

Improving the Deployment of IT Service Management Processes: A Case Study

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Abstract. Many IT service provider companies are interested in using the ISO/IEC 20000 service management standard to demonstrate their ability to provide high quality IT services to customers. However, the deployment of IT service management processes may cause several challenges. The research problem of this study is: How to improve the deployment of IT service management processes? The main contribution of this paper is to present experiences from a case study that focused on evaluating the deployment of an incident management process and a service desk tool.

Keywords: IT service management, deployment, ISO/IEC 20000, process.

1 Introduction

Thousands of IT organizations worldwide are struggling with the deployment of IT service management processes. It is relatively easy to model the future state of the IT service process and define goals, benefits, inputs, outputs, activities, metrics for the process. A major challenge is how to deploy the service management processes into daily IT operations and ensure that employees really follow the process activities.

A poorly planned process deployment can cause a chaos in the IT organization leading to massive resistance to change, decreased customer satisfaction and losing key developers. The number of organizations interested in the implementation of IT service management processes is rapidly growing. Thus, the deployment of IT service management processes is an important and actual research target. In order to improve IT service operations, IT organizations typically use some IT service management framework. The most widely used IT service management framework is IT Infrastructure Library (ITIL) that has gained a status of a de-facto standard.

In the ITIL version 2, IT service management is divided into two sections: service delivery processes and service support processes. ITIL version 3 was

established to better address the service lifecycle thinking. The core books of the version 3 are Service Strategy [1], Service Design [2], Service Transition [3], Service Operation [4] and Continual Service Improvement [5]. We focus in this study on the deployment of service support processes, especially incident management.

The National Institute of Standards and Technology has estimated that software defects and problems annually cost around 60 billions the U.S. economy [6]. The rework in software projects (problem resolution and bug fixes) leads to higher software development and maintenance costs and higher prices for IT services and products. This causes an enormous challenge for IT organizations' service support processes. In addition to the ITIL framework, there are several standards and frameworks that can be used to design, implement and deploy IT service management processes.

ITIL is a set of best practices for IT service management but is not a standard. There are two versions of ISO 20000 Part 1 that describes mandatory (shall) requirements for IT service management: ISO/IEC FDIS 20000-1:2010 Part 1: Service management system requirements [7] and ISO/IEC 20000-1:2005 Part 1: Specification for service management [8]. ISO/IEC 20000-1:2005 Part 2: Code of practice for service management [9] provides more detailed explanation of requirements.

ISO/IEC TR 20000-3:2009 Part 3 [10] can be used to define the scope of ISO/IEC 20000 certification, for example, IT organization may certify one IT service used by one customer. DTR 20000-4 Part 4: Process Reference Model defines name, context, purpose, outcomes and requirements traceability with ISO/IEC 2000 requirements for IT service management processes. COBIT [11] is an IT governance framework developed for IT process management with a strong focus on control.

Previous studies on IT service management have mainly focused on how to implement service management tools and service support processes. The main objective of *incident management* is to restore normal service operation as quickly as possible and minimise the adverse impact on business operations. However, few studies have dealt with IT service incident management. These studies have examined, for example, statistical prediction of incident management lifecycle [12] and requirements for an incident management tool [13].

Problem management is a process of managing problems and errors. Problem management aims to find the root cause of incidents and define a corrective solution or a process improvement [14]. Sandusky and Gasser [15] have explored the information coordination in the problem management process. Additionally, Kajko-Matsson [16] has presented a corrective maintenance maturity model for problem management.

The goal of *change management* is to ensure that standardised methods and procedures are used for efficient handling of changes [14]. Change management consists of the following activities: change logging and filtering, categorization, impact and resource assesment, approval, scheduling, building, testing, implementation and review. *Configuration management* aims to account for all the IT

assets and configurations within the organisation and its services and provide accurate information on configuration items and their documentation to support all the other service management processes [14]. Ward et al. [17] discuss best-practice processes for change and configuration management developed by IBM for the CCMDB product.

Main goals of *release management* are to plan and oversee the successful rollout of software and related hardware [14]. Release management has been examined, for example, by Jansen and Bringkemper [18] who have investigated cost and value functions of release management. Kajko-Mattsson and Yulong [19] have defined a release management process model that integrates both vendor and acceptor sides. Sihvonen and Jäntti [20] present experiences from both patch management and release management.

