



Document Management System design architecture for interdepartmental organization

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&

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1. Summary

Our daily life is governed by rules, standards and policies, trying to guide our life as untainted as possible. This is also applicable to organizations. Often unity within organizations is achieved through management systems. Alongside management system are documentations, which form a vital aspect of the veins of the organization. Having a Document Management System(DMS) prevents congestions. Designing such a DMS will enable the organizations to achieve more efficiency, more simplification, more overview and creating a contemporary environment for its employees. Through usage of a framework such a DMS can be designed. The DMS provides valuable components such as wiki, knowledge base, work flow managements, document libraries, visualizations, templates and excellent collaboration tool. Projects need collaboration to be more effective and successful. However this collaboration must not be at the expense of security. Security is vital to survival of an organization, hence choosing the right DMS can be the success or the downfall. In this case SharePoint has proven itself as a formidable choice within the DMS domain.



2. Preface

This paper is the result of the thesis assignment at Honeywell B.V. Netherlands, which was the final step the Masters program of Information Architecture of the computer science faculty at TU Delft.

The thesis assignment was executed under the supervision of Ir. Bernard Sodoyer of the faculty Electrical Engineering, Mathematics and Computer Science at TU Delft and under the supervision of Coen Kleipool of the firm Honeywell B.V. at Amsterdam Netherlands.

We would like to thank Bernard for his insight, his help during vigorous moments and excellent guidance, Coen for his help, insight and knowledge, and various people at Honeywell, the OSS Team members who were involved at the realization of this project namely, Arjen van Es, Jeroen Vette, and Boy Oudejans. Thanks goes also to Sinclair Koelemij and Parviz Fakhtei who made this thesis project possible. Thanks go also to our family members who gave us support. Having a prosperous collaboration contributes to a meaningful project. Also thanks go to Dr.ir. Jan van den Berg of the faculty Technology, Policy and Management at TU Delft for making himself available for the master thesis committee. Special thanks goes to Prof.dr.ir Jan Dietz of the faculty Electrical Engineering, Mathematics and Computer Science at TU Delft, for his insight, permission to execute this project and his distinguished look at the world. Finally thanks goes to those whose contribution has been valuable but anonymous.

"Yesterday This Day's Madness did prepare;
To-morrow's Silence, Triumph, or Despair:
Drink! for you know not whence you came, nor why:
Drink! for you know not why you go, nor where [1]." Omar Khayyam 1048-1131



3. List of terms

Business process:	A high level process determined by the overall goals of the enterprise.
Design architecture:	A blue print of the to be designed system which can be used for the next phase of development of the system.
Design template:	A template that serves as a building block during design.
DMS:	Document Management System.
Enterprise architecture:	Is the organizing logic for business processes and IT infrastructure reflecting the integration and standardization requirements of the firm's operating model [2].
Framework:	A skeletal structure designed to support or enclose something, a frame or structure composed of parts fitted and joined together.
ICT:	Information Communication Technologies.
IT:	Information Technology.
Kb:	Knowledge base.
Layered structure:	Used often by enterprise architecture to subdivide domains in order to provide holistic view.
OSS Team:	Open Systems Services Team.
Six Sigma:	Is a business management strategy originally developed by Motorola, to improve the quality of process.
Template:	Anything that determines or serves as a pattern; a model.
Wiki:	A collaborative website whose content can be edited by anyone who has access to it.
Work flow:	The automation of a business process, in whole or part, during which documents, information, or tasks are passed from one participant to another for action according to a set of procedural rules [3].



4. Introduction

Looking at an ant hive, one sees ants collaborating together in harmony, acting as an efficient and optimal working machine [4]. In some sense a society can be compared with such a hive. Peeling each layer of a society reveals a separate section or layer, which in its turn can also be compared with an ant hive. One of these sections or layers can be compared in reflection towards an organization. Being an organization demands certain level of cooperation of its employees. Such an cooperation will lead to harmony and will enable an organization to act as an efficient and optimal machine. It is naturally to assume that human kind as far as views towards others cannot achieve the same view as an ant hive, however the harmony in knowledge that each individual knows its contribution towards a higher achieving of a certain goal is satisfying for achieving a certain level of harmony. Regardless it is not our place to cast a verdict on how an society should be run, but it is the connection between people that act as a fuel for thinking beyond the box and hence leading to changes which can be beneficial towards society or an organization, or not.

Even though realization of knowing that without any form of harmony or efficiency an organization cannot benefit its full potential, not every organization has been changing or has not been able to achieve this change. The reason for not changing has to do with various subjects such as lack of standards, policies which are not uphold, work which is not performed efficiently, security risks, frustration and so on. Lack of standards during performance of the daily work will lead to chaos due to the fact that there is at least one employee who prefers to perform his or hers task in a different manner than other employees. Even though the actual percentage of participation by one employee is not that significant regarding the entire work, the results will always be inconsistent between employees. The impact of this inconstancy will be frustration between employees, which in its turn lead to disregard of any policies applicable to the organization. Abandoning policies due to not following or for the simple reason of lacking one, is the first step of the down fall of an organization. The entire purpose of an organization is to follow a certain order or policies for achieving a similar goal. The level of applying various policies is dependable of the layer of the organization itself. The more detailed level policies becomes, the more depth of an organization will become exposed.

Lacking standards and not following policies each causes an effect on the daily work. The effect is not being efficient, not being optimal through production regardless of the product. By creating an environment where frustration of having to do various work over and over again, which could be avoided, leads to an disintegration of the atmosphere of work. By having a disintegrated environment the people awareness of security risk will become more relaxed, which in its turn will lead to situations which oppose as risks for an organization, whether as a whole or as a section.

The importance of having certain guidelines or rules, in the sense of having a thread to follow without going through each separation, will lead to an efficient and optimal way of working. However it must be taken into consideration that placing rules and guidelines will not be in such a way that it will choke the employees in performance of their tasks. The purpose is to lead the way and not pushing the employees down the road.

4.1 *Problem definition*

First step in solving a particular problem is to first admit that such a problem exists. This step is applicable to all subjects, in this case to an organization. An organization therefore must admit that a problem exists. In this project the problem surrounds various subjects, standards, policies, requirements, workflow, documents, information management and security risks.

The problem exists due to the fact that there are no clear policies regarding how work should be executed. It is naturally that there are policies at place which determine how work should be performed, but these policies are followed loosely due to their format and due to habituations. Therefore the workflow is not clearly defined which often creates situations where work has to be redone several time which in its turn leads to frustrations among employees. Lack of standards and requirements enable each employee to be free in performing of his or her work. However this freedom in execution causes more problems than solutions. It is obvious that certain freedom offers room for the employee to express his or her individuality. However in cases where team work has become more important than individuality, it is important for all employees to contribute to their team work. It is important to mention that regardless of the importance of



the team work for achieving productivity, the touch of individuality always remains as an outlet for one's mind.

Taking a closer look at the OSS Team, a department of Honeywell, these mentioned problems are also existing. Their struggle in maintaining and determining of standards, policies, requirements, workflow, document management, collaborations and security requires a fresh look from the outside world.

Requirements will ensure the quality of certain deliverables. Requirements also enable the employee to resort to a certain rescue line in case of falling. Requirements will also ensure that certain procedures will be followed in order to uphold the workflow. An workflow provides the knowledge for an employee of the next phase within an organization, which leads to efficiency of knowing without walking around aimlessly. Managing documentation is an important work within an organization. Having a large amount of documentation without a proper management structure provides an obstacle for searching and managing those documentations. Each time a reference or a piece of information is required, the amount of data which has to be sorted for it, is so much that the efficiency of seeking information will be an obstacle in performing one's tasks. Therefore a structure is needed to provide an efficient or optimal search mechanism for seeking information. The management of information in form of having an actual discussion board provides an efficient way of information reference and problem solver for an organization. Hence the need for a system or a software which enables the OSS Team to manage and conquer their struggle in their daily work.

Usage of a system or software, without proper security restrictions can create situations where security can be compromised. Having policies regarding security issues will ensure the safety of the security sensitive information handled throughout the OSS Team.

4.2 Thesis question

The thesis question is the key question, which accompanies the project from the beginning till the end of the project. The question is the key component of a project in terms of "has the project satisfied the answer to this question". The intentional question asked before this project began was the following: "The research goal is to create a design architecture of how the various design information can be structured, stored and shared. The emphasis is on the structure, what the content of each design "block" should be and managing their interwoven relationship" [5]. However during the project the question has been adapted in some ways. The requirements for sharing and storing has continued to stay on the topic of the project goal. However the focus has also become on displaying of the information through usage of various applications. Also management of documentations and information has become a key role within the projects domain. Therefore the thesis question can be determined as the following: "The research goal is to create a design architecture of how various design information can be stored, shared and managed. The emphasis is on the their interwoven relationship of managing information as form of product used internally."

4.3 Objective

The objectives of this project, executed for the OSS Team as part of Honeywell [6] located in Amsterdam the Netherlands with collaboration of TU Delft, is to determine the following namely:

- A set of requirements:
 - These requirements refer to handling of information,
 - How various processes should occur,
 - Naming,
 - Document managing,
 - Information managing,
 - Security,
 - Sharing,
 - Storing.



- A set of standards for:
 - Various documentations,
 - Various work flows,
 - Various processes,
 - Various templates,
 - Various design,
 - Phases,
 - Applications,
 - Sharing documentation,
 - Storing documentation.
- A set of policies:
 - Dealing with documentation exchange,
 - Format of documentations.
- Application collaboration:
 - Regarding display of information,
 - Visualization aspect,
 - Ease of work load,
 - Design of the sites.
- A workflow:
 - Which enables easier work environment,
 - For review,
 - For approval.
- Designing of an architecture:
 - Blue print, which handles the document management aspect.

