Service Catalog and Configuration Management Database as the Foundation of SIAM

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The purpose of this thesis work was to define the elements and productize Service Integration and Management (SIAM) oriented Service Catalog and Configuration Management Database.

Multi-source IT operating model is increasingly common. It offers many benefits, however it may also present some challenges. One of those challenges is managing and integrating services from multiple insourced and outsourced service providers, which may lead to issues falling into the gaps between the service providers. Digitalization increases the number of suppliers used in an organization. This has led to the need for Service Integration and Management (SIAM), which in turn has therefore become an emerging service area globally.

Service Catalog is one of the key elements in SIAM. Very few companies have a professional SIAM model in use and many companies lack a proper Service Catalog and Configuration Management Database, which include business services as well. The Service Catalog itself is very essential in proving understandable and industrialized services for the business. If it is not in good shape, the IT operations are on a lower maturity level and cannot provide full value for the business and end users.

The aim of SIAM is to
- manage multiple suppliers and integrate them to deliver services
- ensure that the services meet the business need
- get single point of visibility and end-to-end accountability
- manage Service Management processes
- achieve multi-supplier control and provide governance over suppliers.

The basis for service integration is Service Catalog, well planned Configuration Management Database (CMDB) –structure, operational management components, and control information, which can be used for service integration and automation.

The target of this thesis was to create an Implementation Plan, which gives guidelines to implementing SIAM-based Service Catalog, Configuration Management Database –structure, and Operational Management Components –model. The Implementation Plan serves as the basis for the consultants, when starting the implementation of SIAM-oriented service delivery for the customer. The details of the Implementation Plan are considered confidential material.

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Abbreviations

Business	The organization that commissions the SIAM
CI	Configuration Item
ITIL®	Information Technology Infrastructure Library
ITSM	IT service management
Service Catalog	A database or structured document about services
Service Line	A group of services under SIAM
Service Portfolio	The complete set of services that are managed by a service provider
SIAM	Service Integration and Management
SLM	Service Level Management
SLA	Service Level Agreements
SMO	Service Management Office

1 Introduction

Multi-source IT operating models are nowadays increasingly common. They offer many potential benefits compared to single-source models, which provide the customer less flexibility in addressing rapidly changing business objectives and the ability to take advantage of new technologies. Digitalization increases the number of suppliers, which increases the need for service integration. In multi-source IT operating model the customer can select the best service provider for each service and combine service providers' individual strengths or new technologies.

A multi-source IT operating model may also present some challenges. One risk of managing and integrating services from multiple insourced and outsourced service providers is that issues fall into the gaps between the service providers. In case of incident solving or problem analysis, service providers can focus on shifting the blame rather than identifying the root cause. ITIL®[1] focuses on the importance of end-to-end management of services that IT delivers to its customers. The increasing complexity of IT and the rise of multi-supplier eco-systems has led to the rise of Service Integration and Management (SIAM) as a new approach. SIAM is a service capability and a set of practices in a model for every part of the ITIL practices. The aim of SIAM is to manage multiple suppliers and integrate them to deliver a unified business-facing organization, whereas the aim of ITIL is to be a set of concepts and practices for IT Service Management, IT development, and IT operations.

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[1] ITIL® is a Registered Trade Mark of AXELOS Limited IT Infrastructure Library®
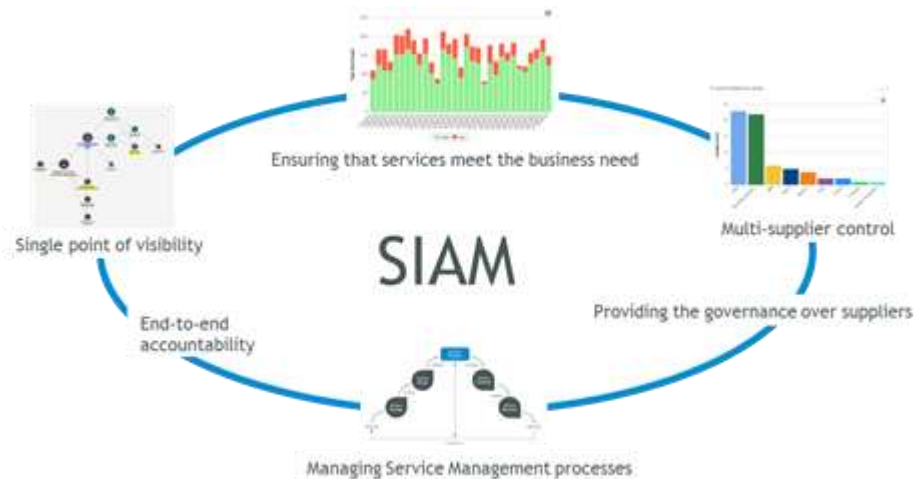
Figure 1. The Aim of SIAM (A drawing made by the author)

Figure 1 shows the main benefits of SIAM:

- Multi-supplier control means that the customer can compare suppliers' individual strengths, for example, comparing their SLAs, amount of incidents or problems, costs, etc. That is possible if you have a centralized ITSM-tool, which you can use as master data for managing Service Management processes.
- Providing the governance over suppliers means that the SIAM-model includes an SMO-function, which handles the necessary governance on behalf of the business.
- Service Management is a set of processes, capabilities, and tools to align the delivery of services with the needs of the enterprise. The primary objective of Service Management is to offer business-aligned services that ensure efficient and uninterrupted business operations. It is very important that there are common processes that the whole company uses with all the suppliers.
- End-to-end accountability means that it is possible to measure the performance and delivery of IT services and IT assets, even when there are several suppliers involved.
- Single point of visibility is possible through centralized CMDB. With a CMDB you can model services and their relations. Through a single point of visibility, it is possible to make the right decisions, when all parties are able to make impact analysis and decisions based on the correct data.
- The primary objective of Service Management is to offer business-aligned services, which follow SLAs and ensure efficient and uninterrupted business operations. Service Management is also responsible for the continuous improvement and development of services, which meet the business need.

A SIAM model needs to cover the complete lifecycle of services and it must be recognized by all stakeholders. SIAM acts as the central point of control between demand and supply of services. It's responsible for maximizing the performance of cost effective end-to-end services, which meet business expectations.

Effective service integration requires all roles and responsibilities of the parties across the IT operating model to be clearly defined, which then enables standardized services, processes and tools.

1.1 Purpose and Objectives

Background of this thesis is Sofigate´s new SIAM model. Sofigate has created a SIAM model, in which there are sales material available to use for introducing the concept to new customers. That material is the starting point for when Sofigate has meetings with CIOs, CFOs, IT-managers, or other persons with similar roles. In order to put the concept in action, there is a need for more specific guidelines for Service Catalog, End-User Portal, or Configuration Management Database.

The purpose of this thesis is to define a Service Catalog and CMDB-structure, which Sofigate can use as a basis for SIAM service implementations. The reason why the objective is to concentrate on Service Catalog and CMDB is that those are the key elements of the SIAM model.

What kind of business value will Sofigate get from this thesis?
Service Integration and Management (SIAM) is an emerging service area globally. Sofigate has invested in concepts and capabilities to provide the best SIAM services in the Nordics. Service Catalog is one of the key elements in SIAM. Therefore, it is very valuable for the business to have a thesis researched and written on this topic.

What is the business value for the Sofigate customers?
Very few companies have a professional SIAM model in use, and many companies lack a proper Service Catalog as well. Service Catalog itself is very essential in proving understandable and industrialized services for the business. If it is not in good shape, the IT operations are on a lower maturity level and cannot provide full value for the business.

What are the expectations for this thesis?

The expectation is to create a very concrete and concise "theory" on how a Service Catalog should be structured to meet the requirements of SIAM. At the same time, there will be practical examples on how to apply that theory in one or two real customer cases.

My objective in this thesis is to create an Implementation Plan, which gives guidelines for Sofigate´s consultants to implement SIAM-based Service Catalog, Configuration Management Database (CMDB) –structure, and Operational Management Components – model. That material will be confidential and it will be as the appendixes in this thesis.

Appendixes include the following documents:
- Appendix 1, Implementation Plan (Confidential)
- Appendix 2, A model for SIAM-based Service Catalog (Confidential)
- Appendix 3, Configuration Management Database (CMDB) –structure (Confidential)
- Appendix 4, Logical CI Templates for implementation (Confidential)

1.2   Scope

The scope of this thesis work is to define and productize elements for Service Integration and Management oriented Service Catalog and a Configuration Management Database – structure for a company, who has made the decision to adopt SIAM practices in IT Service Management and has already implemented ITIL-processes.

This thesis will concentrate on

Defining a structure, which can be modified for each customer's needs
- A Service Catalog structure for Business Services, IT Services, Other services for a company, which has outsourced their IT-services and who operate in a multi-vendor environment
- A structure for SIAM integrated CMDB (Configuration Management Database)
- Elements that belong to SIAM oriented Service Management

Out of scope

Out of the scope are the following topics:

- Defining ITIL processes
- Defining Service Portfolio Management
- Techniques for Systems Integration
- SMO-model
- Physical Configuration Items
- SLA definitions and SLA Frame

1.3 Research Questions

The questions below are the ones that need to be solved during this thesis. You can find the answers for these questions in the chapter: Responses.

- Which conceptual elements are important when ramping up Service Integration and Management (SIAM) model?
- What is the role of Service Catalog in SIAM
    - What are the dependencies between Self-Service Portal and Service Catalog
    - Why is Service Catalog important
- Which elements are needed in CMDB (Configuration Management Data Base), when ramping up the SIAM model?
- What is the role of operational ITIL –processes?
- What are the steps when implementing the SIAM-model?