Surprisingly few academic studies have examined the deployment of IT service management processes in IT service provider organizations. The study of Tan, Cater-Steel and Toleman [21] have identified six success factors in ITIL implementations: senior management support, project champion, relationships with tool vendors, change in corporate culture, project governance and execution and realisation of benefits. Similarly, a study of Pollard and Cater-Steel [22] considers top management support, training, virtual project teams, careful tool selection and use of external consults as key success factors in ITSM implementations.

1.1 Our Contribution

The main contribution of this paper is to

- explore the deployment of IT service management processes and tools in a Finnish IT service provider organization.
- provide lessons learnt from the deployment addressing challenges and problems.

The results of this study can be used by persons who are responsible for implementation or deployment of IT service management processes, IT quality managers, service managers, and customer service managers. The results can be used to support ITIL-based or ISO/IEC 20000-based process improvement work.

The rest of the paper is organized as follows. In Section 2, the research problem and methods are described. In Section 3, we describe the findings from interviews that focused on evaluating the ITSM process and tool improvement. Section 4 is the analysis of findings with lessons learnt. The discussion and the conclusions are given in Section 5.

2 Research Methods

The research problem of this study is: How to improve the deployment of IT service management processes? We used a case study research method with a single case organization to answer the research problem. According to Eisenhardt

[23], a case study is “a research strategy which focuses on understanding the dynamics present with single settings”.

Figure 1 describes the research settings of the case study. The unit of analysis in this study is an IT service provider organization that is implementing and deploying IT service management processes based on the ISO/IEC 20000 standard.

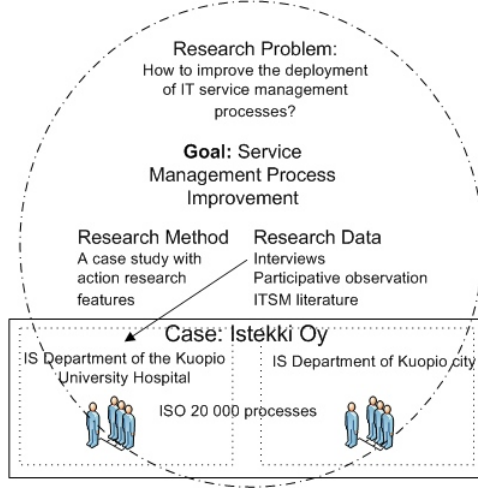


Fig. 1. The research settings of the case study

In addition to the ISO/IEC 20000 standard, we used the concepts of IT Infrastructure Library and Kotter’s 8-step Change Model [24] during the case study. The research problem was divided into 14 interview questions that followed the steps of 8-step Change Model.

2.1 The Case Organization and Data Collection Methods

Regarding the case selection, Istekki was a unique case because of ongoing ISO 20 000 certification process and service desk tool development process. Istekki Oy provides IT and medical technology services to two big customers: the city of Kuopio and Hospital District of Northern Savo. Istekki was founded in 2009 based on the merger of the IS department (Tekplus) of Hospital District of Northern Savo and the IS department of Kuopio city. Istekki started its operations in January 1st, 2010. The IT services of Istekki cover IT maintenance and support services, server and data center services, network and telecommunication services, ICT acquisition services, IT consulting, project and introduction services. Currently, Istekki has 160 full-time employees. The volume of support requests per year is around 35 000 in Tekplus. The case study work was carried out with Tekplus unit.

The case organization’s operations were divided into customer support (19 employees), application support (11 employees), technical support (21 employees),

teletechnology (8 employees) and hardware acquisitions (2 employees). When this study began, there were three different ongoing improvement projects that have effects on customer support: an ISOQ project focusing on the ISO/IEC 20 000 certification, a Plussa project focusing on the improvement of the customer support processes and Feeniks project focusing on the service desk tool development.

