions to the users. This is very basic. We have to manually dispatch all incident. Incidents and requests cannot really be separated in a good way in the tool. So yes, we can do the basic stuff, but we cannot work with improvements, do statistics, categorize them properly and do proper communications. Another problem is that the people doesn't use it in a proper way. Or maybe I should say that the tool doesn't allow people to use it in a proper way.	MAN
6		IM Tool	Can you explain that a bit further for us to understand?	Well, there is for example no connection between Incident and knowledge management tools. So, all incidents are solved manually and we are dependent on the individual knowledge. If we had had a knowledge management database, we could have automated the solution of some of the incidents and we would not be so depended on each individual and also on having so senior staff.	MAN
7	Anything else you would like to add for incident management?/general comments (total score)			I would say that incident management is the most developed process we have in the organization today, but still we are far away from how the score four is defined. I think where the score is correct is the ranking of people, process and tools. For sure, the people is the strongest of the four and then process and then tool. But I just can't understand that we got a 3.2 on the tool when it is so basic and limiting.	
8			Why do you think that is?	Hard to say really. I mean, people and process I can more understand. As I mentioned in the beginning, it is related to the individual himself. They feel it is them being evaluated. The tool is strange. I mean, I do not know anyone that wouldn't like to have a new tool. Everybody is complaining about it. And to say that a tool is bad is not evaluating any individuals. So no, I don't really know.	
9	Request fulfilment management – people received a score of 3.9	RF People		I would refer back to my answer on the people section of incident management. You know, as the request fulfilment process and the incident management process today is one single process and is treated the same, treated as tickets, the answers will be very similar. The same as for incident management, the people are not ITIL trained and certified. I think there is one difference worthwhile highlighting. The requests in the technical infrastructure area where we have hardware, software, networks, servers etc – are much easier to	MAN DEF

				define than for the business applications.	
10		RF People	Why is that?	Well, they are by their nature much clearer. And if you look in all ITIL literature, it is very much related to the technical infrastructure are. So I would say that the people in the technical infrastructure area are better in defining what a request is, what requests they offer etc. But I'm not sure that I would say they are more competent, it is probably just easier.	
11		RF People	So how would you say the knowledge level is around requests and the request fulfilment process?	Compared to incident management it is maybe a bit higher in general in the organization as some teams have actually started to define their requests and some have even started to fulfil them in a standardized way. And now when I think about it, they have actually automated the software distribution. But they couldn't do it in existing tool so they had to buy and external tool to do this. So, yes the competence in parts of the organization is probably above a score of 3. But 3.9 is too high. Then we have to have much more requests defined, standardized and automated	DEF
12		RF People	And what about the request fulfilment roles and responsibilities?	Well, here it is the same as for incident management. As we don't have a separate process defined for request fulfilment, we don't have any global roles and responsibilities defined. We don't have a global ownership. Having that said, there are some individual services working for defined, standardized and actively with requests, but it is individual service teams and they are in their turn not aligned.	MAN DEF
13	Request fulfilment management – process received a score of 3.8	RF Process		Yes, once again coming back to the incident management process. We have only one process handling both incidents and requests. And we are treating Incidents and Request in the same way by using same SLA for all tickets - Incidents and Requests that is. Incident and Request are using same process and priority.	MAN DEF
14		RF Process	Why is this a problem?	But requests and incidents are two completely different things. An incident means that something is broken. They user cannot continue working. We are losing productivity. Incident resolution is about restoring the service as quickly as possible. A request is normally not urgent. I need a new computer or a new software or I want master data to be uploaded in the system. And requests can be automated and optimally even be ordered in a self-service portal and then automatically solved. They are two completely different things.	
15		RF Process	So based on this, what do you think about the score?	I mean it is similar to incident management. To get to a three, I think we need to have a request fulfilment process defined and we don't really today as it is merged with the incident process.	MAN DEF

16	Request fulfilment management – tools received a score of 3.0	RF Tool		Yes, this is the same as for incident management. Or it is even worse I would say, so it is correct that the tool score shall be lower on request fulfilment than on incidents for sure.	MA
17			Why is it worse when it is the same tool for the same process?	Well it is the same as for incidents in the sense that it is only providing very basic support for the request fulfilment process. We can log the request, document it, send a resolution and close it. And also in this case we cannot use knowledge management in order to solve the request. But what differs is that the nature of the requests allows for self-service and automation. The tool we have does not provide self-service and even if we had standardized request processes, the system could not automate it for us.	MAN
18	Anything else you would like to add for request fulfilment management?/general comments (total score)			To summarize, I think the score is too high with the same comments as for incident management.	
19				Yes, that is quite similar to the incident management process. Which makes sense. Since we are treating the request fulfilment and the incident process in the same manner and for us we talk about tickets and a collective name for incidents and requests. Sorry, babbling again, please ask your questions.	
20	Problem management – people received a score of 3.5	PM People		So if I start with the people side. It's the same comments as for incidents and request: we don't have any ITIL trained personnel so our knowledge also in problem management is limited. And we don't have any roles defined for problem managements. And normally when you work actively with problem management, you have dedicated teams working only with problems.	MAN DEF
21		PM People	Is this a pure competence gap or is it a lack of organization structure?	Both I would say. There are not many in the organization that would be able to tell the difference between a problem and an incident.	MAN DEF
22	Problem management – process received a score of 3.1	PM Process		Yes, as I mentioned before, we don't have a global problem management process defined and documented so looking at your scoring model this would be a two.	DEF
23		PM Process	But this gap is very high, can you help us to understand the score gap?	Well, once again it is for sure related to the fact that people feel that they are being evaluated themselves. But a second reason is that they are confusing what a problem is, they are confusing it with an incident. Because for them an incident is also a problem that has to be solved. This is the problem with not having ITIL-educated personnel. They don't understand the difference and they for sure are mixing up the terminology.	
24		PM Process	You mentioned before there were local request fulfilment processes that the individual service team had implemented. Couldn't it be the same case here and therefore people	That is correct. I don't know what all teams are doing, but I know one team that has been working with problem management for half a year and they are doing well. But I would say there are more local request fulfilment processes than problem management processes. On the other hand the process score in problem management is	MAN DEF