1.4 Terminology

The following terms are used throughout this publication:

Term	Description
Business	Business is the organization that commissions the SIAM.
Governance	Governance is the application of techniques for evaluating, directing, and monitoring the delivery of the agreed levels of service and meeting the business and corporate requirements.
ITIL	ITIL (Information Technology Infrastructure Library) is a set of best practice processes for IT service Management (ITSM), which focuses on aligning IT services with the needs of business.
ITSM	ITSM (IT service management) is the implementation and management of quality IT services that meet the needs of the business. It refers to the entirety of activities, policies, processes, and supporting procedures, to plan, deliver, operate, and control IT services offered to the business. ITSM is performed by IT service providers through as an appropriate mix of people, processes, and information technology.
ITSM Tool	In SIAM model the word Product is also used, which means IT Service Management tools.
Service Catalog	Service Catalog is a database or a structured document with information about all existing or "live" IT services, including those available for deployment. Service Catalog is a part of the service portfolio and contains information about two types of IT services, customer-facing services that are visible to the business and supporting services required by the service provider to deliver customer-facing services.
Service Integration	Service integration is a set of practices for managing, governing, and coordinating the delivery of service provided by multiple suppliers.
Service Integration and Management (SIAM)	Service integration and management (SIAM) is an adaptation of ITIL® that focuses on managing the delivery of services provided by multiple suppliers. SIAM is a set of practices in a model

Term	Description
	and approach that builds on every part of the ITIL practices. SI-AM specifies the service management processes and procedures and ensures multiple service providers (internal or external) deliver services to multiple businesses in a cohesive and efficient manner.
Service Line	Service line is a group of services under SIAM management and governance. Service line can be a group of business function types or technology types. The key to effective SIAM is defining and maintaining services, service boundaries, and service lines.
Service Management	Service management is responsible for managing the delivery of IT services from a service provider.
Service Portfolio	Service Portfolio is the complete set of services that are managed by a service provider. Service Portfolio is used to manage the entire lifecycle of all services. It includes three categories: service pipeline (proposed or in development), Service Catalog (live or available for deployment), and retired services.
Service Supplier	Service supplier is an internal or external organization or team providing IT-based services to the business. A supplier can be an organizational unit, not only an external service supplier. In this thesis provider and vendor have the same meaning as supplier.
Service Level Agreement (SLA)	An agreement between an IT service provider and a customer. A service level agreement describes the IT service, documents service level targets, and specifies the responsibilities of the IT service provider and the customer.
Service Level Management (SLM)	Service Level Management's (SLM) purpose is to negotiate Service Level Agreements (SLA) with the customers (business), to design services in accordance with the agreed service level targets, and monitor and report service levels to the customers.
Service Management Office (SMO)	Service Management Office is a group of functions within business or IT that is accountable for defining, maintaining, and especially managing standards for Service Management and its

Term	Description
	processes in the organization. It is the escalation and management point of IT services in daily operations, and its role is to ensure that the governance, legal, and financial interests of enterprise are met in continuous operations. SMO also ensures that services are defined, continuous service operation processes work in practice and suppliers are managed according to policies defined by the organization.
Supplier	Supplier is a third party, responsible for supplying goods or services that are required to deliver IT services.
Systems Integration	Systems integration is responsible for getting solutions, differing technologies, applications, and infrastructure to work together. Implementation of SIAM models usually requires some elements of systems integration.
Third Party	A third Party responsible for supplying services that are required to deliver IT services. Examples of suppliers include commodity hardware and software suppliers, network and collaboration providers, and outsourcing organizations.
Tower	Tower can be a lead supplier; a strategic partner is appointed to manage the whole group with responsibilities from the early planning to the implementation, monitoring, and support for IT services.

Holland (2015) and ITIL Glossary and Abbreviations (2015).

2 Research Methodology

In this chapter, I describe the methodology of how I collected data for this thesis work.

In this study, my research philosophy is practical research, which focuses on empirical study of the topic. The empirical study involves research of the material to find out about and better understand the SIAM model. Finding material was not easy, as the model is quite new, and there is not a lot of material published about it yet. Most of the material is commercial material, white papers, etc. Part of the empirical study is based on my experience, which I received during the past 10 plus years working in the Service Management area. I will also make observations and discuss with my colleagues, managers, and customers as much as possible.

The strategy for my research is to combine research and case study together. I have chosen to use multi-method qualitative study, which consists of data collection, empirical work, discussions, and informal interviews with my colleagues, to get an understanding of the required material level and the challenges they have had with our customers and implementations. I will also discuss with some of our customers, after I get the final 1.0 version of the material ready.

The research approach and methods, which will be used in this thesis are iterative in nature and based on Action Research approach. The way I intend to create and develop the outcomes for this thesis, is iterative and there will be several versions of the material made. Figure 2 describes the model for iterative development that I intend to use to develop the material.
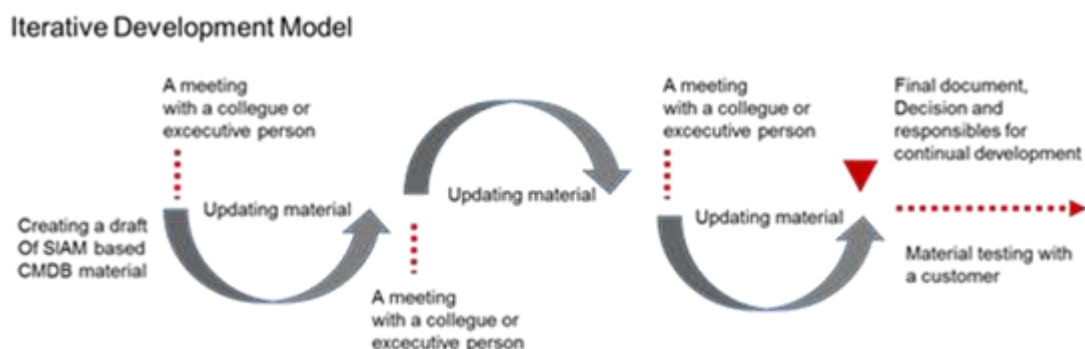
Figure 2. Picture of the Iterative Developed Model (A drawing made by the author)

2.1 Research Planning

According to Dr. Catherine Dawson (2009) it is useful to think of the five "W's" and how to collect the needed data, before starting the research by using practical research. Below I listed examples how I started to plan my research.

1. **What** is my research about?

   This question needs to be answered in as much detail as possible. One of the hardest parts in the early stages is to be able to define your project. If the definition is not correct, there is a risk that the research fails. A useful tip is to sum up, in one sentence only, your research. If you are unable to do this, the chances are your research topic is too broad, ill thought out, or too obscure.

2. **Why** do I want to do the research? What is its purpose?

   In my case, the fact is that I want to finalize my studies and make an excellent thesis. I am also interested in the subject, because I am working in the Service Management area and the SIAM model will be very important for our company.

   The risk is that it will be challenging to keep the focus and the data on a level that makes it possible to have the summary report not exceed the maximum length allowed.

3. **Who** will be my participants?

   In this case, the participants will be my colleagues and executive people from Sofigate. I also foresee that it will be quite easy to get them to participate in this, as this subject is also interesting for them. The SIAM concept is the latest concept at Sofigate, and we have invested a lot of effort in it. All participants understand the meaning of that work and I am quite sure that I will get good support from them.

   The way I will contact them is through holding face-to-face meetings or sending material to them that they can comment.

4. **Where** am I going to conduct my research?

   In this case, the research will be conducted at my company. We have persons here in Finland and also in Sweden. Nowadays, it is easy to work remotely and use, for instance, Lync for meetings if I am not or some of the people are not in our office in Espoo.

   It is also easy to send material via email and keep material on our intranet pages. It is easy to make comments on the material there, even though I do prefer in this case the face-to-face meetings.

5. **When** am I going to do my research?

   This question is very important, especially since I will study and work at the same time. Because we found a subject, which is important to our company, I have a possibility to do some of the thesis work during the working hours, and also use my colleagues' time for it. Still this kind of work takes a lot of time, and it is obvious that you have to also use your free time for it. (Introduction to Research Methods 2009: 4-13)

2.2 Data Collection

In this thesis I will use published material about ITIL and SIAM (Service Integration and Management). ITIL is not a theory, because it is a de facto standard about the best practice processes, which are in use in IT organizations. Even if it is not a theory itself, it is a model, which is the basis for the SIAM model.

The reason why I do not use any specific research model theory is that I will use an iterative model, and research is not conducted as a questionnaire. I approach this research in a deductive way and I will use applicable theories for collecting data.

2.2.1   Internal Expert Interviews

During the data collection I discussed with six key people in the organization to get an understanding of the key issues that they have met, when presenting material for our customers or when implementing our tools in our customer environments. The interviewees represented different roles.

Questions and requests, which I got from my colleagues were, for example:
- To get a simple model of SIAM
- What are the dependencies and differences between Self-Service Portal and Service Catalog?
- Which are the key elements of SIAM based CMDB?

I have presented the evolution of developing the material in Appendixes 7 and 8.

2.3   Continual Improvement

After this material is ready, and we have started to use it in our customer projects, we will continue the development of that material by using the same iterative model that I used during the thesis work.

I will propose to our executives that we start to make customer and employee satisfaction surveys of all those projects that we have implemented using this SIAM-implementation material.

If we find out that some of the materials are not clear enough, we have to update those slides, terms, etc. It is also important to react to the feedback we will get from our experts about the challenges they have in the implementation phases. If there are challenges, we will develop that material together with them.

3   Service Management Best Practices

ITIL (Information Technology Infrastructure Library) is a set of best practices for IT service management (ITSM), which focuses on aligning IT services with the needs of business. ITIL is a collection of common sense guidelines to guide all types of organizations that provide services and deliver value to the business. ITIL's objective is to provide services to business customers that are fit for purpose and fit for use. It is crucial for business that services are stable and reliable and can be trusted (ITIL - Wikipedia).

3.1   ITIL Lifecycle

To sustain high levels of business performance, organizations need to offer competitive products and services that customers will value, buy and use. Adapting quickly to changes in the economic climate and in the market place is of real importance. All services offered should enable business transformation and growth.

ITIL Service Management supports this transformation through the use of the Service Lifecycle, which is split into five distinct lifecycle stages:
- Service Strategy
- Service Design
- Service Transition
- Service Operation
- Continual Service Improvement

Each stage relies on service principles, processes, roles, and performance measures, and each stage is dependent on the other lifecycle stages for inputs and feedback. A constant set of checks and balances throughout the Service Lifecycle ensures that as business demand changes with business need, the services can adapt and respond effectively to them.

There are differences of opinion regarding the number of processes in ITIL V3. The official number from the Chief Architect for ITIL – Sharon Taylor is 26. In this thesis will concentrate only on those topics and processes, which relate to this thesis subject. Those processes are listed below:

1. Service Strategy, Service Portfolio Management,
   see chapter Service Portfolio Management
2. Service Design, Service Catalog Management,
   see chapter Service Catalog Management
3. Service Transition, Service Asset and Configuration Management,
   see chapter Configuration Management Structure and Service Asset and Configuration Management
4. Service Operation, see chapters Incident Management, Request Fulfilment, and Continual Service Improvement, see chapter Continual Service Improvement (CSI)

3.2 Service and Service Portfolio

There is a lot of misunderstanding and different definitions as to what a service is and what components make up a service.