4.4 Scope

This project will focus on the OSS Team only located at Honeywell in Amsterdam the Netherlands. The constraints will be to only handle the work of the OSS Team itself, until decided otherwise. The adaptation of any standards or workflow, if adapted, will be done locally within the OSS Team itself. OSS Team has all the rights to accept or reject any work or design made by the designers in form of adaptation of their daily work and routine. The scope of the project is limited to the design only, any implementation is executed by a third party decided by the OSS team as client. Requirements and policies regarding work at OSS Team is constraint to the OSS Team itself. Various requirements, standards and policies have an effect on the sales and after sales department, which collaborate with the OSS Team. The effect on these departments has not been part of this project, neither has it been to change these departments. The project has a advisory function where the OSS Team as the client has an open mind regarding deliverables. The project is limited to not reinvent processes, however to enable a better cooperation with application to enhance processes.

4.5 Approach

From the beginning, through and till the end of the project an approach must be chosen in order to act as a guide for the designers. In order to find a suitable guideline various actions has to be taken. These actions can be categorized into the following groups namely:

- Gathering,
- Analysing,
- Selecting,
- Applying,
- Evaluating.

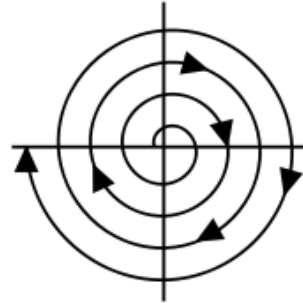


Figure 1: Example of a spiral model.

Gathering defines the research aspect. Finding information through various methods and sources such as books, online materials which are verifiable, holding interviews, sending questionnaires to the client, surveys and workshops.

Analysing, is the next phase, which leads to analysing of the gathered information or answers, in order to sort information for the purpose of providing a clear overview. Analysing phase will continue to occur during the entire project. Together with gathering of information, these phases roles are crucial for the project; due to the fact that these phases provide the base line of the entire project.

Selection phase, is where it will be defined which choices are going to be taken. One can try to gather information from the entire world and start analysing until the end of the world. However without making a choice none of the gathered information matter. Having made the selection is one thing and having chosen the right selection is another. Selecting a way of working, a framework, a method, a documentation method and so on are all part of a project. These choices will influence each decision of the designer towards the client. Having made the right selection depends of the outcome of the project. If the project is considered success by the client, one can conclude that the selection was right in the sense of fulfilling the desire and wishes of the client.

Applying phase, enables the execution of the selection phase to the actual project. In order to realise the project, one must apply the methods to realise the design and the actual deliverables. Applying the theoretical aspect of methods and frameworks into design which later on is evaluated in practical work.

Evaluation phase, continues during and will be the last phase of the project, where during each phase an evaluation takes place continuously to ensure the wishes and desires of the client is met accordingly. The purpose is to evaluate the work performed by the designer in order to stay on the right path for achieving the end result. It is important to receive evaluation for improving oneself as well as the project outcome. Processing clients feedback ensures the satisfaction of the client.

4.6 Report structure

The structure of this report consists of the following chapters namely:

First introducing the problem and the main question of the thesis followed by a glance background of the company.

Second more details regarding the requirements are provided followed by how the choice for a framework is made.

Third the selected framework is described and its application to the project itself is highlighted.

Fourth the application of the chosen framework is applied into practise followed by a conclusion. Finally the remaining work, which can be executed in the future is described.

Bear in mind that the selected pieces of the project which are shown in this thesis report is a fraction of the actual work performed. The entire documentations and deliverables of this project, which were presented to Honeywell [6] can be viewed in Appendix.



5. Background

5.1 History

Six Sigma is developed in order to ensure the quality and productivity of a processes up to an optimal level. Six Sigma enables an optimal process by diminishing the amount of mistakes which leads to a defect product. In short the Six sigma strives to have no more than 3,4 defects per million opportunities during the production process.

The Six Sigma [7] key concept are:

- Being critical towards quality which is the most important attribute for the customer,
- Defect, failure in delivering customer's desires,
- Capability of processes, deliverability of the process,
- Variation, view and feeling of the customer,
- Stability in operations, ensuring consistent and predictable processes in order to improve customer's needs and feelings,
- Designing in order to meet customer's needs and processes capabilities.

The Six Sigma is the way of Honeywell, by upholding and striving for a high standard, the strategy and productivity will improve towards a better value for the company itself as well as the customers.

From the year 1885 till 2009, Honeywell has proven itself to be an innovative company in which growth, productivity, cash, people and the enablers have had a leading role to play in. By invention of the damper flapper, see Figure 2, an automated temperature correction device, which led to foundation of the Butz

Thermo-Electric Regulator Co. in Minneapolis. In 1893 the Consolidated Temperature Controlling Co. Incorporated, acquired the patent of Albert Butz and its business and renamed the company itself into Electric Heat regulator Co. In 1898 the company was purchased by W.R Sweatt whom changed the name into Minneapolis Heat Regulator company. By the year 1904 Mark Honeywell perfected the heat generator and in 1906 he formed Heating Specialty Co. which specialized in hot heat generators [6].



Figure 2: Damper Flapper [6].

In 1912 Electric Heat Regulator Co. expanded and changed its name into Minneapolis Heat Regulator Company. In 1927 MHR and Honeywell Heating Specialty Co. merged together to form the Minneapolis-Honeywell Regulator Co. and became the largest producers of high-quality jewelled clocks. W. R. Sweatt became the chairman and Mark Honeywell became the president of the company. It is mentionable to state that the brown instrument for measuring heat in a more accurate manner had been acquired after this merger [6] which was essential for heat measuring.

MHR had many distributors and in 1934 MHR acquired Time-O-Stat Controls Corporation for its global expansion. The first expansion outside the United States was in Canada namely Toronto, afterwards expansion continued in Europe, the Netherlands and after that United Kingdom in London and Sweden, Stockholm. In 1941 expansion continued in Chilli, Panama, New Zealand, Argentina and South Africa. By the year 1972 there were 25 wholly owned subsidiaries, 142 branch offices and joint ventures in five different countries outside the United States. In 1933 Affiliates were established in Abu Dubai, China, Oman, Romania and Ukraine. By the year 1998 Operations were conducted throughout 95 countries, 83 subsidiaries and 13 joint ventures [6].

Honeywell has and will have a wide variety of ventures into various areas of products. The invention of the electronic auto pilot has proven itself a valuable asset during the United States war efforts [6].



The introduction of the T-86 "Round" thermostat design, in 1953, has been one of the most world recognizable design of thermostats throughout the business world as well as households.



Figure 3: T-86 "Round" thermostat [6].

In 1954 the company of gyroscopes makers was acquired which led to size reduction and sensitivity improvement of the gyroscopes in the next decades. The year 1955 marks Honeywell ventures into the computer business. This venture led to making of the first computer, made possible by the joint venture with Raytheon Corporation, called Datamatic Corporation, named the D-1000 which weighed 25 tons, costs \$ 1.5 million dollar and took up 6000 square feet of space. Later on in 1960 the Raytheon Corporation was bought out and Datamatic Corporation continued under the new name Electronic Data Processing. In 1957 in the line of acquisitions, a fire detection and alarm fire company acquisition led to entering of Honeywell into the security world, which left its mark in many north American cities. One of the more important achievements of Honeywell instruments in 1969, was to help United States astronauts Neil Armstrong and Edwin "Buzz" Aldrin land on the moon. From 1970 till 1991 Honeywell have had various experiences within the mainframe markets and personal computers, later on the focus became mainly on automation control, integrating sensors and activators. In 1986 Honeywell enhanced its position with the aerospace industry to become the world's leading integrator of avionics systems. After fusion with the Allied signal concern, which possesses the same quality and admirations as Honeywell itself, Honeywell has continued its path in the world [6].

Due to its experience and innovative technical people working within Honeywell, Honeywell has been able to grow and establish a leading position within various areas in the world. Regardless of the fields such as aerospace, automation & control solutions, speciality materials and transportation system, the goal has and will always be to look into the future and lead on to play a role within the world.

5.2 Company profile

In the year 1934 Honeywell established its first European company in Amsterdam the Netherlands, which until today forms support for sales activities throughout Europe. After the world war II Honeywell-Brown became involved in post war rebuilding of the Netherlands. In 1963 Honeywell Combustion Control Centre is opened in Emmen after the discovery of a gas bubble at Slochteren. Until the present time the development and production of gas regulators and security devices for the international market is performed there [6].

Honeywell has established various branches of its company in the Netherlands, below a complete list of its branches is provided namely:

- Honeywell Holding B.V, Amsterdam,
- Honeywell Environment & Combustion Control, Amsterdam and Emmen,
- Honeywell Processes Solutions, Amsterdam,
- Honeywell Analytics, Amsterdam,
- Honeywell Building Solutions, Apeldoorn and Purmerend,
- Honeywell Enraf, Delft
- Honeywell Safety Management Systems, Den Bosch,
- Holt Lloyd, Den Bosch,
- Honeywell Life Safety, Den Bosch
- Maxon, Dordrecht,
- Honeywell Customized Comfort Products, Eindhoven,



- Honeywell Imaging and Mobility – Hand Held Products, Eindhoven,
- North Safety Products, Middelburg,
- Novar, Raamsdonksveer,
- ADI-Gardiner, Purmerend and Sliedrecht,
- Honeywell Aerospace, Schiphol-Rijk,
- Honeywell / Cara CÁir, Velsbroek,
- Honeywell Fluorine products Europe, Weert [6].

Honeywell Processes Solution is a respectable atomisation company in process industry area. Various activities within these areas are:

- Offshore and onshore oil and gas explorations,
- Refineries,
- Petro chemistry,
- Bases, pharmacy and fine chemistry,
- Pulp and paper industry,
- Printing industry,
- Thermal power Centre,
- Electricity industry,
- Steel and aluminium industry,
- Sanitation [6].