In order to increase the quality of the case study, case study researchers can use three important principles of data collection [25]: 1) using multiple sources of evidence, 2) creating a case study database and 3) maintaining a chain of evidence. The following sources of evidence were used:

- Interviews focusing on the evaluation of process and tool improvement
- Participative observation (process improvement meetings in May-June)
- Documentation (ISOQ project plan, Plussa project plan, Feeniks system specification)
- Feeniks tool demo by an incident manager (30th June, 2009)
- Support process interfaces training for support process managers (25th August, 2009)
- Experiences on Feeniks project (seminar presentation on 9th September, 2009)

Interviews were conducted for 9 persons from 3 different units: customer support, application support, and technical support. Our goal was to interview around 10 persons. The resistance to change was expected to be highest in technical support where the deployment of incident management tool had started 8-9 months later than in customer support (January 2009). Interviewees were selected with random sampling. Some interviewees cancelled the interview by email and some refused to come without any notice. These persons were replaced with new interviewees.

2.2 Data Analysis

In the data analysis a within-case analysis technique [23] was used. The main purpose of within-case analysis is to examine case carefully as stand-alone entity before making any generalizations. The interview findings were collected to a summary report that described the experiences from the deployment process. A summary did not include interviewees' names and information how many persons were interviewed from each department. A summary report was submitted to an incident manager of the case organization. The summary was considered as a useful document that would help in the future process improvement work. Additionally, we used a research diary where the content of each meeting was recorded.

3 Improving the Deployment of IT Service Management Processes

KISMET (Keys to IT Service Management Excellence Technique) model was used as a roadmap for incident management process improvement work. The

KISMET model has been developed in the IT service management research projects of the University of Eastern Finland. The model consists of the following phases:

1. Create a process improvement infrastructure
2. Perform a process assessment
3. Plan process improvement actions
4. Improve/Implement the process based on ITSM practices
5. Deploy and introduce the process
6. Evaluate process improvement
7. Continuous process improvement

In this paper, the findings from the phase six (Evaluate process improvement) of the KISMET model are presented. The phases 1 to 5 are described in our previous research paper. Evaluation of process and tool improvement focused on service support processes, especially on incident management, and the deployment of the incident management tool, Feeniks. Next, the key findings are described.

3.1 Change Vision and Sense of Urgency

Questions: “When did you hear about ISO/IEC 20 000 project and Feeniks (Service Desk tool) project? Did you understand the connection between projects and their impact to your work tasks? Did you get enough information about projects? Did you get enough time to process information?”

Interviewees reported that they had heard about projects first time in 2008. The projects, especially ISO/IEC 20 000, were considered as distant. Some interviewees did not know how the ISO/IEC 20 000 project and Feeniks were related to each other. Many felt that the ISO/IEC 20 000 project does not affect to their jobs at all. The role of the service desk tool Feeniks was much clearer for interviewees.

According to our observations, interviewees were not very much interested in the ISO/IEC 20 000 standard and somebody had doubts on whether the standard is needed in the governance of Tekplus operations.

3.2 Coalition for Change

Questions: “Do you feel that the people who have carried out the change (management) have acted as a consistent group? Has the need for change and vision been clearly communicated to employees?”

The need for change and vision were understood quite well by interviewees but the ISO/IEC 20000 standard was considered distant. According to interviewees management had presented the change mainly as a unified group (employees had seen some managers having doubts on the benefits of change).

There was a general feeling that the old ticket system required changes and that the new system was built to correct the bottlenecks of the old system. People who were still waiting for deployment of Feenix had doubts whether the system results in any improvements to the workflow. Some were afraid of that the new system just disturbs the workflow.

3.3 Informing and Communication

Questions: “Has there been enough communication and informing between the change implementation team and employees? Do you know how to submit development ideas regarding the Feeniks tool?”

None of the interviewees reported that the communication and informing would not work. In general, the change was considered as "a thing that needed to be done". Regarding development ideas, interviewees knew to whom they should be submitted and also were confident that they will be analyzed and implemented.

3.4 Defining Milestones and Removing Barriers

Questions: “Have ISO/IEC 20000 project and Feeniks project been implemented in small steps enough? Are you aware of milestones? Have you been rewarded for achieving milestones?”

Interviewees considered the phased deployment of Feeniks as milestones. Some answers indicated the need for smaller milestones. However, part of the group were satisfied with the implementation. In team meetings, management had provided employees with positive feedback on implementing change-related tasks. New processes introduced in ISO/IEC 20 000 standard were considered challenging and interviewees stated that people might use old procedures instead of new procedures.