According to ITIL, the definition of Service is; "A means of delivering value to customers by facilitating outcomes customers want to achieve without the ownership of specific costs and risks". (ITIL V3 Service Transition 2011: 15)

It is necessary to define and understand services, but it is also necessary to decompose services into their various components, in order to better understand the service end-to-end.

When you start to define services, (O´Loughlin, 2010) you have to:
- Build accurate service maps piece by piece
- Price and cost services more accurately
- Report on services at different levels
- Utilize the different parts of the Service Catalog effectively
- Develop a clearer picture of what it is that IT does in support of the business
- Understand how the organization actually relies on IT to do business

O'Loughlin (2010) provides the following definition of what is a service:
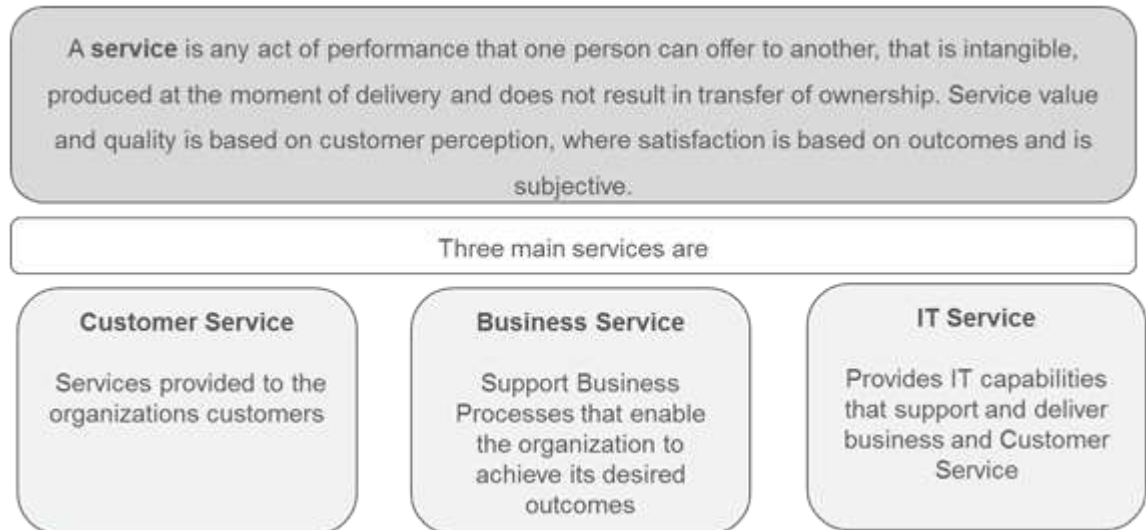
Figure 3. Service Description Presentation Material (A drawing made by the author)

Even though we have several different definitions of service, it still seems to be difficult for organizations:

- To understand what a service is in the IT and Business areas
- To define what a service is in the context of an organization
- To build a Service Catalog that is fit for purpose and fit for use

The main problem is that there is no guidance on how to design and build Service Models or Service Catalogs. If the organization fails to have correct definitions, it can lead to a Service Catalog that is ineffective and provides no real value to any part of the organization.

Figure 4 is an example of Sofigate´s ICT Academy material, where we explain the meaning of Service Description:

Figure 4. Service Description Presentation Material

This information can be leveraged to gain full control of IT organization Service Portfolio through effective Service Portfolio Management. It is easier to focus on priorities to improve the services that support the business.

Service Portfolio Management allows for the most efficient use of IT resources, which reduces costs and helps increase business agility and user satisfaction and sets up a process for the business to generate greater value (Figure 5).

Figure 5. Service Portfolio Management (A drawing made by the author)

4   Service Integration and Management (SIAM)

Service Integration and Management is an extension of ITIL focusing on managing the delivery of services provided by multiple suppliers. The increasing complexity of the IT value chain, the rise of digitalization and multi-supplier environment has led to the rise of Service Integration and Management (SIAM). SIAM is a relatively new, global, and fast evolving concept, which provides an effective way for managing services in a multi-supplier environment.

The primary focus of SIAM is to standardize how IT services are deployed, operated, and measured in a multi-vendor environment and end-to-end accountability for the performance and delivery of IT services to the users, irrespective of the number and nature of the suppliers. SIAM provides governance and management of multiple internal and external suppliers and services. SIAM creates an environment, where all parties know their roles, responsibilities, and context and are empowered to deliver the services. SIAM can be provided from within the business organization, outsourced to an external provider, or using a combination of both. Holland (2015)

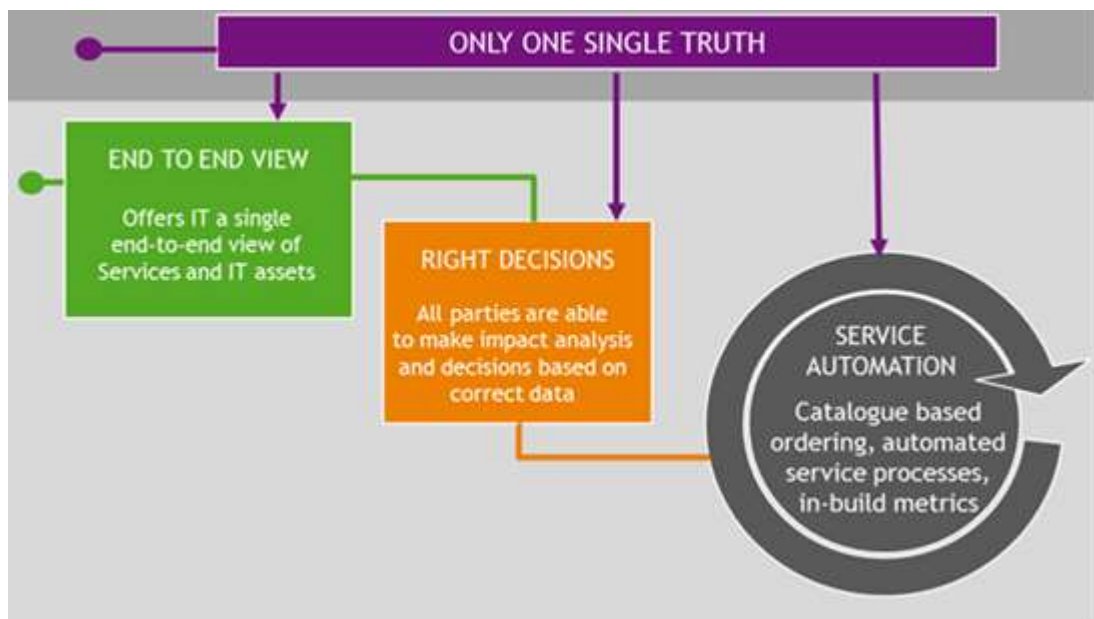Figure 6 presents the benefits of SIAM.

Figure 6. SIAM Benefits (A drawing made by the author)

4.1   SIAM at High Level

SIAM is an approach to managing multiple suppliers of services and integrating them to deliver a unified business-facing organization. SIAM operating model needs to reflect the particular requirements of businesses and the particular nature of their supplier land-scapes. That means that precise models can vary, but at a high level, the models all fit the same conceptual structure, which share some common characteristics.

Service Integration and Management (SIAM) is a model designed to provide unified and integrated services and a harmonized user experience in a multi-sourced service envi-ronment. SIAM is a process-driven function and is largely based on the globally adopted ITIL framework. Service Integration is responsible for constantly managing and monitoring the performance of services.

According to IT Standard for Business (2015) SIAM processes are managed by Service Integration Managers. While Service Owners take care of the development and have the overall responsibility of the services, the Service Integration Managers are responsible for controlling the service operations. Both Service Owners and Service Integration Managers cooperate with Service Delivery Managers, who are responsible for service delivery. As many services are often outsourced, Service Delivery Managers can typically represent Service Providers.

Most SIAM processes are typically taken care of by the SMO. These processes deal with the operative management of services and are split into six process areas:
- SIAM Compliance
- Catalog & SLA Management
- Core Process Management
- Security Assurance
- Continuity Management
- Change Management

Figure 7 has one example of a high level model with the Service Integrator on the left, which takes care of the end users and the service suppliers. A homogenous SIAM provides a model for governance, management, and coordination for all services, regardless of what type of a supplier, type of a service, end users, or number of different parties are in question.
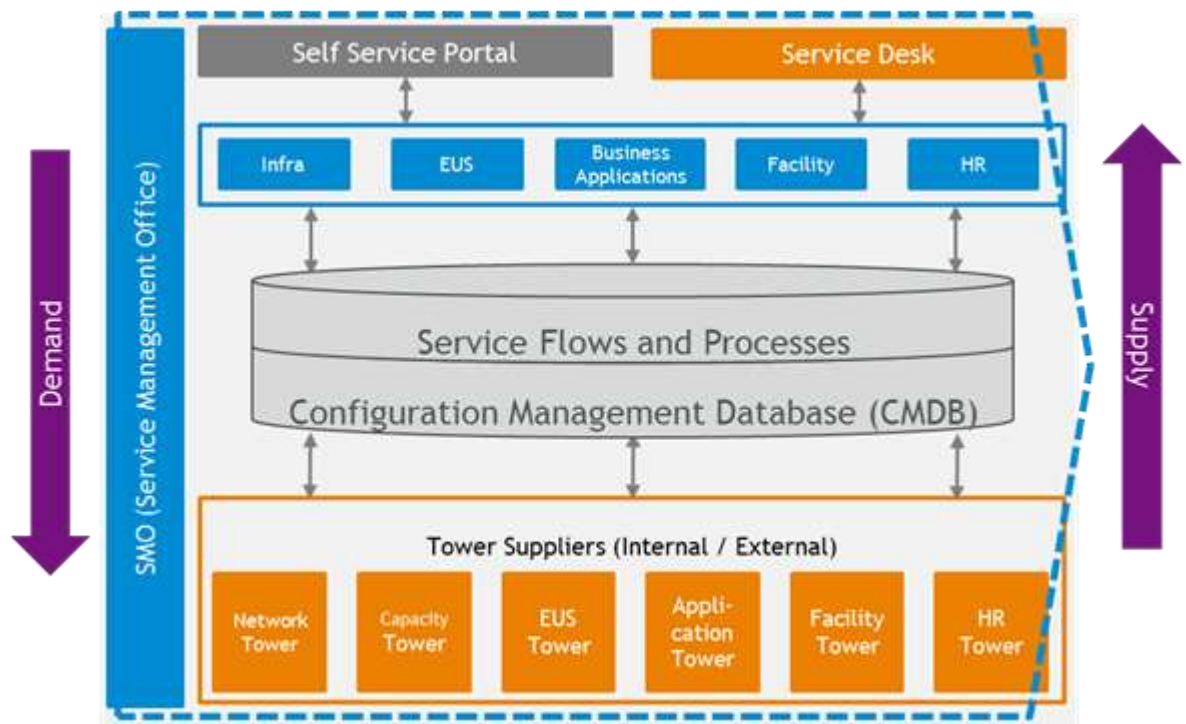
Figure 7. High-Level SIAM Model (A drawing made by the author)