A professional team of employees guides and executes the entire project from engineering through implementation as well as the necessary support for operation to make sure production is achieved in an optimal manner. Another aspect of atomisation is being able to perform benchmarks, feasibility studies and improvement suggestions for other companies as part of many other tasks.

As part of managing and development of the entire project, Honeywell uses its own service departments which enables the customer to possess various options for service selection. In order to provide a complete picture, the following products are offered towards the customer namely:

- Sales, refers to product sale,
- Engineering, refers to development and implementation,
- Services, refers to all sort of service before and after sales,
- Training, refers to training for usage or service,
- Quality, refers to maintaining high quality throughout all projects and services [6].

To be able to provide services from sales, throughout the entire project realization and after sales, is what makes Honeywell processes solution strong in its position and its tasks performance. Providing the bridge between both worlds is to stay innovative for its customers.



6. Requirements and framework

6.1 *OSS Team*

Today's automation is all about making life easier. Human roles start to be replaced by machines. In the early days of propriety systems, very little system management was required. The tasks were done by a related experienced control engineer. On the contrary of nowadays open automation, it surely gives a better business integration for new opportunities. However these systems also need to be made secure. The OSS Team is helping customers in accomplishing such needs. The service that this team provides to the customer is followed by these steps:



Figure 4: OSS service steps [8].

Assess

The assessment step determines what vulnerabilities and possible threats are in the current system. Knowing these weakness gives a clear insight of how to improve system security aspects and performance of the as is situation. Three key concerns are focussed during assessment:

- Security.
Related with network security issues, security policies, documentation security and network threats.
- Network.
Concerned with the current infrastructure and network devices used, for improving reliability.
- Data recovery.
Analysing the current data recovery systems for further improvement if required.

Design & Implement

After finishing the assessment session, a detailed design will be delivered. The team will make sure that the customer's requirements are kept and translated into a secure and ready for open system purposes solutions. The implementation process is to realize the designed solution for a process control network of the customer.

Manage

After delivering the service to its customers, managing services provides the guaranty that these services are kept at its optimum conditions. Performance monitoring and analysis by experts is provided 24 hours a day 7 weeks. Concerning issues that managing services takes into account are patch management, virus protection, systems performance, and data recovery. These services are provided remotely, by using remote hosting or and remote connectivity.

The OSS Team is a fast uprising department within the Honeywell Holding B.V. in Amsterdam. This team has grown up to ten members in a couple of years, consisting of different engineers with different backgrounds. However the workload is even increased more. The core business that is comprised of four main steps has been summed up above. The whole process requires immense amount of paperwork to document the comprehensive work, which is from basic assessment documentation to the more complex detailed design documentations. Each documentation has its own style and its own purpose. Working with different engineers and especially with different backgrounds gives even more irregularities in making documentations. Not to mention that sometimes customers like to keep its own style and formats. Since the OSS Team is quite a new department, the administrative concerning aspects have not been set up properly. Currently documentations are stored at a central directory structure. The more projects to come, the more difficult it is to find the right documentation for reference purposes. Therefore a common structure needs to



be introduced. In order to restore order in the workflow, and to maintain standards for the documentation in the workflow.

6.2 *Acquire wishes and demands*

With every project, the main point of the problem needs to be fully understood. In order to provide the right and most effective solution possible. This project faces many different aspects. Not only the IT aspects needs to be considered, also the business processes, the way of working and the acceptance of a new system needs to be considered as well. Digging through the pile of documents within the department would only give some theoretical support in solving this problem. This requires a typical soft system [9] [10] approach, where we are not seeking for the qualitative optimal solution. The methods that were used to gather information were done by interview and sending out questioners. Talking with a few members of the team, to get a grasp of how they feel about the situation and to obtain useful data. Since this is a complex situation openness [11] is important, to show everyone's thoughts including the designers. Organizing workshop would provide an added value. During this workshop, the results of the direction of the design were presented to see if this aligns with the teams wishes and demands. Also a workshop is eminently the best opportunity to brainstorm, to share ideas, to discuss contradictions or conflicts and to reach consensus.

6.3 *Determine requirements*

It is clear that the four steps described before about the way of work is a little coarse. In order to design a proper system for the OSS Team, a better understanding of their way of work is mandatory. After a few meetings it becomes clear that the four steps comprise of several other phases. These phases are the ideal business processes to maintain a natural workflow. However, in practice some phases are left out or realized in other subsequent sequences. To give an impression, it consists of seven phases with each phase its own associated sub phases.

1. Quotation

- Project deliveries,
- FEED (Front End Engineering Design).

2. Project engineering

- Handover
- Plan
- Resources.
- FDS
 - Functional design specification
- Design
 - Detailed Design specifications.
- BOM (Bill of Material)
 - List of hardware/software, which is needed for the project.

3. Implementation

- Installation
- and configuration of hardware and software.

4. Internal test

- Pre internal test before FAT test is performed. This test is not always performed.

5. FAT

- Factory Acceptance test, this test will be performed before products are shipped to customer site.

6. SAT

- Site Acceptance test, this test will be performed at customer site.
- Commissioning of plant. After test and issues resolved the plant is commissioned.



7. AMS (After Market Services)

- Service and support department, this includes also the TAC (Technical Assistance Centre).

The flow among these phases and sub phases are illustrated in the High Level Requirements. How the process flow within each phase is identified, see Appendix A.

From these phases the requirements of the to be designed system can be further determined. Initial approach is to identify and determine the high level requirements. This process of determining requirements was done iteratively. Each set of requirements was first reviewed and modified until it was fully satisfied. When the high level requirements were final, next the detailed level requirements were determined.

Due to the fact that managing documents is one of the main issues, flow charts of how documentation should be processed was contrived. This will support in deriving the requirement policies for managing documents, which is described in the Requirements Detail ArchiMate, see Appendix B. These policies concerns form the initial start of making a document, using the right style and document naming convention, till the final approval of a document, review approval process. Besides the more or less administrative elements, also the policies of management of the documents are determined. For example how a document should be edited, shared and stored with security issues kept in mind. Each document can be used as a knowledge base for in the future. Also in order to improve the efficiency of these documentations, design templates were considered. Design templates serving as building blocks purposes. A consensus about how these templates should look like still needs to be reached. Two ideas were highlighted. Either using one large master document that covers almost 90% of the required content for design documents. Or using small chunks of bits and pieces, resulting for the engineer to decide which pieces should be taken into his design document. However the only concerning policies for managing these templates were determined.

One obvious conclusion of the results of the workshop was that a DMS is needed to manage the large amount of documentation. Access to documents should be easier, especially finding the right documentation during daily work should be more convenient. If possible this convenience should even be visually supported, instead of textual representations. The workflow in dealing with documentation should be structured. According to the software advice report, Software choice see Appendix C, three kinds of software end design could be delivered. The OSS Team decided to utilize the off the shelf solution. It was financially more attractive, and besides a part of the off the shelf solution was already available on the Global Honeywell infrastructure. It was never fully analysed and exploited.

6.4 Selecting framework

There are various frameworks available that can be selected to realize the architectural structure of this project. In the following paragraphs brief explanations of the considered frameworks and the arguments of the used criteria for selecting a framework will be given.

Definition of a framework

In general, a framework is a real or conceptual structure intended to serve as a support or guide for the building of something that expands the structure into something useful [12].

Definitions of architecture

The term enterprise architecture becomes very popular nowadays. Many people have many definitions about what this term means.

The fundamental organization of a system embodied in its components, their relationships to each other and to the environment and the principles guiding its design and evolution (IEEE) [13].

Architecture is that set of design artefacts, or descriptive representations, that are relevant for describing an object, such that it can be produced to requirements as well as maintained over the period of its useful life (Zachman) [14].



1. *A formal description of a system, or a detailed plan of the system at component level to guide its implementation (TOGAF) [15].*

2. *The structure of components, their interrelationships, and the principles and guidelines governing their design and evolution over time (TOGAF) [15].*

Conceptually, architecture is the normative restriction of design freedom in system development (Dietz, Jan L.G.) [16].

If we take a greater look at those definitions we can see that there are two architecture notions, which are descriptive and prescriptive. When we compare TOGAF's second definition with Zachman's definition we can conclude that the true meaning is to answer the important question of how to develop a system, versus of how the system should look like. The descriptive notion provides tools and models in producing the enterprise descriptions. Whereas the prescriptive notion only provides a set of guidelines and principles for how to do so.

In the interest of ICT, there are several categories of frameworks developed to facilitate the complex processes involved during designing. Among of these are:

- Software framework,
In the issue of computer programming, it is providing generic functionality for programmers for them to reuse.
- Application framework,
Framework that provides a set of common software routines, let say building blocks that provides a foundation structure for developing an application.
- Enterprise Architecture framework,
A framework for enterprise architecture to structure its organization, providing a describing blueprint.
- Web application framework.
A software framework for designing web applications or dynamic web sites.

Why enterprise architecture?

Organizations need management to deal with dynamics and the environment. Therefore an organization, in this context an enterprise, needs to be modelled. Knowing the problems of how the OSS Team is struggling to align their IT with their businesses, it is clear that it's needed to look in the direction of enterprise architecture frameworks. This field is concerned with improving the efficiency of the business itself. This means structuring the organization, which is to manage the organizations IT, people, assets and operations. Having the available technology aligned with the existing business process, will benefit the productivity of the organization.

For defining architecture, framework is being used to determine and describe the required platform necessary for realizing the enterprise goals. Thus describing the business structures and processes that connects each other. In other words the architecture is a model of the organization business situation and how it's going to be. Unlike the past, it is a business issue and not just an IT issue, because it involves the management and the overall documentation of all aspects of an enterprise.

In the field of determining and describing enterprise architecture there are many frameworks. They all have its specific benefits and disadvantages. A few well known framework that were studied are listed below:

- TOGAF,
- ArchiMate,
- (DEMO),
- C4ISR,
- DoDAF,
- TEAF,
- XAF,
- Zachman framework.



