

# Developing ICT management framework - Case study

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<p>The objective of the thesis was to develop and improve the IT service management function by adding a systematic approach to ITSM, identifying and documenting processes and discovering the problems in the daily operations.</p> <p>Many best practice frameworks and guidelines, such as ITIL, COBIT, IT Standard for Business and JHS were reviewed for information on how to develop the organization's ITSM function. The research was done using action research, interviews and observation over a period of about one year. The results were analyzed and reflected against the theory from selected frameworks and a development plan formed.</p> <p>The project can be considered a success as more information and knowledge was gained than initially thought to be realistic. A development plan that included several new processes for ITSM, was written. The organization's management approved the development items and the implementation project will start soon.</p>	
<b>Keywords</b> Service management, IT Standard for Business, ITIL, JHS.	

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# 1 Introduction

This thesis is the result of a development project in a public-sector organization. Case organization has 170 employees and an IT department of 8 people.

The topic of the project was to develop service management in the organization. As the project progressed additional objectives were added: completing service documentation with process descriptions and identifying the problems of the daily support operation. The author works in case organization as a specialist responsible for all industry-independent ICT services and their operations.

## 1.1 Background

In 2011 a strategic decision was made by the central government lead by prime minister Jyrki Katainen and a goal was set into the government program that the production of public sector industry-independent ICT services was to be centralized to a single service center. Industry-independent ICT services are services that can be produced and organized without any significant industry-specific expertise being required and which are based on commonly available hardware and software solutions and technologies. A transition project called Tori was founded and it was given the task to map and collect all of governments' industry independent ICT services and employees working with them. The guidelines of the project were:

Industry-independent ICT tasks are grouped together so that

- the compilation of tasks can clearly demonstrate overall economic savings in the state administration.
- the reliability and service quality of services will also be safeguarded during the transition phase.
- a new service center providing industry-specific information and communications services to central government can start its operations in a timely manner planned by the project.
- the change is in line with the good human resources policy of the state and the government decision on the status of state personnel in the change situation of the organization and the instructions and decisions issued under it.

(Ministry of Finance 2015)

The term of office of the TORI project was 7.5.2012 - 31.12.2015. Government ICT Center Valtori (later referred to as Valtori) was founded during the project (1.1.2014) and it started

operating 1.3.2014. Most of the government employees that worked with industry-independent ICT services was transferred to Valtori, including 5 employees from case organization. This is when a transition period started.

The purpose of the transition period was to replace current ICT services, some insourced others outsourced, with new services produced by Valtori. During the transition period, the personnel that was transferred to Valtori still worked mainly for case organization and could be contacted directly without the need for formal service requests or orders. For case organization and its IT department this meant organizational change transitioning from an organization that produced a mix of insourced and outsourced ICT services to one that outsources all ICT services and related staff.

In the fall of 2016 the transition period ended and all the old self-produced services were replaced with outsourced services. During the transition period, no service management framework or processes were implemented and the ways of working became strongly personified. When personnel changes occurred the tactic knowledge they had acquired about the new services and processes was lost resulting in lengthy disruptions in service operation, weakened customer satisfaction and distrust toward the service provider. The lack of standard procedures lead to inadequate documentation and partially implemented services that did not realize their full potential and value.

For these reasons, there is a great need to develop and implement service management processes and create a base for continual service improvement using industry standard best practices. The purpose of this thesis is to answer those questions and the topic was assigned by case organization.

## **1.2 Objectives and research questions**

The research problem of the thesis is the lack of a systematic approach to service management, guidelines and personified processes of continuous service management. In the current situation, the ways of working and knowledge of the operational environment and service are personified, creating an environment where personnel changes or leaves of absence result in a lengthy disruption of operational efficiency. The objective of the thesis is to improve the organizations development by:

- Identifying and documenting processes related to daily operations and services.

- Discovering the current pain points in service management, daily operations and partially implemented services.
- Selecting an appropriate management framework and processes.
- Creating a development plan for the implementation of selected processes from the framework.

The research questions are:

- RQ1: What are the most important processes and services needed for supporting the operations?
- RQ2: What are the current pain points in service management?
- RQ3: What is the appropriate management framework that fulfills the requirements?
- RQ4: What are the next implementation actions that should be taken?

### **1.3 Scope**

The implementation of the management framework and new processes are not in the scope of the thesis. The thesis will include the development plan, management framework and documenting current processes, services, roles and responsibilities of case organization's industry-independent ICT services.

## 2 Theoretical framework

In this chapter, the theory and frameworks used in this thesis will be presented. The frameworks and recommendations are very comprehensive and contain large amounts of information that is not used in this thesis. For this reason, a quick overview will be done for the parts that are not used in the thesis and a more detailed description of the theory that is used will be included.

There were limitations and regulations concerning selected frameworks. Within a few years case organization, among other government organizations will be merged. It has been decided that its IT organization will be organized using the "IT Standard for Business" framework. (ICT Standard Forum 2015.) The IT Standard for Business framework has also been adapted for usage in the government sector by the Ministry of Finance and the ICT Standard Forum (Ministry of Finance & ICT Standard Forum. 2013.). To streamline the transition process that follows the merger the IT Standard for Business framework is the primary theoretical source used in this thesis.

In the public sector, there is a series of instructions called JHS-recommendations published by JUHTA – Advisory Committee on Information Management in Public Administration. The JHS-recommendations are methods, processes and guidelines for data management, enterprise architecture, service development, process mapping and so forth. They are considered best practice and their use in government offices when applicable is highly recommended. (JUHTA.)

The IT Standard for Business and JHS-recommendations form the theoretical base of the thesis. In addition, industry standard ICT management and governance frameworks ITIL and COBIT were reviewed. case organization's internal guidelines, policies and enterprise architecture were also taken into consideration.

### 2.1 IT Standard for Business – a Model for Business driven IT Management

IT Standard for Business is an IT management framework published the ICT Standard Forum. It has been developed by an international community of ICT and business leaders and experts. It is a high level, but practical management framework that aims to help management overcome challenges with digitalization and the relationship between business and IT. Unlike ITIL, COBIT, TOGAF and other best practice frameworks that go into detail about a specific topic, it is simple, written in everyday language and a holistic approach of all the IT management aspects. It is currently in its third version, which was pub-

lished in 2015. The current version and which includes the results of the extensive development programs carried out with companies, such as, Fortum, KONE, Neste, Pöyry, Saab, Sanoma, and VR Group places focus especially on digitalization and its requirements for IT and business. (ICT Standard forum 2015.)

It has been slightly modified to better suit the government sector in 2013 by the ICT Standard Forum and the Ministry of Finance. This adaptation creates the prerequisites for the development of operational models for information management in public administration organizations and is intended to facilitate cooperation between organizations. (Ministry of Finance & ICT Standard Forum. 2013.) The IT Standard for Business framework and its adaptation for the public sector is the main framework used in this thesis.

The framework consists of what it calls the five principal elements of IT management.

These are:

- Enterprise Development turns business development initiatives into operational actions in IT.
- Strategy and Governance defines how IT operates and creates value for the business.
- Sourcing and Supplier Management ensures that the company has the services that best fit its business purposes.
- Project and Development Management is essential for organizations to improve and create new solutions to succeed in competitive environments.
- Service Management offers business-aligned services that ensure efficient and uninterrupted business operations.

(ICT Standard forum 2015.)

The framework contains an illustration call the “the grid” of the all the different elements and topics and their relation to each other.



Picture 1. The grid (ICT Standard Forum 2015)

The most important element used in this thesis is the Service Portfolio Management. It provides the preconditions for service lifecycle management and alignment with business needs and IT strategy. Ecosystem Management, Sourcing and Supplier Management and Self Service and Automation are also used, but in a lesser “consulted” role to enhance and refine existing functions.

### 2.1.1 Service Portfolio Management

Service Portfolio Management, part of enterprise development in the framework, is a tactical level function that exists to ensure that IT services are reliable and fit their purposes supporting the business. It does not manage services on an operational level, but constantly monitors that services provide what they should with the correct amount of resources and quality. It is the decision-making body that defines a model of how services are managed throughout their lifecycle. The portfolio itself contains services in all phases of their lifecycle. (ICT Standard forum 2015.)

The five most important goals of Service Portfolio Management according to the framework are:

1. Business is provided with the right set of services
  2. Services are fit for the business purpose and aligned with IT strategy
  3. Performance of the services is at the right level
  4. Services are organized effectively with the best fit service provider
  5. Resources and costs are optimized throughout the life cycle
- (ICT Standard forum 2015.)

Managing the Service Lifecycle is an important part of managing the portfolio. It is tightly tied to service operation, that maintains and operates the services, but the decisions to implement or retire services are made by the Service Portfolio Steering Group. IT Standard for business suggest that the Service Lifecycle management can be organized under four different functions. These are Demand Management and Innovations, Development Portfolio Management, Service Operations and Retirement Control. (ICT Standard forum 2015.)



Picture 2. Service Lifecycle (ICT Standard Forum 2015)

All four functions should be managed and coordinated systematically so that the Service Portfolio is compliant, compatible, fulfills business needs and aligns with the strategy always. The service portfolio should be managed so that the service portfolio steering group makes enterprise-wide decisions on new services and significant changes to existing services. Processes for faster, small scale changes should be agreed upon for rapid deployment. (ICT Standard forum 2015.)

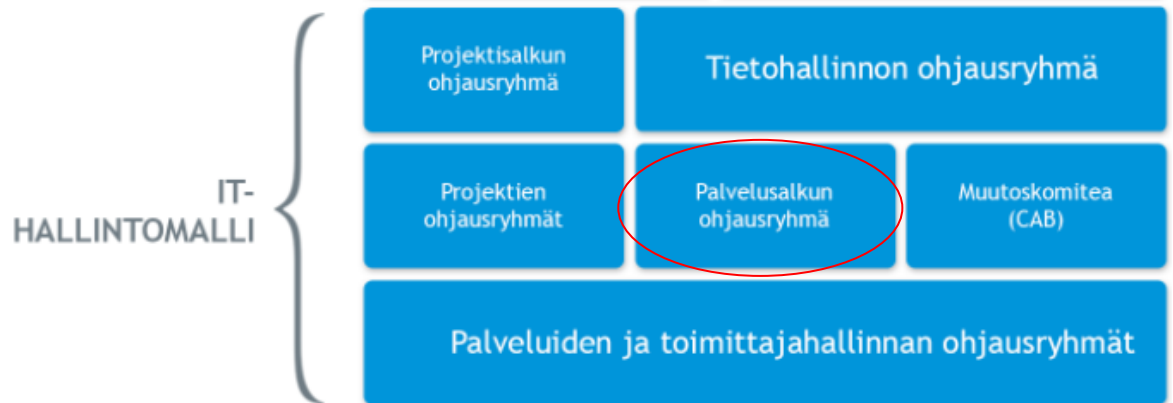
### **Service Portfolio Steering Group**

The Service Portfolio Steering Group manages the service development and service lifecycle. It reviews, approves or rejects development measures of new services or major upgrades to existing services. The Service Portfolio Steering Group can be organized in many ways, depending on the size and structure of the organization, but it should always have strong business representation. The recommendation as the chairperson is a business executive with interests for ensuring performance and business value. (ICT Standard forum 2015.)

The Steering Group ensures that

- services have a good business fit and are aligned with IT strategy
- performance of services is at the target level
- new services are developed efficiently and
- resources and costs are optimized.

(ICT Standard forum 2015.)



Picture 3. IT governance model (ICT Standard Forum 2015.)

### 2.1.2 Ecosystem Management

An ecosystem is a set of companies and organizations whose products or services complement each other and create significant business value.