At a more concrete level, the British government´s Service Design manual defines SIAM as follows: *"Service Integration and Management lets an organization manage the service providers in a consistent and efficient way making sure that performance across a portfolio of multi-sourced goods and services meets user needs".*

The term SIAM is the sum of two disciplines – Service Integration and Service Management or more like IT Service Management (ITSM), which is standardized by ITIL framework. Therefore, parts of ITIL processes are also described shortly in this thesis.
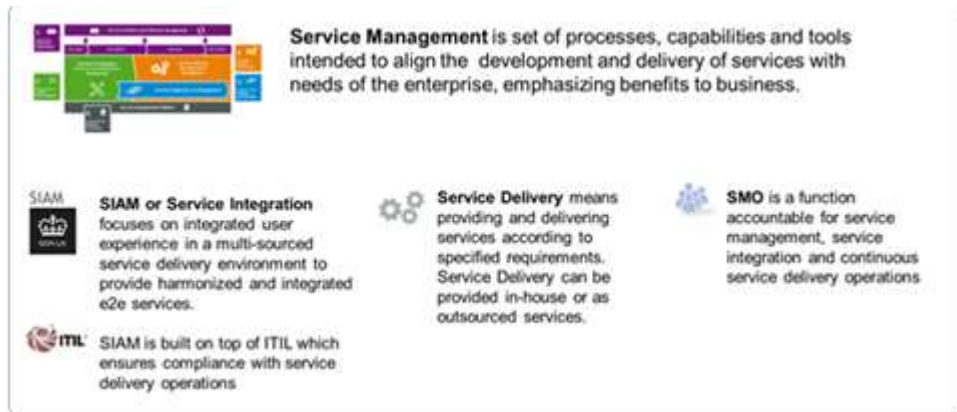
Figure 8. Framework Definitions (Sofigate´s IT Academy –material)

4.2 The Aim of SIAM

According to Holland (2015), the aim of SIAM is to provide a single point of visibility and control for the service management and delivery of all services provided by suppliers:

1. Taking end-to-end accountability for the performance and delivery of IT services to the users, irrespective of the number and nature of suppliers
2. Coordinating delivery, integration, and interoperability across multiple services and suppliers
3. Assuring suppliers' performance
4. Ensuring that the services effectively and efficiently meet the business need
5. Providing the necessary governance over suppliers on of behalf of the business.

Another view of SIAM can be found in Sofigate´s IT Academy –material.

Figure 9. The Aim of SIAM (IT Standard for Business, 2015)

Effective SIAM is dependent on the cooperation and involvement of the suppliers and the business. Because the SIAM model includes all of these parties, moving to a SIAM approach will involve changes to their ways of working. . It is also possible to apply the SIAM model in non-IT service landscapes, just like ITIL.

4.3   Drivers for Adoption

Kevin Holland (2015) found the following reasons for companies to adopt SIAM model:

1. The move to the using multi-supplier contracts instead of using a single-sourced prime contractor approach necessitates effective service integration
2. The increasing use of commodity services such as IaaS and SaaS results in limitations to achieving consistency through imposing ways of working with suppliers
3. Within larger businesses, the existence of several services, often similar in nature, managed in different ways by different teams in the business
4. Tensions between suppliers, who want to commoditize and optimize their services and customers, who want services personalized to their requirements but integrated with other services that they consume
5. The requirement to make the best use of a business's skilled resources by using standardized models with a focus on adding value
6. Increasing quality expectations from the users, while at the same time continuing budget constraints
7. The need to integrate selected services by business users while maintaining overall quality and performance
8. Mismatches between the service target achievement of individual component services and the customer's perception of the overall service that they receive
9. The flexibility required to support changing Business and IT supply models
10. The emerging customer/supplier landscape of more specialized service providers and technologies, multiple delivery channels, diversity of customer communities, and a rapid rate of change to requirements
11. A move from supply chains to supply networks for the delivery of services.

The author's point of view, the main reasons for adopting SIAM model are:

1. To ensure that services meet the business need
2. To get single point of visibility and end-to-end accountability
3. To enable organizations to retain all of the flexibility and advantage that a multi-supplier environment and a multi-source operating model brings
4. To get multi-supplier control
5. Aim to increase customer satisfaction with effective supply chain

Referring to the first reason on Holland´s (2015) list. IT organizations are structured around technology with two primary divisions – Infrastructure and Applications. With IT infrastructure the organization manages the technology below the application layer, and it is the primary candidate for outsourcing.

Within infrastructure, there are further subdivisions, which include:

- Data Center Hosting Services and Mainframe Management
- Enterprise Storage Services
- Workstation Services (typically called as End-User Services, EUS)
- Network Services
- Collaboration Services
- Application Management Services

Within Application Management Services, there are areas like application hosting, development, maintenance, packaging, implementation, and support. From the outsourcing point of view the challenges are more on the application area. Some applications are retained inside organization and some are outsources. That also makes Service Integration and Management a challenge, as there are several different ways to manage applications. (Verma and Kumar, 2014: 15).

5   The Key Elements of SIAM

The key elements of SIAM model are Service Catalog, Configuration Management Database (CMDB) and Service Operation processes, which provide guidance to achieving effectiveness and efficiency in the delivery and support of services.

A homogeneous SIAM model provides consistency for the governance, management and coordination for all services. SIAM is not just a one thing. It is a set of capabilities each of which has its own processes, functions, activities, and principles.

5.1   Service Catalog

If you are running a manufacturing business, you need an extensive, detailed view of the products provided by your company. You have to know, which products are currently being planned, in development, or already available to customers. If you do not have a detailed view of the products, how could you know the product costs, the prices, or the sources of products and components? Or how could you determine the support resources required for each product? Such information is needed for informed decision making. IT organizations have faced a similar need to have a single point of visibility into the IT services.

Without that kind of information it is difficult or almost impossible to run IT like a Business. To be successful an IT organization should create comprehensive and accurate documentation of their "products", as well as their planned and existing services. The result of that work is a Service Catalog that includes all relevant details about each service and its Service Level Agreements (SLAs), who can request those services, how much the service costs and how to fulfil you service promise.

The glossary in the Service Delivery (ITIL V3 Service Delivery 2011: 98.) book defined a Service Catalog as "a database or structured document with information about all live IT Services, including those available for deployment". The Service Catalog is the only part of the Service Portfolio published to customers and is used to support the sale and delivery of IT Services. The Service Catalog includes information about prices, contact persons, SLAs, ordering and request processes. To be fully successful, IT needs to be strategically aligned to the business and positioned as a key enabler in achieving successful outcomes for the organization. IT needs to provide real value to the organization that di-

rectly achieves business outcomes. They should also be capable of demonstrating how it provides business value to the organization to ensure that IT is positioned within the organization as a core strategic asset. To achieve this, IT has to provide services which fulfil business needs, deliver value for money, and retire services that do not provide value any longer. (ITIL V3 Service Design 2011: 100 -103).

Service Catalog describes services that IT provides to the organization. Service Catalog describes also the business processes and customer service that are supported and provided by IT. The Service Catalog can also contain the services that another part of the organization provides, like HR, Finance, Facility services, etc. The Service Catalog gives users and customers a full understanding of which services they can actually use. Different views of the Service Catalog can provide service details and information in a format that is understood by the users. (O´Loughlin, 2010: 1 – 3).

A Service Catalog has three parts, which are: Customer Service Catalog, Business Service Catalog, and the IT Service Catalog (also called as Technical Service Catalog). Their relationships is presented in Figure 10.
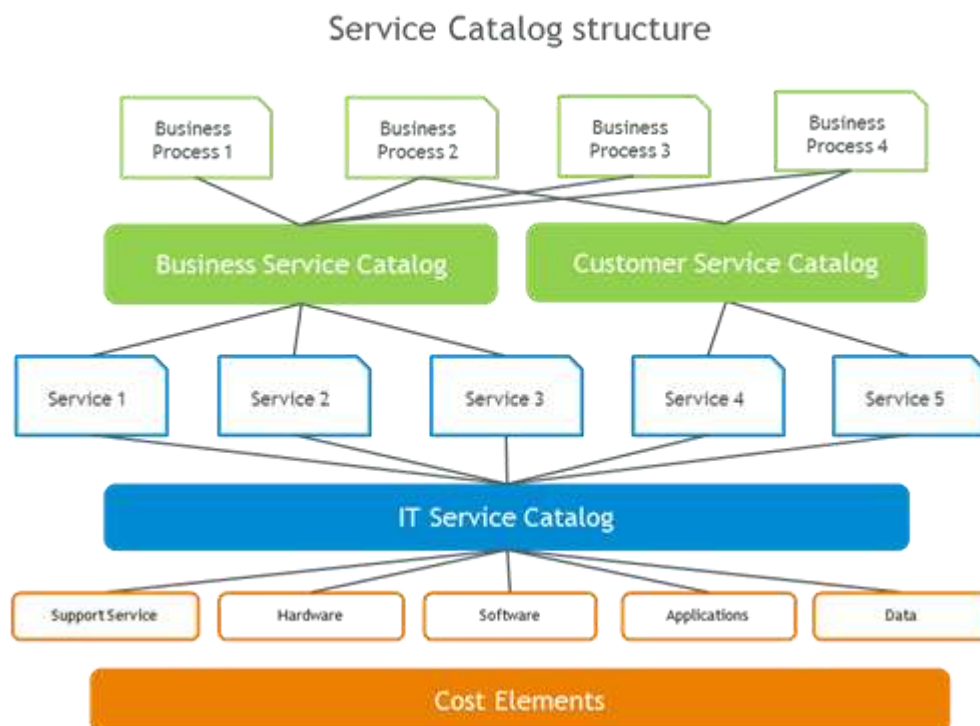

Figure 10. Service Catalog Elements (from ITIL V3 Service Design 2011: 102 – 103. Modified by the author)

5.1.1 Business Service Catalog

Business Service Catalog is a listing of the Business Services. It should also contain information on the relationships between IT Service records. This catalog represents the services used by personnel within the organization and should be written from their perspective in language and format that they understand. Business Services rely on technology, so there is a direct relationship between the two.