A few common factors of these frameworks are that they use a layered approach. This layered construction reduces the complexity, thus improving better understanding of the relationships. Although each layer is related, it can be designed independently. Therefore creating different views, to give different perspectives. First the known frameworks are elaborated, then the search continues for finding more possible frameworks applicable to this project.

6.4.1 TOGAF

The Open Group Architecture Framework (TOGAF) is a framework for developing enterprise architecture. It is developed by Members of The Open Group, working within the Architecture Forum. The original development of TOGAF Version 1 in 1995 was based on the Technical Architecture Framework for Information Management (TAFIM), developed by the US Department of Defense (DoD) [15].

The architecture is typically modelled at four levels or domains:

- Business architecture.
Defining the business strategy along with the governance issues, organizational issues and key business processes.
- Application architecture.
Providing a blue print for the individual application systems to be deployed, the interactions between these and their relationships to the organization's core business processes.
- Data architecture.
Describing the structure of an organization's logical and physical data assets and the data management resources.
- Technology architecture.
Describing the required software and hardware capabilities to provide support to the deployment of business, data and application services. It typically includes IT infrastructure, middleware, networks, communications, standards and etc..

The combination of Data Architecture and Applications Architecture is also referred to as the Information Systems Architecture. In the beginning TOGAF only supported the Technology architecture. But because of its evolution towards framework for enterprise architecture, it is now consisting of the above levels or domains.

The TOGAF document consists of four parts, which are the introduction, the Architecture Development Method (ADM), the Enterprise Continuum and the Resources [15].

- Introduction,
Part 1 provides a high-level introduction to some of the key concepts behind enterprise architecture and in particular the TOGAF approach.
- Architecture Development Method,
Part 2 is the core of TOGAF. The Architecture Development Method describes step-by-step how to develop enterprise architecture.
- Enterprise Continuum,
Part 3 describes the virtual repository of architecture assets. This includes the TOGAF Foundation Architecture, and the Integrated Information Infrastructure Reference Model (IIIRM).
- Resources.
Part 4 tells what set of tools and techniques are available for applying TOGAF and the TOGAF ADM.

6.4.1.1 Architecture Development Method

For developing enterprise architecture the ADM is used. The ADM methodology is iterative and cyclic, see Figure 5, and it has a more descriptive nature. Each phase, which is represented by a circle, is checked by the requirements management. Phase B, C and D are also included with non-functional requirements.

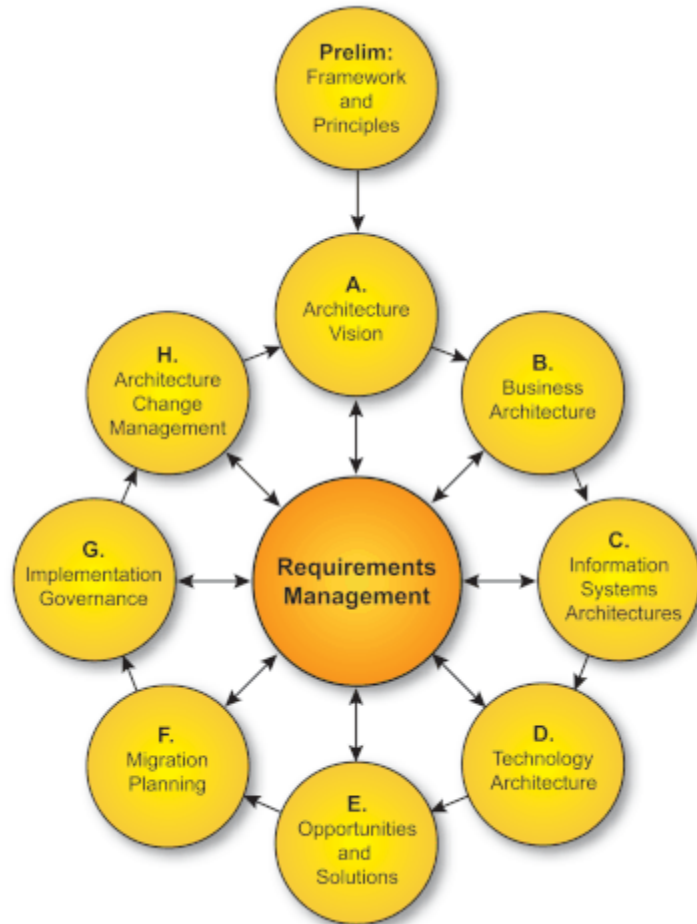


Figure 5: Architecture Development Method [17].

Below the phases of Figure 5 will be explained shortly.

- Preliminary Phase,
In this phase it is about defining “how we do architecture” in the concerned enterprise. Two aspects are considered, namely: defining the framework that is to be used and defining the architecture principles that will form the base for any architecture work.
- Phase A: Architecture Vision,
This phase represents the architect’s “elevator pitch”, the opportunity to present the benefits of the proposed development to the decision makers within the enterprise.
- Phase B: Business Architecture,
It’s often necessary to demonstrate the business value of the subsequent Technical Architecture to draw stakeholder’s interests.
- Phase C: Information Systems Architecture,
In this phase only the IT supported business processes are considered.

- Phase D: Technology Architecture
This will be the basis of the following implementation work.
- Phase E: Opportunities and Solutions,
This phase concerns evaluating and verifying the suitability for implementation.
- Phase F: Migration Planning,
Migration planning, including work prioritisation, selection of major work packages and further development of a Migration Plan are being addressed.
- Phase G: Implementation Governance,
All the information for successful management of the various implementation projects is brought together.
- Phase H: Architecture Change Management.
The procedures for managing change to the new architecture are established, also framework and principles set-ups in the Preliminary Phase are possible.

The ADM methodology is an iterative process. Up to phase E it is more leaning towards the design process. Also stated before, TOGAF provides principles and guidelines. TOGAF also provides the freedom to acquire deliverables by using another appropriate framework, for example the Zachman framework.

6.4.2 ArchiMate

ArchiMate [18] is an open and independent modelling language for enterprise architecture. It provides a method for describing and illustrating the relating business domains of organizations in an unambiguous way. It's based on the IEEE 1471 standard and is included and supported by the Open Group consortium. ArchiMate is influenced and uses elements of other enterprise architecture frameworks, such as TOGAF and Zachman framework [14]. TOGAF complements ArchiMate in the sense, that it is using TOGAF's ADM for its architecture process.

Figure 6 depicts the metamodel.

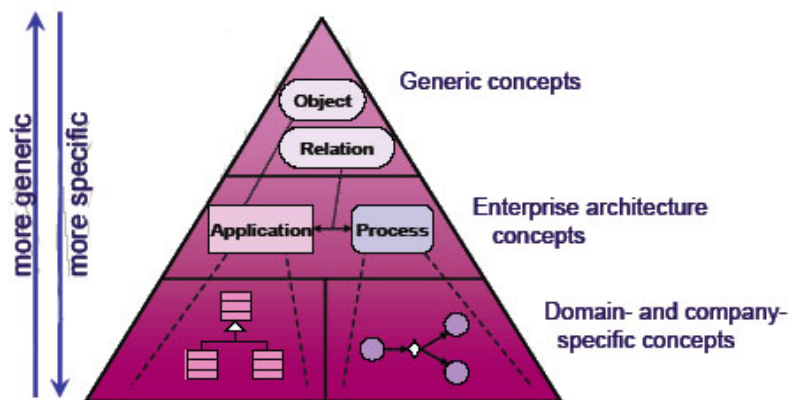


Figure 6: ArchiMate metamodel [19].

This metamodel tries to balance the general views and concepts with the more modelling languages specific elements of an enterprise. For example UML would be the utmost suitable modelling language for software modelling. And for describing business process, BPM [20] would be the preferred method. However in this case when dealing with an enterprise, the relation with how each business process can access an



application cannot easily be described by either UML or BPM. ArchiMate is closing this gap, by providing a layered approach. Three layers are used to distinguish an enterprise's essentials:

- Business layer,
Describes the structure of the organization, business processes, and events.
- Application layer,
Describes the software applications that support the business components, which are described in the business layer.
- Technology layer.
Describes the hardware infrastructure for realizing the application layer.

Each layer can be designed independently, which improves flexibility when some changes needs to be made. In the interest of aligning business with IT, cross layer dependencies is introduced for the purpose of making the relations between the three layers. The general structure of the models within the three layers is similar. Some concepts are derived from UML, and the granularity can differ, depending on the aspect of which part of the enterprise architecture needed to be illustrated.

Core concept of ArchiMate

The basics of ArchiMate consist of three structure elements, which are the active structure elements, the behavioural elements and the passive structure elements.

The active structure elements are the subjects. These are the business actors, but it can also be the application components and devices that would start using behaviour. The behaviour element can be seen as a verb. It describes the dynamic part of the system. It defines the actions what will and what should be done. The passive structure elements are the objects on which behaviour is performed. In this aspect, data objects information objects are meant.

As illustrated in Figure 7, the three structure elements are combined with the business layer, application layer and technology layer. This gives us a three by three matrix, each cell distinguished by its own viewpoint. These nine cells remind us of the 36 different views of the Zachman framework [14], which gives a holistic view. It is based on completeness, interpretability and independence. Although with both frameworks it is not necessary to answer all cells. However relatively the Zachman framework would require more documentation due to its overly completeness.