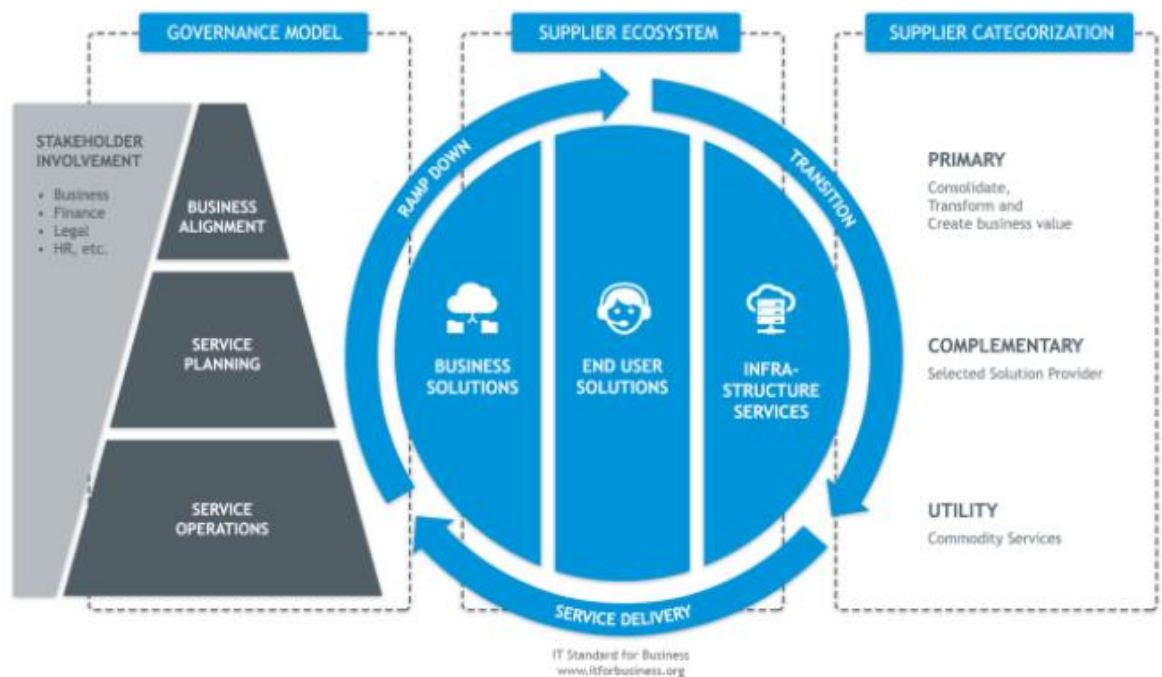


Figure 2.4.1 The Ecosystem.

Picture 4. Ecosystem (ICT Standard Forum 2015.)

When making procurement decisions (tendering, sourcing), it is important that the management takes ecosystems and their constraints into account. By working with suppliers operating in the same ecosystem cooperation is natural and efficient. This type of supplier network works more efficiently than a customer-specific supplier network. The ecosystem management is based on the understanding of the business value chain and on active communication with key stakeholders. In addition, an effective ecosystem has the following characteristics:

- co-created steering and roadmaps to boost the innovations
- joint end-to-end KPIs and performance dashboards
- unified processes and quality assurance across all suppliers
- joint operative model ensuring the continuity and flexibility

(ICT Standard Forum 2015.)

Ecosystem management principles reduces the need of traditional control-based supplier management activities, such as suppliers and technology categorization. Service integration plays an important role in delivering services in cooperation with various suppliers and in managing complex ecosystems. Opportunities for scaling and similar synergies should be constantly monitored. Innovations and the development roadmaps are important pre-conditions for building a successful supplier ecosystem. The role of joint business and service development with ecosystem members becomes increasingly important when forming strategic relationships. The end user experience and satisfaction should also be monitored to achieve a seamless end-user experience. (ICT Standard Forum 2015.)

### **Ecosystem Management Life-cycle**

Ecosystem life-cycles need to be understood and managed like services. The role of declining or obsolete ecosystems need to be reduced or retired and developing ecosystems increased. The roles and positions of different parties operating in the same ecosystem need to be identified. Suppliers can have different roles in multiple ecosystems, minor role in one and major in another. Suppliers should not only be considered as individual suppliers, but when sourcing or procuring, their relative strengths and roles in the ecosystem should be taken into account. (ICT Standard Forum 2015.)

Suppliers are categorized based on service business criticality, total purchases and service offerings. The primary supplier relationships can be strategic and long-term. Primary

suppliers often act as main integrators for other suppliers. Supplementary supplier relationships are managed through a multi-layered management model and often offer some special services. Relationships to basic service providers are handled by a simple model as they mainly produce commodity-based services. (ICT Standard Forum 2015.)

### **2.1.3 Government sector ecosystems**

In the government sector Valtori has created an ecosystem of sector-independent ICT services and service providers. They offer, for example, services that support the use of National Architecture for Digital Services (KaPA) and Suomi.fi services. If suppliers, service providers or services are selected outside the ecosystem they should be integrated into it. Valtori also is the primary supplier and manager of the ecosystem. This needs to be considered in tendering and contracts.

The National Architecture for Digital Services creates an interoperable digital services infrastructure that facilitates the transfer of information between organizations and services. The program establishes a national data exchange layer, a shared service view for citizens, companies and authorities, a new national electronic identification solution, and national solutions for managing roles and authorizations of organizations and individuals. The purpose of the program is:

- to simplify and facilitate transactions by citizens, companies and organisations with the authorities and to improve security
- to promote openness in public administration and to improve the quality of public services
- to enable cost-efficiency in online services
- to improve shared use of information and the compatibility of information systems
- to promote corporate opportunities for leveraging public administration databases and services
- to support the national economy by making public administration more efficient and by creating new business opportunities in the private sector

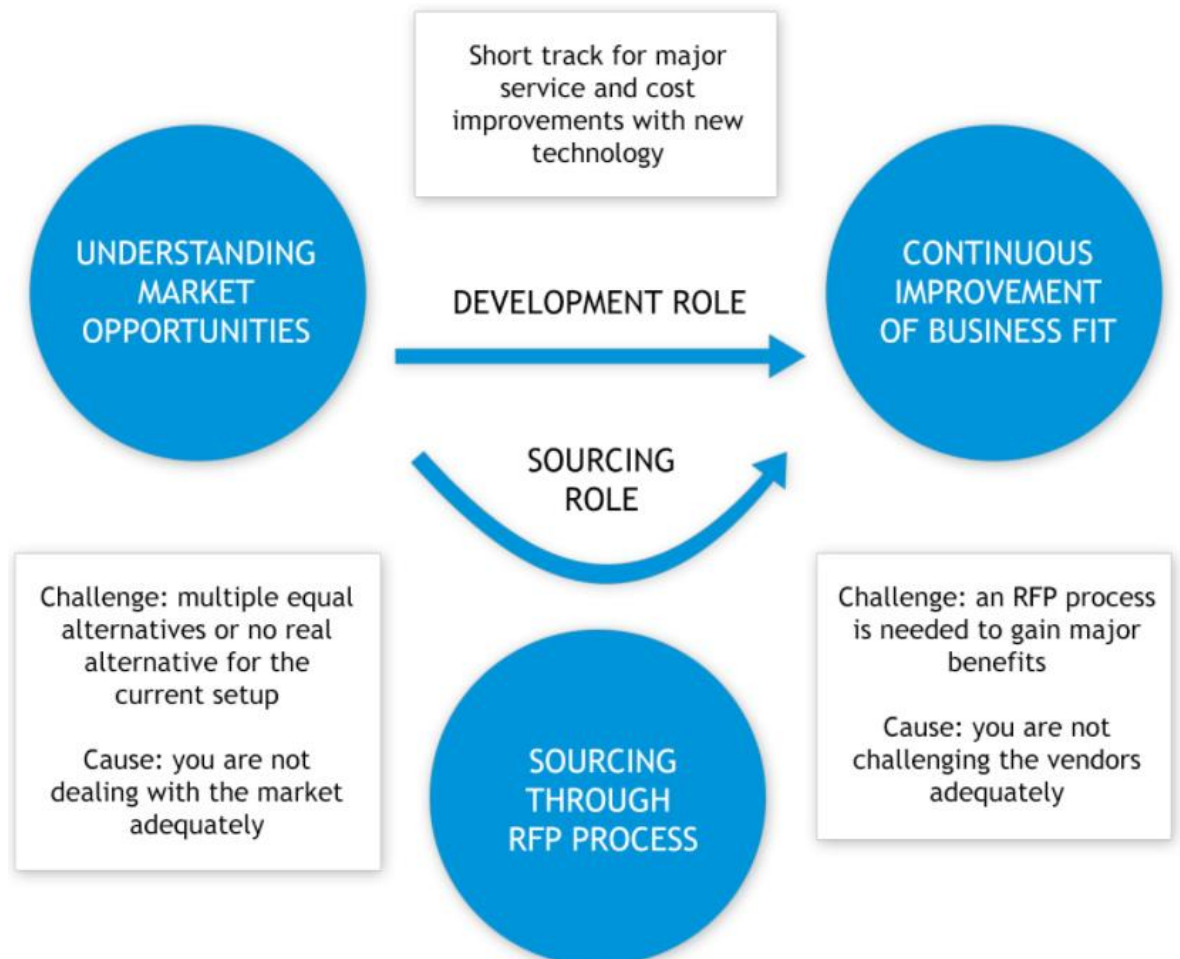
(Ministry of Finance.)

### **2.1.4 Sourcing and Supplier Management**

In the IT Standard for Business Sourcing and Supplier management ensures that the company has services that support the needs of the business. It seeks new opportunities and follows market trends to ensure that the quality and price of the services are competitive.

The company's business requirements define the sourcing strategy. Services can be in-sourced or outsourced partially or fully. Whatever the strategy is, sourcing and supplier management must have clear objectives, a long-term perspective and a close relationship with suppliers of ecosystems. A well-managed sourcing and supplier management function takes into account both the buyer's and seller's interest, which ensures a sustainable and more productive cooperation. (ICT Standard Forum 2015.)

Sourcing has two principal roles: sourcing and development. Sourcing refers to acquiring suppliers, solutions and services specified by Service Portfolio Steering group. Development is finding and evaluating opportunities with new technology and solutions that support or become new business concepts. Adequate involvement of procurement in support and development roles will ensure that the opportunities offered by the market are taken into account and that wrong choices are eliminated before they are implemented further and become expensive and challenging to fix. (ICT Standard Forum 2015.)



Picture 5. Relationship between development and sourcing (ICT Standard Forum 2015.)

When sourcing the following should always be taken into account: sourcing strategy and principles, scope of operations, enterprise architecture, service scalability to future needs, continuity and costs. Cost and performance monitoring throughout the service life cycle is mandatory. (ICT Standard Forum 2015.)

Key Objectives of Sourcing and Supplier Management according to the framework:

- Analyze the market and bring major technology innovations and opportunities for business and service development.
- Organize and manage the supplier relationship with other stakeholders, such as Service Management, to continuously improve the cost level and quality of services.
- Source services and solutions efficiently, appropriately, and timely from suitable suppliers, while actively maintaining quality and cost levels, a strong negotiating position, and market price awareness.

(ICT Standard Forum 2015.)

Usually the responsible for Sourcing is a IT or Sourcing Manager/Officer. His responsibilities according to the IT Standard for Business are:

- Bring out new technological or commercial opportunities
- Plan, facilitate and steer the sourcing process
- Review new contracts
- Participate in all major sourcing decisions
- Define and follow up on sourcing models and principles
- Master the supplier ecosystem

(ICT Standard Forum 2015.)

The role includes defining the principles for the procurement, there actual responsibility for decision-making belongs to Service Portfolio. Other responsibilities of the Sourcing manager include working with the service management in evaluating service levels, supplier-related risks and future needs. He is also responsible for tactical level relationships, but in large environments a Supplier Relationship Manager might be needed.

(ICT Standard Forum 2015.)

The Legal Council and Sourcing Manager together ensures that the contracts and sourcing principles are legally in the best interest of the company. If necessary the Legal Council also participates in contract negotiations. IT jurisprudence requires special expertise and is typically purchased as a service.

(ICT Standard Forum 2015.)