Business Service is something that:
- Supports business processes, for example HR, Sales, etc.
- Is one or more IT Services that enable a business process or function
- Are services used by the business to support the business
- Can have charging applied to it
- Delivers value to the business

Key points to note are that the Business Service Catalog should contain:
- Details of the Business Services
- Relationships between IT Services and Business Services

(O´Loughlin, 2010: 35).

5.1.2 Customer Service Catalog

The Customer Service Catalog contains a listing of the customer services. This catalog represents the services used by the organization's customers and should be written and presented in a language or view that is understood by the customer.

Customer Service is something that:
- Is provided to a customer that allows them to interact with the organization
- Is seen from the perspective of the customer and delivers value to customers
- You can sell to a customer or that a customer can buy and use

Key points to note are that the Customer Service Catalog should contain:
- Details of the Customer Services
- Services that are used by customers to interact with the organization
- The relationships to Business Services

(O´Loughlin, 2010: 35).

5.1.3 IT Service Catalog

IT systems and IT Services together constitute the IT Service Catalog. IT Service Catalog underpins the Business Service Catalog and provides the IT view. It shows the details of the services, including the relationships of the services to the enterprise infrastructure CIs (Configuration Items) that support them.

Technology enables organizations to work more efficiently and effectively and enables them to deliver more to the users and customers faster and smarter. To achieve required benefits from technology, an organization should identify and invest adequately in the technology that is required and discontinue investing in technology that is no longer needed or can be replaced with cheaper alternatives. Organizations need to understand what technology is required for the core business applications and need to make sure that adequate support and maintenance is provided by each supplier/partner.

Organizations should identify any gaps in the provision of support and close out any gaps with the relevant suppliers. Technology decisions should be based on the best fit that will achieve the business needs and provide value at an acceptable cost. In the IT Service Catalog, technology can be broken down into IT solutions and IT services, and IT solutions can be broken into Configuration Items (CI) that make up IT solutions.

According to O´Loughlin (O´Loughlin, 2010) the IT Service Catalog contains a listing of the IT solutions and IT services, and it also maintains the relationships between the IT solutions and IT service records.

IT Solution:
- Is a grouping of CIs that make up an end-to-end IT solution like an Authentication System or a Storage System
- Provides a capability to satisfy a business need like the ability for all staff to store data (e.g. File Storage)
- Is built from CIs that exist in the CMDB
- Is a collection of IT CIs

IT Service:

- Is based on one or more IT solutions
- Is an IT Solutions that can be charged for, outsourced for, or paid for
- Provides the means to deliver a business or a customer service
- Is seen from the IT perspective as a collection of IT solutions
- Charging can be applied to users of the IT service
- Maps to IT Solutions and not to CIs directly

Key points to note are that IT Service Catalog:
- Contains details of the technical services
- Contains the relationships between IT solutions and IT services
- Contains relationships between or links to CIs and IT solutions
- Generally written and presented in a technical language or view
 (O´Loughlin, 2010: 33 - 35).

The aspects of the Service Catalog have parallels in manufacturing firms. The Business Service Catalog is similar as the product catalog and the IT Service Catalog is similar as the manufacturing product documentation that show the configuration of components and parts that make up each product.

The Business Service Catalog communicates essential information to the users. The IT Service Catalog communicates essential information to the IT staff and gives an understanding of the configuration of services and enables IT to reuse services in different applications.

5.1.4　The Service Request Catalog

The three Service Catalog types presented in the previous sections are static information about each service listed in Service Catalog records. The Service Request Catalog is a dynamic element of the Service Catalog, which is published to the users and customers and allows them to order goods and services.

Service Request Catalog is a key element of SIAM. With a Self-Service Portal it is possible to integrate and automatize Requests, Incidents, delivery, and manage multi-supplier environment. Service Request Catalog is known as a Self-Service Portal, which employees and customers can use by themselves. O'Loughlin (2010: 36 - 37).

An example of such a Self-Service Portal is presented in Figure 11.

Figure 11. An Example of Self-Service Portal

According to IT Standard for Business (2015) an enterprise should aim to automate IT services as widely as possible. Increased automation will spare resources and enable self-service independently of time and place. This can be done efficiently via a Service Management Platform (ITSM-tool), which enables the management of services and related transactions.

The platform enables process automation and the implementation of a self-service portal for end users. The Service Management Platform includes a Configuration Management Database (CMDB) as a repository for configuration items as well as their relations and attributes.

Service Request Catalog can be utilized to enable staff to work more efficiently and effectively. Service Request Catalog can reduce the cost by using IT to automate the delivery of Service Requests. The element is often an extension of the organization's Service Management System like ServiceNow, which I use as an example in this thesis.

5.1.5 End-to-End Service Mapping

The Service Catalog is a definition of services provided by the company IT. It makes IT services more understandable and concrete, and is in fact the basis for developing, organizing, delivering, and improving IT management. In addition, it creates a link between business and IT by explaining, which services are available and what components each of these services include. The Service Catalog helps demonstrate the service focus of IT and the value produced for the business.

All three types of Service Catalog i.e., the Customer, Business, and IT Catalogs contain information regarding particular services and relationships between their service records. If a Service Catalog is defined correctly, it can develop into an end-to-end service model, which maps out all the services used by an organization and their customers. Below is an example of an end-to-end service mapping.

Business Service Management (BSM) is an approach for managing IT from the perspective of the business. With BSM you can make better decisions, about which services to develop, deploy, and retain. Effective Service Portfolio Management helps you make decisions and improve your service offering by focusing on services that deliver the most value to the business. O'Loughlin (2010: 61 - 63).

The most complex task of IT is to integrate IT goals and objectives with overall business goals and value drivers. IT needs to find a mechanism to link IT services to business processes. The IT organization needs to manage IT as a service rather than as individual technology components. It requires that many individual technology components, applications, and systems work together to deliver the desired business outcome.

A BSM (Business Service Map) approach focuses on linking service assets to Business Services, which enables IT to make business sense of individual technology components. Figure 12 is one example of a BSM view, which you can obtain from ServiceNow solution.
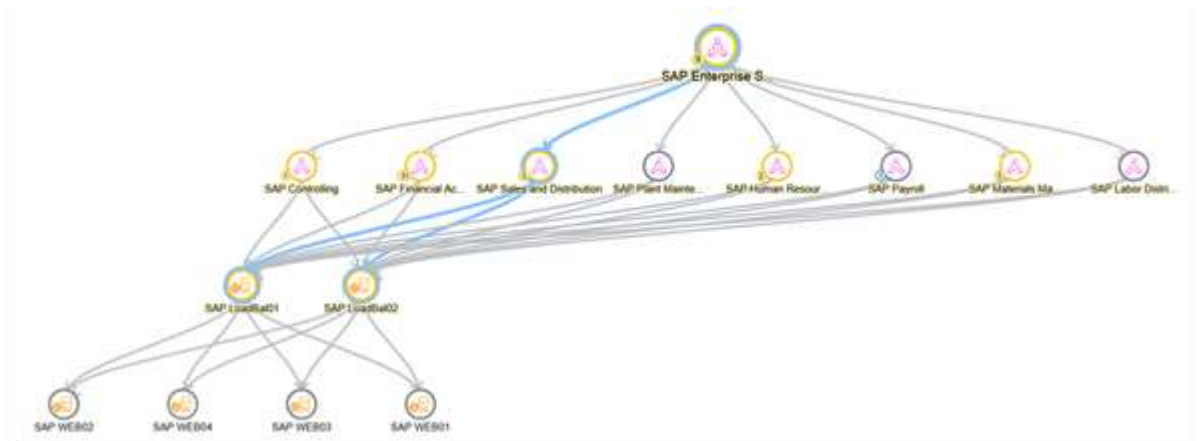

Figure 12. Example of BSM View

5.1.6   Service Portfolio Management

Service Portfolio defines a model of how services are managed throughout their lifecycle. The Service Portfolio includes all services at any phase of their lifecycle.

Figure 13. IT Standard for Business, Service Portfolio Management. "Copyrights owned by ICT Standard Forum".

This section introduces those Service Strategy processes that belong to this thesis subject. These processes are vital for an organization to run the business according its strategy. Service Strategy processes are more about the strategy and goals of the organization, and without those the organization will not understand the direction, in which it is going.

Service Portfolio describes a provider's services in terms of business value. Service Portfolio is managed by a service provider, and it is a complete set of services they deliver. The purpose of Service Portfolio Management is to ensure that they have services that meet the customer and business needs. It ensures that services are defined clearly and linked to the achievement of business outcomes. The value for the business comes from being able to understand exactly what the service provider will deliver to them and what the conditions are. (ITIL V3 Service Strategy 2011: 170 - 171)

The work methods of the Service Portfolio Management process are: define, analyze, approve, and charter (Figure 14).
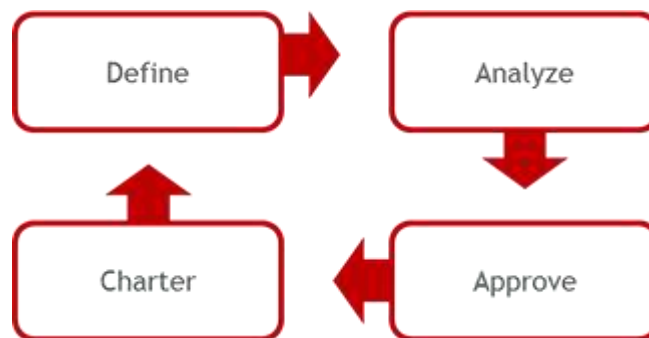
Figure 14. Service Portfolio Management Methods

Service Portfolio Management begins with defining the services by focusing on documenting and understanding the existing and new services. Analyzing the services will indicate if the service is able to deliver value in an optimal way. Approvals are needed for ensuring sufficient resources to deliver the services. It is not enough to just build on request, services have to be formally chartered. (ITIL V3 Service Strategy 2011: 180 - 181)

5.1.7 Service Catalog Management

This section introduces the Service Design processes. The key topics in Service Design are Service Catalog, Service Level, and Supplier Management.

