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Deployment of IT an service management system

Uponor Corporation

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ABSTRACT

This Bachelor's thesis was made for the Uponor headquarters, which is located in Vantaa. The thesis deals with the deployment of IT service management software that is provided by BMC Software Inc. The objective of the study was to configure and launch the software at Uponor and examine the reasons why that particular software was selected to be deployed.

The study was carried out as a project. The first phase of the project is now completed and the second phase has already been started. The project included a small team which took a course by BMC Software about the deployment and configuration of the system.

This study showed how significant role the IT service management has in companies nowadays. The rapidly changing markets create problems to the traditional hierarchies of the companies. This leads toward more flexible and less hierarchical organizations. IT service management processes and software were developed against this background.

Key words: ITSM, ITIL, BMC Remedy, incident, service request

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TIIVISTELMÄ

Tämä opinnäytetyö tehtiin Uponorin pääkonttorilla Vantaalla. Työ käsittelee IT service management -ohjelmiston käyttöönottoa. Tämä ohjelmisto on BMC Software Inc. -nimisen yrityksen toimittama. Työn tavoite on määrittää asetukset ja ottaa käyttöön IT service management -ohjelmisto Uponorilla ja tutkia syitä ohjelmiston käyttöönottoon.

Tämä työ tehtiin projektina. Ensimmäinen vaihe on nyt valmistunut, ja toinen vaihe on aloitettu välittömästi. Projektissa oli mukana pieni tiimi, joka kävi BMC Softwaren järjestämällä kurssilla liittyen ohjelmiston käyttöönottoon ja konfiguraatioon.

Tämä työ osoittaa, kuinka merkittävässä osassa IT service management on nykypäivänä yrityksissä. Nopeasti muuttuvat markkinat luovat ongelmia perinteisille yrityshierarkioille. Tämä johtaa joustavimpiin ja vähemmän hierarkkisiin organisaatioihin. IT service management -prosessit ja -ohjelmistot luotiin tätä taustaa silmälläpitäen.

Asiasanat: ITSM, ITIL, BMC Remedy, incident, service request

CONTENTS

GLOSSARY AND ABBREVIATIONS

API	Application Programming Interface, specification intended to be used as an interface by software components to communicate with each other.
ADDM	Atrium Discovery and Dependency Mapping, used to discover automatically physical and virtual assets and applications - and relationships between them.
BSC	Uponor Business Solutions Centre
CMDB	Configuration Management Database, a database that is used to store configuration records. Databases store attributes of configuration items and relationships with other configuration items.
DEV, QA, PROD	Development, Quality Assurance, Production environments.
Incident	An unplanned interruption to an IT service or reduction it IT service quality.
Incident Management	Incident Management tries to ensure that the service will be restored to original state as quickly as possible and the business impact is minimized.
ITSM	IT Service Management, the implementation and management of quality IT services that meets the needs of business.
ITIL	A set of best-practice publications for ITSM.
KPI	Key Performance Indicator is a type of performance indicator.
Process	A structured set of activities designed to accomplish a specific objective. A process takes one or more defined inputs and turns them into defined outputs.

RFC	Request For Change, a formal proposition for a change to made.
Service Request	A formal request from a user for something to be provided. Service requests are usually provided by service desk members.
SLA	Service Level Agreement, an agreement between IT service provider and a customer that defines e.g. service level targets and specifies responsibilities of the IT service provider.
Work Order	A formal request to carry out a defined activity.

1 INTRODUCTION

What is the purpose in IT service management? IT service management can make a difference to a whole organization. It can make the business processes more efficient and effective. There are many reasons why. It makes more reliable IT services to support business critical services and makes cost reductions to IT service delivery, just to name a few advantages. It also improves the current quality of IT services. These are only a few reasons why many companies are intrigued about the subject.

Uponor is one of the leading providers of plumbing and indoor climate systems in Europe and North America and they are also the market leader of infrastructure pipe systems in the Nordic countries. Today Uponor has operations in around 30 countries, with 10 manufacturing facilities in 4 European countries and in the United States. Uponor's products are sold in more than 100 countries. The IT departments have been struggling with issues that multinational operations bring. This is mostly because different countries have different rules and policies.

This Bachelor's thesis is examining the benefits of launching an IT service management suite. The aim is to improve the IT services in the Uponor Corporation and investigate whether it succeeded. The scope of the thesis is to launch incident management and service request management modules and also investigate the benefits that an IT service management suite brings. The target audience is mostly end-users but also IT staff members.

This is an on-going project in Uponor so the development will continue after the objectives of the first phase are reached. It is done in cooperation with Uponor Group IT, Uponor Business Solutions and Uponor Suomi.

The first chapter introduces the Uponor Corporation. Material has been gathered from the Vice President of IT. The next chapter is some basic theory about IT service management. After that the BMC Remedy IT Service Management Suite is introduced along with the BMC Company. The next topic is configuring Uponor's company setup and creating needed setups and service requests in this case. After that there is some consideration of future steps and conclusion of the

case.

2 UPONOR IT

Uponor Group IT and Uponor Business Solutions Centre are located in Vantaa, Finland. Uponor Group IT supports and coordinates all other IT functions when required. It defines global standards and provides global services from data centers, handles various tasks such as supporting AD, Exchange, SharePoint and manages also all the global agreements with companies e.g. Microsoft, Dell, IBM.

Uponor Business Solutions provides support, maintenance and development services together with both internal partners (local IT and business key users) and external partners to core Business Applications such as Oracle eBS, Oracle Business Intelligence, Hyperion Financial Management and PTC Windchill Product Management. Uponor Business Solutions also defines standards of further development of the solutions under agreement. (Juuso Welling 2012. Challenges for Global Services)

Figure 1 helps to explain the Business Solutions Centre (BSC). It is a service organization, which helps the business in fulfilling its objectives by supporting, maintaining and developing the U2 solution. The U2 solution i.e. Foundation of Operational Excellence is a set of harmonized processes. Oracle eBs is used as common platform supporting the use of those processes, harmonized master data and correctly trained users. (Juha Rättäri 2012. Uponor – ERP deployment and BSC)

FIGURE 1. Business Solutions Centre described (Juha Rättäri 2012. Uponor – ERP deployment and BSC)

2.1 Uponor IT in general

Uponor Group IT is a relatively small department. It only contains a few key persons and they are providing support and guidance in IT related matters throughout Uponor.

Right now Uponor Group IT handles the user management of all the Nordics with addition of a few other countries and the data center that is located in Finland. There are approximately 1400 mail boxes and 400 mobile users to maintain. An other big region to maintain in Europe is the Central European countries, which are maintained in Germany. It contains about 1600 mail boxes and 220 mobile users. USA's and Canada's footprint is a bit smaller and they contain 500 mail boxes and 120 mobile users. Figure 2 explains the hierarchy of IT support inside Uponor. Figure 2 is a cross-section of different IT departments and their areas to maintain. (Juuso Welling 2012. Challenges for Global Services)

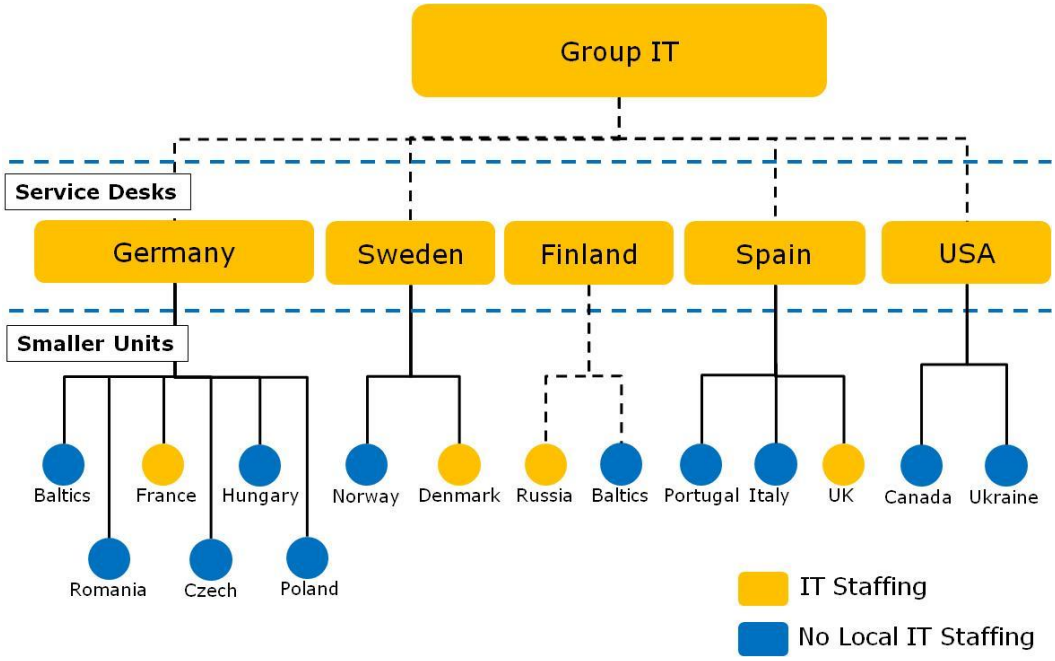

FIGURE 2. Cross-section of Group IT (Juuso Welling. 2012. Current service desk landscape – IT services)