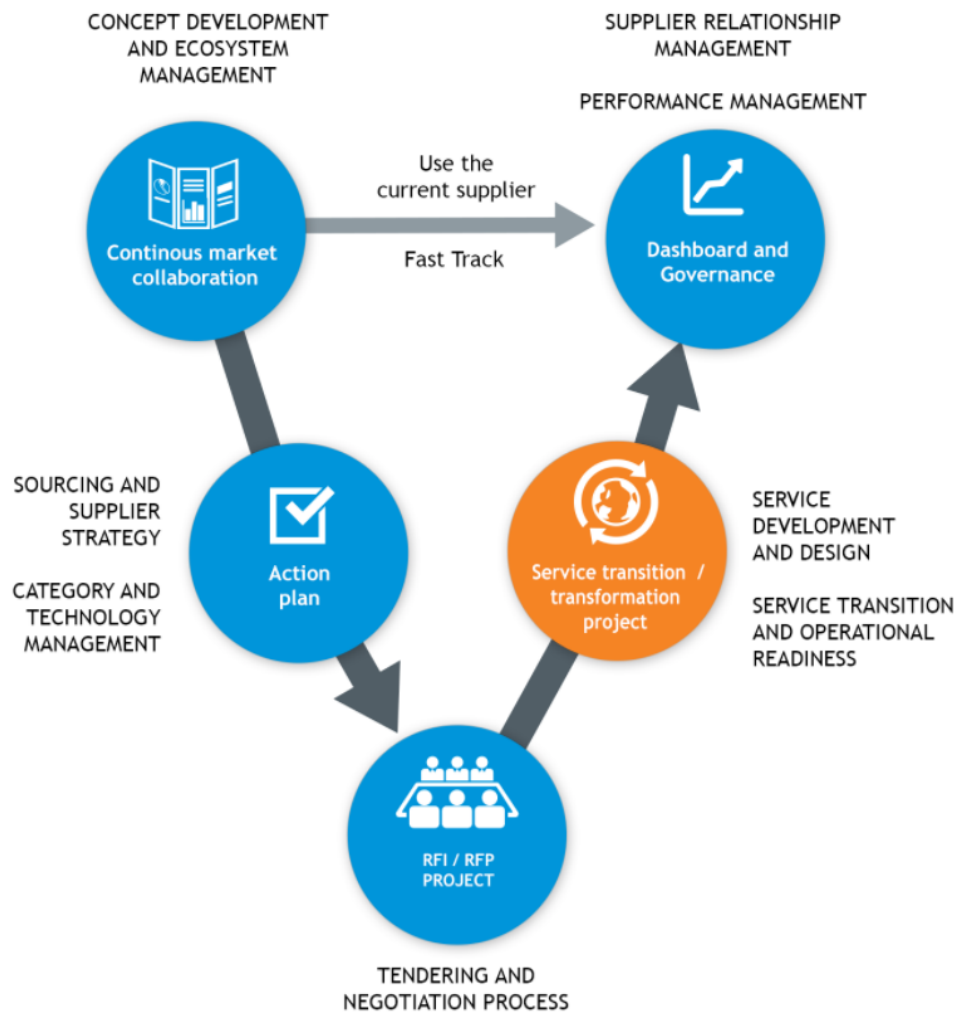
Key Roles in Sourcing and Supplier Management according to the framework are:

- Sourcing Manager
- Service Manager
- Supplier Relationship Manager
- Legal Counsel

and consists of the following functions:

- Ecosystem Management (part of Enterprise Development)
- Concept Development (part of Enterprise Development)
- Sourcing and Supplier Strategy
- Service Architecture
- Tendering and Negotiation Process
- Supplier Relationship Management
- Performance Management

(ICT Standard Forum 2015.)



Picture 6. Sourcing and Supplier Management stream (ICT Standard Forum 2015.)

### **2.1.5 Self Service and Automation**

Automation saves resources and enables users to independently self-service regardless of the time and place. Automation can be done with a tool or software like a IT Service Management (ITSM) System and a Service Management Platform. They enable management of services and related transactions, and process automation. Also, they can be used as a CMDB and to bind together all elements of Service Management. (ICT Standard Forum 2015.)

## **2.2 JHS 152 Process modeling**

The JHS-recommendation 152 is a series of instructions for process modeling. The purpose of this recommendation is to standardize and clarify process modeling in the public administration. It includes the definition of process descriptions, modelling, and the presentation format. The notation (appendix 1) used in the recommendation is based on Object Management Group's BPMN (Business Process Modeling Notation) version 1.1. A new version (2.0) of BPMN was released in 2011 extending the notation. (JUHTA 2012; Wikipedia 2017b)

### **The advantages of process modeling**

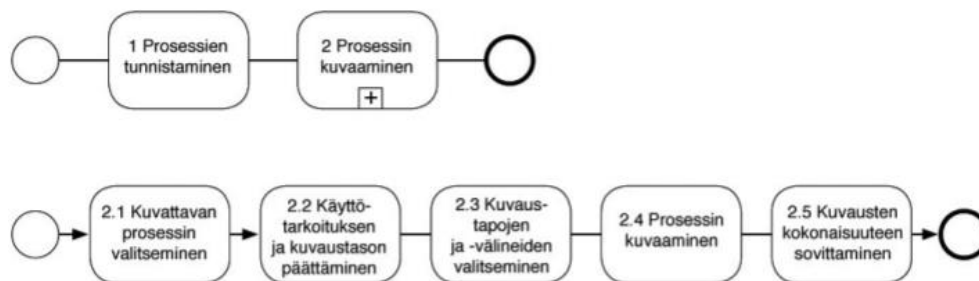
The advantages of processes modeled in a standardized way include help managing business, improving operational efficiency, organizing processes and responsibilities, improving documentation and information sharing, and enabling co-operation over organizational boundaries. Process models and descriptions are tools for managers, developers and service providers alike. They are used to support decision making, in information and documentation management to document and describe organizational practices, to build performance and quality monitors and as tools for change management, resourcing and service integration. Process models can also be used to gather tacit knowledge. (JUHTA 2012.)

A proprietary notation that can be understood within the organization should not be used. Adopting a standard commonly accepted notation can create significant synergy by enabling cooperation across organizational boundaries and reliable comparison between existing and approachable models. (JUHTA 2012.)

## Different phases of process modeling

Process modeling is part of process development that may include streamlining the workflow, or improving the organization's overall performance. It begins with identifying the need for improvement. The goal of developing processes is continuous improvement, so the same development process is always carried out as needed.

Process modeling begins with identifying processes and selecting the process to be modeled. Next the function and scope of the process is determined and the basic information of the process is recorded to the basic information form (appendix 1). Afterwards a process diagram is drawn and a function table (appendix 3) is completed. The process description is then matched to the organizational process map. (JUHTA 2012.)



Picture 7. Phases of process modeling (JUHTA 2012.)

### Step 1: Identify processes and owners

First processes and process owners are identified by the management. The process owner then defines the process. Once processes are identified, processes that realize the organization's tasks and goals are grouped and named. Before modeling, the owner must identify the process inputs and outputs, and what information is generated in the process and what is its purpose. The process owner is responsible for developing, upgrading and maintaining the process. If the process exceeds organizational limits owners must be assigned or identified to each stage of the process. (JUHTA 2012.)

### Step 2: Select the process to be modeled

After the processes are identified the appropriate process is chosen and its limits are defined. Defining the limits ensures that the beginning and end of the process are defined in a useful way. All core processes should be defined at the same time ensuring integrity among them. (JUHTA 2012.)

### **Step 3: Decide the use and detail level**

The reason and use of the process model needs to be determined as it determines the detail level of the modeling. Management doesn't necessarily need a detailed description of the process, but the operative level does. These factors determine the detail level, modeling method and selection of tools used. (JUHTA 2012.)

Process modeling should begin with recording the basic information of the process. The tasks and responsibilities of the participant involved in the process should be clarified before modeling. The basic information form (appendix 2) is filled by the process owner who is responsible for maintaining and updating the process documentation. (JUHTA 2012.)

### **Step 4: Choose the modeling method and tools**

When the detail level has been decided modeling methods and tools are selected. The basic principle is that the formality increases with the detail level used. This applies in particular to the process diagram and information presented in the process model. When modeling a process, one should consider what kind of a diagram and tools are used, which are the phases of the process and who are involved in the different phases of the process. (JUHTA 2012.)

### **Step 5: Model the process**

Process modeling begins with recording the basic information of the process). All essential factors affecting the process need to be documented. The basic information form helps determine the beginning and end of the process and the function form supports creating the graphical model. Comprehensive process documentation consists of the basic information of the process, a verbal description (function form, appendix 3) and a graphical model that complement each other. (JUHTA 2012.)

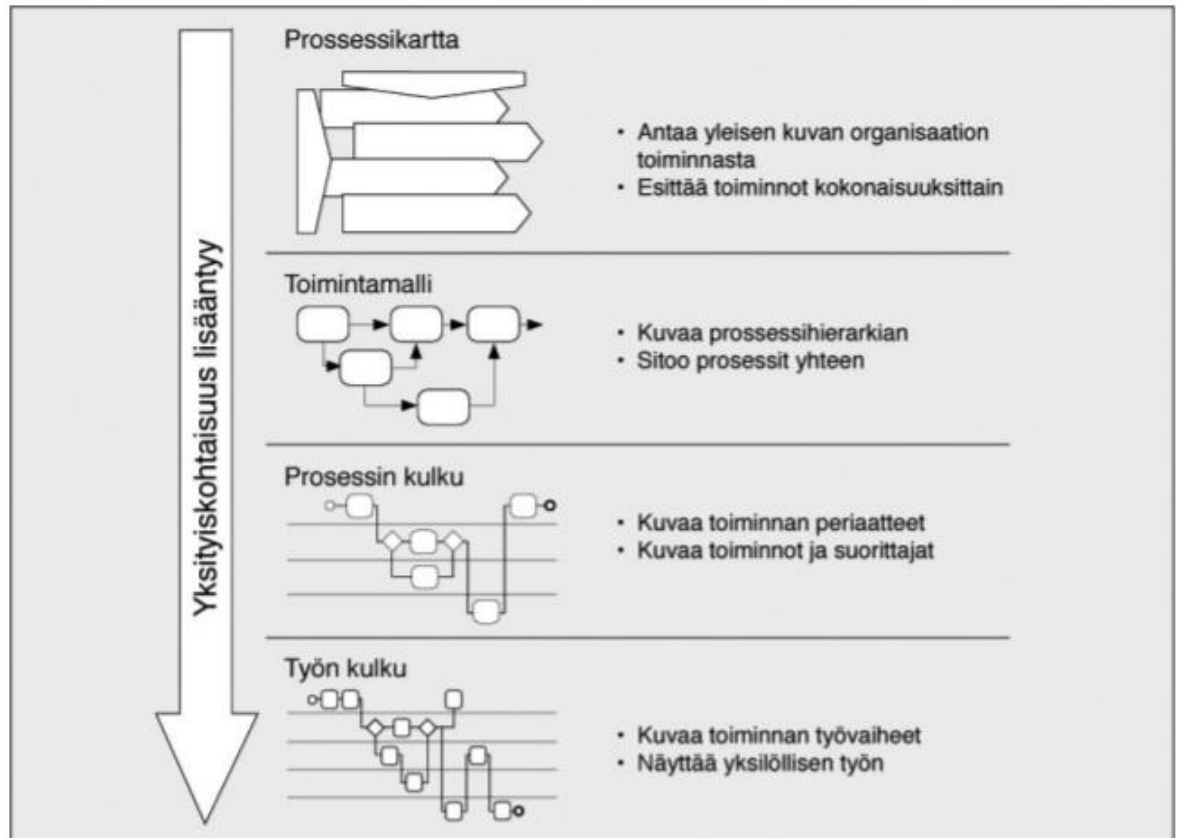
### **Step 6: Update the process map**

Incorporate the process into the organization's process map so that all process interfaces to other processes should be seen. The process owner must ensure that there are no random process descriptions, but the process is always part of the organization's overall architecture. Each process should complement to the entity.