Service Design is the stage where Service Strategy turns into the planning for the delivery of the services. Services must be designed with the business needs in mind, or otherwise the services do not provide the needed value to the business. Service Design is the stage, where strategic goals are converted into portfolios of services. The scope of Service Design is not only to plan new services, it also includes all services that are being run or being prepared to run. It helps organizations to achieve service levels and it guides how to develop design capabilities for service management. (ITIL V3 Service Design 2011: 96 - 97.)

The Service Catalog Management process provides a single source of all operational service information. The information consists of all of the agreed services. The Service Catalog Management ensures that the Service Catalog is available to those, who need that information.

The goal is that the Service Catalog is produced and maintained. Service Catalog should include correct information on all services, which are in production and also those, which are being prepared to be run. The Service Catalog Management process scope is to manage the catalog information and ensure that the current details, priorities, status, and relations of all services are correct. The organization should define dependencies and logic between the Service Catalog and Service Portfolio, as well as Configuration Items (CIs) and the structure of Configuration Management Database (CMDB).

5.1.8 Benefits of the Service Catalog

Any element of the Service Catalog that can reduce manual labor may provide a financial return on investment. Below is a list (O´Loughlin, 2010) of Service Catalog attributes, which can reduce lost time spent looking for information by IT support staff.

The Service Catalog:
- promotes IT into the service focused role
- facilitates IT to be run like a business and to allocate costs, or service charges
- provides a platform to develop a clearer understanding of business requirements
- allows users and customers to choose the correct service for their needs
- provides the foundation for formal Service Level Management
- improves the relationships and communications between IT and the business, users, and customers
- identifies critical business systems for allocating resources e.g., during high demand peaks or to prioritize Incident resolution
- increases customer satisfaction, O'Loughlin (2010: 4).

5.2 Configuration Management Database (CMDB)

A Configuration Management Database (CMDB) is a database that contains and maintains data on all IT resources, including infrastructure elements and services as Configuration Items (CIs). It is a key element of SIAM model.

A CMDB provides the informational foundation for both the Business Service Catalog and the IT Service Catalog. From a CMDB you can view the services, which are currently available to customers. You can also get a view of the enterprise infrastructure, including all services and their relationships to the underlying enterprise infrastructure components. (ITIL V3 Service Transition 2011: 89 - 95.)

5.2.1 Configuration Management Structure

A CMDB gives detailed data on each CI and maintains information about the relationships of the CIs to each other. A CI can be any conceivable IT component, including software, hardware, documentation, and personnel, as well as any combination of them. A CMDB provides an organized view of data and a means of examining that data from any desired perspective (Figure 15).
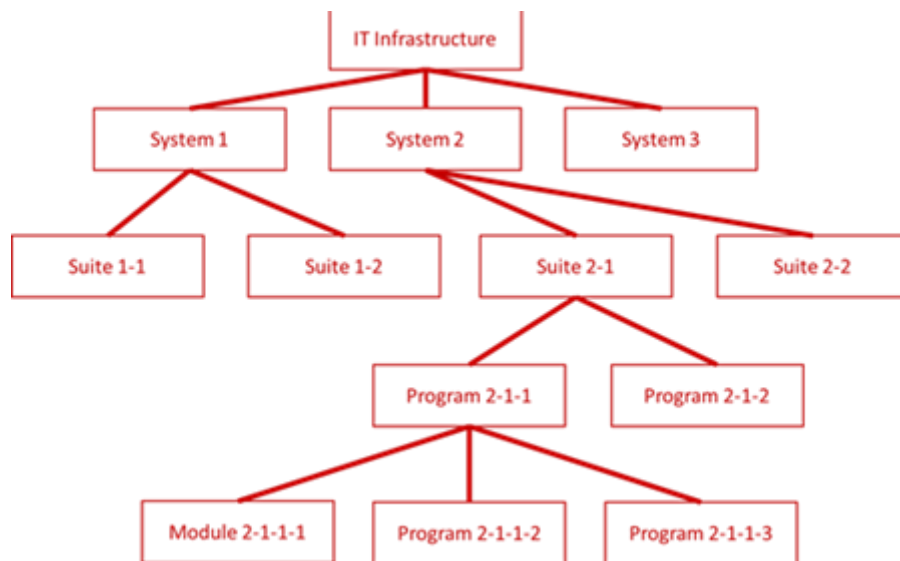
Figure 15. A Simplified Example of an IT Infrastructure,
(ITIL V3 Service Transition 2011:108.)

5.2.2 Service Asset and Configuration Management

The processes of Configuration Management seek to maintain information about CIs and service assets, and track any changes made to them. The organization can be fully efficient and effective only if assets are managed in a way that supports the other Service Management processes.

The main activities involved in Configuration Management are to identify, control, record, report, audit, and verify CIs. It is important to ensure that only authorized components are used and authorized changes are made. The coherence of service assets and CIs needs to be protected and controlled. Authorized information includes CI attributes and relationships. An accurate and complete Configuration Management Database (CMDB) is the

most important component in this process, and it needs to be well planned and maintained.

The aim of the process is to support and provide accurate configuration information. This enables people to make the right decisions at the right time. The goal of the process is to define and control the components of logical services and physical infrastructure. Accurate configuration information needs to be maintained regarding the prior, planned, current, and retired state of the services and infrastructure. (ITIL V3 Service Transition 2011: 89 - 93.).

5.3   SIAM Operational Management Components

Service Operation includes the management practices of running the day-to-day operations of services. This section will provide a brief introduction to the Incident Management and Request Fulfilment processes, which are included in the Service Operation part of the lifecycle and are associated with this thesis.

Operational ITIL processes provide guidance on how to achieve effectiveness and efficiency in the delivery and support of services. This guarantees the value for the customer and the service provider, and this is where the strategic goals are finally realized. The purpose of Service Operation is to support stability.

This section discusses briefly Incident Management and Request Fulfillment processes, which are the most commonly implemented processes in IT organizations. Those processes are usually referred to as, basic Service Desk processes. These processes belongs in the Service Operation phase. (ITIL V3 Service Operation 2011: 72.)

5.3.1   Incident Management

The goal of the Incident Management is to restore normal service operation as quickly as possible and minimize the adverse impact on business operations, thus ensuring that the best possible level of service quality and availability is maintained.

Incident Management provides ability to detect and resolve Incidents. By detecting and resolving Incidents in a controlled way results in shorter disruption to the business and higher availability of the service. Incident Management includes the capability to identify

business priorities and dynamically allocate resources as necessary by aligning IT activity with real-time business priorities.

The definition of Incident Management is: "The process responsible for managing the Lifecycle of all Incidents. The primary objective of Incident Management is to return the IT Service to normal state."

Service Level Agreements (SLAs) define, what here is considered as, normal service operation. ITIL Service Operation defines an Incident as: "Any event which is not part of the standard operation of a service, and which causes, or may cause an interruption to, or a reduction in the quality of that service."

Incidents can be reported by users through Service Desk or Self-Service Portal. For service operation to run well, Incident Management is generally among the first processes to be implemented in ITSM projects. (ITIL V3 Service Operation 2011: 72 - 86.)

5.3.2   Request Fulfilment

The process handling end-user service requests is called Request Fulfilment. Service Request is a common description for different types of end-user requests. Usually they are small changes, such as requests to change a password or ordering a new laptop. As they are by nature low risk, massed, and generally low cost, it is better to have a separate process for handling them instead of handling those in the Change Management or Incident Management processes. Service Requests can and should be planned so, that there are separate work flows and records for them in the ITSM-tool. (ITIL V3 Service Operation 2011: 86 - 97.)

5.3.3   Continual Service Improvement (CSI)

When an organization has defined its services, designed and implemented them in production, they need to start analyzing and developing those services continually. It is not enough that they are running services, it is important to develop and manage them to run even better. The services should be continuously monitored and measured. The data that an organization has received should be used to improve the current and new processes, which is the target of Continual Service Improvement (CSI).

The purpose of CSI is to continually modify IT services to the changing business needs by identifying and implementing improvements. All this is done through the different phases of the Continuous Service Improvement –lifecycle (Figure 16). Briefly, it is about looking for a way to improve process turnaround, efficiency, and quality.

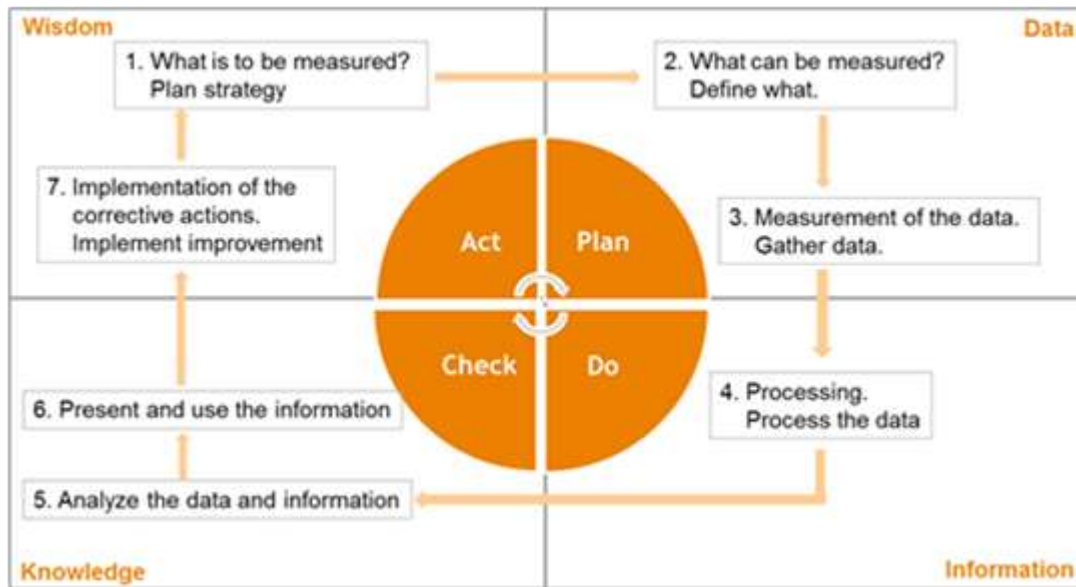Figure 16. An Example of 7 Step Continual Service Improvement (CSI) Model

According to ITIL, CSI can be done with different methods, which can provide quantitative or qualitative results. CSI counts heavily on the activities of all other Service Management processes and an organization should not overlook the value of processes and the data those can provide. (ITIL V3 Continual Service Improvement 2011: 3 - 5.)