			score higher?	also lower than the one in request fulfilment.	
25	Problem management – tools received a score of 2.4	PM Tool		Here I'm not surprised and I think this is a quite correct answer. We can use problem management very limited in our current tool but it wouldn't support the full problem management process for sure. And even the few teams working with problem management, can say that they get enough tool support. So this score I would say corresponds to reality.	MAN DEF
26					
27	Anything else you would like to add for problem management?/general comments (total score)			Incident management and request fulfilment management, we have as one common process, but it is still documented in our global process system and defined as a global process that everybody should follow. This is not the case for problem management. It is not a documented process at a global level.	

7.5.2 Interview 2

	Question	Category	Follow-up question	Answer	Coding
28	Incident management – people received a score of 3.9	IM People		The average result of the assessment for Incident Management in all three areas corresponds to 3.6. This score is not consistent with the situation experienced at that time. Based on an IT assessment of best practices for incident management the score would have barely made it to 3.0. The score for People dimension would have exceeded expectations in incident management (above 3.0) given the low scores in the process and tool areas. In other words, the Incident Management process works because the people, not because processes and the tools implemented. However 3.9 is too high of a score in light of the lack of competence development in the area of service management among other topics within IT. People's knowledge was outdated in a number of fields. Since people are responsible of their competence development and plan in a sense, a score ranging between 3.3 and 3.5 might have been more appropriate.	DEF
29		IM People	And what about roles and responsibilities?	We don't have incident management roles and responsibilities at a global level, but I would say that many of the individual services do have. So once again, 3.9 is way too high, but I wouldn't say it is non-existing.	DEF

30	Incident management – process received a score of 3.7	IM Process		The score for Process dimension should have been lower given lack of adherence to process steps. A high number of tickets categorized as Incidents were in fact service requests. The process lacks consistent documentation. The main goal of the Incident management process is geared towards identifying root causes rather than restoring the service as soon as possible. There are no specific guidelines about communication. Major incidents are treated in a similar manner as any other incident. Incident classification was limited and had no linkage to a configuration database. Cause codes are not being used making impossible to trend proactively incidents within problem management. A score of 2.8 would have been more appropriate considering that having a process documented up to level 3 and having no one followed consistently or delivering its intended value does not meet expectations.	MANDEF
31					
32	Incident management – tools received a score of 3.2	IM Tool		The score for the Tool Dimension should have been lower as well given that the tool does not support neither the process in place, the people using it or the service stakeholders. The tool functionality is more appropriate and in line with the needs of a call center, not a service management help desk. All service records are managed by the tool in the same way, with the same fields even though the information maintained in these records, according to Service Management best practices, differ radically from one another. The tool has no workflow capabilities and lacks completely reporting capabilities. A score ranging between 2.0 and 2.3 would have been more appropriate given these facts.	MAN
33					
34	Anything else you would like to add for incident management?/general comments (total score)				
35					

36	Request fulfilment management – people received a score of 3.9	RM People		The average result of the assessment for request fulfilment Management in all three areas corresponds to 3.6. For me, this is too high. I would personally score the average on the process to a 3. The score for People dimension would have exceeded expectations in Request fulfilment given the low scores in the process and tool areas. Just the same as for incident management, the Request Fulfilment process works because the people, not because processes and the tools implemented. And once again, the same as for the incident management process, 3.9 is too high of a score considering the lack of competence development in the area of service management. I feel like I'm repeating myself now, but that is because incident and request fulfilment is the same process with us. So the roles and responsibilities are also lacking at least at a global level.	DEF
37					
38	Request fulfilment management – process received a score of 3.8	RM Process		The Request fulfilment process was rolled into the incident management process and used for both. Only a handful of service request types are available as a dropdown menu and used mostly for classification purposes. KPIs and SLAs related to request fulfilment only measured closure rate. SLAs used to track service request either non-existent or not meeting business expectations. A score of 2.5 would have been more appropriate considering that a process used for both incident and request fulfilment does not do a good job at neither.	DEF
39					
40	Request fulfilment management – tools received a score of 3.0	RM Tool		The score on the tool is lower, which is correct, however it is still too high. An actionable service catalogue is not documented or missing. Service offerings non-existent. Automatic escalation missing. No Self Service. Poor or non-existent knowledge management functionality. Considering that Service Requests are the highest volume of any service and the lack of automation provided by the tool, a score of 2.0 would have been more appropriate.	MAN
41					
42	Anything else you would like to add for request fulfilment management?/general comments (total score)				
43					
44	Problem management – people received a score of 3.5	PM People		Once again, we are lacking competence in the service management area and thereby also in the problem management area. And as I will explain in the process section, we don't have a global process defined in our organization. This leads to lack of knowledge in the area by itself.	MAN DEF
45			And roles and responsibilities?	Of course we don't have that neither due to a non-existent process	MAN DEF