Process descriptions made at different levels must not conflict with each other. If necessary the descriptions must be detailed enough that every function and operator, the resulting information or output can be identified. (JUHTA 2012.)

## Detail levels

JHS recommendation 152 divides the detail levels into four different categories:



Picture 8. Process detail levels (JUHTA 2012.)

### Process map

High level representation of the organizations processes. Describes a general view of the organizations operation. (JUHTA 2012.)

### Functional model

More detailed than the process map. It details process hierarchy, process owners, goals and performance indicators and the interaction between other processes. (JUHTA 2012.)

### Process path

The process path includes same items as in the functional model, but in greater detail. This level describes the work steps, functions and the actors responsible for them. From

this detail level, problems in the current operation can be identified. This is the reason why this detail level was chosen to be used in this thesis. (JUHTA 2012.)

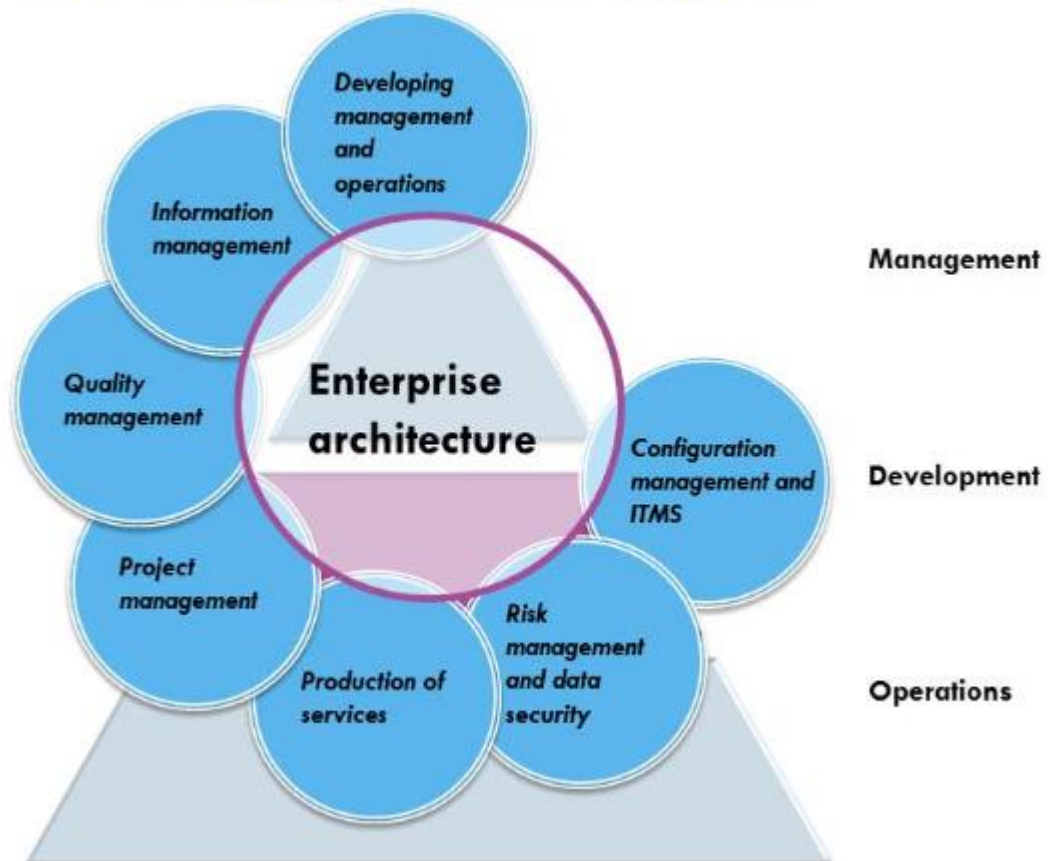
### Work path

The most detailed level. It includes internal and external dependencies of processes as data types to see what form of information moves between different functions. (JUHTA 2012.)

## 2.3 JHS 179 Designing and developing enterprise architecture

Enterprise architecture supports management, strategy implementation, the continuous development of operations and services, the control of change and complexity, the managed use of digitalisation and interoperability. Enterprise architecture is part of the strategic work of an organisation, its management process and financial and operational planning. (Ministry of Finance.)

### EA – bringing operations together



(Ministry of finance.)

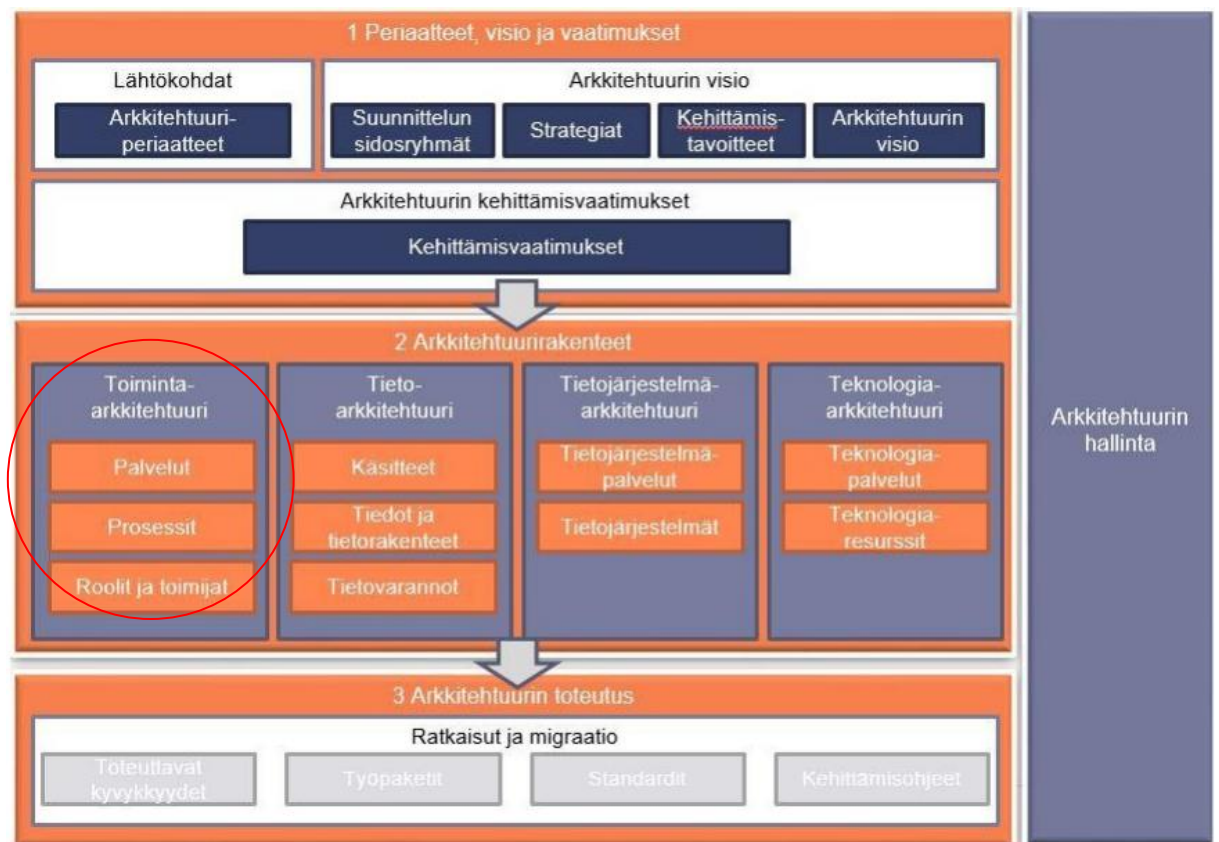
JHS recommendation 179 is the enterprise architecture method for public administration. It's an adaptation of TOGAF 9.1, which is considered a de facto standard for enterprise

architecture framework. It includes a coherent design methodology as well as uniform approaches and approaches to the development of the overall architecture of public administration organizations at its various stages. case organization has been using JHS 179 architecture framework as a guideline for its EA-work because it's a public organization. (JUHTA 2017, Wikipedia 2017d.)

During this research project, some development ideas for the conceptual and logical level of the business architecture were discovered. The JHS-recommendation 179 is rather extensive and the development ideas only apply to a small part of it. For this reason, only the theory of those items is covered.

### 2.3.1 Business architecture

Business architecture is a subset of enterprise architecture. It describes the organization's functional structures, which are stakeholders, services, products, processes, strategy and vision. The purpose of the business architecture is to guide designing and developing the organization's core processes and supportive support functions so that they support the strategy. (JUHTA 2017.)



Picture 2. JHS-179 architectural content framework (JUHTA 2017.)

### **The conceptual level of the business architecture**

The conceptual level of business architecture describes what is done in an organization or in a developed subfield, and what are the actors and services involved. (JUHTA 2017.)

### **The logical level of the business architecture**

The logical level is a more accurate description of the operations and the processes related to the operation and how the data that is exchanged is related to each other. (JUHTA 2017.)

### **Interaction between processes**

It describes relationships between processes and data that is transferred between them. (JUHTA 2017.)

### **Operators**

Operators can be divided into external and internal, and are sometimes referred to as stakeholders. They can be actual persons or organizational roles. In process models they are often illustrated as swimming lanes. (JUHTA 2017.)

### **Service map**

The service map gives an overall picture of the services that can be produced. (JUHTA 2017.)

### **Process Map**

The process map portrays an overview of processes related to the production or acquisition of services. The process map describes the most important processes for organizational operation. (JUHTA 2017.)

## **2.4 COBIT**

Created by ISACA, COBIT a widely adopted de-facto framework for IT governance is a tool for auditors, IT managers and business managers (The Stationery Office. 2015, 9.). It is used for achieving objectives for the governance and management of enterprise IT.

ISACA states that it “helps enterprises create optimal value from IT by maintaining a balance between realizing benefits and optimizing risk levels and resource use. COBIT 5 enables IT to be governed and managed in a holistic manner for the entire enterprise, taking in the full end-to-end business and IT functional areas of responsibility,”. (ISACA 2015, 13.)

The current version of COBIT, COBIT 5 was released in 2012 and it is based on 5 core principles:

- Principle 1: Meeting Stakeholder Needs
- Principle 2: Covering the Enterprise End-to-end
- Principle 3: Applying a Single, Integrated Framework
- Principle 4: Enabling a Holistic Approach
- Principle 5: Separating Governance From Management

COBIT makes a clear distinction between governance and management:

Governance ensures that stakeholder needs, conditions and options are evaluated to determine balanced, agreed-on enterprise objectives to be achieved; setting direction through prioritization and decision making; and monitoring performance and compliance against agreed-on direction and objectives.

Management plans, builds, runs and monitors activities in alignment with the direction set by the governance body to achieve the enterprise objectives. (ISACA 2012.)

The COBIT framework was reviewed, but it was decided that the issues are more related to management than governance so ITIL was chosen instead. Combining COBITs controls and processes with ITIL can offer significant synergy and helps organizations to focus on areas where services need to be better governed and managed (The Stationery Office. 2015. 4, 9.) so it is recommended to revisit COBIT later.

## **2.5 ITIL**

ITIL is a set of detailed practices for IT service management (ITSM) that focuses on aligning IT services with the needs of business. It is the most widely recognized framework for ITSM in the world and generally considered the best practice for IT service management. It is vendor and technology neutral, non-prescriptive and based on the experience of IT service management practitioners. The current version, ITIL V3 2011 edition (Later referred to as ITIL) is published in five core volumes that each cover a different ITSM lifecycle. (Hunnbeck et al 2011, 5. Agutter 2013, 19.)

As ITIL is a lengthy and extensive framework with a large variety of literature available, only the publication and topic that are used in this thesis will be presented.