6   Model for SIAM Implementation

When starting to implement effective SIAM, focusing on processes and technology alone will not deliver the expected benefits. According to Holland (2015) effective SIAM requires also consideration of People, Process, Suppliers, and Products.

Figure 17 represents author's view of the elements of SIAM. Each of them will be described in the following sections.

Processes	Suppliers	Tools	People
1. → 2. → 3.			
An adoption of SIAM should always start by defining processes	The SIAM is as good as the weakest supplier	Supportive tools are the primary products for effective SIAM	People make SIAM work

Figure 17. An Effective SIAM Model (A drawing made by the author)

6.1   Process

Operational management processes like Incident Management and Request Fulfilment are mandatory for successful SIAM model. SIAM process documentation should attempt to map inputs to outputs and ensure the flow across the boundaries. An effective SIAM model requires the use of one common tool and processes at the customer organization. If the customer has to use as many processes as they have suppliers, it is not possible to manage all of them effectively.

Even if the customer has defined one common process, it is important to understand that one size will not fit all. Therefore, they have to define the standards for exchanging service management information. For example, a minimum dataset for incident and request records and how to map status values and urgencies. The Implementation Plan for SIAM elements, which can be found as an attachment (Appendix 1, Implementation Plan), shows examples of how Sofigate has implemented the SIAM model. Holland (2015: 10).

6.2 Suppliers

It is not possible to build successful SIAM only with good processes. SIAM has overall accountability for providing the required quality of services to the business and SIAM is strongly dependent on the understanding of each supplier's capabilities and responsibilities. Good working relationships between the SIAM process and supplier process owners is necessary, as well as networking with suppliers who will work with and support each other.

When you start to adopt the SIAM model, it is important to start by developing a Service Portfolio and Service Catalog, where you collect the information on all the services provided by Internal or External suppliers. There has to be a consistent way to take care of the Service Portfolio and Service Catalog. Otherwise, the SIAM operating model cannot be fully designed and adopted.

In a multi-supplier organization, there are three types of suppliers. An Internal Supplier is, for example, a team inside organization, which takes care of certain applications, servers, etc. Another one is an External Supplier (outside of the organization), which for example, takes care of Capacity Services or End-User Services. Those suppliers are so called Towers. Then there is also a group of Suppliers, the so called Third Party, which will take care of a specific application or service.

When a company will start to build up a SIAM model, they have to separate these three types of suppliers and figure out a way to assign Incidents and Requests for them. You can find out Sofigate´s way to solve that from Attachment 1, Implementation Plan for SIAM model. Holland (2015: 11 - 14).

6.3 Tools

Supportive tools are the primary products for effective SIAM. Effective supportive tools are important for Service Management in general, but a multi-supplier environment has the added complication of having to integrate inputs and outputs to/from external suppliers.

An effective SIAM model requires a clear understanding of the boundaries and dependencies between all the services. A visual map of the service hierarchy is important, especially the technical interdependencies between services and also those services, which do

not have any dependencies. It is important to note that the majority of services will have at least one dependence on another service.

The Service Portfolio and Service Catalog should include the Business Services, IT Services and the individual SIAM components. All of those elements have to be mapped with clear dependencies and service characteristics. It is also important to ensure that mapping is done in a consistent way, with a common template and with common definitions and classifications for all of the services. Without this, a full understanding of the service landscape would be hard to obtain services between different suppliers and tools.

The areas, where SIAM needs those kinds of tools are Service Reporting, Operational Service Management (including Incident, Service Request, Change and Problem Management), Workflow Management, Service Portfolio and Service Catalog. These kinds of tools are called ITSM-tools, or in other words IT Service Management Tools. Holland (2015: 14 - 15).

6.3.1 ITSM-Tool Integrations

In order to provide an effective information exchange between the customer and suppliers, it is necessary to build an integration between the customer's and the suppliers' ITSM-tools. There are several challenges and complexities when integrating all toolsets together. It is highly likely that ITSM-tools are easy to configure and integrate, as there are currently no commonly used interface standards for the exchange of Service Management information. If possible, Sofigate will propose (Appendix 1, Implementation Plan) that the

customer concentrate all their information in one ITSM-tool, which is their own tool. That will usually mean several different integrations.

Figure 18 is an example of the real multi-supplier environment and its integration architecture.
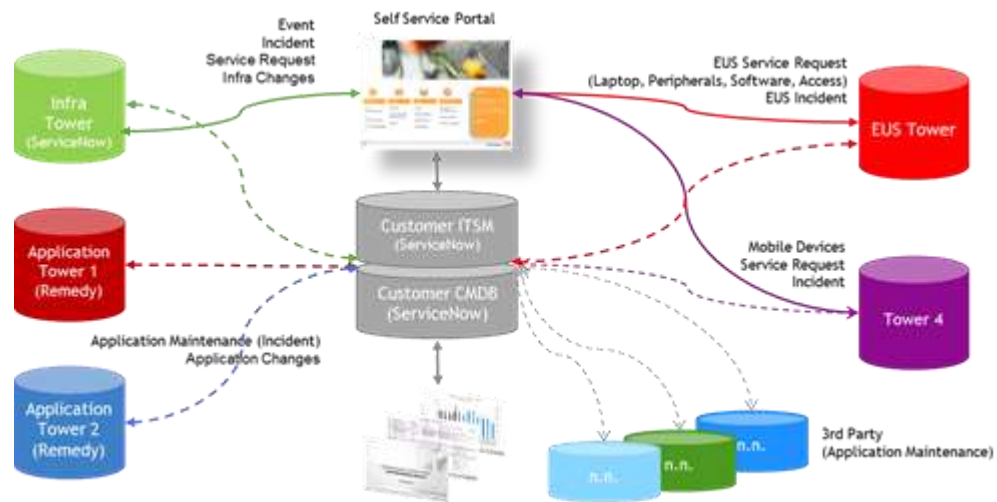

Figure 18. Example of Integration Architecture (A drawing made by the author)

6.3.2 Common Ways for Integrations

There are a few common ways for integrations. Here is a short overview of different integrations, and in which situations they are suitable.

Point to Point –integration
Point to Point –integration means that the defined information will be send from the customer's ITSM system to the supplier's ITSM system. If the Incident Management process is integrated, the defined information about incidents, their status, comments etc., will be send back and forth between the two different systems.

One Way -integration
One Way –integration means that information is sent from one system to another, but it will not update the information on the other side. Usually it means that information is in Read Only –format and it is not possible to send it back or modify it.

Email-Integration

Email -Integration means that it is possible to send email from the customer´s ITSM tool to the supplier´s (for example Application Maintenance Supplier) ITSM tool. The supplier can give their answer by using email Reply-functionality. The answer will be sent via an email integration, and it will update the Incident´s Action Log.

It is not easy to build several different integrations. It takes time to define all the rules on how to send information back and forth, and it is also quite expensive to do that. It would be most beneficial if it was possible to make a contract with the supplier that they will use the customer's own ITSM tool. Even if there is a need to buy licenses, in several cases that will be much cheaper, than building integrations.

6.4 People

SIAM is not just processes. It is people, who make SIAM work. An effective SIAM model needs a supportive culture and an effective relationship between all people at all levels in the business organization, the SIAM function, and at the suppliers.

It is important to note that the key staff, such as process and service owners, who are engaged in SIAM, are as qualified and knowledgeable in ITSM as the staff at the supplier's side. Those skills are important for being able to design and govern effectively the necessary processes and activities.

Effective SIAM also needs soft skills as well as technical or process skills. The biggest challenge is that many of the SIAM staff will come from other parts of their own organization or from external suppliers, who may even be contracted to a different organization. They are outside of the direct management control, and it is important that SIAM key staff have the key soft skills like relationship and conflict management and negotiation skills.

All of the functions in SIAM need to be seen to work as one. It is vitally important that the SIAM function establishes and maintains trust at every level in the SIAM organization. It is also important for SIAM to be effective to always focus on the business outcomes. Every member of staff in the SIAM function should be able to articulate, how they individually support the business and always give specific examples of how they have done it.

The organizational structure of SIAM is also significant, and it is important to avoid creating an inflexible SIAM function that is not in touch with the business. The SIAM function has to be able to take care of services that change over time and give time to services, which require more attention than others. All SIAM staff should have a good way to support this. (An Introduction to Service Management and ITIL® 2015: 9 - 10).

7   SIAM Implementation Planning

The goal of this thesis is to create concrete and practical material about the Service Catalog and CMDB structure and implementation of SIAM model for the party who commissioned this thesis, Sofigate. The result of this thesis will be a plan that Sofigate consultants can use, when they are implementing SIAM model at their customer environments. Mainly these implementations are executed using the tools Sofigate sells (ServiceNow and RemedyForce), however the plan is fully applicable with any other ITSM-tool that the customers may use.

As the whole SIAM model implementation has multiple phases, and it includes several processes, to clarify and limit the size of this thesis I have chosen to concentrate only on the Incident Management and Request Fulfillment processes, as well as CMDB and Service Catalog Implementation.

Since the phasing of the implementation plan, and all the practical examples and models (Appendixes 1 - 4) related to that are company confidential information for Sofigate, I have described on a rather high level, which types of phases SIAM model implementation contains.

Appendix 1, Implementation Plan (Confidential) is a document based on Figure 17. Implementation Plan includes steps that are needed for SIAM based ITSM-tool implementation.

Appendix 2, A Model for SIAM based Service Catalog is a document (Confidential), which includes Sofigate´s Service Catalog Concept and how to implement that in an ITSM-tool.

Appendix 3, Configuration Management Database (CMDB) –structure (Confidential) is a structure for CMDB, which helps consultants to explain the CMDB-structure for customers.

Appendix 4, Logical CI Templates are templates for configuring CMDB (Confidential).

7.1 Things That Should Be Considered When Implementing SIAM Concept

When an organization makes the decision to launch SIAM model implementation, it is important to keep in mind that it is quite an extensive endeavor that often takes several months to execute. The implementation requires contribution from several employees and commitment not only from the top management but also from the middle management and expert level. Many organizations already have ITSM-tools and practices in use and they may continue to be used as is, or with slight modifications or additions. On the other hand, there are several procedures that should be given up in order for the SIAM-based operating model to even be possible.