The Uponor Group IT has had quite big projects in recent years. Between 2005 and 2012 Group IT has executed numerous large scale projects such as setup of the corporate MPLS network, migration of multiple Windows domains into single Corporate Active Directory Domain, mail migration to Microsoft Exchange and deployment of automated software deployments using Microsoft SCCM. Subsequent upgrade projects like upgrade of Microsoft Exchange (2011) and the change of corporate network provider (2011 – 2012) were also executed. Additional projects are also in the pipeline.

Uponor Business Solutions Centre has been busy in 2012 as well. During spring 2012 Oracle E-Business Suite hosting moved from Austin, USA to Helsinki. Uponor BSC decided to change the approach by terminating the service from Oracle OnDemand to start hosting its own servers. This approach gives Uponor more options to further improve efficiency of eBS solutions. Furthermore, Uponor has more control of the costs of running and maintaining the solution. At the same time the amount of internal responsibility and work has grown but is still at a very manageable level. (Juuso Welling 2012. Challenges for Global Services)

One of the important projects where Group IT along with BSC has been involved is BMC Remedy Implementation. This means a new global service desk tool for the whole Uponor Corporation. It replaces the old c.Support incident management. In the first phase the Incident Management and Service Requests are deployed. The next phase is Atrium Discovery tool and following is also Change Management and additional modules of BMC Remedy.

2.1.1 Development of IT service management in Uponor

In 2001 Uponor began defining a new strategy to strengthen the brand, gain growth and become more effective in its operations. In 2003 the strategy named "One Unified Uponor" was defined. The objectives were to deploy common business processes and integrated IT platform (ERP solution) to improve the efficiency of the business. Enterprise resource planning (or ERP) means that systems are integrated across the entire organization, embracing finance/accounting, manufacturing, sales and services etc. The ERP solution was meant to ensure the efficiency and stability of Uponor.

In the year 2004, U2 solution project kicked off. With the decision to go ahead, a cross-organizational programme team was put together to identify the best practices from across the company and to design and build the Core Model that met the needs of business. By 2006 the design and building phases of this Core Model were completed. The first country was selected for rollout and Uponor Business Solutions was formed to maintain, support and develop the new Oracle ERP.

The approach chosen was to establish a competence centre (Uponor Business Solutions) with skillful people responsible for the eBS solution. Subsequently, ITIL v2 based processes and tools were selected and deployed with predefined distinct KPIs through the support organization. Solution hosting was given to Oracle OnDemand and it stayed that way until spring 2012. Application Management Services were given to an external partner in February 2007. Uponor BSC has the responsibility to coordinate and to drive all the activities around

support, maintenance and development. (Juuso Welling 2012. Challenges for Global Services)

The traditional IT organization had the same agenda but it required a different approach. Uponor Corporation has spread to two continents and many different countries in Europe. The corporation has different IT departments working in various countries and they have multiple IT systems to maintain. Departments have their own IT solutions and supporting staff. There is global, regional and local support for different tasks. Uponor is working on improving the harmonization to set up the direction inside the corporation, build a basic common infrastructure and to start adopting first unified processes, models and reporting of KPIs.

The purpose of the “Service desk Solution” project is to run reiteration on IT services and organization. The objective of the project is to further harmonize IT services and to improve end user experience on receiving services from the IT organization.

3 IT SERVICE MANAGEMENT

In recent decades IT development has had a major impact on companies worldwide. Organizations are able to bring their products and services to markets more quickly. Traditional hierarchies in organizations find it difficult to respond to rapidly changing markets. This phenomenon leads towards less hierarchical and more flexible organizations. Similarly, emphasis within organizations has shifted from vertical functions or departments to horizontal processes that run across the organization, also decision making authority is increasingly granted to personnel at a lower level. The IT Service Management (ITSM) processes were developed against this background. (Office of Government Commerce 2005, 1.)

3.1 ITSM fundamentals

ITSM can be summarized briefly as the implementation and management of quality IT services that meet the needs of the business. ITSM is performed by IT service providers through an appropriate mix of people, processes and information technology. (Crown 2011. English 2011 Glossary)

Until recently the infrastructure of IT was limited to providing support services. It was in some ways equated to office materials: important and essential for the proper functioning of the organization but not much more. However, today this has changed, and IT services represent a substantial share of business processes. (Osiatis 2013. IT Management Fundamentals)

The IT Service Management processes are best understood against the background of the concepts of the organizations, quality and services which influenced the development of the discipline. Familiarity with these terms also helps to understand the relations between the elements of the IT Infrastructure Library (ITIL).

Organizations are nowadays often greatly dependent on their IT services. IT services are not expected only to support the organization but also to present new alternatives to implement the objectives of the organization. The high expectations of customers of IT services force change over time and require constant review.

Providers of IT services have to consider the quality of the services they provide and focus on the relationship with their customers.

Services are provided through interaction with the customer. Services are assessed when they are provided. The quality of a service depends to some extent on the way in which the customer and service provider interact. The customer and provider may still make changes when the services are being delivered. The outcome is largely dependent on their personal experiences and expectations. (Office of Government Commerce 2005, 3.)

The quality of a service is measured by how the service fulfills the requirements and expectations of the customer. The supplier should continuously assess how the service is experienced and what the customer expects from the future in order to provide more quality. The result of the assessment can be used to decide whether the service should be modified, if the price should be changed or if the customer should be provided with more information. (Office of Government Commerce 2005, 4.)

> *Quality is the totality of characteristics of a product or service that bear on its ability to satisfy stated and implied needs (ISO-8402).*

An organization is a form of cooperation between people. One of the most important things is a shared concept why it is worth cooperating in the organization. Every organization has some objectives where they aim. Usually they are visions, missions, objectives and policies, which mean that appropriate activities have to be undertaken.

Processes are a group of activities and they usually show what has to be done, what the expected result is, how we measure if the processes deliver the expected results and how the results of one process affect those of another process. The questions in Figure 3 arise all the time in the process-based approach of a typical IT Service Management. (Office of Government Commerce 2005, 16.)

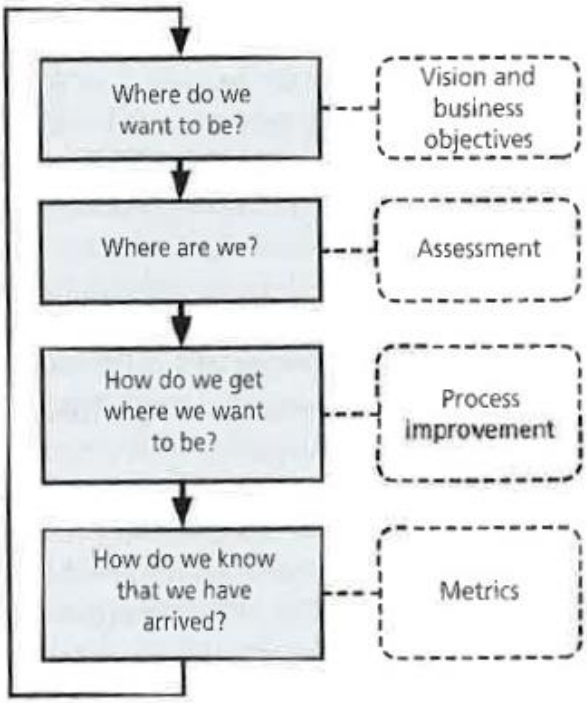

FIGURE 3. A simple process improvement model. (Office of Government Commerce 2005, 16.)