The five core publications are:

- ITIL Service Strategy
- ITIL Service Design.
- ITIL Service Transition
- ITIL Service Operation
- ITIL Continual Service Improvement

The book ITIL Practitioner Guidance (The Stationery Office 2016.) lists the following guiding principles that should be followed when adopting a new service management approach:

- Focus on value
- Design for experience
- Start where you are
- Work holistically
- Progress iteratively
- Observe directly
- Be transparent
- Collaborate
- Keep it simple

### **2.5.1 Service Design**

As the name implies ITIL Service Design is a framework for service design. The goal is to design appropriate and innovative services that meet business needs and customer requirements, now and in the future. (Hunnbeck, Rudd, Lacy & Hanna 2011, 4; Agutter 2013, 95.)

### **Service Catalogue Management**

Service Catalogue Management is one of the most valuable elements of service provision and should be given high priority. Its purpose is to provide and maintain a single source of information on all operational service. Service Catalogue Management is process that

provides the means to manage the Service Catalogue at a sufficient level. The objectives of the process are:

- Manage the information contained within the service catalogue.
- Ensure that the service catalogue is accurate and reflects the current details, status, interfaces and dependencies of all services that are being run, or being prepared to run, in the live environment, according to the defined policies.
- Ensure that the service catalogue is made available to those approved to access it in a manner that supports their effective and efficient use of service catalogue information.
- Ensure that the service catalogue supports the evolving needs of all other service management processes for service catalogue information, including all interface and dependency information

(Hunnbeck et al 2011, 97.)

The scope of the service catalogue management is to provide and maintain accurate information of all services that are or have been transitioned to live environment.

Ongoing service catalogue management activities include:

- Maintaining and making available accurate, consistent and up-to-date information of the services.
- Managing the information within the service catalogue to ensure that it is current, complete and relevant.
- Ensuring that all services are properly defined within the service catalogue.
- Responding to challenging business requirements in relation to the service catalogue.
- Ensuring that procedures for adding and removing services from the catalogue are followed and responded properly.

(Griffiths 2014, 62.)

Service catalogue management provides value to the organization by providing a clearer understanding of the services available and how customer-facing services connect to supporting services. (Agutter 2013, 120.)

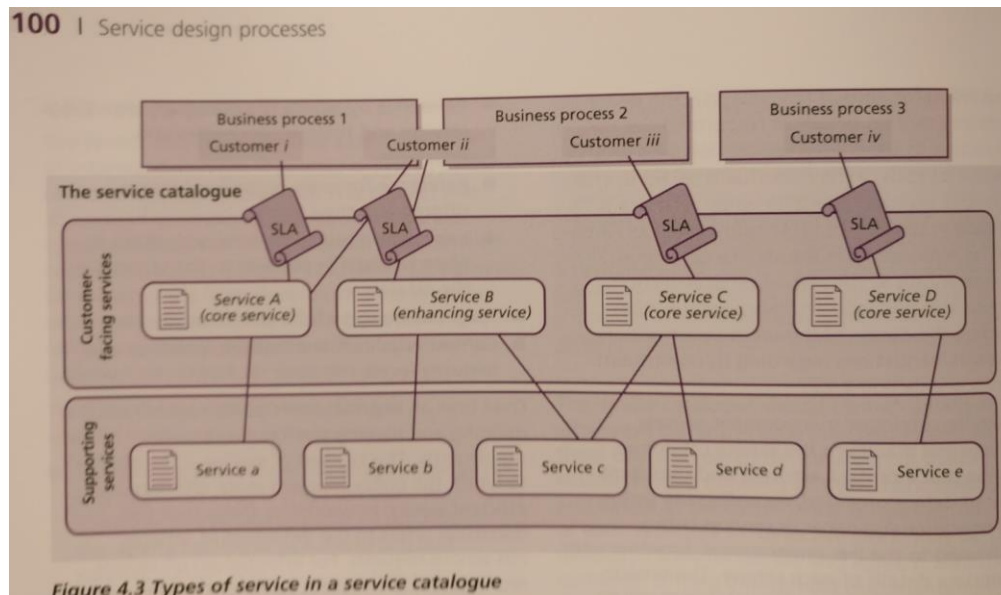
The key critical success factors for the Service Catalogue Management are:

- An up-to-date, accurate and consistent service catalogue.
- Business users and business areas being aware of the services being made available by the IT service provider.
- Business users and business areas being aware of the links between the services provided by the IT service provider and the business processes.
- Internal IT staff being aware of the service being made available by the IT service provider.

- Internal IT staff being aware of the links between the services provided by the IT service provider and the underpinning components and infrastructure.

(Griffiths 2014, 69.)

The Service Catalogue is a list of services containing accurate information on all operational services and those preparing to be run operationally. It provides vital information for all other service management processes, service details, current status and their interdependencies. (Hunnbeck et al 2011, 97.)



Picture 3. Hunnbeck et al. 2011. a two-view ITIL service catalogue.

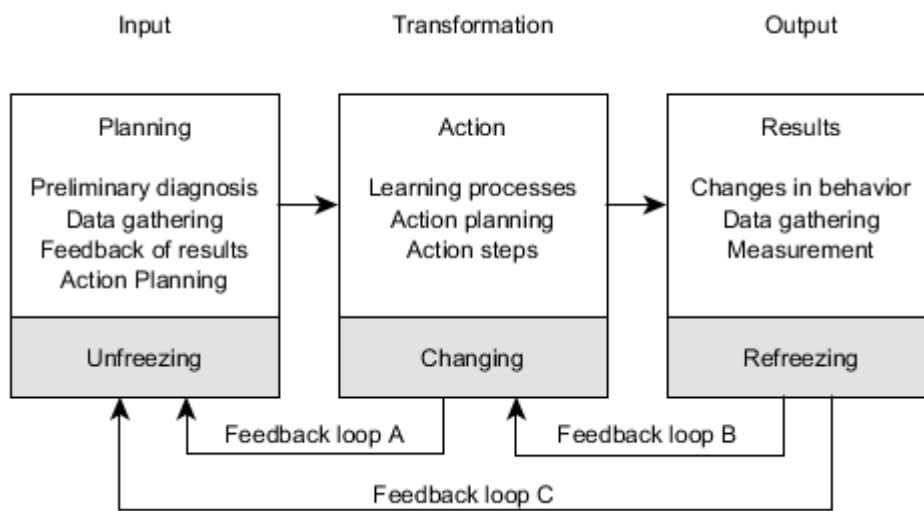
The service catalogue can be structured in a few different ways. There is the two-view catalogue that separates the customer and technical views. The customer view shows services that are relevant to customers and the technical views shows the supporting IT services and their links to customer-facing services. (Agutter 2013, 121) A three-view catalogue can be used to separate different views for different customers, for example by using wholesale customer, retail customer and supporting views. There is no single correct way to construct a catalogue and each organization will have to consider its needs and objectives so that it meets their goals. (Hunnbeck et al. 2011, 103.)

Major challenges and risks when creating a service catalogue include the validity and integrity of the data. It has to be accurate when first created and diligently maintained at all times. The upkeep can be linked to change management processes so it will be updated when changes occur. The responsibility of maintaining the catalogue must be made clear. (Hunnbeck et al. 2011, 105 – 106. Agutter 2013, 124.)

### 3 Methodology

Action research methodology was used in creating the development plan for process and service management framework. It is an approach that emphasizes active participation in change situations while simultaneously conducting research. The purpose is to solve particular problems, help the community to improve its practices and to produce best practice guidelines to use. The reason for using action research was that all the people involved in this research work with and use the services and processes that are within the scope of this thesis. The author is the manager of industry-independent ICT services so conducting a strictly theoretical research was not feasible.

(Wikipedia 2017a.)



Picture 4. Action research, action-research process (Wikipedia 2017a.)

The study was done using qualitative methodology. Literacy and documentation review, interviews, observation, survey and workshop were also used.

#### 3.1 Data collection methods.

Data was collected by interviewing members of the IT department, service provider representatives and personal observation and participation in managing and running the daily operations. The interview types used were informal conversational interviews and standardized, open-ended interviews. (Wikipedia 2017c.)

The informal interviews were used in situations when an employee experienced a problem using a service or process and during the process modeling. The particular problem at

hand was discussed and reviewed to better understand what was the underlying cause from the user's point of view. In situations where the problem could be replicated, the user was asked to do so. These observations would then be discussed with the service providers representative in both informal conversations and specific quality control and production meetings with a set agenda. Notes were written down from the interviews and minutes were kept from the meetings.

**Roles and affiliation of the persons interviewed:**

- Enterprise Architect, IT department
- IT Manager, IT department
- Office Secretary, IT department
- Project Manager, IT department
- System Specialist 1, IT department
- System Specialist 2, IT department
- System Specialist 3, IT department
- Registry Secretary, IT department
- Production Manager, service provider 1
- Service Manager, service provider 1
- Local Support Specialist, service provider 1
- Service Manager, service provider 2
- Senior Customer Operations Manager, service provider 3
- Service Delivery Manager, service provider 3

A written survey was also sent to the personnel of the IT department via email asking all participants to identify five major problems with the daily operation of the (industry-independent) ICT services.

**Roles and affiliation of the persons included in the survey:**

- Enterprise Architect, IT department
- IT Manager, IT department
- Office Secretary, IT department
- Project Manager, IT department
- System Specialist 1, IT department
- System Specialist 2, IT department
- System Specialist 3, IT department
- Registry Secretary, IT department

A workshop was organized 18<sup>th</sup> of May 2017 to discuss the problems with transferring tacit knowledge, which was one of the major issues identified within the IT department. The workshop was part of coursework for Life-Based Service Design course in the University of Jyväskylä and was organized by Auli Aalto. Mrs. Aalto is an employee in case organization's IT department and a student in Jyväskylä University Faculty of Information Technology. The results were used with her permission.

**Roles and affiliation of the persons participating in the workshop:**

- System Specialist 1, IT department
- System Specialist 2, IT department
- System Specialist 3, IT department
- Registry Secretary, IT department

**3.2 Data analysis**

The data was discussed with the IT manager, specialists and stakeholders that were familiar with the services. Analysis was made based on their responses and the authors common sense and expertise in the subject acquired from years of producing and managing industry-independent ICT services.

**3.3 Result validation**

The results and reasoning was presented to the employer for further review and approval. After the approval, the results were reviewed and implementation scheduled. The implementation will be done in an iterative manner described in action research theory. Changes will be made in small increments after which the results will be reviewed and validated and if necessary modified.

## **4 Results and analysis**

This chapter present the target, objective, problems and development task of the thesis.

The starting point was that a need to develop service management practices in case organization was recognized, but there was uncertainty of what was actually wrong, what to improve, how and why. The goal of this thesis was to answer those questions, identify the problematic services and processes and create a development plan to address the management issues that will be implemented later. This research and development work was done between November 2016 and November 2017. The implementation of the development plan is scheduled to start February 2018.

### **4.1 Process identification and modeling**

The work was started with process modeling. This was selected as the starting point to familiarize oneself with the services and because the process descriptions had not been done during service deployment or had gone missing. The theory used for process modeling was JHS-recommendation 152, a public sector best practice. Process descriptions help with familiarizing the service, measuring results, mapping information, security risks and evaluating quality. They can be used to collect tacit knowledge and set the indicators used to evaluate the operation. (JUHTA 2012.)

The processes selected were related to the industry-independent ICT services procured by case organization's IT department. These are considered support processes and services, but have links to the core processes and are important for operational stability. The service documentation was reviewed and found to be too inaccurate to be able to describe processes based solely on them. Interviews were held with service provider's representatives and case organization's IT department staff to find out what was being done and how it should be done.

Processes and services that were examined:

Chart 1. Services and related processes

Service	Related processes
Workstation, networking and service desk services	IT support processes including support and service requests: Device order, delivery and installation Software packaging and deployment Licensing
Identity and Access management	User account creation and removal User right management
Infrastructure Operations	Change management Server and service deployment and removal Major incident management and communications Problem management

Many of the processes were so similar, that a generic process model is used to describe them. For example. All device orders (laptops, smartphones, accessories), access management and change requests follow the same process. The following process models are used to describe the support processes (appendix 4): new employee, service request, request for change, device order, other orders and access management. MiM and problem management processes were so closely related to the management of case organizations most important enterprise information system that they were excluded from the scope of this project.