A full-blown implementation of the SIAM model requires that all ITSM information in the company go through its own ITSM system, which utilizes a CMDB, and where service providers can input/log/add information in a distributed way. A centralized database, through which all information travels, is the only way to enable measuring the end-to-end process and monitoring the quality in a multi-supplier ecosystem.

7.2 The Challenges for SIAM Implementation

Implementing the SIAM model has several challenges, and solving those calls for communication between all the parties, and a common understanding and will to find a solution that works best for the whole. Deploying the SIAM model requires that the different service providers are open with each other and work together. This cooperation is challenging as the service providers are often competitors, and the SIAM model entails sharing information between different parties.

In some situations, the implementation of the SIAM model is also challenging because the service providers work globally. Many of the service providers operating in Finland use global ITSM systems and modifying their functionality to suit one customer's needs is practically impossible. These types of challenges are not impossible to solve, but solving them does require that the suppliers participating in the endeavor are experienced and that the customer has a flexible system.

In practice, all suppliers of IT services claim that they operate according to ITIL processes. ITIL is a framework and a collection of best practices, instead of an exact manual, based on which the companies have designed their own processes. As a result, processes and procedures differ between companies. In some situations, the differences in processes

are such that a flexible implementation of an end-to-end process is truly challenging. In implementing the SIAM model, the most important thing is, however, for the customer to define their own ITIL processes (e.g., Incident Management), to which the different service providers can attach. This way the customer can ensure a successful and common way of operating, common key performance indicators, and ways of reporting.

A big challenge in implementing the SIAM model are the existing contracts between the customer and the service provider. Those contracts are often rigid and not flexible enough to allow for changes. In order for these types of challenges to be identified already at an early stage, it is useful to evaluate the differences between processes and to ensure from a contractual perspective the possibility to perform the needed changes.

7.3   Comments from Colleagues

The purpose of this chapter is to answer the questions posed in the Internal Expert Interviews chapter. I interviewed six key people in the organization to get an understanding of the key issues they have met.

The interviewees represented the following roles; Managing Director, Business Executive of Service Management, Concept Owner, Project Manager, Senior Advisor, and Junior Advisor.

Questions and topics, which I got from my colleagues were:

To get a simple model of SIAM
As the result I created a simple model of SIAM, which is presented in Figure 9. Appendix 7 shows how I used Iterative Development Model for material development.

What are the dependencies and differences between Self-Service Portal and Service Catalog?
I described dependencies and differences in Appendix 2, A model for SIAM-based Service Catalog (Confidential).

Which are the key elements of SIAM based CMDB?
I described the key elements of SIAM in chapter The Key Elements of SIAM.

8   Conclusions

The purpose of this chapter is to summarize how the Implementation Plan can be utilized in practice, according to what we have found out so far from the feedback. The comment from the SIAM concept owner was; "I think that this thesis summarizes really well SIAM, its objectives and benefits and illustrates the concrete meaning of Service Catalog and CMDB as foundations for SIAM. In addition, the work includes lots of good outlines that can be utilized in Sofigate's Service Management Concept, project communication, and Sofigate's IT Academy".

SIAM-based Service Catalog structure is a new illustration that I created during writing this thesis. I used this picture discussing the different areas of Service Catalog with my colleague Pavel Haimi during the planning of the script for the video that is added as an Appendix 5 Videoscript (Confidential) in this thesis. I have also used the picture during our new, major customer project that started in August 2015. The result from the first Service Catalog –workshop was that the illustration helped the customer to better understand the different areas of Services Catalog.

Implementation Plan is also new, a collection of materials organized into one document, which I created during the writing of this thesis. We will distribute this document to all my colleagues working in the ITSM-team. The goal is to have a common, uniform model and productized models for all our customer projects. In the future, this will help the support team significantly, in their endeavor to advice on, support, and maintain the customer implementations. If the implementations differ from each other a lot, maintaining and supporting them become truly challenging.

I have used the picture of the CMDB structure that is included in the Implementation Plan, in our customer projects. The customers thought the picture to be clear and found it helpful to understand the full picture of CMDB, as well as the needed Configuration Items and their relationship with each other. My colleagues have started to use the same structural picture in their own projects as well, and personally I've used the structure in about ten different customer projects. The template models of the Configuration Items (CI-class) are generic, and thus usable for different customers. These template models were found to be functional in several CMDB implementation projects.

8.1 Responses

The purpose of this chapter is to answer the questions posed in the [Research Questions](#) chapter.

Which conceptual elements are important when ramping up Service Integration and Management (SIAM) -model?

Implementing the SIAM model requires that the following areas are in good shape:

- Processes; the operative processes are defined (e.g., Incident, Request, Change, and Problem) and the service providers are required to connect to them.
- Suppliers; combined end-to-end –processes are defined between the customer and supplier.
- Tools; ITSM tools are taken into use, the operative processes and the required integrations are implemented.
- People; people are trained and working according to the processes throughout the organization.

What is the role of Service Catalog in SIAM?

Service Catalog is in a really important role when SIAM model is taken into use in a multi-supplier environment. A Service Catalog includes all the services provided by the different service providers, the service promises, and the connection or association to other services, as well as the instructions on how to order the service, how fast it will be available, etc. A functional service catalog can contain automation to make the order-delivery chain continuous and consistent between the customer and the service provider. An integrated and automated implementation is the main purpose of the whole SIAM model.

What are dependencies between Self-Service Portal and Service Catalog?

All the services in the Service Catalog are published in the Self-Service Portal. The Service Catalog has different types of expressions of a service depending on, from which role the person is viewing the service. For instance, a Workstation Service view for the specialist working in IT contains technical information about the workstation models, operating systems, etc. Whereas the end user view contains pictures of the available laptops, information about the delivery time for the devices, and which applications or software is included with the device. For the line managers the information could include, e.g., price per month, and so on.

Why Service Catalog is so important?

Service Catalog is a collection of all services that IT can provide for the business and end users. It makes Demand/Supply –process transparent, and it makes it easy to order services regardless of whether they are technical or business services. Service Catalog makes it easier to allocate costs and provides the foundation for Service Levels and through that it will increase customer satisfaction.

Which elements are needed in CMDB (Configuration Management Database), when ramping up the SIAM model?

This is described in Appendix 1: SIAM Implementation Plan (Confidential)

What is the role of operational ITIL-processes?

With the help of the operative processes, the service production can be managed and the services developed. The processes are implemented in the offered services, and this enables fast order and delivery cycles, and the automated forwarding to the right service providers (internal or external). With the operative processes the order and delivery cycle can be measured and monitored. There are examples of SIAM compliant Incident and Request Fulfilment –processes in Appendix 1, Implementation Plan (Confidential).

What are the steps when implementing SIAM-model?

This is described in Appendix 1: SIAM Implementation Plan (Confidential).

8.2   Ideas for Further Development

Beyond this thesis work, I feel it is very important that our company continues to create implementation plans also for other SIAM processes. These processes include, for instance, Problem Management, Change Management, and also other ITIL processes. The work should be done in stages according to which processes are most commonly used at our customer IT operations.

Another important task is to translate the materials to Finnish, as we implement the SIAM model also for the public sector and for companies that solely use Finnish as their working language.

8.3 Personal Reflection

I am very satisfied with how fast I was able to complete my studies and how, in a rather short period of time, I was able to finalize my thesis work.

Service Integration and Management (SIAM) is a model that surfaced in the 2010s. The model has reached Finland only after year 2014. The subject of SIAM was very interesting to me already at the beginning of my studies, in the fall of 2013, when I made my first course, I wrote a Development Plan of SIAM (Appendix 6, Development Project Service Integration). I decided to write my thesis on this subject, as it relates so closely to my own work, and I believe it to be very useful to me professionally. The other reason why I chose this subject, was that the SIAM model is one of the concepts in our company that we have invested a lot of effort to develop, in the past year.

SIAM, as a subject for the thesis work, was a quite challenging choice, as it was very hard to find unbiased material about it. Most of the material that could be found was marketing material from different vendors and interpretations of how each vendor could help implementing the SIAM model and offer SIAM as a service for their customers. On the other hand, this also made the work very interesting and forced me to really interpret the sales material and find details, with which I could form my own opinion and understand the subject. The other challenge was that the SIAM model is a broad subject, so to limit that into a reasonable entity for the thesis was hard.

I felt that this subject was especially interesting and timely, as the most important result of this thesis is the Implementation Plan for the SIAM model (Appendix 1 – 4). That material is significant for our company, since the interest for implementing the SIAM model is, at the moment, high, and now Sofigate can offer a uniform way of implementing the SIAM model. The implementation material has been mainly designed to be applicable for implementing the ITSM tools that we represent (ServiceNow, RemedyForce), however the material can also be utilized with other ITSM tools to make them fit the SIAM model.

I have worked in the Service Management area for nearly 15 years, and since 2004 with the ITIL processes, mapping and implementing them. I have been involved in mapping and implementing several dozens of ITSM solutions, as well as mapping services and Service Catalogs. During the past five years I have been involved in several projects to define and implement the integrations between the customer and the service provider

ITSM tools. Despite having all this experience, working on this thesis helped me to clarify my understanding of the SIAM model, and it was especially rewarding to create the different graphical elements to illustrate the meaning of CMDB, Service Catalog, and also the SIAM model in a concrete way for our customers. During this time, I was able to familiarize myself especially closely with the principles of the Service Catalog, and in already a short amount of time, I have noticed how much that has helped me in our customer projects describe e.g., how the Service Catalog should be designed.

A special thank you goes to the founder of our company Juha Huovinen, for all the great arguments that he gave about the importance of this thesis and the goals that he set. It motivated me greatly in working on the thesis. In addition, I want to thank Pavel Haimi for his comments on the content for the SIAM model and especially Hanna Lassila-Sramek for finalizing the wording.

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10 Appendixes

Appendix 1: Implementation Plan (Confidential)

Appendix 2: A Model for SIAM-Based Service Catalog (Confidential)

Appendix 3: Configuration Management Database (CMDB) –structure (Confidential)

Appendix 4: Logical CI Templates (Confidential)

Appendix 5: Videoscript and video (Confidential)

Appendix 6: Development Project Service Integration (Confidential)

Appendix 7: Iterative Model in Practice – Simple SIAM Model

Appendix 8: Iterative Model in Practice – CMDB Structure (Confidential)