A process is a series of activities which are conducted towards a defined objective. When studying processes, the objective of the process and the relationships with other processes is very important. A process is a series of activities that are carried out to convert input into an output. Input and output can be associated to each of the processes with quality characteristics and standards to provide information about the results that are obtained by the process. This produces chains of processes which show what goes into the organization and also what the result is. There are also monitoring points in the chains which monitor the quality of the products and services provided by the organization.

If the result of a process meets the defined standard then the process is effective and if the activities in the process are carried out with the minimum required effort and cost, then the process is efficient. The aim is to use planning and control to ensure that the processes are effective and efficient. (Office of Government Commerce 2005, 16.)

Most businesses are hierarchically organized. Departments are responsible for a group of employees. Departments are generally dependent on IT services. Figure 4 shows a basic example of the combinations of the different activities in a process. The service desk processes every request and then forwards them to a different group of specialists. (Office of Government Commerce 2005, 17.)

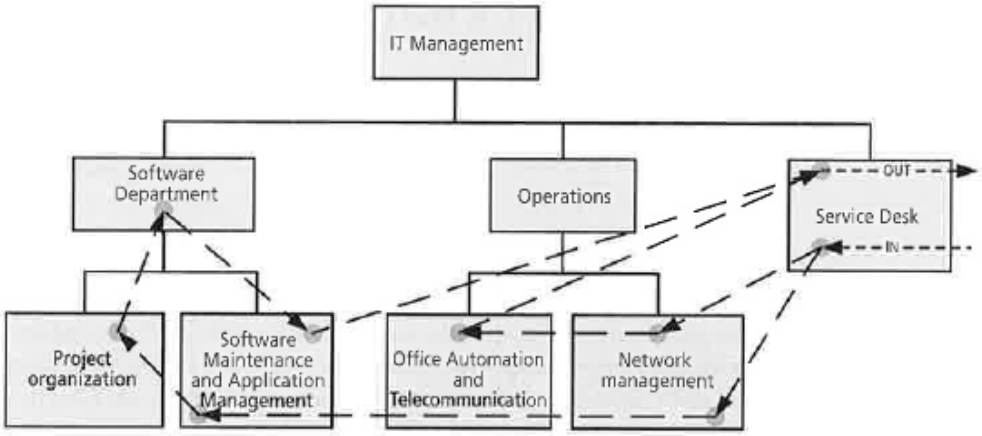

FIGURE 4. Processes and departments. (Office of Government Commerce 2005, 19.)

The objective of IT Service Management processes is to contribute quality IT services. With a process-focused approach the situation within an organization has to be considered (policies, size, etc.).

ITIL, the best known approach to IT Service Management, describes the relationships between the activities in processes. They are relevant in any organization. This provides a framework for exchanging feedback between organizations. This approach also provides a framework that supports learning from the experience of dynamic organizations. (Office of Government Commerce 2005, 17.)

3.1.1 Introduction to ITIL

IT Infrastructure Library (ITIL) is a set of best practices guidance for ITSM. ITIL was created in recognition of the fact that organizations are becoming more and

more dependent on IT to fulfill their corporate objectives. This increasing dependence has resulted in a growing need for IT services which meets the requirements and expectations of customers' needs. ITIL focuses on the quality of IT services delivered, from both business and a customer perspective. These are only a few of the reasons that ITIL has gained a worldwide success and has contributed to its prolific usage.

In overall life cycle of IT products, the operations phase takes about 70 to 80 percent of the overall time and cost, the rest of the resources are spent on product development (or procurement). Effective and efficient ITSM processes are essential to the success of IT. This applies to any kind of organization, public or private, small or large with internal or outsourced IT services. In all of these cases, the service must be reliable, consistent, high quality and the cost must be acceptable.

ITIL provides a common framework for all the activities of the IT department. These services are divided into processes which, when used together, provide an effective framework to make ITSM more mature. Each of these processes covers one or more tasks of the IT department, such as deploying new equipment or supplying and supporting the services. This process approach makes it possible to describe the ITSM best practices independently of the structure of the organization. (Office of Government Commerce 2005, 21.)

ITIL was published in the UK between 1989 and 1995 by Her Majesty’s Stationary Office (HMSO) on behalf of the Central Communications and Telecommunications Agency (CCTA). These offices are nowadays attached to the Office of Government Commerce (OGC). A second version of ITIL was published between 2000 and 2004 as a set of revised books. The second version became universally accepted and is now used by thousands of organizations in many countries as the base of effective IT service provision. A third version of ITIL consists of five core books covering the service lifecycle together with the Official Introduction. (itSMF 2007. An Introductory Overview of ITIL)

ITIL presents the best practices consistently. The ITIL books describe how the processes that have already been identified can be optimized and how the

coordination between these processes can be improved. Formalizing the processes is also an important issue and ITIL books also explain this. Finally, the ITIL books help to define the objectives and to determine the required effort and they also provide a reference to relevant terminology. (Office of Government Commerce 2005, 21.)

Figure 5 shows the set of ITIL best practices publications. The service management processes at the center of the ITIL framework, are divided into the two core areas of Support and Delivery. (Office of Government Commerce 2005, 25.)

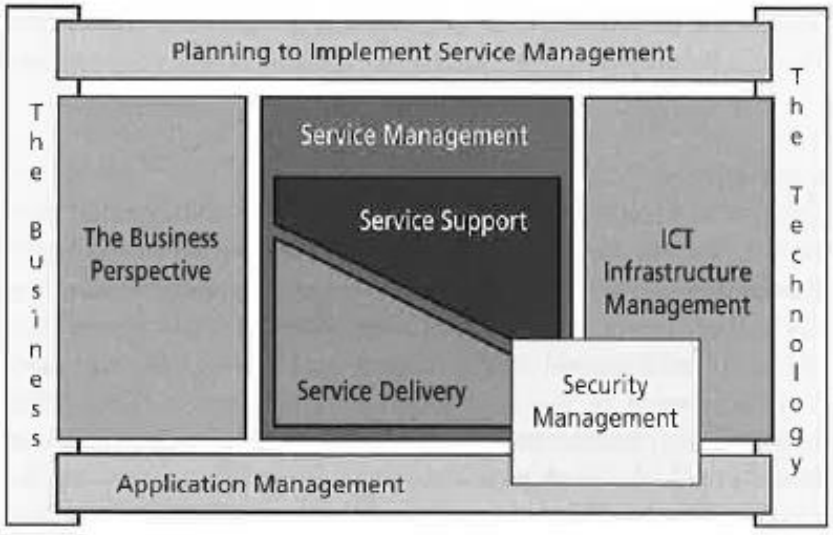

FIGURE 5. The ITIL publication framework. (Office of Government Commerce 2005, 25.)

As indicated above, service support and service delivery are considered to be the heart of the ITIL framework for IT Service Management. Service delivery describes the services that the customer needs to support their business and how they are provided. The objective of the surrounding service level management is to implement the agreements of the customers' type and quality of IT services to be delivered. Service level management requires information about the customer needs, financial resources available and the facilities provided by the IT organization.

Service support describes how the customers and users gain access to the appropriate services to support their activities and how those services are supported. This work covers the following subjects: service desk, incident management and service requests.

The service desk is the initial point of IT contact in an organization. Previously it was referred in ITIL as a help desk. The major task of help desk was to record, solve and monitor problems. It is possible to extend the help desk's role to receive for example RFC's. It can carry out activities belonging to several processes.

Incident management processes aim to resolve the incident and restore the provision of services quickly. Incidents are recorded so they can be inspected later and the quality of records determines the effectiveness of a number of other processes. (Office of Government Commerce 2005, 26.)

3.1.2 ITIL Version 2 & 3

Each of ITIL publications addresses part of the framework. Each provides either an outline description of what is required to organize IT Service Management or a definition of the objectives, activities, inputs and outputs of each of the processes needed in an IT organization.

However, ITIL does not prescribe how these activities should be implemented. This will be different in every organization. ITIL is not a method; it offers a framework for planning the essential processes, roles and activities instead. It indicates the links between them and tells what lines of communication are needed.

The ISO 9000 series are part of the ITIL philosophy as being based on quality systems. ITIL supports quality systems with a clear description of the processes and best practices in ITSM. The time required to obtain ISO certification can be reduced significantly because of this.

Originally ITIL was divided to a large number of books, each based on a specific area of the maintenance and operation in IT infrastructure. Nowadays the material

can also be found in internet and there are many different courses in the market that teach ITIL. Books describing service support and service deliveries are considered the core of ITIL. There are about 40 other books on different subjects that are related to IT Service Management. (Office of Government Commerce 2005, 25.)