During the process modeling it was discovered that a lot of the documentation was inadequate and that some services had been just partially deployed. Not all employees were trained in the use of new services. Automation and self-service capabilities were not leveraged and manual work was still required in many phases. Some of the old services were still being used because they hadn't been properly retired and shut down.

#### 4.2 Discovering the problems in service management

Some of the issues were discovered during the process modeling phase. To further clarify the issues behind the problems experienced a survey was conducted for IT department employees where they were asked to identify five major problems with the daily operation of the ICT services. Although there was some variance with the answers, similar issues were identified by all participants.

- Documentation is not consistent and the quality varies. There are many locations where it is stored and there are no guidelines on managing it.

- Information and knowledge sharing between employees is inadequate. People accumulate tacit knowledge that is lost when personnel changes occur.
- There is no standard operating model for the lifecycle management or deployment of IT services.

It was identified that the problems discovered during the interviews were mainly caused by personnel changes and the knowledge gap that resulted from them leaving. The former employees that were responsible for the deployment or implementation and operation of new services and processes knew how to direct, help and instruct users in their use. When they left, their knowledge was not passed on resulting in disruptions in service operations. Because there was no operating model implemented for portfolio or catalogue management, the quality of documentation varied greatly, if it could be found.

### **4.3 Selecting the management framework**

The management framework was assigned by the employer. The ICT Standard for Business and its adaptation for the public sector was used as the high-level framework and it was complemented with ITIL. The ICT Standard for Business is a commonly used framework in the public sector and is compatible with other established models and standards such as ITIL, COBIT, Togaf, Prince2, PMBOK, ISO2000 & 38500 and CHHMI. COBIT was reviewed, but the identified issues were more related to management than governance so it was dismissed. Although ITIL and COBIT are not mutually exclusive options and complement each other, it was not feasible to use both. The organization did not have the expertise, experience or resources to use the COBIT reference framework but had multiple people with ITIL certificates and experience of using it. For these reasons, ITIL was chosen as the complementary framework for ICT Standard for Business. The focus was on quick wins and maximizing the benefits with the resources available not a full revamp of the organizations management and governance practices. COBIT does include many useful processes and controls, so it is recommended that it should be revisited when the implementation of the development plan is finished.

The JHS recommendations were reviewed and the most appropriate options were selected. JHS 152 Process modeling and JHS 179 Designing and developing enterprise architecture were used in writing the development plan. Also, case organization's enterprise architecture and other internal guidelines were taken into consideration.

#### 4.4 Validating results and the development plan

The key issues identified were inadequate documentation, challenges in information sharing and lack of operating model for implementation and deployment of new services. The IT Standard of Business framework identifies typical focus areas in companies of different sizes. For small organizations, such as case organization the focus areas for service management are:

IT in small companies is generally operated by only a few people. This requires focus on documenting the operating environment and applications, and on facilitating knowledge sharing. In order to avoid excessive dependency on a few individuals, small companies can buy basic IT as a service.

(IT Standard for business)

Focus areas for strategy and governance:

In small companies, IT management must be well-organized: the roles and responsibilities of personnel must be described, and the decision-making model needs to be clear.

Basic documentation on IT strategy, information security and architecture ensures that IT development focuses on achieving the company's objectives. Small companies must also understand their IT costs.

It is essential for small companies to find the right balance between internal and purchased services. The amount of purchased services increases with company growth. This emphasizes the role of competent sourcing with good cost awareness.

(IT Standard for business)

Many of the focus areas mentioned in the framework are the same ones that were identified as the most problematic. After careful consideration and review of the literature a development plan was formed. Recommended primary development items are the creation of a service catalogue and implementation of the Service Catalogue Management and Service Portfolio Management processes.

The Service Catalogue is a list of services containing accurate information on all operational services and those preparing to be run operationally. It provides vital information for all other service management processes, service details, status of services and their interdependencies. Service Catalogue management is the process of creating and maintaining the service catalogue. The reason to implement the service catalogue management process and the creation service catalogue is to fix the problems associated to inadequate documentation and make updating and maintaining the catalogue somebody's responsibility. Up to date information of every service will also help in information and

knowledge sharing. The Service Catalogue can be implemented even if the organization hasn't fully adopted ITIL yet. In his book Moeller (2013, 219) states that "However, even if an enterprise has not yet fully adopted ITIL concepts, an enterprise service catalog can serve as a focal point for interactions between IT and the business as well as providing both an opportunity to improve IT customer service. An IT service catalog is an important IT governance tool, essential for providing the foundation for defining services and communicating with the business."

The service portfolio management will address the issues with service lifecycle management, alignment with business needs and IT strategy. It provides the basis for managing all service through their lifecycles. It ensures that business is provided with the right set of services, services are fit for the business purpose and aligned with IT strategy, performance of the services is at the right level, services are organized effectively with the best fit service provider and resources and costs are optimized throughout the life cycle. (ICT Standard Forum 2015.)

Because some issues with service implementation and deployment were also discovered, it is also recommended to implement service transition processes/service acceptance gates to assure that future deployments go as planned. Additionally, automation and self-service capabilities were not fully leveraged and some manual processes were still in use. It is recommended to replace old manual processes with self-service and automation using vendor's portals.

Some additional development items were also identified, but have lesser priority and can be covered and implemented later or can be adapted rapidly without major change management. These are:

### **Ecosystem management**

case organization's enterprise and technical architecture could be updated to use ecosystem management and ecosystem thinking as described in the IT Standard for Business: "Ecosystem management is based on understanding the business value chain as well as active communication with the relevant stakeholders. Further, effective ecosystem management is characterized by the following:

- co-created steering and roadmaps to boost the innovations
- joint end-to-end KPIs and performance dashboards
- unified processes and quality assurance across all suppliers

- joint operative model ensuring the continuity and flexibility”

As mentioned before, there is an ecosystem of ICT services and suppliers created by Valtori and The Ministry of Finance (KaPA, Suomi.fi, Valtori’s services). It is crucial to leverage the ecosystem and be compliant with it when tendering and sourcing for new services.

### **Sourcing and supplier management**

As mentioned in the theory, the key objectives for sourcing and supplier are:

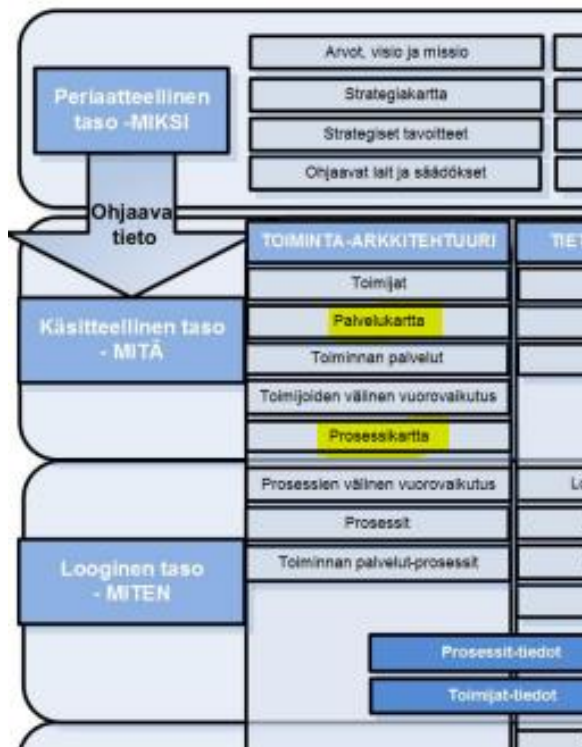
- Analyse the market and bring major technology innovations and opportunities for business and service development.
- Organize and manage the supplier relationship with other stakeholders, such as Service Management, to continuously improve the cost level and quality of services.
- Source services and solutions efficiently, appropriately, and timely from suitable suppliers, while actively maintaining quality and cost levels, a strong negotiating position, and market price awareness.

While case organization does not have a separate sourcing or supplier management function and all sector independent ICT-services are outsourced to Valtori, there is still need for sourcing and supplier management. The sourcing and supplier management responsibilities are shared by the IT department and the general administrative department that provides legal support. The role of the function has changed some as the need for tender and sourcing has decreased since all sector independent ICT-services can be bought from Valtori without a separate tendering process. Valtori should now be considered as the primary supplier, the manager of the ICT ecosystem and a strategic partner. Even though Valtori has a primary role in supplying all sector independent ICT services, they can only offer services in their portfolio. Should case organization require new ICT services, they need to be developed in collaboration with Valtori. Without informing Valtori about the needs of the organization they cannot develop services to fulfill the needs. Also, Valtori’s service portfolio, including those in the development pipeline should be actively monitored for new and improved services that could be used to solve existing problems or increase operational efficiency.

### **Enterprise architecture, operational architecture and service and process maps**

case organization’s enterprise architecture and operational architecture should be updated with including service and process maps of ICT services as described in JHS 179. This

will further improve service and process documentation, which were identified as major issues during this research.



Picture 7. Architecture Reference Framework, JHS-179. (JUHTA 2017.)

### Self Service and Automation

Numerous manual processes, for example access management, were identified during the research. Now that an ITSM system and a Service Management Platform has been provided by Valtori those manual processes should be reviewed and automated where possible. This work was already started during the research project in cooperation with a service provider. It is expected that the automatization of said processes will save valuable time and resources by ending the need for repetitive manual labor.

## 5 Conclusion

Initially the goal of this development project was to create a development plan to improve service management in case organization. Later additional goals were added because they were considered important for the success of the project: documenting IT department's (support) processes, identifying the problems and pain points in service management and daily operations, selecting an appropriate theoretical framework and creating a development plan to address the issues discovered. This meant more work, but the new goals supported each other and enabled a rational and progressive approach.

All the goals set for this project were met and all the research question answered. The processes were identified and process maps were drawn (RQ1). Deficiencies in the service management function and daily operations were discovered (RQ2). A development plan was created using industry standard best practices and it was approved by the management (RQ3 & RQ4).

The amount of data that was collected about the organization and people's activities, including tacit knowledge, exceeded expectations. This information enabled to accurately identify the issues with service management and daily operations, and create a targeted development plan to issue them. The greatest challenge was the lack of resources available for the research, but using the action research methodology helped alleviate this problem. The study was carried out intertwined with work and the findings were later examined against the theory.

The development plan was approved by the management and the implementation of service management improvements are scheduled to start February 2018. The issues with partially deployed services were corrected and the creation of automated processes and self-service features that will replace old manual processes are being developed and implemented in cooperation with a service provider. In addition to the high priority issues, several other development items were identified. These were added to the development plan and are suggested to be reviewed after the more pressing issues are dealt with. The project was delayed multiple times due to the lack of time and resources, but all things considered the project can be considered a success.