46	Problem management – process received a score of 3.1	PM Process		There are isolated service teams that on their own behalf has implemented a problem management process. Some according to ITIL standard, other to another standard or possibly to their made-up standard. But the fact is that we do not have a global problem management process and this gives the impression that it is not recognized as an important process. A score of 2.5 would have been more appropriate.	MAN DEF
47					
48	Problem management – tools received a score of 2.4	PM Tool		This score is more realistic, The reason why it relates more to how it actually is, is because important functionality is indeed missing. Differentiation between a problem and a root cause missing. No linking of incidents to problems possible. No linking of RFCs to problems possible. No linking of Configuration Items from the configuration management database possible.	MAN DEF
49					
50	Anything else you would like to add for problem management?/general comments (total score)				
51					
52			Thank you very much for this. It seems like you would score it lower than what the rest of the organization did. Do you have any thoughts why?	I think they didn't fully understand the terminology. They are not ITIL educated and do not necessarily understand for example the difference between an incident and a problem. I think you would have to explain the terminology before they do a survey or have them ITIL certified in beforehand.	

7.5.3 Interview 3

53	Question	Category	Follow-up question	Answer	Coding
54	Incident management – people received a score of 3.9	IM People		Seems a bit high. In parts of the organization I think we treat incidents and requests separately, but in many areas we do not.	
55		IM People	Can you develop that a bit further? We are talking about how well people are executing the incident process now. Their competence and also if you have clear roles and responsibilities within the incident management process.	I'm not sure if this is because people are not competent or because we don't do it basically. And in the system, incidents and requests are not separated really. It is really hard to talk for the full organization. In my team, which is the global service desk, the people have basic knowledge in the difference between incidents and requests. But they don't really care as they are not supposed to separate them. I have actually made an attempt to make them work with incidents and requests separately, but it is a struggle as first of all it is not really any support from our current tool and secondly, the service delivery teams are not separating incidents from requests, so it loses its value.	DEF

56		IM People	Can you explain that a bit more? Which are now the service delivery teams again?	We are organized so that the global service desk receives all tickets. We solve about 55% of all tickets coming in and we have about 1000 tickets per day. If we cannot solve them, it is sent to the service delivery teams which have more expertise in a specific area. Now, if we categorize the ticket as incident or request, but not the service delivery teams, we cannot automate the requests, we cannot standardize, the statistics will not be correct and so on.	
57		IM People	Are you saying that the service desk has more ITIL and service management knowledge than the service delivery teams?	It is my team so of course. No, I'm only joking. But yes I think we are more familiar with ITIL and the need of ITIL and a new tool in the service desk than the others. I also think there is a difference between technical infrastructure and the business applications. I should probably say it like this. We in the service desk are both ITIL v1 educated or - at least some of us - and we see the need for ITIL as it would reduce our workload dramatically. I know there are some in technical infrastructure that are also ITIL v1 certified but in the business application areas, they have probably never heard about it. But I actually don't know many that are ITIL v3 certified. So I would say, there is competence and a will to run a proper incident management process but as this statement is not representing all in the organization and very few are ITIL v3 certified would not score it as high as 3,9. I would put it to 3,3 instead.	DEF QM
58		IM People	And can you give your reflections on roles and responsibilities for the incident management process?	We don't have formal and documented incident management roles but here in in the global service desk we have tried to structure the ownership of the incidents. And I think also the service delivery teams have made a try to implement what they call a mailbox coordinator.	DEF
59		IM People	If we start with the global service desk, can you explain what you mean with incident ownership and what you have done?	First of all we have a dispatcher role and they are receiving all the 1000 tickets per day. They are distributing the tickets to where they belong. Then we have a coordinating role that is looking at all incident currently in our inbox to see if any ticket is about to get out of the SLA response time, if there any trends amongst the tickets and so on. And then we have 3 time zone leads that are looking at the incidents at a higher level and taking action in case of any emergency ticket coming in. So, it is not the traditionally incident management roles but that is not really possible as we have taken the choice to not let the Global Service Desk own all incidents.	DEF
60		IM People	And you also mentioned something about a mailbox coordinator?	Yes, I don't know so much about it, but I think the business application teams have a mailbox coordinator that is overall responsible for their inbox of tickets. Similar to our coordinator role, making sure the tickets are solved in correct priority and not out of SLA's.	