The incident manager of the case organization reported that the deployment of ISO/IEC 20000 processes was implemented in two main phases. The first phase included Service Management System, Service Level Management, Incident Management, Problem Management, Change Management, Configuration Management, Business Relationship Management and IT Financial Management (Phase 1.5). The second phase focused on Continuous Service Improvement, Management of New and Changed Services, Service Reporting, Release and Deployment Management, Capacity Management, Availability and Continuity Management, Security Management and Supplier Management.

3.5 Training

Questions: “Are you satisfied with the training (ITSM) you received? Would you have needed more specific or more general training? Do you feel that it is justified to change the names of existing business terms because the standard might use different types of terms? What do you think about the benefits of self-training tests for IT service management?”

Those interviewees who had received training were satisfied with the training. As expected, those who had not received any training on ITSM processes or Feeniks tool were not satisfied and were skeptic on the future trainings. Many interviewees mentioned the impact of summer holidays on learning. They felt that they forget the learnt issues during holidays. Some interviewees would have needed more inter-department training (between customer support, application support, technical

support departments) in addition to trainings related to employees' own tasks. These were considered useful for providing a clearer picture on how service requests move from one department to another and a "big" picture on the Feeniks tool. Additionally, the inter-department meetings were considered as a good method to share user experiences on Feeniks and process changes.

Interviewees saw the the terminology changes surprizingly positively. They had understood that unified terminology enables people to communicate and work more effectively. Self-training tests were generally considered as a positive thing. Some interviewees doubted whether this type of tests are necessary and whether they have time to execute tests. Interviewees told that employees should decide by themselves whether to do the test or not. Self-learning material and Finnish ITIL tests could increase the employees ITIL knowhow in a motivating way. Test results should remain confidential and should not be submitted to management.

4 Analysis

In the analysis phase of this study, we summarized case study findings in the form of lesson learned. A source for each lesson is presented in parentheses (I= Interviews, O= Observation, D= Documentation, ST= Seminars and trainings organized by the research group).

Lesson 1: Clarify employees the role of the ISO/IEC 20000 standard in service management (I, O, ST). The typical challenge in any organization is that most employees are not interested in the quality frameworks and standards and are not aware of their content or benefits. The management of the IT organization must frequently inform employees of IT service management benefits and quick-wins and tell how a single person's work is related to the big picture of service management. We also noticed that employees seem to understand the improvement of the ITSM tool better than improvement of ITSM processes.

Lesson 2: Process managers play a key role how successful deployment of the ITSM processes shall be (O, I). Top management cannot execute organizational changes, such as moving from a product-oriented or project-oriented culture to service-oriented culture, without the help of active process managers. The process managers that we met during the case study were all highly motivated to process improvement work and actively participated in the ITSM trainings. According to observations and interviews, process managers and management acted as a unified and consistent group in implementing and marketing the change. It is not enough that management tells how IT employees should change their procedures and workflows. Management should also show that they are willing to change. A concrete example is that each process manager should pass the ITIL Foundation course.

Lesson 3: Informing and communication decreases resistance of change towards IT service management (I). It is important to use multiple communications channels to ensure effective informing and communication on IT

service management issues. Potential communication channels are organisation's newsletters, intranet sites, posters, team meetings and seminars [26]. In our case, informing and communication seemed to work well although the first seminars on IT service management were considered as too abstract by some interviewees. Interviews indicated that longer the time between the first presentation of change and change actions, more sceptic employees become. Frequent informing and open communication may remarkably decrease the resistance of change.

Lesson 4: IT service management trainings should be organized in small groups and should emphasize process interfaces (ST, I). Smaller groups in IT service management training result in more questions and discussions. It is recommendable that employees should not skip Awareness level trainings and should not go directly to Foundation level. Otherwise, the training might be considered too difficult with a dozens of new concepts. Trainings create overall awareness and understanding of the ITSM framework and terminology [26]. The number of ITIL certificates and trainings can be used as a metric to measure the learning and the competence of IT service management. Another important thing regarding ITSM process trainings is that they should focus more on lifecycle thinking by explaining how processes interact with each other (e.g. how incidents may lead opening a problem, how a problem is solved by sending a Request for Change for change management). Process interfaces are the points where the most information gaps exist.