The main difference between ITIL V3 and V2 is the new service lifecycle structure. ITIL V3 is best understood as seeking to implement the feedback loops by arranging the processes in a circular way. The old structure of service support and service delivery is replaced by a new one. It consists of five ITIL V3 core disciplines: service strategy, service design, service transition, service operation and continual service improvement.

Service strategy ensures that every element of the service lifecycle focuses on customer outcomes and relates the companion processes that follow. Service design provides guidance producing and maintaining IT policies, architectures and documents for the design of appropriate and innovative IT infrastructure service solutions and processes. Service transition provides guidance and process activities for transition of services in the operational business environment. Service operation introduces, explains and details delivery and control activities to achieve operational excellence on a day-to-day basis. Continual service improvement focuses on the process elements involved in identifying and introducing service management improvements. (Rick Lemieux 2009. The top five question about ITIL Version 3)

3.2 BMC Remedy IT Service Management Suite

More than 25,000 IT organizations in over 120 countries rely on BMC Software. BMC Software handles their business services and applications across a distributed mainframe, virtual and cloud environment. With the leading application solutions BMC helps customers cut costs, reduce risk and achieve business objectives. For the Q4 2011, BMC revenue was approximately $2.2 billion. (BMC 2010. BMC Remedy IT Service Management Suite)

3.2.1 Introduction

BMC Remedy IT Service Management Suite is designed to remove complexity and costs when using ITSM inside the company. It provides visibility into the resources, activities and priorities required to deliver and support business services. It is an ITIL-certified suite and it includes many different areas. There are industry-leading applications for service desk, asset and configuration management, change and release management and so on. BMC Remedy includes fully integrated mobility and the system is cloud-enabled.

BMC Remedy IT Service Management Suite is available in premise and on demand. In Uponor's case it is on demand. It means that it provides all of the benefits of BMC's industry-leading software while eliminating the cost of maintenance, administration and infrastructure through a SaaS (Software as a Service) delivery model. Uponor has also bought licensing to BMC Atrium CMDB which means that they will start using ADDM for easier asset management. Everything is powered by BMC Remedy Action Request System (AR System) which is the industry's leading service process management platform.

BMC Service Desk is the leading incident and problem management solution. It is based on ITIL and it cost-efficiently reduces the number of incidents handled, improves resolution times and prevents future incident from happening. All this will improve the IT staff efficiency. (BMC 2010. BMC Remedy IT Service Management Suite)

3.2.2 Architecture of Remedy ITSM Suite

The BMC Remedy AR System uses a graphical user interface, which means that IT administrators can easily extend the out-of-the-box functionalities inside the application without any programming. The user has limited options in the form of workflow objectives and if the user knows what each form does, building can be started. The studying of workflow objectives is highly recommended since the same task or requirement can be achieved in different ways.

The system provides a single point of integration to third-party applications and tools through fully open API, web services and direct SQL access. For some more advanced modifications the user is required to have a basic knowledge of SQL language and some HTML.

AR System has a flexible Multi-Tier / Multi-Level architecture. It is a server - client model in which all the calls make several clients go through the server and make necessary changes to the database. There are several ways to use the client. In Uponor's case the web-based client is used. The company also has access to the native user tool but only in DEV environment.

Figure 6 shows the relationship between different tiers and interoperability.

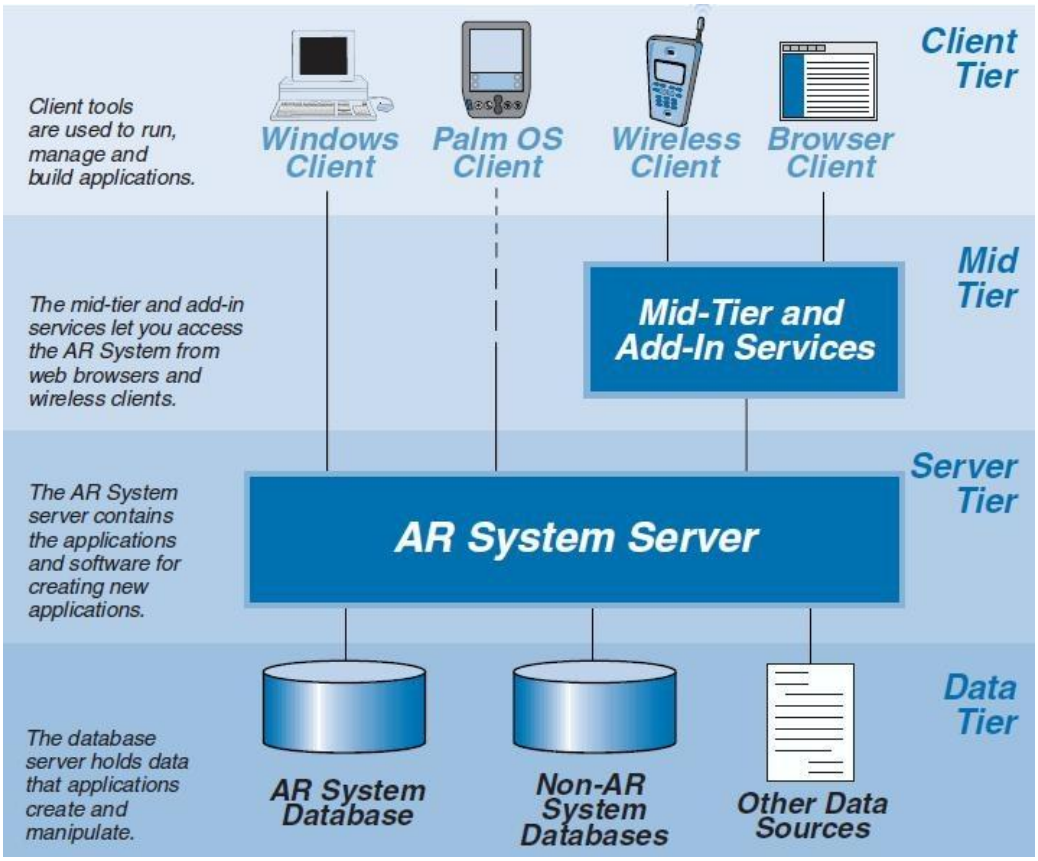

FIGURE 6. BMC AR System Architecture (Venkat 2009. Remedy 101 - BMC AR System Remedy Architecture)

The four tiers in the basic architecture are: database, server, mid-tier and client.

Database tier is the most important tier, which naturally stores everything from field to forms and entry to configurations inside the system. Everything that is seen or done goes directly into the database. BMC Remedy is only an application which interacts with the database. But the way in which data is stored and how it is used is totally controlled by Remedy.

Server tier acts as a gateway between the user and the database. It is the actual place where necessary changes are made on the database and the results are passed to the client. For example if some code is written and executed it goes through server tier.

Mid-Tier was created because of the growth in demand for web-access in the early 2000's. BMC deployed AR Server with the capability to use Remedy applications over web through browsers.

Client provides a client tool access to the AR Server and Database tiers. Remedy User tool is a traditional and most sought way to access the AR System. Nowadays many of the options are built in at the Mid-Tier so the system can be made quite versatile by using a browser. The most advanced commands still have to go through Remedy User tool, such as setting up LDAP or writing SQL commands to fetch data from an external database. (Venkat 2009. Remedy 101 - BMC AR System Remedy Architecture)

4 INCIDENT MANAGEMENT AND SERVICE REQUESTS

The objective of this part was to configure BMC Remedy for Uponor's purposes and create the needed incident forms and service request forms. One of the biggest challenges has been to teach the end-users to separate incident from service request. BMC Remedy IT Service Management Suite has at the moment a better incident module than a work order module. This is because the workflows are more detailed in the incident module. This will change in the next release.

Nevertheless, Uponor wanted to separate incidents from work orders. Incidents are malfunctions that can happen and work order is basically service request. Counting the SLA is more important with incidents than it is with work orders.

4.1 Incident Management

Incident Management is a task which tries to reduce or eliminate the effects of actual or potential disturbances in IT services, that way ensuring that the users can continue their work as soon as possible. For this reason incidents are recorded, classified and reassigned to their appropriate specialists. The whole progress can be monitored by users and in BMC Remedy. The name of the monitoring bar is workflow bar. There the customer can see the current status and the service desk worker can give more detailed information about the status. After the incident is resolved, the incident will subsequently be closed.