61	Incident management – process received a score of 3.7	IM Process		It also seems a bit high I must say. I think our incident management process is well defined, even if it does not separate Incidents from Requests. I would expect that most people at this point know the difference between an incident and a problem. The main area where we are behind is when it comes to the classification on impact and urgency. I would probably have this score similar to the people score. Maybe a bit lower. 3.1 or 3.2.	DEF
62		IM Process	Why lower than the people score?	I really think, at least speaking for the global service desk that we have great people. Both their attitude and their knowledge. We have quite high satisfaction amongst our users and I'm sure it is related to our users. I mean you can have great tools and processes, but if you don't have the people, the processes and the tools won't matter.	DEF
63		IM Process	Can you elaborate a bit more with what you think about the score? You mentioned impact and urgency?	We are not really prioritizing our tickets. We have a field in the tool called prioritization but this is not really based on any logic. We say it is the users picking the priority which can be low, medium, high or emergency. But when the users call or send an email to log a ticket we never ask what the priority is so the users don't know that they can decide. Instead the system is defaulting all tickets to medium. And even if the users would know that they can set the priority themselves, it is not a good idea to have the users deciding this. It should be based on impact and urgency.	MAN
64		IM Process	Why do you think like that?	If the users are going to set the priority, they will not see to what is best for The company. They will consider their computer not working as an emergency and we would not get the priorities correct. And we don't get the priorities right now neither. The problem with this is that we have to spend time on prioritizing the tickets instead of this happening by itself. This is really non-value adding time. Instead of spending out time on solving issues and helping users, we are trying to figure out what which tickets are most important.	MAN
65		IM Process	Ok thank you. You also mentioned that you have a well-defined incident management process. Can you elaborate on this, please?	Yes I think is well-defined in the sense that the steps on how an incident should be solved are documented in detail and we are following the same process for each incident. It is not separated from requests but except for that it is a good process. Ah, actually one thing that is very important to mention here is that there is a strong reason why the incident process cannot be a four. If we want to take our incident management process to the next level we need to start to work on integration. This is what is missing now. How could I have forgotten to mention that?	DEF QA

66				The whole idea is that the processes should integrate with each other. Take for example knowledge management and incident management. The perfect scenario is if we have an incident that we know can happen. Then we have documented the resolution of that incident in a knowledge article. When we get the incident, we can just import that knowledge article into the resolution of the incident and it will be very quick to solve the incident. Actually when it comes to the incident management process, knowledge management is probably the most important process to integrate with.	
67	Incident management – tools received a score of 3.2	IM Tool		The other two scores were a bit too high but not too far away from reality. The tool is what we are struggling the most with. Not having a proper service management tool is very time consuming. We would have saved so much time if we had better functionality. So on score I would rather put 2,5. We have a tool but is doesn't provide any of the advanced functionality.	MAN DEF
68		IM Tool	Like what?	Well, just take the dispatch. We have four full-time people working in the dispatch. That's very expensive. And it is not only four people. It is the most senior people as they need to have deep knowledge in order to interpret what the users are asking about. If we would have a more advance tool, we would be able to automate big part of the dispatch. Other companies similar to ours, have about one person in the dispatch. Imagine if we could have these other three people solving tickets instead!	MAN DEF
69		IM Tool	Any other example?	Yes, like I mentioned before; if we could use knowledge management to help us solve incidents, we would save a lot of time. And also look more professional towards our users. We could guarantee that everyone gets the same answer on the same questions. Today it is very people dependent. And it is not that people don't want to use knowledge management. It is just not enabled in the tool. But I should mention that in order to have some kind of knowledge database we have built a temporary knowledge management database in Share-Point. It is not integrated with our ticketing system, but at least the global service desk analyst can go there and find information and also copy paste into the resolution.	MAN DEF
70		IM Tool	Is there anything that could justify a 3.2 score?	Not really, but if you want to know what is good with the tool, it is that we at least can log our tickets and we can for sure get basic statistics. We can integrate with AD so we don't have to enter details about the users when they are calling. So the basics are for sure there, but that's it.	MAN DEF
71	Anything else you would like to add for incident management?/general comments (total score)				
72					

73				You know since we are running incident and requests through the same process, I'm thinking very similar about these two processes. This is also why they have scored very similar. But fine, let's give it a try. 3.9 is just like incident management a bit too high. Not too far from reality but considering that not all know the difference between incidents and requests and that not all are educated in this area, close to a four is a bit too high. I think the difference here between incidents and request is the service definition. And maybe we should score request fulfilment slightly lower considering not all service delivery teams have defined their services yet.	DEF
	Request fulfilment management – people received a score of 3.9	RM People			
74				We in the global service desk are noticing this very clearly. The dream scenario is that all services are defined so let's say we have one hundred service offerings. Then we could standardize and automate several of these. And we would know out scope of knowledge. If we know there one hundred services, we would know everything we need to know about requests. The problem we are facing is that we have some services defined but others not and we get all kinds of requests that we have never heard about. It is very difficult to keep a good knowledge level. And of course, non-defined services cannot be automated. But except for that I think the process is well-defined.	DEF QA
		RM People	Not all, does that mean that the majority have or have not?		
75				Yes we have some roles for request fulfilment as well. I think on the roles and responsibilities side we are quite fine. What could be better would be if each service had a defined owner. This owner would make sure the service is running as optimal as possible and he could also make sure we in the global service desk are properly trained in the service. Else the roles are structured in the same manner as in for incidents.	DEF
		RM People	In the incident management process, you mentioned some roles that you have in the service desk. How does it look for request fulfilment?		
76	Request fulfilment management – process received a score of 3.8	RM Process		Yes I think this is quite ok. The request fulfilment process is well-defined. Just like for incidents we are missing a separation between incidents and requests.	DEF QA
77		RM Process			
78	Request fulfilment management – tools received a score of 3.0	RM Tool		No, this is too high. I explained in the incident section that the tool should have been more advanced. The nature of a service request is that it is a bit of "monkey job" you need to perform to solve it manually. Installation of a software, creation of a distribution list, resetting of password, access requests – it is all repetitive tasks that no one wants to do. Everyone in my team is overqualified to do these tasks. We have basically no automation or workflow possibilities in the tool so we have to do all these tasks manually. It is boring and demotivating but worst of all, it has an impact on the users.	MAN