## References

- Agutter, C. 2013. ITIL lifecycle essentials: Your essential guide for the ITIL foundation exam and beyond. Ely, Cambridgeshire, U.K.: IT Governance Pub.
- Griffiths, R. 2014. Service offerings and agreements: a guide for ITIL exam candidates. BCS, British Informatics Society. Swindon.
- Hunnbeck, L., Rudd, C., Lacy, S. & Hanna, A. 2011. ITIL® Service design. 2nd ed., 2011 ed. London: TSO
- ICT Standard Forum 2015. IT Standard for Business – a Model for Business driven IT Management. URL: <https://www.itforbusiness.org/>. Accessed 11.12.2017.
- ISACA. 2012. Cobit 5 – Framework for governance and management of enterprise IT. URL: <https://cobitonline.isaca.org/>. Accessed 28.10.2017.
- JUHTA. JHS-suositukset. URL: <http://www.jhs-suositukset.fi>. Accessed 11.12.2017.
- JUHTA. 2012. JHS 152. Prosessien kuvaaminen. URL: <http://www.jhs-suositukset.fi/suomi/jhs152>. Accessed 10.2.2017.
- JUHTA. 2017. JHS 179. Kokonaisarkkitehtuurin suunnittelu ja kehittäminen. URL: <http://www.jhs-suositukset.fi/suomi/jhs179>. Accessed 10.2.2017
- Ministry of Finance & ICT Standard Forum. 2013. URL: [https://wiki.julkict.fi/julkict/projektit/Kuntaudistus/ict-muutostuki-1/ict-valmistelu/tietohallintomallin-soveltamisohje-julkiselle-hallinnolle/at\\_download/file](https://wiki.julkict.fi/julkict/projektit/Kuntaudistus/ict-muutostuki-1/ict-valmistelu/tietohallintomallin-soveltamisohje-julkiselle-hallinnolle/at_download/file). Accessed 8.12.2017.
- Ministry of Finance. Enterprise architecture in practice. URL: <http://vm.fi/en/enterprise-architecture-in-practice>. Accessed 11.12.2017.
- Ministry of Finance. 2015. Valtionhallinnon toimialariippumattomien tieto- ja viestintäteknisten (ICT) tehtävien kokoamishanke (TORI). URL: <http://vm.fi/tori>. Accessed 11.12.2017.

Moeller, R. 2013. Executive's Guide to IT Governance : Improving Systems Processes with Service Management, COBIT, and ITIL. John Wiley & Sons cop.

The Stationery Office. 2015. Interfacing and adopting ITIL® and COBIT®. London: The Stationery Office

The Stationery Office. 2016. ITIL practitioner guidance. [Norwich]: The Stationery Office

Wikipedia 2017a. Action research. URL: [https://en.wikipedia.org/wiki/Action\\_research](https://en.wikipedia.org/wiki/Action_research). Accessed 10.12.2.107.

Wikipedia 2017b. Business Process Model and Notation. URL: [https://en.wikipedia.org/wiki/Business\\_Process\\_Model\\_and\\_Notation](https://en.wikipedia.org/wiki/Business_Process_Model_and_Notation). Accessed 10.12.2.107.

Wikipedia 2017c. Interview (research). URL: [https://en.wikipedia.org/wiki/Interview\\_\(research\)](https://en.wikipedia.org/wiki/Interview_(research)). Accessed 10.12.2017.

Wikipedia 2017d. The Open Group Architecture Framework. URL: [https://en.wikipedia.org/wiki/The\\_Open\\_Group\\_Architecture\\_Framework](https://en.wikipedia.org/wiki/The_Open_Group_Architecture_Framework). Accessed 10.12.2017.

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## Appendix 1. JHS 152 notation

### Toimija

Prosessikuvauksissa eri toimijat (roolit) erotetaan vaakasuuntaisilla uimaradoilla (swimlane) toisistaan. Toimijat kuvastavat vastuualueita. Toimijan ja henkilön käsitettä ei pidä sekoittaa toisiinsa: yhdellä henkilöllä voi olla useita rooleja prosessissa tai prosesseissa. Toimijoita ei pidä nimetä henkilöiden tai organisatorisen aseman mukaan. Myös tietojärjestelmä voidaan kuvata toimijana. Yksi toimija voi koostua yhdestä tai useammasta radasta, jotka ovat kiinni toisissaan ja muodostavat yhdessä altaan (pool). Kaaviokuvissa eri toimijat erotetaan toisistaan jättämällä niiden väliin tyhjä tila.



### Tapahtuma (Event)

Tapahtumasymbolilla kuvataan prosessin alku- ja loppupisteet.

Prosessin alku



Prosessin loppu



### Toiminto (Activity)



Toimintosymbolilla kuvataan prosessia, osaprosessia ja tehtävää.

### JUHTA - Julkisen hallinnon tietohallinnon neuvottelukunta



Plus-merkki toimintosymbolin alareunan keskellä tarkoittaa, että toiminnolla on alatoimintoja.

### Valinta (Gateway)



Valintasymbolilla kuvataan valintatilanteita, joissa virta haarautuu tai yhdistyy.

Valintasymbolia käytetään, kun prosessissa tehdään päätös jostakin asiasta. Tällöin prosessi haarautuu kyllä- ja ei-polkuihin. Merkki nimetään kysymyksellä, johon vastataan "kyllä" tai "ei". Joissain tapauksissa saattaa olla tarpeen käyttää useampia polkuja. Prosessi saattaa haarautua myös toiminnosta. BPMN-määrittelyssä on määriteltä myös erilaisia valintatyyppisiä ja niitä kuvaavia symboleita, joita käytetään salmiakkikuvion sisällä.

### Virta (Flow)

Virtasymbolilla kuvataan toimintojen suoritusjärjestystä prosessissa. Virta esitetään yhtenäisellä viivalla, jossa on nuoli kuvaamassa siirtymissuuntaa.



### Tietovirta (Message Flow)

Tietovirtaa käytetään silloin, kun esitetään jonkun tiedon tai dokumentin siirtämistä toimijalta toiselle tai toimijoiden ja tietovarastojen välillä.



### Tietoaineisto (Data Object)



Name

Tietoaineistosymbolia käytetään kuvaamaan asiakirjaa tai asiakirjallista tietoa, joka liittyy johonkin toimintoon. Symboli voi tarkoittaa esimerkiksi asiakirjaa, joka syntyy toiminnon seurauksena.

## Appendix 2. JHS 152 basic information form

### JHS 152 Liite 1: Perustietolomake

Prosessi kuvataan vuokaaviomuotoisella prosessikaaviolla ja siihen liittyvillä 1-3 tekstisivuilla. Tavoitteena on kuvauksen yksiselitteisyys ja ymmärrettävyys niin että jokainen prosessiin osallistuva ymmärtää kuvatun asian samalla tavalla. Kuvauksen tulee vastata todellista toimintaa. Sanallinen prosessinkuvaus laaditaan organisaation tarpeen mukaan.

1	Prosessin nimi	
2	Kuvauksen laatija ja laadintapäivämäärä	
3	Kuvauksen hyväksyjä ja hyväksymispäivämäärä	
4	Versionumero	
5	Prosessin tarkoitus	
6	Prosessin omistaja	
7	Prosessin mallintajat ja mallinnuspäivämäärä	
8	Prosessin lähtötilanne	
9	Prosessin lopputilanne	
10	Prosessin asiakkaat	
11	Prosessin sidosryhmät	
12	Prosessin asiakkaiden tarpeet ja vaatimukset	
13	Prosessin menestystekijät	
14	Prosessin mittarit	
15	Prosessin keskeiset resurssit ja muut volyymitiedot	
16	Prosessin ohjaus ja kehittämismenettely	
17	Rajapinnat muihin prosesseihin	

## Appendix 3. JHS 152 function form

### JHS 152 liite 2: Toiminnot-taulukko

#### Prosessin toiminnot

Toiminnot -taulukossa esitetään prosessin sanallinen kuvaus yksityiskohtaisesti

Dokumentissa tulisi esittää ainakin seuraavat tiedot:

**1. Prosessin nimi:**

**2. Kuvauksen laatija ja päivämäärä:**

**3. Kuvauksen hyväksyjä ja päivämäärä:**

**4. Version numero ja päivämäärä:**

**5. Prosessin syöte ja tuotos**

Merkitään koko prosessin syöte, joka toimii samalla ensimmäisen osaprosessin syötteenä. Taulukossa kunkin osaprosessin, toiminnon ja tehtävän tuotos on seuraavan vaiheen syöte.