4.1.1 Introduction and objectives

The primary goal of the Incident Management process is to restore the normal state of users' operation as quickly as possible and also minimize the adverse impact on business operations, thus ensuring that the levels of service quality are at the best possible levels and availability is maintained. 'Normal service operation' is defined here as service operation within SLA limits. (Crown 2000. Best Practises Service Support, 5.1 [e-kirja])

Incident Management requires close contacts with users; the main point of the incident management process is usually through the Service Desk function, which

works as a front office for the back office that usually is an underlying specialist department and suppliers. Service Desk usually picks up the incident and reassigns it to the right person. Incident Management is essential to the other ITIL processes because it provides valuable information about infrastructure errors.

In ITIL terminology incident is defined as:

> *Any event which is not part of standard operation of service and which causes, or may cause, an interruption to, or a reduction in, the quality of that service. (Crown 2011. English 2011 Glossary)*

Examples of different incidents in different categories are, for example:

> Hardware: system failure, printer not printing, access problems to a network drive. Application: software installation, application bug, disk-usage threshold exceeded.

Most IT departments and specialist groups contribute to handling incidents at some time and the service desk is usually responsible for assigning the right group to the each incident. Service desk also is responsible for monitoring the resolution process of all registered incidents. The process is mostly reactive and to react efficiently and effectively demands a formal method of working that can be supported by software tools.

The status of incident reflects its current position to the customer in its life-cycle. In BMC Remedy it is known as 'workflow'. It is important to be aware of each status and its meaning. The different statuses in BMC Remedy are: New, Assigned, In Progress, Pending, Resolved, Closed and Cancelled. 'New' is automatically assigned when the user is creating the incident but has not saved it yet. The system assigns the incident automatically according to the assignment rules to a certain support group and after the incident is saved the status is changed to 'Assigned'. The status is then 'In Progress' and the service desk is investigating the incident. If they need to reassign it to a different group, they have an option to change the status to 'Pending' for the time that the new support group picks the ticket up. This status pauses the SLA count until the new support group picks up the ticket. 'Resolved' is when the incident has been solved and the

system will automatically change the status to 'Closed' after ten days if the customer does not want to reopen the case. At this point it does not require any special permission to open the ticket. The service desk or user can also cancel the ticket and then the status will be 'Cancelled' and it works in a similar way as 'Resolved'. If nobody complains and opens the ticket again it will automatically change to 'Closed' status. When the system changes the status automatically after 10 days from ‘Resolved’ to ‘Closed’ it will complicate re-opening an incident a bit. There are two different functional roles and one permission that allows re-opening a ticket at this point.

Throughout an incidents’ life-cycle it is important to keep an incident record. This allows any member of the support groups to help solving the problem and also keeps the customer up-to-speed about the incident. The easiest way to communicate with the customer and other team members are via Work Info screen in BMC Remedy. Messages can be set to "Internal" or "Public" and also three attachments can be attached. Work info type can also be determined. Based on the message type the right persons will get notification that there is updated work info. Also modifying status will give information to the customer about the state the incident is in.

SLA or service level agreement is a part of the service contract where the level of service is formally defined. In BMC Remedy there are a few ways to monitor SLA. Every incident has their SLA count. Also the system may randomly send surveys and ask questions about the quality of the provided services. Uponor BSC provides their end-users with certain response time. This is usually during the business day. Also based on the priority of the incidents, BSC provides certain resolution times. If BSC needs to escalate the ticket to the consultant then the ticket count stops. The definitions of SLA counts are still a bit inaccurate, because they were not the first priority at the first phase. After the system starts to have tickets, then the operations team can start to consider the SLA times.

The priority of an incident is calculated in BMC Remedy from two fields. The fields are: impact to the business and the urgency of the incident. The system will automatically calculate the priority based on the values of these fields. In

Uponor's case the impact and urgency have been customized to a more user-friendly mode. This is because otherwise users tend to exaggerate the impact of their incident. The values of the impact field are: 4 - Single user (low), 3 - My Department (medium), 2 - My site (high), 1 - Whole Uponor (critical). That way the user has real life examples of the impact. The values of the urgency field are just: 4 - Low, 3 - Medium, 2 - High, 1 - Critical. The roles that are involved in incident management are described below with their respective responsibilities.

User requests support when necessary and provide all the required information to help resolve the problem. The requests are submitted by using the request entry portal or by using email. In the request entry portal there are various ready forms to just fill in the details and submit. The user also checks the solution and reopens them if the solution is not acceptable.

Specialists and the service desk staff resolve the incident requests. They update the incident requests with relevant information and status changes.

Service owner decides whether an incident needs to be resolved by continuing the resolution. If for example the incident can happen the same way in many upcoming incidents the original incident can be continued.

Service desk analysts obtain the necessary information from the users when they are requesting support. They register this information to the incident request. If the incident cannot be resolved by the assigned group, service desk analyst determines the most appropriate group.

Group coordinators ensure that the incidents are resolved within the completion targets dictated by the SLAs. They also review and accept or reject solutions that have been proposed for general use. (BMC Software, Inc 2010. BMC Remedy Service Management Process Model)

4.1.2 The Incident Management Process

The BMC Remedy incident management process consists of seven procedures for handling requests from users. In Uponor's case the change management has not

been released yet so that will not be explained in much detail. Still, the procedure is visible in the process view image.

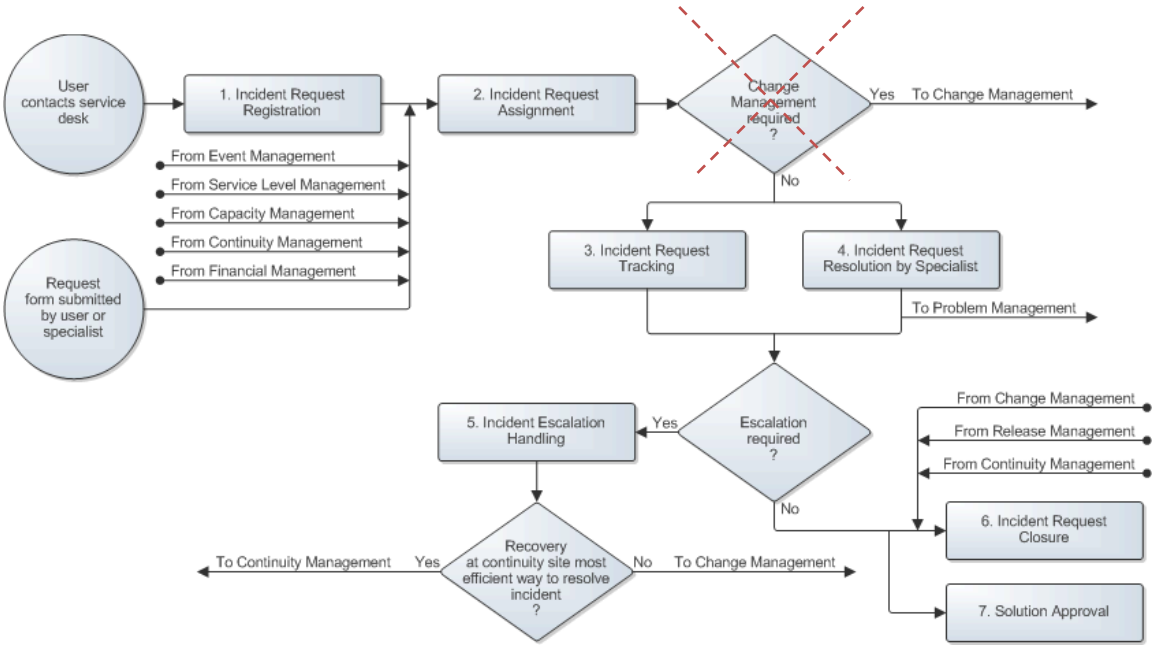

FIGURE 7. Incident process view. (BMC Software, Inc 2010. BMC Remedy Service Management Process Model)

The first step is the registration of the request. This procedure is used by the service desk analysts when they register incident requests for users. Usually the request form is submitted by an end-user or specialist.

The second step is the assignment of the incident request where service desk analysts and group coordinators assign the incident requests to the appropriate specialists for resolution.

The third procedure is called "Incident Request Tracking". It is used by the group coordinators when they are dealing with SLA escalations and reassignment notifications.

The fourth procedure is used by specialists that resolve the incident when assigned to them.

The fifth procedure is the "Incident Escalation Handling". It is an important step for further improving the resolve time. After an incident has been escalated, the service owner of the affected service uses this procedure to determine how the incident could be resolved in the most efficient manner.