79				There are no users that want to wait two days to have their password reset. And if they need a software, they need it now. It is so old-fashion to do these things manually, but what can we do? And it is the same here as for incidents. We need 4 full-time FTEs to distribute the requests.	
		RM Tool	In what sense?		MAN
80				Yes and then of course – we don't have a service catalogue and a self-service portal. Well, I should probably say that we don't have a service catalogue and we have a stand-alone self-service tool. Our existing tool does not come with neither service catalogue nor self-service portal. But even if our self-service portal is basic, I really like it. It is user friendly and clear. It is very easy to user and the users give good feedback on it. It is also integrated – to some extent at least – to our ticketing system so we can do some automation. But for a future tool it would be nice to have all in one tool.	
		RM Tool	So compared to incidents, it is the same drawbacks plus lack of automation?		MAN
81	Anything else you would like to add for request fulfilment management?/general comments (total score)				
82					
83				Regarding knowledge, I think we are less mature compared to our knowledge about incidents and requests, for sure. But I wouldn't say it is non-existent. For the teams working actively with problem management, I think they are at a good level. Others probably understand the basic concepts. But where I really think we have the problem is to have it in the back of everyone's heads. We are so focused solving things fast, closing tickets, firefighting. It is a very reactive approach. We don't have the mind-set to work long-term and pro-actively. And this will take an effort to change. We have been working in the same manner for years. I would give it a 3.	
	Problem management – people received a score of 3.5	PM People			DEF
84				For those teams that have implemented problem management, they also have the standard ITIL roles and they have dedicated resources and teams focusing on real root-cause analysis. But all the rest, including my own team to not have any problem management roles in place.	
		PM People	And what about roles and responsibilities?		MAN
85				I think this is fairly ok. Maybe I would lower it to a 3, but maybe that wouldn't make a difference. What we are missing in s documented process. As I mentioned earlier, we are having processes defined and probably also documented but it is one per team and it is not all teams. The best way forward would be to create a global problem management process and then roll it out to all service delivery teams. In that way we would all use the same terminology and tool.	
	Problem management – process received a score of 3.1	PM Process			DEF

86		PM Process	So a missing global process rolled out to all services is what is missing?	From a process standpoint yes. And I also think resource allocation. Problem management has an initial cost, which later on leads to a cost saving. Our management team would of course need to invest some time and money the first couple of year and I'm not sure we have that commitment.	DEF
87					
88	Problem management – tools received a score of 2.4	PM tool		Yes, I would say is it correct. We don't really have a dedicated tool support for problem management. However, the teams using problem management have found their own unique way to use the tool. I also know one team that is using SharePoint as their problem management tool. So, I'm guessing that since we don't have a global process documented for problem management and no central push to implement it, then some teams have done it themselves and are probably using whatever platform is best for them.	MAN DEF
89		PM tool	Do you know how the problems are created when they are not in your ticketing system?	It's a good question. Normally you would make a trend analysis in my team to see if there are repetitive incidents. From repetitive incidents a problem is created to solve the root cause. So now I think they do the analysis themselves as we are not doing it and then manually creating the problem.	
90		PM tool	How are they informing you that the problem is done so you can close the ticket?	They don't really. You see, as I mentioned before we don't have the ownership of incidents in the service desk, so they have probably taken over the incident from us and are the owner. Then they would manually go in a close the incidents when the problem is solved. And this is exactly one of the reasons why I would score the tool below a three.	MAN
91		PM tool	Because of the ownership?	No sorry. Ok, I will explain. Problem Management is only functioning when it is fully integrated with incident management. The way it should work is that the repetitive incidents are automatically discovered by the tool and a problem is created. Once the problem is solved, all incidents are automatically closed. When a problem is known or has a work-around but isn't solved it should be logged in a known-error database so that my team can just link the incident to the problem and automatically send the work-around to the user. Now I'm probably talking about a 4, but we are very far from this scenario.	

92	Anything else you would like to add for problem management?/general comments (total score)			I'm not surprised about the lower score on problem management. First of all it is not as linked to incident management and request fulfilment as they are to each other. Secondly, when we implemented "Manage Call" some years ago, we focused on inking incident management and request fulfilment into the "manage call process". That was the scope. The last years, problem management has gotten a focus, especially within the technical infrastructure area. But it might also be that some business application services are using it. So I would say that problem management exist, it is just that people have taken it in their own hands and implemented it as it has not been driven centrally. Then of course what happens when people take it in their own hands is that each service delivery team does it differently. They are executing problem management differently; they are using different terminology and so on	
93			What is the problem with what you just mentioned?	This causes two problems. The first one is for us in the global service desk. We both want to create problems from repetitive incidents. Then we also want to get information from the problem management teams once there is a work-around or a solution to the problem so we can close all incidents related to the problem. If everyone does differently and uses different tools, it won't work. Secondly, we cannot on a global level measure the performance of the problem management process. How well are we performing? What can we improve? And so on.	