Environment

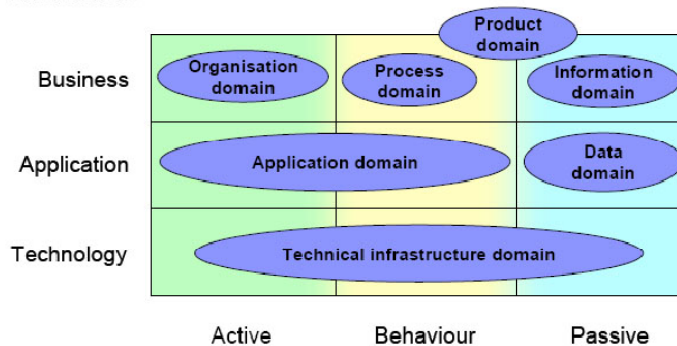


Figure 7: ArchiMate framework matrix [19].

Another problem related with architectural framework such as Zachman's is that it only categorizes architectural descriptions rather than offering further insight into their coherence.

ArchiMate involves multiple views in order to capture the essence of each set of concerns. The design of an enterprise's architecture has to deal with various actors and stakeholders. Because of this, it distinguishes first the point of view for whom it is intended to be described. In general a view means what you see, in our content it addresses the architectural description, which is in mind for a certain group of actors or stakeholders. Among these actors or stakeholders are, designers, software developers, decision makers, CEO and customers, which are classified as designing, deciding or informing.



Each point of view from the perspective of the actor corresponds to it's own necessary sets of viewpoints. Viewpoints are the direction where you are looking from. It describes the set of concerns of one or more stakeholders and defines how to build the corresponding view. In total there are fifteen sepeerate viewpoints identified and devided into four categories, composition, cooperation, support and realization. Later on in the next chapter these viewpoints will be further elaborated.

6.4.3 DEMO

DEMO methodology provides a way of thinking and a way of modelling an enterprise on an ontological level. This method is concerned with capturing the Coherence, Comprehensiveness, Consistency, Conciseness and Essence [16] of an organization. It defines enterprise as heterogeneous system consisting of homogeneous system, where the human action is kept central. Every organization consists of actors. Each of them has their distinct roles, which divided into two types: production acts and coordination acts. Only human beings can perform production acts on the ontological level of an enterprise. Coordination acts are the commitments between two actors who is willing to communicate in order to perform a production act. Three distinct human abilities are defined, which is called the distinction axiom, see Figure 8.

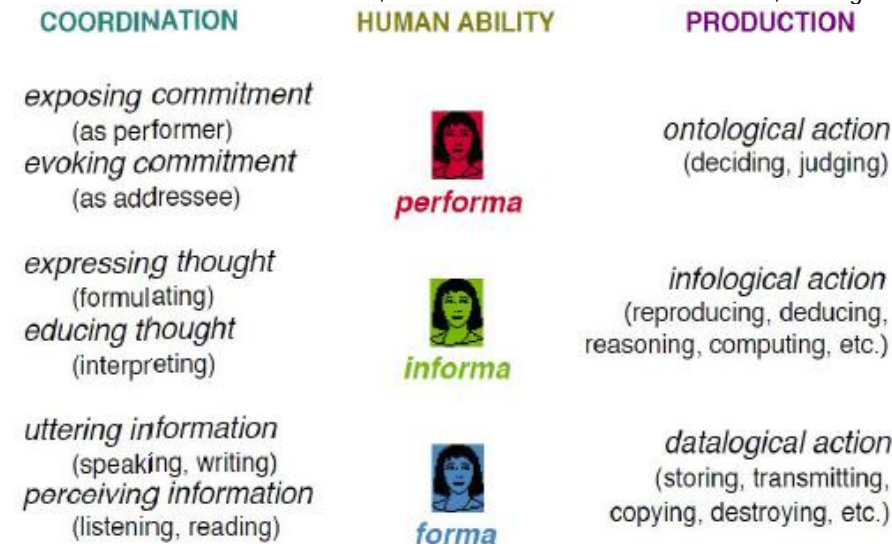


Figure 8: Distinct axiom [16].

The performa ability states that new information and knowledge can be created through communication between the initiator and executor. This is also the essential human ability for doing business of any kind. The informa ability concerns the content aspects of information and communication. In other words things as sharing thoughts between people. The forma ability deals with the form aspects of communication and information, such as speaking words and listens to sentences.

The homogeneous systems mentioned are represented in Figure 9. Where the B-organization represents the business, the I-organization represents the intellect and the D-organization represents the data.

Honeywell

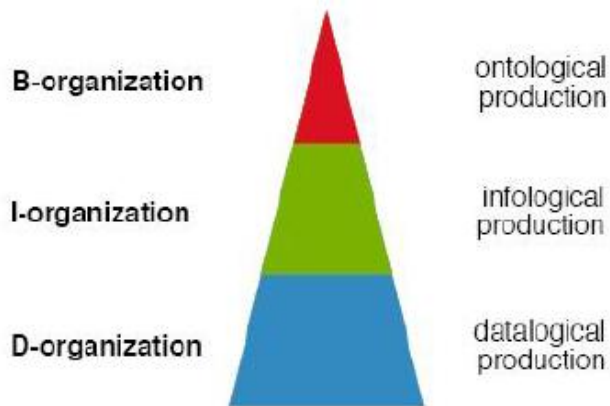


Figure 9: Representation of organization axiom [16].

As shown in the Figure 9 each organization uses its underneath organization. For example a B-actor would like to have the annual results, he or she asks an I-actor to produce them. The I-actor will make the calculations. The results are performed by the D-actor, which represents the results on paper. In an organization, it's important to bring about new things. Communication is the essential element for a good functioning of an organization. The B-organization is in essence the complete knowledge of an enterprise. The underlying organization is merely the realization and implementation. Which leads to a deeper focus on the B-organization. DEMO provides a method to visualize the essence in different models. These models are Construction Model (CM), Process Model (PM), Action Model (AM) and State Model (SM).

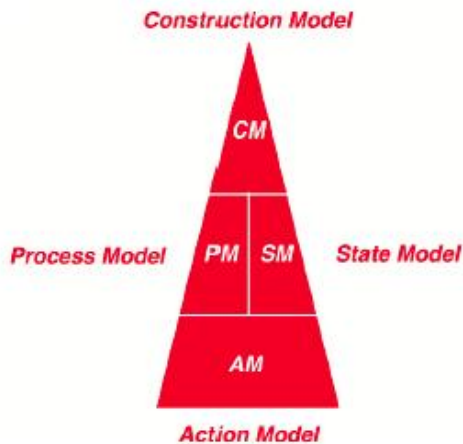


Figure 10: Ontological aspect models [16].

The Construction Model describes the transactions between their actor's roles, which in fact is the construction of the organization. The complete transaction pattern of each business process performed by actor roles is described in the Process Model. The Action Model serves as guiding the actors in doing their business by specifying the concerning rule base. The State Model specifies the state space of the production world, which are object classes, fact types, result types and the ontological coexistence rules.

6.4.4 Selected framework

To provide a way of making a blueprint for enterprise architecture basic elements are the performing actors, the to be performed business processes, data model, the required services or applications and the

supporting hardware and software infrastructure. In order to make clear distinction between these elements, layered approach are commonly used by enterprise architecture frameworks.

To compare the different frameworks, the following criteria has been followed:

- Specification of the actors, business, application, infrastructure.
- How many layers used.
- Modelling methods for the specific layers.
- Granularity of the layers view.
- Intended purpose of the framework.
- Relationship between the layers.
- Supporting tools for using the framework.
- Cost rise of the use of the framework.
- Available support for using the framework.
- Future development of the framework.
- Applicability to Honeywell's OSS team case.

C4ISR

The four C's in C4ISR stands for Command, Control, Computers and Communications. This framework was created for the Department of Defense to ensure comprehensive architectural guidance in interoperable and cost effective military systems. Momentarily it is under revision and is also used in government areas beyond the defence sector. The model consists of three different views, see Figure 11.

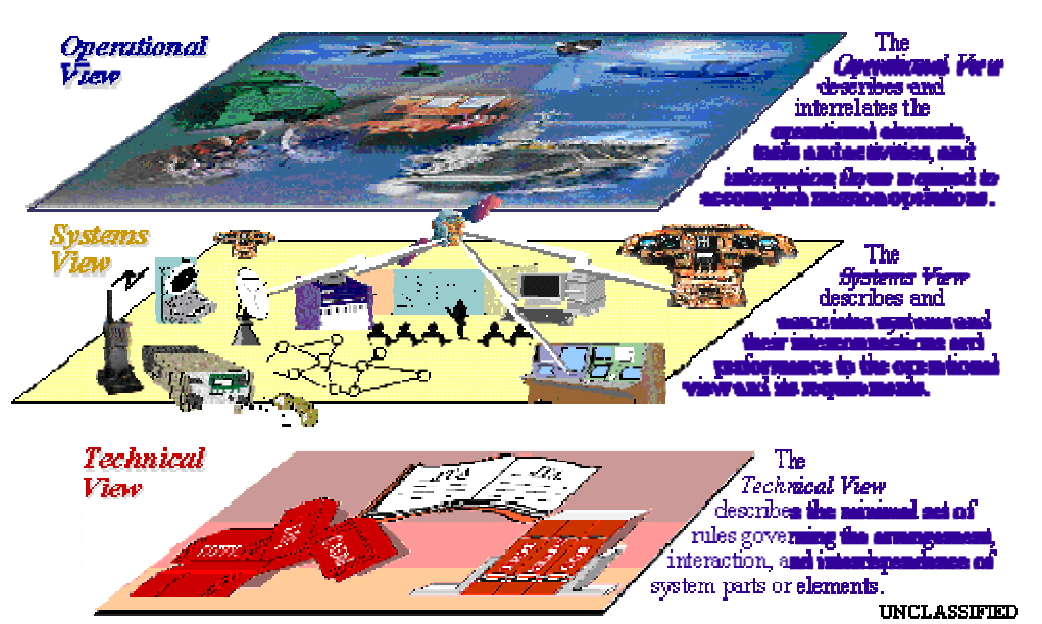


Figure 11: C4ISR Architecture framework [15].