**Prosessin syöte:**

**Prosessin tuotos:**

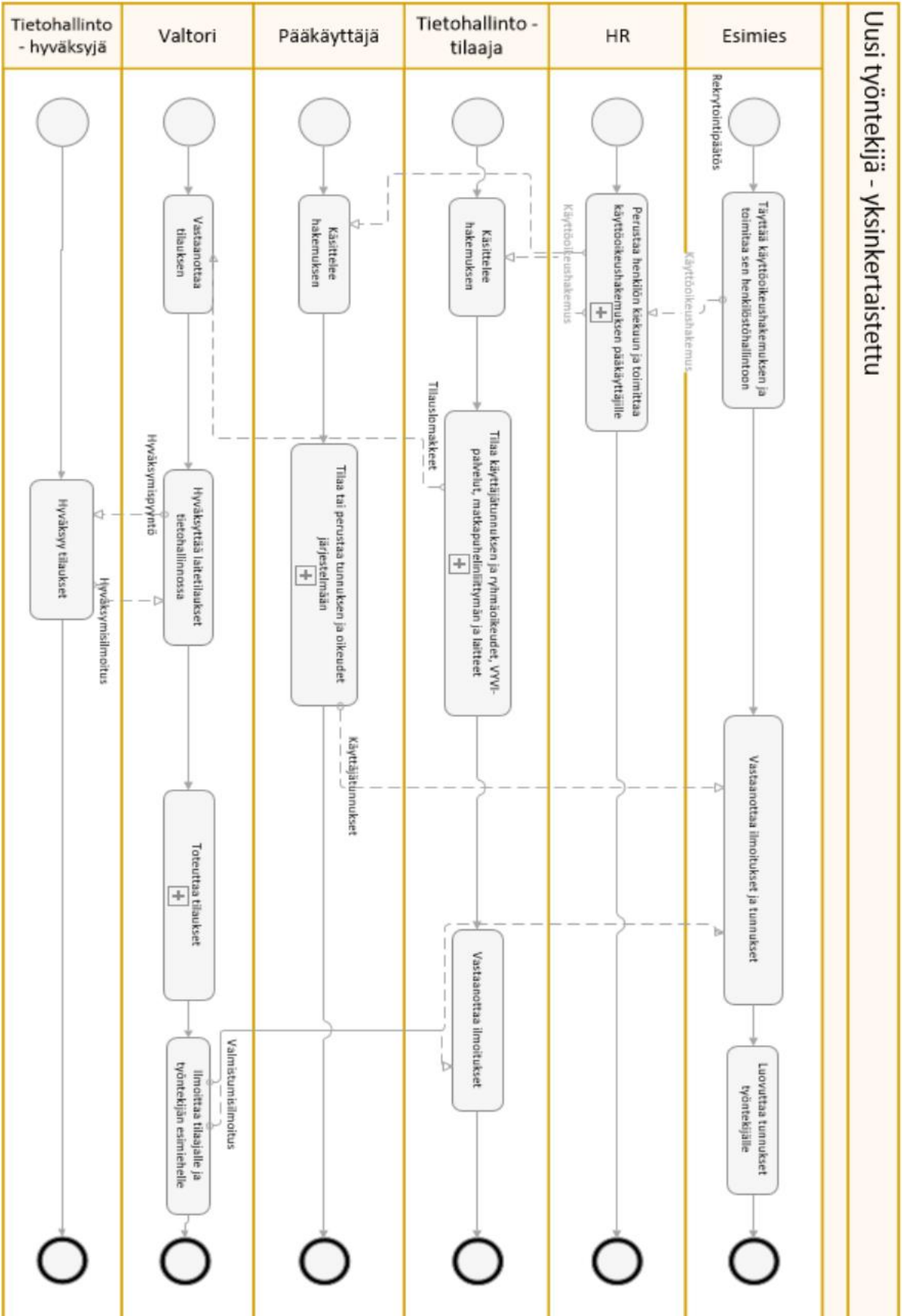
#### 6. Lisätiedot

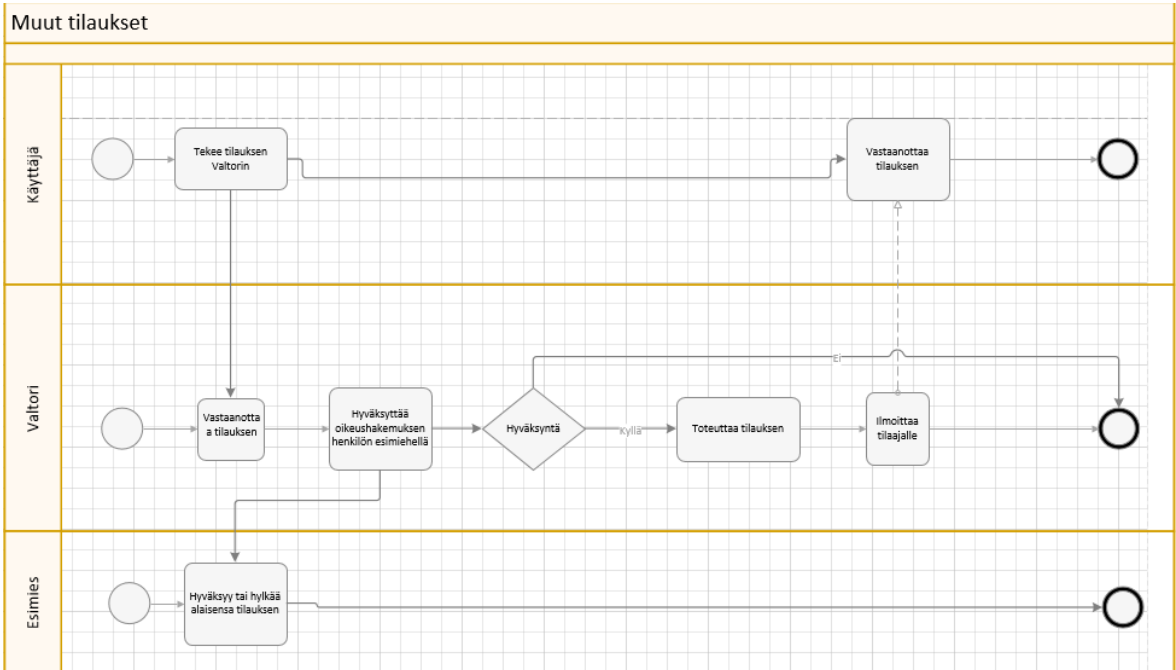
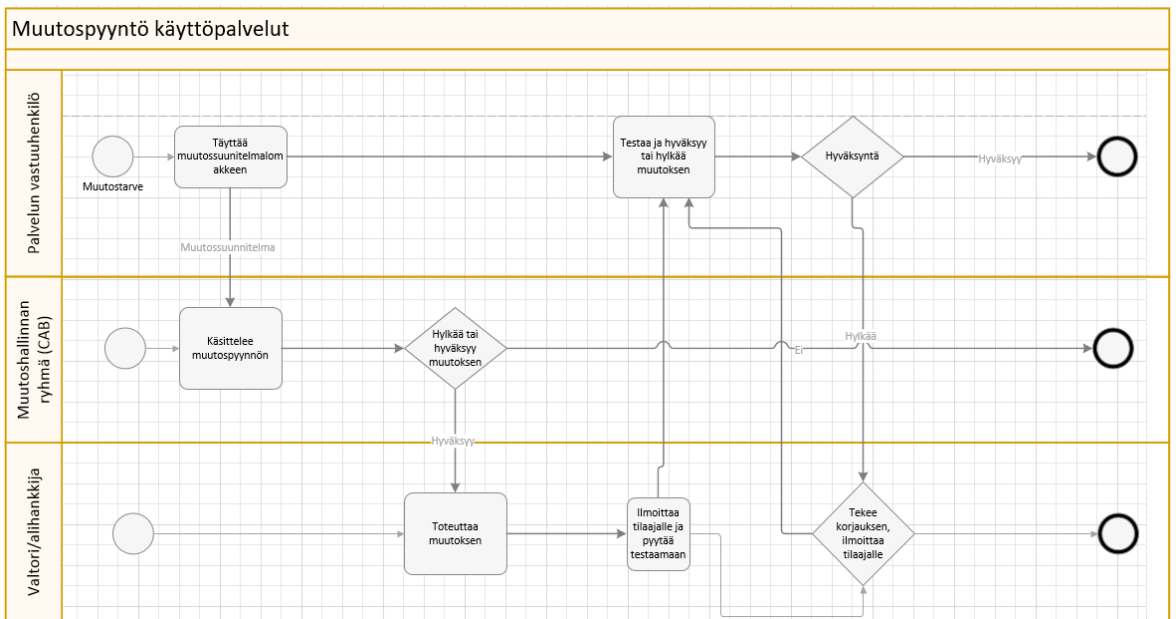
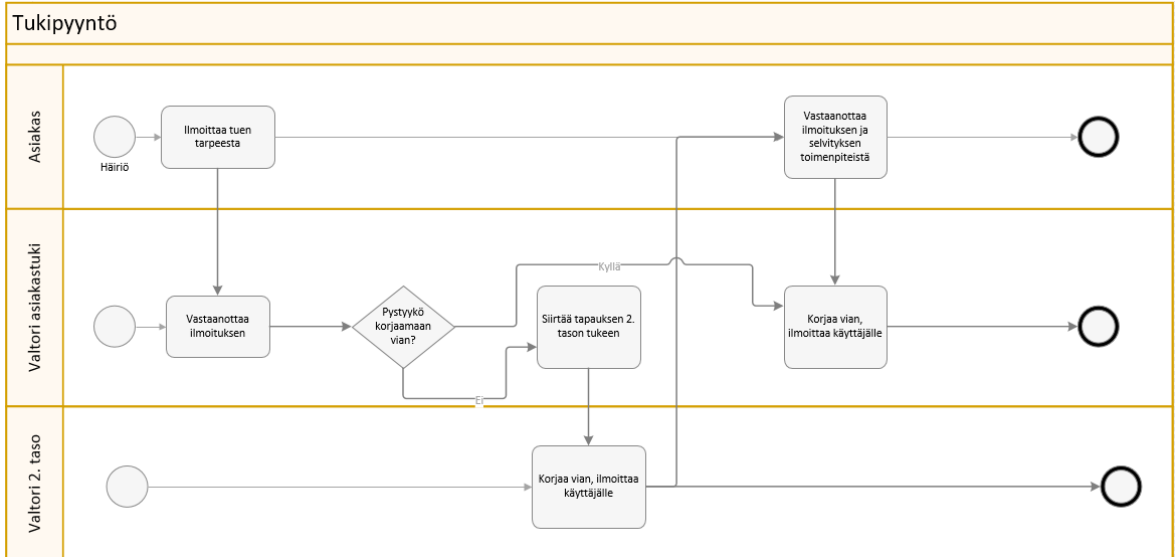
Merkitään tarvittavat lisätiedot, kuten käytettävät lyhenteet (esim. kh = kaupunginhallitus)

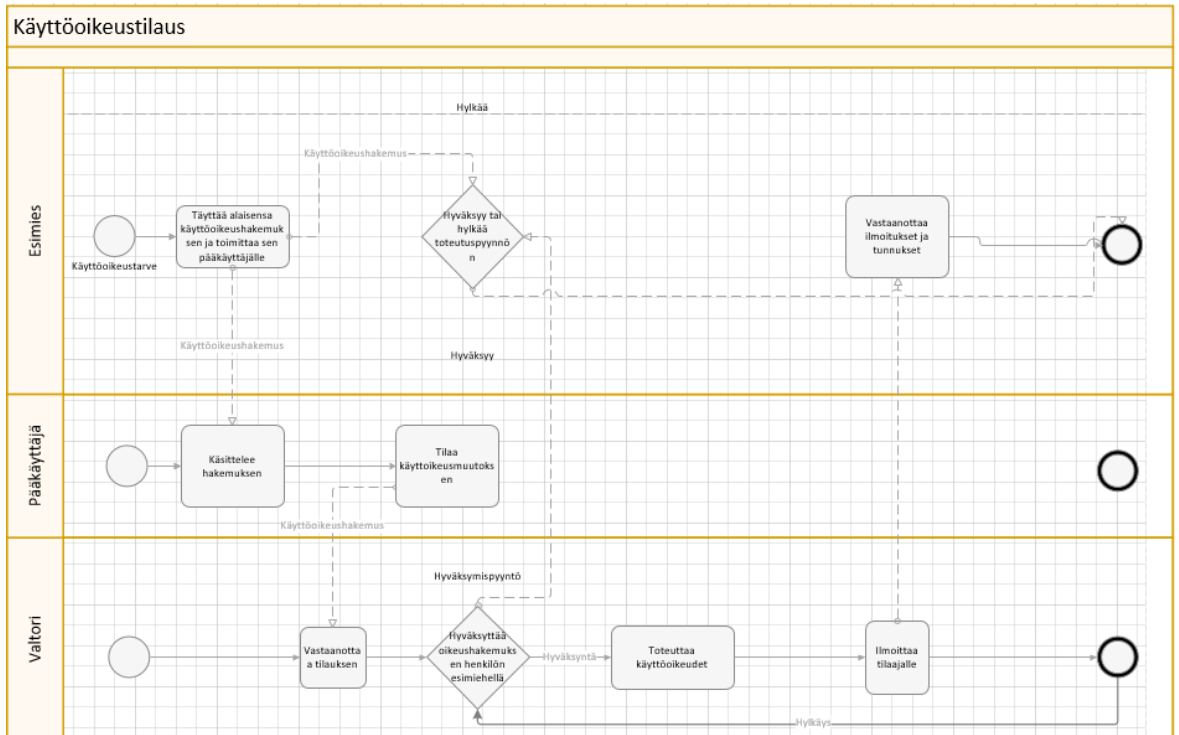
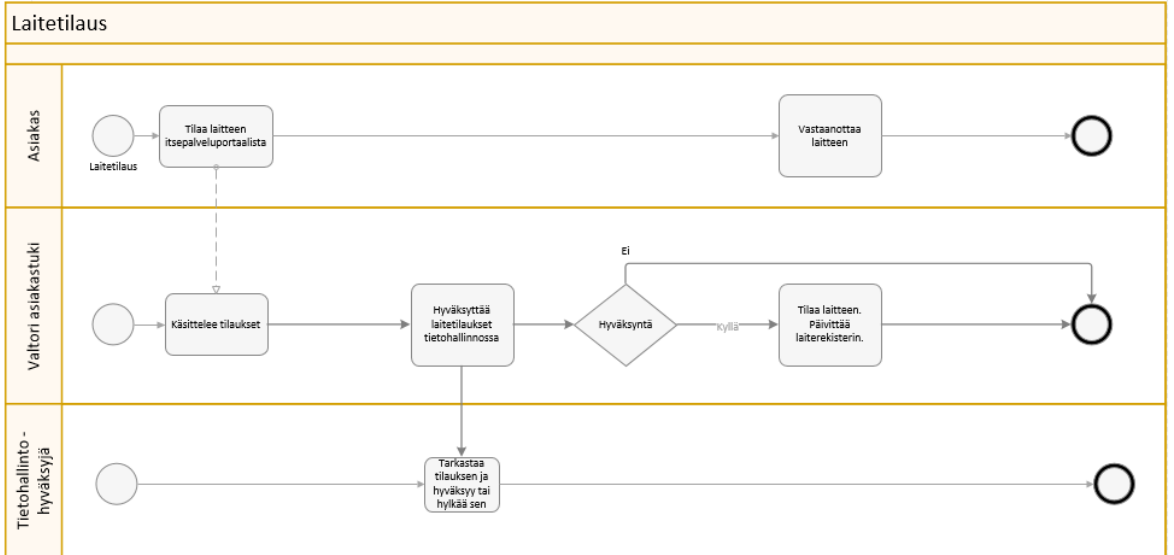
Lisätiedot:

<b>A Perheiden tukeminen</b>				
<b>Osaprosessi</b>	<b>Toiminnot</b>	<b>Tehtävät</b>	<b>Toimijat</b>	<b>Tulostila/suoritteet</b>
A1 Osaprosessi	A1.1 Toiminto	A1.1.1 Tehtävä		
	A1.2 Toiminto	1.1.2.1 Tehtävä		
A2 osaprosessi	A2.1 toiminto	1.2.1.1 tehtävä		

## Appendix 4. Process models







## Appendix 5 Development plan (confidential)