7.6 Appendix F – Documentation review results

7.6.1 Incident management process on dimensions people and process

Dimension	Survey Statement	Statement was correct, partially correct or incorrect	Authors' comments and results of documentation review
People	We have clear roles and responsibilities for the Incident Management Process which have been identified, defined, documented, and appointed.	Partially correct	The roles documented and implemented is the analyst, the service lead and the service delivery manager. There is a clear roles description for above mentioned roles. There is no incident manager or incident owner defined or implemented.
People	The employees have the understanding that an incident has to be resolved fast, without the need for root cause investigation.	Incorrect	There is no documentation or process separating incidents from requests.
People	The personnel responsible for Incident Management are suitably trained.	Partially correct	Around 20% of the service employees are ITIL version 2 certified. There are very few employees being ITIL version 3 certified.
Process	We have a clearly defined, repeatable incident management process across the organization to manage the life cycle of incidents from their inception to closure. This process helps us to restore the service, so that it can be used again by users, as quickly as possible. We have clearly defined process goals, objectives, policies and procedures for the Incident Management Process.	Partially correct	There is one global process implemented – Manage Calls, this is a mix of incident and request fulfilment process, meaning no separate incident management process. The ITIL version 3 incident management process consists of seven steps, five of these steps are included in the Manage Call process. There are no process goals documented. There is no integration with other ITIL processes.
Process	The definition of an incident is clearly understood and is applied across the organization. An incident is understood as being different from a problem.	Incorrect	There is no documentation or process separating incidents from problem. The definition of an incident is not documented

Process	Incident records are maintained for all reported incidents.	Correct	All incident records are recorded and solution is distributed from the incident record. This is described in the process documentation.
Process	All incidents are analyzed and classified by the Global Service Desk prior to handing them over to backbone support.	Partially correct	All incidents are analyzed and classified by the Global Service Desk prior to handing them over to backbone support. The incidents are closed by backbone support rather than of the service desk.
Process	All Incidents are assigned a priority based on impact and urgency.	Incorrect	The incidents are not assigned a priority based on impact and urgency. There are four priorities available: low, medium, high and emergency but the priority is selected by the customer rather than being based on impact and urgency.

7.6.2 Request fulfilment management process on dimensions people and process

Dimension	Survey Statement	Statement was correct, partially correct or incorrect	Authors' comments and results of documentation review
People	We have clear roles and responsibilities for the Request Fulfilment Process which have been identified, defined, documented and appointed.	Partially correct	The roles documented and implemented is the analyst, the service lead and the service delivery manager. There is a clear roles description for above mentioned roles. There is no request fulfilment manager or request owner defined or implemented.
People	The employees are actively working towards replacing manual, repeatable IT tasks with technology solutions that can automate the tasks.	Incorrect	There is no documentation on standardisation of requests and no automation targets.
People	The employees understand and have the mind-set that a request fulfilment is about providing timely and effective access to standard services.	Partially correct	There are SLA's on the service team, but not on the individual services offered by the service team. The SLA's are decided by the IT Organization rather than

			in alignment with the customers.
Process	We have a clearly defined, repeatable Request Fulfilment process for effectively delivering normal service requests from request to delivery. This process helps us satisfy users' requests in an effective and timely manner. We have clearly defined process goals, objectives, policies and procedures for the Request Fulfilment Process.	Partially correct	There is one global process implemented – Manage Calls, this is a mix of incident and request fulfilment process, meaning no separate request fulfilment management process. The ITIL version 3 request fulfilment process consists of eight steps; four of these steps are included in the Manage Call process. There are no process goals documented. There is no integration with other ITIL processes.
Process	The process helps us to replace manual, repeatable IT tasks and processes with technology solutions that can automatically carry out steps and check for any issues or errors that might have occurred in the process.	Incorrect	There is no request model execution step in the Manage Call process (REF) that supports standardization and automation of service requests. There are no statistics or measurements available to see how much automation is done.
Process	Service request records are maintained for all reported service requests.	Correct	Yes, service request records are maintained for all reported service requests.
Process	The definition of a service request is clearly understood and is applied across the organization. A service request is understood as different from an incident.	Incorrect	There is no documentation or process separating incidents from requests. There is no documentation on the definition of a request.

7.6.3 Problem management process on dimensions people and process

Dimension	Survey Statement	Statement was correct, partially correct or incorrect	Authors' comments and results of documentation review
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People	We have a role within the IT Organization that is responsible for analysing incident records, incident trends, and for reviewing the problem records.	Partially correct	There is no such role defined, but two individual service teams (out of sixteen) have implemented their own problem management roles. They have implemented problem owner, problem manager and problem analysts.
People	We have clear roles and responsibilities for the Problem Management Process which have been identified, defined, documented, and appointed.	Incorrect	There are no Problem Management roles defined and documented. Two individual service teams (out of sixteen) have implemented their own problem management roles. They have implemented problem owner, problem manager and problem analysts.
People	There is management commitment to support staff allocation in sufficient time for problem solving activities.	Incorrect	There is a wish from the Management team to work with problem management and root cause analysis. It is not possible to get facts on and judge if the resource allocation is enough.
Process	We have a clearly defined, repeatable Problem Management process to prevent incidents from happening and to minimize the impact of incidents that cannot be prevented. We have clearly defined process goals, objectives, policies, and procedures for the Problem Management Process.	Incorrect	There is no global Problem process implemented but as a part of the Manage Call process, there is one step called problem management, but no details behind this step. Comparing this to ITIL version 3, the problem management process consists of ten steps. There are no process goals documented. There is no integration with other ITIL processes.
Process	The definition of a problem is clearly understood and is applied across the organization. A problem is understood as being different from an incident.	Incorrect	There is no documentation or process separating incidents from problem. The definition of a problem is not documented

Process	There is a procedure by which potential problems are classified in terms of category, urgency, priority and impact and assigned for investigation and root cause analysis.	Incorrect	The problems are not assigned a priority based on urgency and impact. There are four priorities available: low, medium, high and emergency but the priority is selected by the customer rather than being based on impact and urgency. Only the two teams working with problem management is executing structured root cause analysis.
Process	We have a mechanism for tracking problem resolution.	Partially correct	Yes, the problem resolution is documented and communicated, but not used in the incident management problem and there is no known-error process.
Process	A measurement framework has been established for Problem Management that identifies, measures and reports on metrics aligned to KPIs.	Partially correct	There are no measurement or KPI framework for problem management on a global level. The two teams working actively with problem management have their own measurement frameworks in place.