DoDAF

The C4ISR framework undertook several changes, which was desired by the Deputy Secretary of Defense to enhance the interoperability and needs of the warfighter. And so another framework was born.

The Department of Defense Architecture Framework (DoDAF) provides a foundational framework for developing and representing architecture descriptions that ensure a common denominator for understanding, comparing, and integrating architectures across organizational, Joint and multinational

boundaries [21]. The accent lies on the Department of Defense (DoD) applications. DoDAF uses four basic views to describe enterprise architecture:

- All View (AV) with two work products,
- Operational View (OV) with seven work products,
- Systems View (SV) with eleven work products,
- Technical Standards View (TV) with two work products.

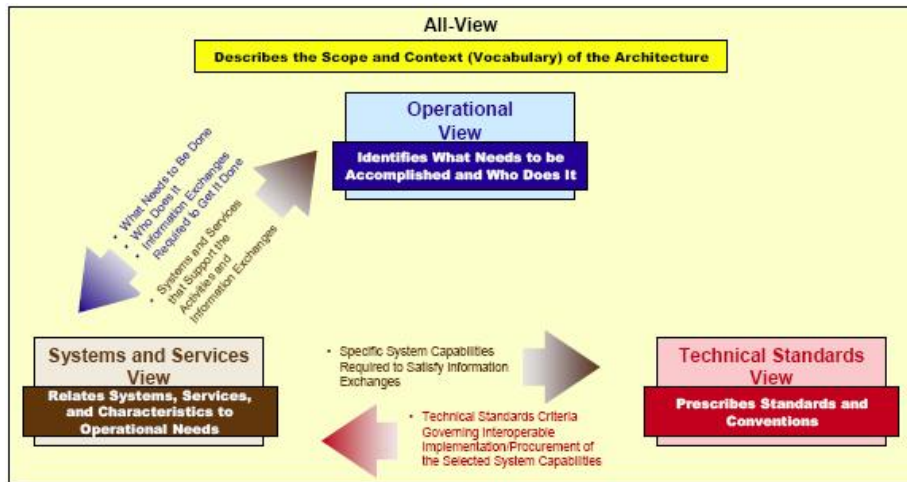


Figure 12: DoDAF view [21].

TEAF

This architecture framework is developed by the Department of the Treasury [22]. It provides guidance to the Department and its bureaus in developing enterprise architecture that meets the needs of each bureau, fulfil federal requirements, performing of strategic planning, investments and engineering activities that supports the business needs.

TEAF works in conjunction with the Federal Enterprise Architecture Framework (FEAF). Since this framework is based on the Zachman framework, the TEAF irrevocably inherits this character. Just as other frameworks, the model is divided into four layers and is subdivided by its views, perspectives and work products.

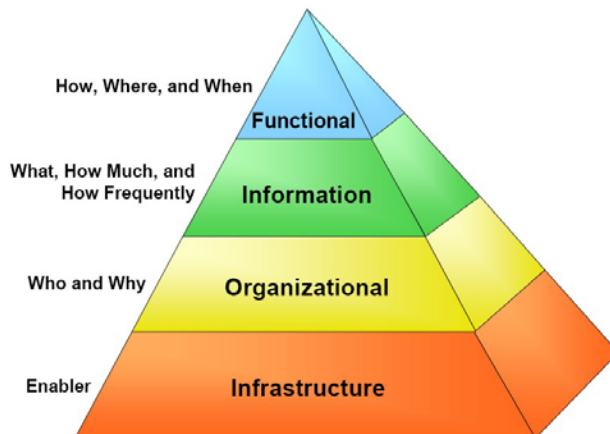


Figure 13: TEAF model [17].

The hierarchical structure is represented in Figure 13. Each layer represents a certain view of the enterprise architecture. The top three layers models the organizations business processes and procedures. The infrastructure layer provides description for the required computing platforms, internal external interfaces for enabling the cross relations between the different layers.

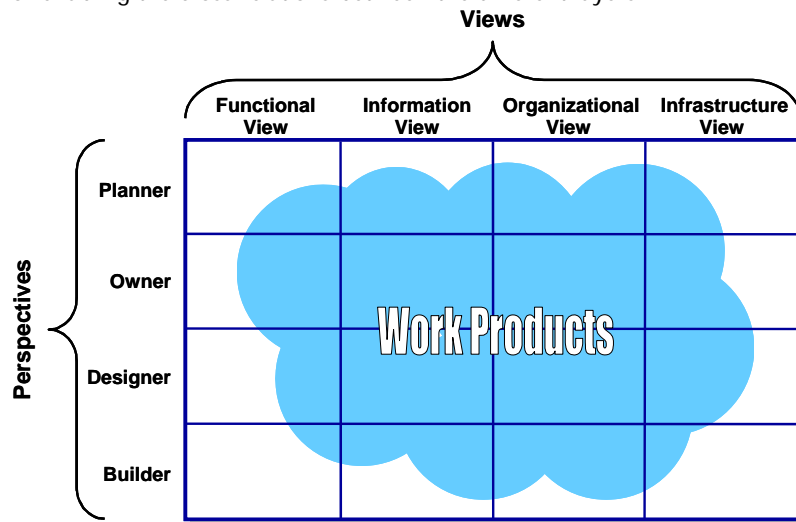


Figure 14: TEAF Perspectives, Views and Work products [22].

The TEAF enterprise architecture is subdivided by:

- Views,
- Perspectives,
- Work products.

xAF

The extensible Architecture Framework is developed by the Netherlands Architecture Forum in the Netherlands. The idea was to develop a generic architecture framework that is theoretically solid and practically useful. It will be convenient to have a structured checklist for devising architectures. An architecture framework can be divided as a tuple $\langle O, D, A \rangle$, O is a set of object types (churches, computer networks, organizations), D is a set of design domains (functions and constructions) and A is set of areas of concern (security and maintainability). These three elements in this tuple can be considered as three dimensions, which are placed orthogonal.

Based on a formal definition of architecture framework, it is possible to define an architecture framework as an extension of one or more existing architecture frameworks, while being also extensible itself [23]. The advantage is that other architecture frameworks can be compared and evaluated, for bringing out new ones. The root framework is named xAF_0 .

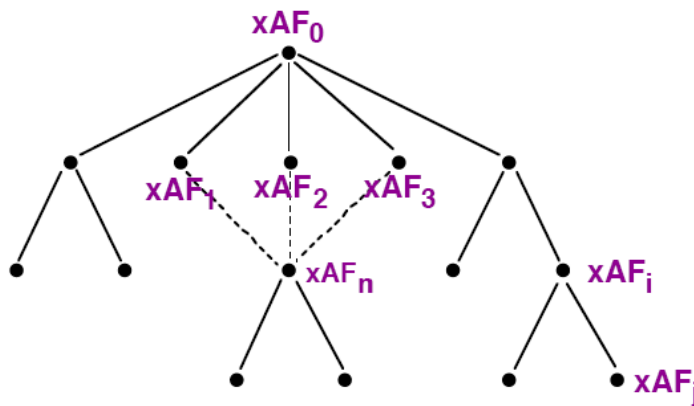


Figure 15 : xAF Specification integration [23].

Zachman

This framework was designed by John Zachman [14]. In 1987 he wrote: "To keep the business from disintegrating, the concept of information systems architecture is becoming less of an option and more of a necessity." Since then the Zachman framework has become a model for many organizations to describe their information infrastructure. It provides a blueprint for the current state or future state of their organizations.

Instead of analysing series of steps of processes, Zachman discovered that it would be more useful to look at the point of views of the involved objects/parties. This will give us five major perspectives namely, the scope, owner, designer, builder and sub-contractor. He also used the famous open questions, what, how, where, who, when and why for easily describing the main meanings of an object. These six characteristics are called abstractions.

In Figure 16, a matrix is illustrated, which is formed by these perspectives and characteristics. By defining each cell in the matrix there should be a complete understanding of the issue that is being modelled. Although enterprise architecture is a complex object, it has to be described. If this is not possible, the enterprise cannot be created. Once an enterprise is created and structured, changes should be able to be made.

The responsible stakeholders have to be able to deal with the complexity of the enterprise and its environment. The top of the organization has to connect strategy to implementation via the managers. Thus, enterprise architecture helps CEOs to deal with complexity and changes, so they can produce and build services or products at a reasonable cost.