The sixth step is the closure step. Service Desk analysts close the incidents when they have resolved the ticket. Requestors also review the ticket that has been completed for them.

The final step is the solution approval step. The group coordinators approve the solution and then they decide if the solution is proposed for general use.

In Uponor's case a very important step is approval step after the request has been submitted. Uponor has many Service Requests that require different approval processes. These are described in more details later. Before the ticket goes to the service desk it goes to e.g. a manager for approval. When it is approved it is automatically assigned to the service desk and they know that e.g. equipment can be ordered.

4.1.3 Configuration of BMC Remedy

The configuration of BMC Remedy starts by creating a company. Company setup refers to capabilities of separating services offered to users or separating different support organizations. Initially company setup was introduced to provide tenancy for service providers supporting multiple companies. In Uponor’s case the whole corporation is divided to two parts, Uponor Europe and Uponor Americas. This does not refer to the actual legal entity, this is only a way to separate data in Remedy. Global services will be in Uponor Europe site but will be exposed to Uponor Americas users and support groups. Uponor Europe’s configuration and rollout is currently at that point that the Nordic countries have been deployed to the system. Central Europe and Southern Europe are next to follow.

Location setup will be the next important step. Locations have 4 mandatory fields and they are Company, Site, Country and City. In Uponor’s case site is a street address. This is due the requirement that each location must have a unique

identifier in the system. Uponor chose street addresses to keep the amount of locations at a sustainable level. Each user record must be tied to an existing location in Remedy. All of these fields will be automatically populated along with other information from Uponor's Active Directory.

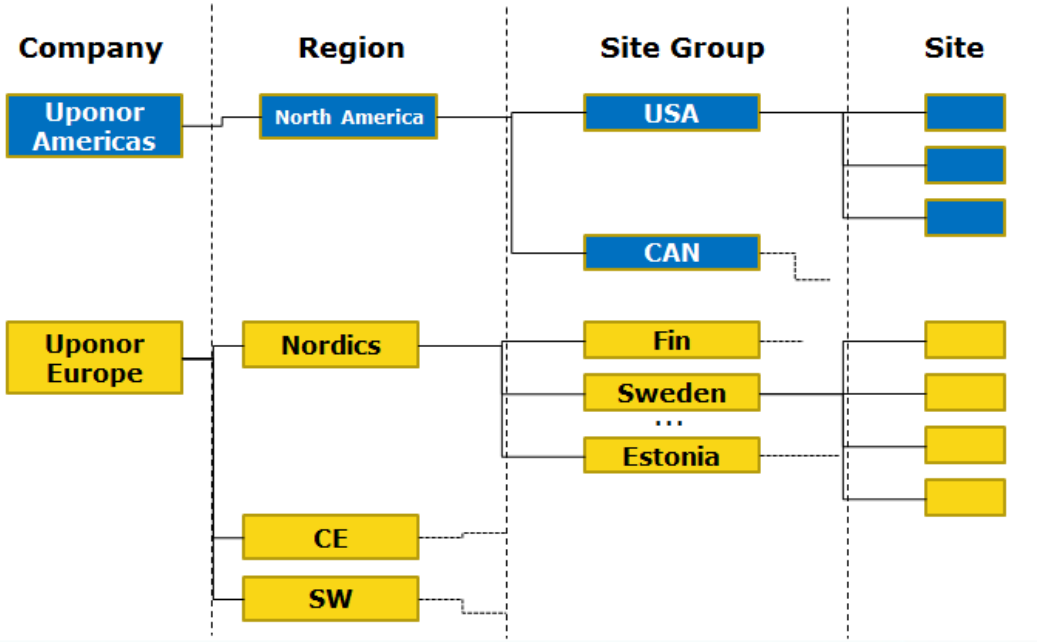

FIGURE 8. Cross section of company setup

Figure 8 describes the hierarchy of the company setup inside Remedy. First the company needs to be created in Remedy. The next phase is to set up different regions. This the helps situation in Europe because, as explained earlier, Central Europe is a really big area, and Germany is doing the entire IT management there. Site groups are basically countries and sites are addresses. These site addresses needed to be unique identifiers in the system.

Manager information is very crucial in Remedy because most of the service requests are using manager approval. This was also one of the biggest issues in Uponor's AD. The local IT staff had to update manager information to every user. The system uses LDAP integration which pulls user records from Uponor's Active Directory every night and either creates new user records or updates changed user data.

Before starting AD migration Uponor had to do some quite critical cleanup at the Active Directory. The maintenance of the AD had been divided to different persons during past years and there were a lot of differences in the address records of employees. In order for the synchronization to work the address must be precise. Uponor and BMC in co-operation investigated and agreed which fields from AD populated to BMC Remedy.

Each person using BMC Remedy will have their own person record in the Remedy AR system. This record contains basic information about the user (e.g. name, login ID, contact information, manager information). Additionally, the user's record may contain necessary login/access rights to enable certain activities in Remedy. If the user belongs to support group(s) the user will be granted additional rights to specific Remedy modules or functions. Additionally, user may have functional roles assigned to him/her.

There are a few different license types to choose in the BMC Remedy system. Read license is mostly for end-users, they just need to view and submit tickets. Floating license is a license type where all the licenses are shared among a number of users over time. For example if there is a license available in the system, the server allows the user to log in. When they are finished using the application the license is released for a new user. This license type is used mostly among the support staff members. The last one is a fixed license and they are named mostly to administrators of the system and also a few service desk members. They can use the system regardless how many other users are currently at the system. Uponor has 10 fixed and 20 floating licenses bought. Most likely, when Uponor Americas will join Remedy, more licenses must be bought.

Support groups are very important in BMC Remedy AR System especially for users who work on tickets. Each member of the service desk or IT staff has to be a member of a support group in order to receive any tickets. Support groups are mainly divided by region. The requested incident or work order is routed to the right group. There are also global support groups which can be picked by any service desk member in the whole company. This speeds up helping the end-user. Another assignment rule in the system is country specific requests. After creating

a support group, users have to be assigned to certain functional roles for the support group to work. An example of different support groups and functional roles in the system can be found in attachments.

4.1.4 Real scenarios

Most of the users in Uponor's Remedy are planned to use the end-user portal. There is only one incident SRD in the system. It is called *Report an IT incident* and it is used to report any malfunction that the end-users may have. It can be either a hardware or a software error. It has fields for a short description and a more detailed description of the problem. The form has a prefilled service list of different areas where the problem may be. The list has been created to be as generic as possible. It is easier to maintain that kind of list because if Uponor decides to change for example its email software to something else, it does not require any actions to the system.

After the user has submitted the incident, the system will automatically create a request number that is exposed to the user. In the background the system will automatically create a matching incident and generate a unique incident number for that as well as assign the incident according the user's region.

Creating an incident template for the end-user requires four different stages. The first stage is to create Incident Template (AIN). This template requires information that will be prefilled to the incident management console when the request arrives from the end-user. The most important things are describing the purpose of the incident template, impact and urgency and assignment rules. *Report an IT incident* template does not require impact and urgency or assignment rules. The assignment rule is configured to the background of the system. Impact and urgency are automatically defined to be medium in this case and the service desk has the power to change these if they see it to be necessary.

Application Object Template (AOT) is the next form that must be created. Application object template may be either a URL or a link to the incident template. This form will handle the information that comes from the end-user portal to the incident management console. This form is used to select if some of

the information that comes from the end-user portal should be automatically mapped to the selected field. This is called exposing the fields from the end-user portal to the incident management portal. 'Report an IT incident' does not have to expose any special fields because all of the provided information is mapped at the final stage to the ‘Notes’ field. The service desk will transfer all the data to the correct fields in the incident management console.