Lesson 5: Understanding the key IT service management concepts is very important (ST, O, I). Understanding the key concepts (service requests, incidents, problems, requests for change, release packages) plays very important role in any ITSM improvement project. ITSM trainings should provide participants with practical examples from real life. Fortunately, many IT service management companies organize company-specific ITSM trainings where one can freely discuss about the current challenges and problems and the relation between existing business concepts and ITSM concepts. To our surprise, interviews showed that the attitudes towards new terminology were very positive. It would be good to create memos from concept-related discussions to share the knowledge to other teams and units that are very likely discussing the same things but perhaps in the different service context.

Lesson 6: Processes introduced in ISO/IEC 20 000 standard were considered challenging (I). The ISO/IEC 20 000 IT service management standard describes auditable requirements for 12 key processes. For many organizations, a part of these processes are completely new, for example, problem management, and a part have existed but perhaps with a different name. One reason why ISO/IEC 20 000 standard is considered challenging is that solving a customer support request might require an activity chain where 7-10 different processes participate in. Employees shall very likely be confused when a consultant goes through the whole lifecycle of a support request. The role of the ISO/IEC 20 000 standard in relation to IT Infrastructure Library should be explained already in IT service management Awareness trainings. However, the most employees do

not need formal ISO/IEC 20 000 Foundation training but a compact information package that also explains the benefits of using the standard.

Lesson 7: Use milestones and a phased approach in the deployment of ISO/IEC 20 000 standard and a service desk tool (D, I). The case organization used a phased approach in the deployment of ISO/IEC 20 000 standard and a service desk tool. The deployment of ISO/IEC 20 000 standard was divided into two main phases. It might be advisable to use more phases (3-4) because the process implementation and deployment may take years. The deployment of a service desk tool was phased according to 3 teams. Those teams that have to wait for a longer time to deployment need special care and frequent information on the deployment issues to decrease the number of rumours.

Described lessons learnt above are not presented in a priority order, nor in a chronological order. The interview findings were reported as a case study summary report describing the experiences from the deployment process. The summary report was later used in a Master's thesis work at the School of Computing [27]. A summary did not include interviewees' names and information how many persons were interviewed from each department. Thus, the management of case organization did not know who actually participated in interviews. A summary report was submitted to an incident manager of the case organization. The research team had worked before interviews with the incident manager to define the incident management process. She considered the summary report as a useful document that would support the future process improvement work by highlighting the issues that need to be taken account in the deployment of other ISO/IEC 20000 processes.

5 Discussion and Conclusions

This paper aimed to answer the following research problem: How to improve the deployment of IT service management processes? The main contribution of this study was to explore the deployment of an incident management process and a service desk tool in a IT service provider organization in Finland and to provide lessons learnt from the deployment. Interviews that collected feedback on the deployment were used as a main data collection method. Additionally, we used participative observation, documents, and seminars and trainings as data sources.

Our study resulted in the following key findings: 1) employees do not see clearly the benefits of the ISO/IEC 20000 standard, 2) IT service management trainings should focus more on the process interfaces and should be organized in smaller groups, 3) understanding a key ITSM concepts is crucial and 4) the deployment of ISO/IEC 20000 requires a phased approach with smaller milestones.

Every case study contains certain limitations. First, data were collected by using qualitative research methods from one case organization. A number of interviewees could have been larger and could have included also people from management side. Second, we cannot generalize the results of a single study to other IT service provider organizations but our study resulted in a valuable information on the deployment of ISO/IEC 20000 processes. Third, the case

organization was not randomly selected but selected from the pool of the project's industrial partners. Thus, we had an easy access to the case.

To conclude, the implementing and defining of ISO/IEC 20000 processes seems to be much easier than the transition of the process to the daily work practices. More academic studies are needed to explore the deployment of the ISO/IEC 20000 standard in IT service provider organizations.

Acknowledgment. This paper is based on research in KISMET and MaISSI projects funded by the National Technology Agency TEKES, European Regional Development Fund (ERDF), and industrial partners.

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