7.6.4 Dimension tool for the three processes

Process	Survey Statement	Statement was correct, partially correct or incorrect	Authors' comments and results of documentation review
Incident Management	An incident database is maintained to document details for all reported incidents, including resolutions and workarounds. We have a shared repository of Incident	Partially correct	There is an incident database where basic information of the ticket and the requester can be logged. The resolutions can be logged but it is not searchable. No possibility to log workarounds
	There is a searchable Knowledge Database that contains workarounds, resolutions and known-errors, as well as work instructions regarding how to apply	Incorrect	There is no knowledge base in current tool. There is an attempt from few teams to use sharepoint as a knowledge repository but this is not integrated with the tick-

	these resolutions.		eting tool.
	Resolved and closed incidents are updated and clearly communicated to the Global Service Desk, customers, and other parties.	Partially correct	Incidents are updated but only communicated to the person logging the incident.
Request Fulfilment Management	We have a tool that accommodates the necessary fields for capturing the Request details. E.g., the service, who raised the request, who the request will be assigned to, priority, status, closure details.	Correct	There is request database where basic information of the request and the requester can be logged. The resolutions can be logged.
	The tool provides the capability to establish self-help access to predefined lists of services.	Incorrect	There are no self-service capabilities in the tool. There is an attempt from a few service teams to build their own self-service catalogue, but this is completely stand-alone.
	We have a tool that includes automation/workflow capabilities, so that easily repeatable tasks can be approved and implemented without intervention of IT staff.	Incorrect	No Automation or workflows available
Problem Management	There is a tool supporting problem management reporting. We have a shared repository of Incident Management documentation in place.	Partially correct	The tool supports the logging of problems but there is no shared database with incident management
	There is a problem database maintained to record details for all re-	Correct	Problems can be logged in the system.

	ported problems.		
	The tool allows the linking of Incidents to Problem records.	Incorrect	The problems are logged separately from incidents and there is no link between them.

References

- Addy, R. (2007). *Effective IT service management : to ITIL and beyond!* Berlin ; New York: Springer.
- Arraj, V. (2010). ITIL®: the basics. *Buckinghamshire, UK*.
- Baruch, Y., & Holtom, B. C. (2008). Survey response rate levels and trends in organizational research. *Human Relations*, 61(8), 1139-1160.
- Başkarada, S. (2009). *Information quality management capability maturity model*: Springer.
- Becker, J., Knackstedt, R., & Pöppelbuß, D.-W. I. J. (2009). Developing maturity models for IT management. *Business & Information Systems Engineering*, 1(3), 213-222.
- Becker, J. D., & Schultz, U. (2007). IT Service Management/Governance: Case Study of ITIL/COBIT Frameworks in Three SME's.
- Behr, K., Kim, G., Spafford, G., & Information Technology Process Institute. (2005). *The visible ops handbook : implementing ITIL in 4 practical and auditable steps* (Rev. 1st ed.). Eugene, OR: Information Technology Process Institute.
- Bell, J., & Nilsson, B. (2000). *Introduktion till forskningsmetodik*: Studentlitteratur.
- Booth, W. C., Colomb, G. G., & Williams, J. M. (2003). *The craft of research*: University of Chicago press.
- Cannon, D. (2011). ITIL Service Strategy 2011 Edition. *TSO The Stationery Office, London*.
- Cartlidge, A., Hanna, A., Rudd, C., Macfarlane, I., Windebank, J., & Rance, S. (2007). An introductory overview of ITIL® V3. *The UK Chapter of the itSMF*.
- Clark, J. (2007). Everything You Wanted to Know About ITIL® in Less than One Thousand Words. *Retrieved 2015-05-17 from <http://www.best-management-practice.com/Knowledge-Centre/White-Papers>*.
- Cooksy, L. J., & Caracelli, V. J. (2008). Metaevaluation in practice: Selection and application of criteria. *Journal of MultiDisciplinary Evaluation*, 6(11), 1-15.
- Dabade, T. D. (2012). Information Technology Infrastructure Library (ITIL). *Retrieved 2015-05-01 from [http://www.bvicam.ac.in/news/INDIACom%202010%20Proceedings/papers/Group3/INDIACom10_11_Paper%20\(4\).pdf](http://www.bvicam.ac.in/news/INDIACom%202010%20Proceedings/papers/Group3/INDIACom10_11_Paper%20(4).pdf)*.
- De Bruin, T., Freeze, R., Kaulkarni, U., & Rosemann, M. (2005). Understanding the main phases of developing a maturity assessment model. *Retrieved 2015-05-11 from <http://eprints.qut.edu.au/25152/>*.
- Denscombe, M. (2009). *Forskningshandboken: för småskaliga forskningsprojekt inom samhällsvetenskaperna*: Studentlitteratur.
- Elephant, P. (2004). ITIL Process Maturity, Pink Elephant Whitepaper.
- Faber, M., & Faber, R. (2010). ITIL® and Corporate Risk Alignment Guide. *Retrieved 2015-05-21 from http://www.best-management-practice.com/gempdf/ITIL_and_Corporate_Risk_alignment_guide.pdf*.
- Gartner. (2013). IT Glossary. Retrieved 2015-05-12 <http://www.gartner.com/it-glossary>
- Godfrey, S. (2008). What is CMMI. *NASA presentation*. Retrieved 2015-05-16 from http://ses.gsfc.nasa.gov/ses_data_2004/040601_Godfrey.ppt.