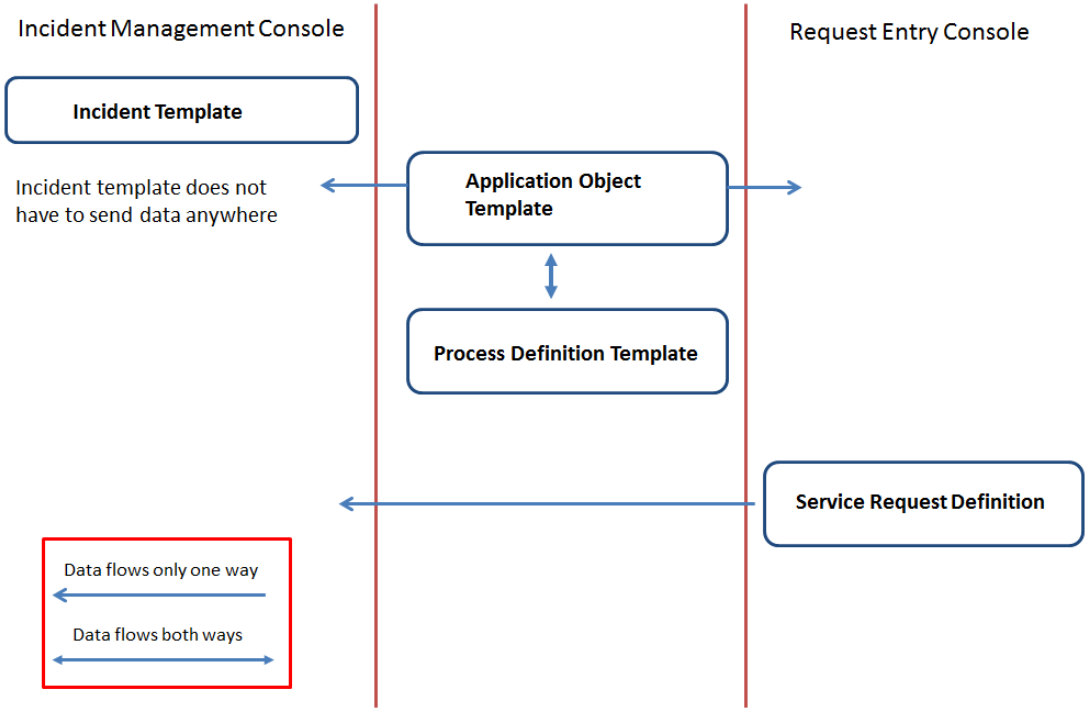

FIGURE 9. Description of required templates and how data transfers between them

Figure 9 is a cross section of all the templates and how they affect to each other. Between them there are the templates that transfer the data between different modules.

Process Definition Template (PDT) will be the next step. This template is used to create the process which each request follows. In other words, a PDT is a fulfillment process. It is also used to relate one or many Application Object Templates into a more complex request. When chaining multiple AOTs, Process

Definition Template can have conditions that define what happens based on the user's response. The process is quite simple at *Report an IT incident*. After the user has provided all the information and selected, submit the system will create corresponding request ID for end-user and transfer the information to the incident management console while automatically creating an incident ID.

Finally Service Request Definition (SRD) form is created. This form defines everything that the end-user sees, most importantly: title, description, category and image. Remedy has four different approval types: Person, Custom, Group and Manager. Person is one single person who has been selected to approve every ticket that is created by using this form. Custom approval can be used to create approval chains that include for example first group and then manager. Group can be e.g. the service desk that approves the information. Finally the most commonly used approval method is manager approval. *Report an IT incident* does not have any approval process. They are mostly used in service requests. Finally Service Request Definition defines questions and mappings.

Questions and mappings is an easy way to prepare questions to the end-user. The end-user portal is fully working on every major browser and creating questions does not require any knowledge of web-coding. While this is information can be useful also in Remedy, it is not mandatory. Instructions field is a fully HTML-based field and while the query language is completely individual language, it resembles the SQL-language. There is a library of pre-created most commonly used questions. The IT staff can also create their own questions. Question format includes: Text, Radio Buttons, Check Boxes, Range, Menu and Date/Time. Menus can be static menus or queries from different forms in the system. Questions can be mandatory or optional and there can also be hidden questions. Hidden questions are mostly to remind the service desk of important tasks that need to be done e.g. when a new employee arrives at the company and the manager fills in his/her information there might be a hidden field to remind the service desk to create all the necessary IDs for different systems.

4.2 Service requests

The objective of service requests is to fulfill the request of an end-user. It is also commonly known as Request Fulfillment process. It delivers goods and services that the customer request through the service catalog. In Remedy all the service requests and incidents are behind one end-user portal. This makes it easier for the customer to find everything needed. After submitting a service request the task will be assigned to the service desk for fulfillment according to the assignment rules that are configured. The process is very similar to incident's process but the main difference is that incidents refer to some malfunction in any used system where as service request is used to require service or ask generic questions from the service desk.

4.2.1 Introduction and objectives

In Uponor's case service requests require more configurations at the beginning. This is because service requests need more support groups and more assignment rules. There might be regions or even countries that have different policies about e.g. equipment order. The decision at Uponor was that it reduces the workload more to have an automatic assignment to directly to countries own service desk rather than a generic one where someone has to do this assignment manually.

After the user submits the service request from the end-user portal, Remedy works the same way as in incidents. It gathers all the information provided at the request and creates a corresponding work order. In the current version of Remedy work orders do not share the same functionalities as incidents. The idea is that the work order is a list of different tasks and after they all are completed, the work order is also completed. It has similar statuses and priority/urgency but it provides this workflow bar for only the end-user. So they still know in which stage the work order is and the communication works in the same way as incidents. Work orders are going to improve in the new version of Remedy (version number 8), which will be released in the near future.

The list of every work order and their routing rules and approvals can be found in the appendix section.

4.2.2 Real scenarios

Service requests and their configuration are quite the same as with incidents. They need to be thought through a little more carefully than incidents because of the reasons mentioned above. They most probably need more assignment rules and approvals.

The process also starts by analyzing what kind of service request is needed. The first thing to be considered is setting up the framework. What kind of users will be using the service requests? What are the groups that will be handling the request? Are there specific roles inside the groups and who needs to approve the request?

The most difficult service request is ordering new equipment and it is going to be used as an example in this phase. The first step is setting up the framework. All users in the corporation are going to use the new equipment order form, end-users and IT staff. This means also that the service request needs to be localized based on the countries. The groups that will finally get the assignment are the service desks based on the requester's location. Finland's new equipment order form has a two-level approval. After the form is submitted the first approver is the service desk. They will investigate the request and suggest a model (if the user has not ordered a specific one) and include the price. They will also do a so called 'sanity check' where they check when the user has ordered the same equipment last time. The manager usually does not know or remember this information. He can then check his side of the request and approve if it fits to the budget. After that it will automatically go to the service desk again and they know that they can make the order.

After everything is analyzed it is time to create the forms. They are basically the same as in incident. The first one is slightly different. It is called work order template. Assignment rules can be specified in this template or then they can be generic rules. This also gathers the information on the end-user side and will transfer it to the work order console. In new equipment order form every country will have their own work order template and the assignment rules are configured there. The next phases are identical with creating incident: Application Object

Template (AOT), Process Definition Template (PDT) and finally Service Request Definition (SRD).

SRD is the only form that will be different in every request. Below is a screenshot of the current form. The form is created using the default tools that the Remedy offers. More complex forms can be also created by using the developer tools. They are called Advanced Interface Forms (AIFs).