ENTERPRISE ARCHITECTURE - A FRAMEWORK TM

	DATA	What	FUNCTION	How	NETWORK	Where	PEOPLE	Who	TIME	When	MOTIVATION	Why	
SCOPE (CONTEXTUAL)	List of Things Important to the Business		List of Processes the Business Performs		List of Locations in which the Business Operates		List of Organizations Important to the Business		List of Events/Cycles Significant to the Business		List of Business Goals/Strategies		SCOPE (CONTEXTUAL)
Planner	ENTITY = Case of Business Thing		Process = Case of Business Process		Node = Major Business Location		People = Major Organization Unit		Time = Major Business Event/Cycle		Ends/Motives = Major Business Goal/Strategy		Planner
BUSINESS MODEL (CONCEPTUAL)	e.g. Semantic Model		e.g. Business Process Model		e.g. Business Logistics System		e.g. Work Flow Model		e.g. Master Schedule		e.g. Business Plan		BUSINESS MODEL (CONCEPTUAL)
Owner	Ent = Business Entity Rein = Business Relationship		Proc = Business Process IO = Business Resources		Node = Business Location Link = Business Linkage		People = Organization Unit Work = Work Product		Time = Business Event Cycle = Business Cycle		End = Business Objective Means = Business Strategy		Owner
SYSTEM MODEL (LOGICAL)	e.g. Logical Data Model		e.g. Application Architecture		e.g. Distributed System Architecture		e.g. Human Interface Architecture		e.g. Processing Structure		e.g. Business Rule Model		SYSTEM MODEL (LOGICAL)
Designer	Ent = Data Entity Rein = Data Relationship		Proc = Application Function IO = User View		Node = IIS Function (Processor, Storage, etc.) Link = Line Characteristics		People = Role Work = Deliverable		Time = System Event Cycle = Processing Cycle		End = Structural Assertion Means = Relation Assertion		Designer
TECHNOLOGY MODEL (PHYSICAL)	e.g. Physical Data Model		e.g. System Design		e.g. Technology Architecture		e.g. Presentation Architecture		e.g. Control Structure		e.g. Rule Design		TECHNOLOGY MODEL (PHYSICAL)
Builder	Ent = Segment/Table/etc. Rein = Pointer/Key/etc.		Proc = Computer Function IO = Data Element/Set		Node = Hardware/Systems Link = Line Specifications		People = User Work = Screen Format		Time = Execute Cycle = Component Cycle		End = Condition Means = Action		Builder
DETAILED REPRESENTATIONS (OUT-OF-CONTEXT)	e.g. Data Definition		e.g. Program		e.g. Network Architecture		e.g. Security Architecture		e.g. Timing Definition		e.g. Rule Specification		DETAILED REPRESENTATIONS (OUT-OF-CONTEXT)
Sub-Contractor	Ent = Field Rein = Address		Proc = Language Statement IO = Control Block		Node = Address Link = Protocol		People = Identity Work = Job		Time = Interrupt Cycle = Machine Cycle		End = Sub-condition Means = Step		Sub-Contractor
FUNCTIONING ENTERPRISE	e.g. DATA		e.g. FUNCTION		e.g. NETWORK		e.g. ORGANIZATION		e.g. SCHEDULE		e.g. STRATEGY		FUNCTIONING ENTERPRISE

John A. Zachman, Zachman International

Figure 16: Zachman enterprise framework [14].

Its completeness, simplicity interpretability and independence, gives Zachman's framework a holistic view. The columns have no order, basic model (entities and relationships) of each column is unique, each row represents a distinct view and each cell is unique.

By combining the cells in one row, it forms a complete description from that view. In respect of this, rows 2 and 3 represents the designers view. The topics business process Models, business function allocation, elimination of function overlap and ambiguity, project management, and requirements definition will come up.

Rows 4 (builder) and 5 (integrator) can be seen as the engineering view. Here the physical models and solutions will be realized implemented and deployed. For example by answering in row 4, what database management type should be used; or in row 5 how the programmed source code can run on various platforms. As you can see a lot is needed to define each cell of the matrix. There is not a special ICT application described. But tools that would support for defining those cells can be word processors.



Table 1: Framework features comparison.

Framework Criteria	ArchiMate	C4ISR	DEMO	DoDAF	TEAF	TOGAF
Specification of the actors, business, application, infrastructure.	Three categories of actors, designing, deciding, and informing.	Six-step process building of an architecture.	Distinction Axiom, operation axiom, transaction axiom, composition axiom, organization theorem, CRISP.	Two actors (architect and manager).	Views (4 distinct views), perspectives (4 different actors), work products.	Architecture development method, enterprise continuum, resources.
How many layers used.	Three layers (business, application, technology), including 15 views.	Three layers (operational view, systems view, technical view).	Three layers (B-, I-, D-organization).	Four views (all view, operational view, systems view, technical standards).	Four layers (functional, information, organizational, infrastructure).	Four domains (business, application, data, technology).
Modelling methods for the specific layers.	ArchiMate own modelling, with some derivative of UML.	CADM [24].	IAM, PM, AM, SM, ISM.	UML, Net Centric, CADM.	UML state diagrams.	Architecture Development Method (ADM).
Granularity of the layers view.	Up to the designer, can be simple to complex.	Four dimensions, global, hierarchical views of warfighter operations and support. Each view consists of several list of products (see DoDAF).	B-organization based on the axioms, and modelled by IAM, PM, AM, SM, ISM.	Each view consists of several list of products. AV (4 products), OV (7 products), SV (11 products), TV (2 products).	4 by 4 matrix.	Depends on the methods are used.



Table 1: Framework features comparison.

Framework Criteria	ArchiMate	C4ISR	DEMO	DoDAF	TEAF	TOGAF
Intended purpose of the framework.	Describing architecture for public and private organization.	Department of Defense.	Brings forth the essence of an organization.	Department of Defense.	Department of Treasury.	For IT architects and anyone responsible for the architecture function within an organization.
Relationship between the layers.	Cross domain relationship between layers.	Triangular linkage of the three layers.	The underlying layer is supporting the layer above, and a layer is using the layer beneath.	The three views OV, SV, TV has traceable linkages.	Direction -> description -> accomplishment.	ADM, iterative process.
Supporting tools for using the framework.	BizzDesigner, ARIS ArchiMate Modeler.	Core Architecture Data Model (CADM), repository is based on CADM and able to be in conjunction with multiple framework based architecture.	Xemod.	MagicDraw, Telelogic TAU, ProVision Enterprise Pro.	Makes use of UML diagrams.	NCR's VEAP.
Cost rise of the use of the framework.	Reference documents available for usage. However costs depends on supporting software and tools.					



Table 1: Framework features comparison.

Framework Criteria	ArchiMate	C4ISR	DEMO	DoDAF	TEAF	TOGAF
Available support for using the framework.	ArchiMate forum, books, ArchiMate specification documents.	C4ISR Architecture Framework Version 2.0 reference document.	DEMO knowledge centre, books, publications.	Three parts (Definitions guidelines and background; description of each architecture product; architecture data description) of reference documents, books.	Treasury Enterprise Architecture Framework, version 1 reference .document	TOGAF forum, reference documents, white papers.
Future development of the framework.	ArchiMate version 1.0 (2009), still extending and refining the concepts [19].	C4ISR Architecture Framework Version 2.0 (1997).	DEMO 3 version (2009).	DoDAF version 1.5 (2007).	Treasury Enterprise Architecture Framework, version 1 (2000).	TOGAF 9 (2009).
Applicability to Honeywell's OSS team case.	Yes, due to its focus on application and technology layer.	No, due to its military based purpose.	No, due to its focus mainly on business processes.	No, due to its military based purpose, and limited actors.	No, applicable to finance.	No, due its extensive but not usable phases. Prescriptive nature.



Table 1: Framework features comparison.

Criteria \ Framework	xAF	Zachman
Specification of the actors, business, application, infrastructure.	Objects, domains, areas.	Six different perspectives defined with six views, which makes a 6 by 6 matrix.
How many layers used.	Tuple <O,D,A>.	Raw material data, function of process, location or networks.
Modelling methods for the specific layers.	-	Comply to the matrix.
Granularity of the layers view.	Specifications <Oi, Di, Ai> ; Integrations < O1, D1, A1>.	6 by 6 matrix.
Intended purpose of the framework.	Enterprises, organizations.	Enterprises, organizations.
Relationship between the layers.	Tree structure	6 by 6 matrix, with 7 rules.
Supporting tools for using the framework.	-	Zachman Certified™ - Tool.
Cost rise of the use of the framework.	Reference documents available for usage. However costs depends on supporting software and tools.	
Available support for using the framework.	Nederlands Architectuur Forum	Zachman education courses, books, articles, references.
Future development of the framework.	XAF version 1.1.	Zachman enterprise framework TM (2008).
Applicability to Honeywell's OSS team case.	No, OSS Team lack of having a framework, does not enable xAF to compare or develop with another framework.	No, due its extensive but not usable phases.



It is clear that every framework uses different views or layers to provide a holistic view of the enterprise architecture. Basically it comes to four categories or levels that are used to describe enterprise architecture. These are the business, process or operations of the enterprise; the information or data that the enterprise uses and requires; the application or services that are supporting the enterprise business, process and operations; the bedding of the whole, which is the technology where the IT infrastructure is running on, these are hardware platforms, servers and networks. Those views should be clear and capture the importance of the system for different stakeholders and users. To make the views understandable models according to its language and rules are being used, which conforms to exactly one concerning viewpoint. Modelling is the creation of abstraction or representation of the system to predict and analyze performance, costs, and to provide guidelines for system development. It is also a method to communicate with clients, engineers and builders.

There was also a difference in the notion between descriptive and prescriptive. Although each framework can be mapped to our needs, however some were intended to be used for example in the military, and some were destined to be used in organizational purposes. The cost of using frameworks were studied. Most of them provided reference documentation for how to accomplish this job. Also some of them even have supporting tools. To give more flexibility also the development of the framework were taken into account. Three frameworks/modelling methods stood out of the competition. These were TOGAF, ArchiMate and DEMO. First they are intended for business organizations. The documentations and support were extremely well, and are still evolving. However TOGAF has a prescriptive character. A more practical and solid approaches were desired. DEMO provides a very well method in modelling the business processes. However the I-, and D- organizations were not clear how to do so. For this thesis assignment the emphasis is more on the applications and infrastructure domains. That leaves us to ArchiMate. It fulfils all the desired wishes. It provides a method in modelling the architecture, it is intended for business organizations, it is still developing and the support is adequate.

7. ArchiMate concepts

7.1 *ArchiMate views*

7.1.1 All views

As mentioned in paragraph 6.4 ArchiMate is the enterprise architecture by which the infrastructure of an enterprise or organization can be designed or modelled. ArchiMate consists of the three layer structure namely:

- Business,
- Application,
- Technology layer.

Each layer contains a piece of the entire puzzle. The business layer contains details regarding the business processes and their interwoven relationships. The application layer contains details regarding the applications, which enable the realization of business processes. Finally the technology layer, which contains the hardware and the infrastructure for the entire application layer.

By providing design models containing description or design of the business processes into application and its infrastructure, the entire road map for achieving a solid enterprise architecture is laid at hand.