- Griffiths, S. (2009). The RACI Authority Matrix (pp. 6): Retrieved 2015-05-28 from http://www.whitmoresolutions.co.uk/index.php?option=com_content&view=article&id=71%3Athe-raci-authority-matrix-1&catid=36%3Aresources&Itemid=1.
- Hammer, M., & Champy, J. (2009). *Reengineering the Corporation: Manifesto for Business Revolution*, A: HarperCollins Publishers.
- Humphrey, W. S. (1988). Characterizing the software process: a maturity framework. *Software, IEEE*, 5(2), 73-79.
- ISACA. (2015). Getting Started With Governance of Enterprise IT (GEIT) AN ISACA WHITE PAPER: ISACA.
- Kvale, S., & Brinkmann, S. (2009). *Interviews: Learning the craft of qualitative research interviewing*: Sage.
- Leopoldi, R. (2015). Employing ITSM in Value Added Service Provisioning (pp. 5): RL Information Consulting LLC.
- Lloyd, V., Wheeldon, D., Lacy, S., & Hanna, A. (2011). *ITIL continual service improvement*: TSO.
- MacDonald, I. (2010). ITIL Process Assessment Framework. 42. Retrieved 2015-04-02 from <http://itsmfi.org/files/ITIL%20Process%20Assessment%20Framework%20-%20MacDonald.pdf>
- Marquis, H. (2006a). ITIL: What It Is And What It Isn't. *Business Communications Review*, 36(12), 49.
- Marquis, H. (2006b). A prescription for ITIL. Retrieved from Retrieved 2015-05-21 from <http://www.itsmsolutions.com/newsletters/DITYvol2iss11.htm>
- McNaughton, B., Ray, P., & Lewis, L. (2010). Designing an evaluation framework for IT service management. *Information & Management*, 47(4), 219-225.
- Mesquida, A. L., Mas, A., Amengual, E., & Calvo-Manzano, J. A. (2012). IT Service Management Process Improvement based on ISO/IEC 15504: A systematic review. *Information and Software Technology*, 54(3), 239-247.
- Meyerson, B. S. (Producer). (2011, 2015-05-21). IT Spending History 1996 to 2010. Retrieved from <http://electronics.wesrch.com/wiki1879>
- Nicewicz-Modrzewska, D., & Stolarski, P. (2008). ITIL implementation roadmap based on process governance. *European University of Information Systems (EUNIS)*.
- Oehrlich, E., Mann, S., Garbani, J.-P., O'Donnell, G., & Rakowski, J. (2012). Assess Your Service Management And Automation Maturity (pp. 8): Forrester Research.
- Official-Site, I. (2011). ITIL® glossary and abbreviations. ITIL officialsite. Retrieved 2015-04-28 <http://os.itil.org/custom/glossaren/>
- Olsen, K., & O'Reilly, S. (2011). Evaluation Methodologies. 2011. Retrieved 2015-05-21 from http://www.iodparc.com/get_resource.html?resource_id=18
- Recker, J. (2012). *Scientific research in information systems: a beginner's guide*: Springer Science & Business Media.
- Ross, J. W., & Weill, P. (2005). A matrixed approach to designing IT governance. *MIT Sloan Management Review*, 46(2), 26-34.
- Stufflebeam, D. L. (2000). The methodology of metaevaluation as reflected in metaevaluations by the Western Michigan University Evaluation Center. *Journal of Personnel Evaluation in Education*, 14(1), 95-125.
- Stufflebeam, D. L. (2001). The metaevaluation imperative. *American journal of evaluation*, 22(2), 183-209.
- Svenning, C. (1996). *Metodboken: [samhällsvetenskaplig metod och metodutveckling: klassiska och nya metoder i informationssamhället: källkritik på Internet*: Lorentz.
- Team, C. P. (2010). CMMI for Services, version 1.3: Software Engineering Institute.

- Van Bon, J. (2011). *ITIL® A Pocket Guide-2011 Edition*: Van Haren Publishing.
- Van Bon, J., De Jong, A., Kolthof, A., Pieper, M., Tjassing, R., van der Veen, A., & Verheijen, T. (2008). *Foundations of IT Service Management Based on ITIL®* (Vol. 3): Van Haren.
- Ward, M., Gruppen, L., & Regehr, G. (2002). Measuring self-assessment: current state of the art. *Advances in Health Sciences Education*, 7(1), 63-80.
- Weill, P., & Ross, J. W. (2004a). IT governance on one page (pp. 15): MIT Sloan.
- Weill, P., & Ross, J. W. (2004b). *IT governance: How top performers manage IT decision rights for superior results*: Harvard Business Press.
- von Wangenheim, C. G., Hauck, J. C. R., Zoucas, A., Salviano, C. F., McCaffery, F., & Shull, F. (2010). Creating software process capability/maturity models. *Software, IEEE*, 27(4), 92-94.
- Yarbrough, D. B., Shulha, L. M., Hopson, R. K., & Caruthers, F. A. (2010). *The program evaluation standards: A guide for evaluators and evaluation users*: Sage Publications.