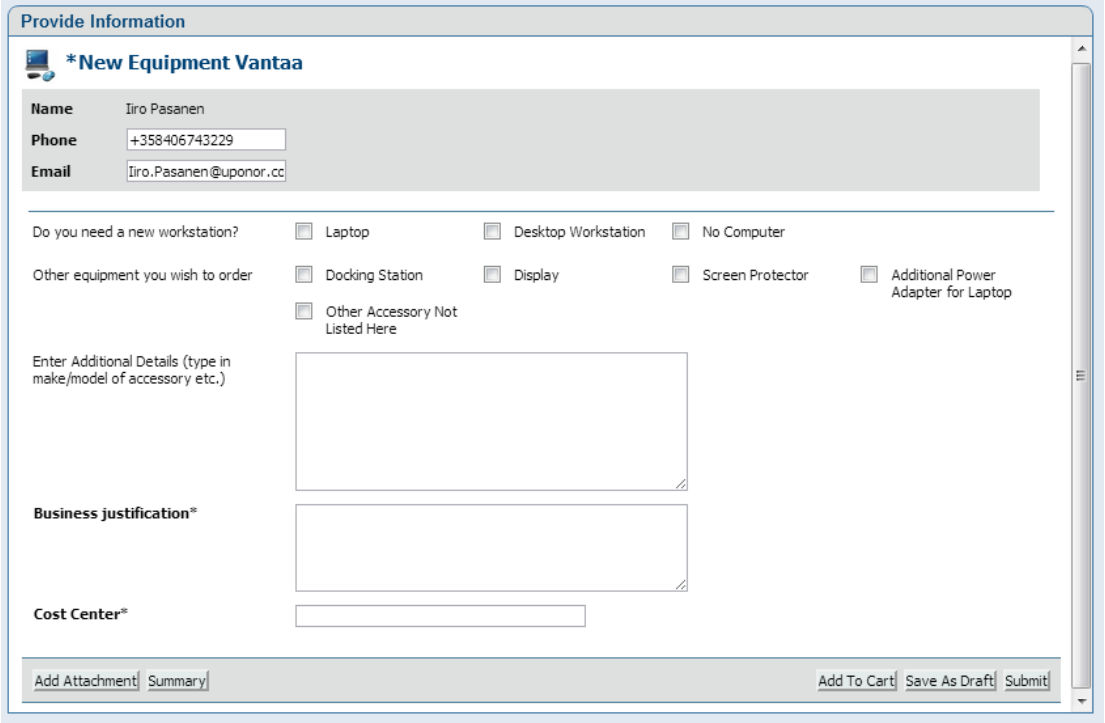

FIGURE 10. Service request example from the system

As seen in Figure 10, this form can be used to order a workstation, accessories for the workstation or general accessories. The information about the user is automatically coming from Remedy user credentials and that information is migrated from AD. This is a really basic form that includes a few check boxes and free text fields. It does not include any complicated queries from the system. Both business justification and cost center is always mandatory. In the next phase the cost center will be included in the basic info so it will always be visible. This requires a bit more work because the information is planned to be pulled from the AD, so it needs to be added to every person's record.

Generally every form out of the box will look similar. Recently created *Report an IT incident* looks quite the same.

The last steps are to configure entitlements. The system allows by default everybody to see everything. This can be reduced by using entitlements. For example Finnish users cannot see any other countries country specific requests. These entitlements are created by using the qualification language or by selecting some prefilled options. Advanced qualification can be used to create more advanced rules, for example that some city inside the country will see some request. This also helps in creating the assignment rules. This is because assignment rules can be configured in the specific templates and entitlements can reduce the view of different forms. The full list of entitlements in the system can be found in attachments.

4.3 Upcoming phases

The launching of the Remedy ITSM Suite has managed to keep on schedule mostly. A few countries in Europe have more demands than others and this requires additional work. The aim is still quite clear: at the end of the year BMC Remedy should be operational in most of the countries where Uponor works.

Although the first phase was quite narrow in its scope, the work does not end here. At the next phase the aim is to provide more intelligent service requests for end-users. This might require some additional training for the Remedy administrators. The goal is to learn how to create the advanced interface forms with the Remedy Developer tool. This allows creating more dynamic forms where the information flows from the AD and through some queries. These are mainly helping the end-user side.

For the IT staff the next improvements are change management and inventory and asset management. The second one especially has raised a lot of interest inside the Group IT. It would be an official way to storage information about the assets that are in use (or expired) inside the corporation. Asset management also allows maintaining the financial side of assets.

Other modules will follow but they are not the biggest priority. The aim is first to improve the narrower scope as much as possible so the user experience will get better.

5 CONCLUSIONS

After the scope has been reached and phase 1 is complete, Uponor has reviewed the results. Business Solutions Centre along with the different IT departments has come to the conclusion that the deployment of Remedy ITSM has been successful.

The IT staff and especially managers have been satisfied since there is finally one harmonized service desk tool. This allows more rapid response times to simple problems that might affect business efficiency. The user might require something very simple such as installing a new version of software and the local IT staff might be away. Now there is a way for an other service desk to notice this problem and they can install the new version remotely.

Uponor decided to select to be an OnDemand customer. Uponor did some calculations and noticed that it will take several years when the costs of being the OnDemand customer will meet with owning own servers. Also the support will respond in any technical issues. It is still unsure if Uponor wishes to move to hosting its own servers some time in future.

The basic configuration of the system does not take that long in the end. The system is really wide and the possibilities tweaking the system are countless so the improvement of the system is an ongoing process and that’s what Uponor is doing at the moment. The aim is to provide as good user experience as possible. The company decided to take the approach where the team learns how the system works and how it is developed. There are many different companies that provide consulting services and BMC has their own Remote Enhancement Hours.

The pricing of the system has been under a lot of discussion. Since Uponor does not own the servers the pricing idea is to pay for the usage. Every module costs separately so it requires a bit more studying of what modules are required. Also the general slowness of the system is a common complaint. The system uses a bit old technology (Java) and it can be seen. The loading times are sometimes really long. Hopefully in future versions BMC decides to move into HTML5.

The IT service management is a popular topic at the moment. The effectiveness can really be improved by ITSM software. According to the users the response times are faster and the whole process is more transparent. According to different articles some major Finnish companies have already moved to ITSM services or are planning that in the near future.

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ATTACHMENTS

List of active Service Request Definitions:

SRD Title	Type	Approval	Assignment Rule
IT Service Request	Work Order	-	Region: Automatically assigned to Regions Service Desk
Report an IT incident	Incident	-	Region: Automatically assigned to Regions Service Desk
New Equipment	Work Order	2-level. IT -> Manager	Country: Automatically assigned to Country specific Service Desk
Request New Phone	Work Order	Manager	Country: Automatically assigned to Country specific Service Desk
Request New Software Install	Work Order	Manager	Region: Automatically assigned to Regions Service Desk
New Uponor Employee	Work Order	Manager	Country: Automatically assigned to Country specific Service Desk
End Date Employee	Work Order	Manager	Region: Automatically assigned to Regions Service Desk
Modify Uponor Employee	Work Order	Manager	Region: Automatically assigned to Regions Service Desk
External Uponor Employee	Work Order	Manager	Region: Automatically assigned to Regions Service Desk
File Share Access Request	Work Order	Manager	Region: Automatically assigned to Regions Service Desk
Password Reset	Global	Incident	Region: Automatically assigned to Regions Service Desk

List of active Support Groups:

There are global and regional support groups. These are usually for more generic programs and bigger issues.

Also there are country specific support groups and even city specific groups inside the country. These are usually service desks.

Support Company*	Support Organization*	Support Group Name*
Uponor Europe	Email Support Global	Email Application Support
Uponor Europe	Email Support Global	Email End User Support
Uponor Europe	Email Support Global	Email Global Support
Uponor Europe	Intranet Support Global	Intranet Application Support
Uponor Europe	Intranet Support Global	Intranet End User Support
Uponor Europe	Intranet Support Global	Intranet Global Support
Uponor Europe	IT Support CE	CE Application Support
Uponor Europe	IT Support CE	CE End User Support
Uponor Europe	IT Support CE	CE Infrastructure, Server and Networks
Uponor Europe	IT Support NO	Nordic Application Support
Uponor Europe	IT Support NO	Nordic End User Support
Uponor Europe	IT Support NO	Nordic Infrastructure, Server and Networks
Uponor Europe	IT Support SW	FRA Support
Uponor Europe	IT Support SW	ITA Support
Uponor Europe	IT Support SW	SW Application Support
Uponor Europe	IT Support SW	SW End User Support
Uponor Europe	IT Support SW	SW Infrastructure, Server and Networks
Uponor Europe	IT Support SW	UK Support
Uponor Europe	Lync Support Global	Lync Application Support
Uponor Europe	Lync Support Global	Lync End User Support
Uponor Europe	Lync Support Global	Lync Global Support
Uponor Europe	Postini Support Global	Postini End User Support
Uponor Europe	Remedy	Remedy Administrators
Uponor Europe	SCCM Support Global	SCCM Application Support
Uponor Europe	SCCM Support Global	SCCM End User Support
Uponor Europe	SCCM Support Global	SCCM Global Support
Uponor Europe	Service Desk	Service Desk CE
Uponor Europe	Service Desk	Service Desk Denmark
Uponor Europe	Service Desk	Service Desk Finland
Uponor Europe	Service Desk	Service Desk Nordic
Uponor Europe	Service Desk	Service Desk SW
Uponor Europe	Service Desk	Service Desk Sweden
Uponor Europe	Service Desk	Service Desk Vantaa
Uponor Europe	Service Desk Global	Service Desk
Uponor Europe	WAN Support Global	WAN Application Support
Uponor Europe	WAN Support Global	WAN Global Support

List of active Entitlements in the system:

By default, users do not see anything in the system.

People Qualification	**Exclusion**	**SRD Qualification**
Global users (Everybody in the system)	No	Global SRDs (Every SRD that has region rule)
European IT staff (Everybody working in Service Desks)	No	Everything in the system
Country specific rules	No	Country specific SRDs
Site specific rules	No	Site specific SRDs
Site specific exc. rules	Yes	If site specific SRDs, hiding the similar country specific rules