In order to model an appropriate design for the client, there exists a need to know who your actual client is. To which group of actors does the client belong? What kind of model is the client interested in? These questions form the foundation of the to be designed models for the enterprise architecture. Without an clear stated target group the models would become meaningless. Before being able to answer these questions, the knowledge is required to know which areas of selection are available. The reason for acquiring this knowledge is for the translation or the classification of the clients view into the right actors view of the ArchiMate.

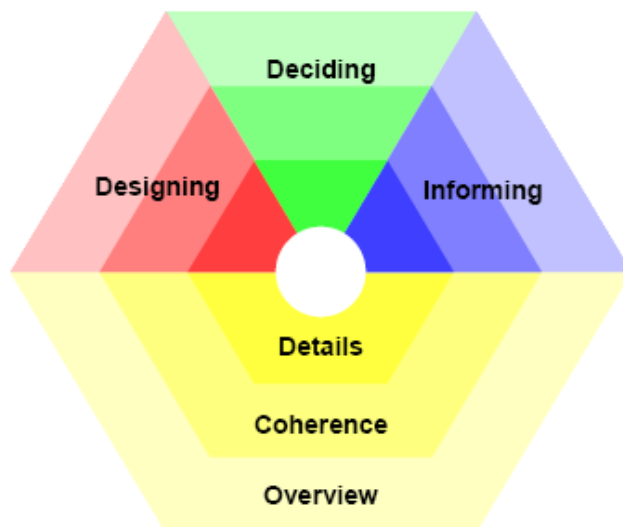


Figure 17: Classification framework for viewpoints [25].

In Figure 17 three groups of actors are distinguished to be the user of the designed models. The three main types are:

- Designing,
- Deciding,
- Informing.



The Design overview will assist actors in their initial sketch of design models and will continue to assist into the details of the design models. The entire design processes will be supported. The purpose of this support will be to act as a navigation through the design, supporting design decisions regarding various topics and issues and finally to be able to compare alternatives.

The Deciding overview will be assisting actors in their decision making process. This support is provided through offering of an insight into the cross-domain architecture relations; by projecting, crossings of models and analytical techniques. Such examples would be landscape maps, lists and reports.

The Informing overview acts as a support for informing stakeholder in issues related to enterprise architecture. The purpose is to help reach an understanding, commitment and convincing attitude towards viewers. To achieve this purpose methods such as illustrations flyers can be used.

A note is at its place, categorising the actors for an particular viewpoint does not state that the viewpoint should exclusively be used. The categorisation will guide the designer towards a viewpoint, which could be the right viewpoint, however usage of other viewpoint is not prohibited during the design process.

In Table 2 a selection of the categorised actor groups is displayed. Each actor has his or her own way of looking at the world. Therefore it is important for each individual to view the relevant information necessary for him or her. The term "right" used here is only subjective in terms of use, which applies for using "a viewpoint" to display the designed model. Being actually right is another topic which is beyond the scope of this master thesis script and belongs to a philosophical matter.

Table 2: Actor classification.

Group of actors (example)	Types of purpose
Architect	Designing
Software developer	
Business process designer	
Product manager	Deciding
Chief executive officer	
Chief information officer	
Customer	Informing
Employee	
Other	

Categorising the "right" view for actors is the first step in designing the viewpoints. The next step would be to determine in which level of detail the design should be modelled. Therefore there is a need for defining certain abstraction level for characterising the content of each view.

ArchiMate distinguishes three abstraction levels namely [26]:

- Overview,
- Coherence,
- Detail.

The Overview level regards multiple layers, aspects of the views. The goal is to provide an overview which extends through various levels to show their relationships, showing process integration with the system as well as application integration within the system itself.

The Coherence level focus is extended on either the multiple layers, or the multiple aspect of the design. In relation to design views the concentration is either on how processes are integrated with the system or the integration of applications within the system.

The Detail level focus is only on one layer or aspect at a time. By focusing on one piece of the total view the road for implementing will become more clearly visible.



Categorisation of the correct viewpoint determines the level of detail of the various layers which has to be designed using ArchiMate design viewpoints. The design viewpoints display the heart and souls of an organization which can be grouped into four different sections namely:

- Composition viewpoints,
- Cooperation viewpoints,
- Support viewpoints,
- Realization viewpoints.

Each section on its own is divided between other viewpoints namely:

- Composition viewpoints,
 - Business function viewpoint,
 - Business process viewpoint,
 - Organization structure viewpoint,
 - Information structure viewpoint,
 - Application behaviour viewpoint,
 - Application structure viewpoint,
 - Infrastructure viewpoint.
- Cooperation viewpoints,
 - Business process cooperation viewpoint,
 - Actor cooperation viewpoint,
 - Application cooperation viewpoint.
- Support viewpoints,
 - Product viewpoint,
 - Application usage viewpoint,
 - Infrastructure usage viewpoint.
- Realization viewpoints,
 - Service realization viewpoint,
 - Implementation and deployment viewpoint.

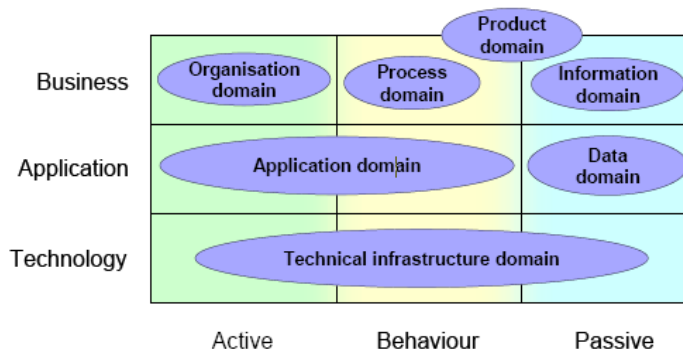


Figure 18: ArchiMate framework.

These four sections which surround the viewpoints, determine how the design is categorised in order for the organization to be modelled. Each viewpoint has to do with a particular work area in terms of looking from a different angle to the same picture. Through sorting of information from the entire design, the content of the acquired information will be more liable and more significant for a specific field of work. Even though various detailed viewpoints are "categorised" in four groups, they all have and will maintain one common thing. The one thing these viewpoint have in common with each other, is the fact that they are distributed throughout the three layer structure of the ArchiMate framework. However attention must be paid to the fact that these viewpoints also have a multi layer relation with other layers, which enables them to be more than restricted to one layer alone.



By enabling the views to be multi layer the relationships and role of various component will be made more visible. However that alone will not be sufficient to show the true essence of the designed modelled. It is also necessary to show the essence of the object within the models itself or what its relation is or what it does. This aspect is determined through distinguishing of three elements within the ArchiMate framework namely:

- Active elements,
- Behaviour elements,
- Passive elements.

The active structure elements are the subjects. For example this can be a business actors, however it can also be an application components and devices that would start using other elements such as behaviour.

The behaviour element can be seen as a verb. It describes the dynamic part of the system. It defines the actions occurring for example, what will it do and what should be done.

The passive structure elements are the objects on which behaviour is performed. For example, data objects and information objects.

The main aspects which are crucial for determining a "right" view for an actor to see is by taking the domain, actors and elements sort into consideration during specification of the particular viewpoint. In other words the ArchiMate framework seen Figure 18 will be a portal for all viewpoints, each time entering one level deeper into the maze in order to reach the centre of the building. By defining various domains within the layers of the ArchiMate framework, the space for positioning various viewpoints will be created in order to further elaborate on its own particular domain.

For a more detailed description of the various viewpoints and the ArchiMate framework please see Detailed Level Requirements report in Appendix B.

7.1.2 Selected views

As shown in the previous sections ArchiMate possesses various design viewpoint by which details of the to be enterprise architecture can be modelled or designed. However there is no regulation which states which viewpoints have to be designed even though the right actor group is chosen to further narrow the selection. Through choosing the right criteria's, the number of viewpoints can be narrowed down into a selection which are crucial to the actor.

The choice for selecting criteria's is related to two areas. One area is having to do with the wishes and the demands of the client. The second area has to do with the interpretation of those requirements into the aspects of ArchiMate. In other words. The first aspect is the translation of the wishes and demands of the client into requirements. The second aspect is the interpretation of the requirements into the designed model.

Translating wishes and demands into requirements is and will always be a difficult task. The cause of this difficulty are various reasons. One reason is that the client needs are not always understood by the designer. The thoughts expressed by the client, wishes and demands of his or hers need, are interpreted differently by the listener. The reason for this is that the fact that language can be misleading in its journey of being expressed and being understood. This has and will always be an obstacle in translation of wishes and demands. Other obstacles for a smooth translation is actually the desire itself. Often occurs that what is "desired" is either not the actually desired wish or either not possible to realise or either not expressed correctly. The view of the client or at least the person who expresses his wishes and demands, is always different from those who are listening. Another reason which leads to misunderstanding which often occurs, has to do with the various background of the client and the designer. The goal is to reach a common ground or a consensus in which both the client as well as the designer can agree upon. For achieving this goal it is required to review and meet each other regularly in order to reach a certain level of understanding. Regarding the interpretation of the requirements into the designed model, the obstacle lays with the designer. The view of the designer has impact on how he or she interprets the requirements into reality. The problem lays with the fact that experience and background of the designer guides the designer in his or her journey of designing a model. Therefore each design has an individual aspect of the designer combined



with the requested requirements modelled within. The challenge will be to integrate his or her own individual aspect into the requirements in such a way that it will not act as a disadvantage to the model in terms of realizing the requirements.

Translation of wishes and demands into the requirements and their interpretation into the design model is only possible if the "right" view is chosen. This selection has to be made according to certain criteria's. For this project at Honeywell the following design viewpoints of ArchiMate framework were chosen to design the model according to the requirements provided by Honeywell.

The chosen design viewpoints are:

- Actor cooperation viewpoint,
- Business processes viewpoint,
- Information structure viewpoint,
- Application cooperation viewpoint,
- Application connected to services viewpoint,
- Application usage viewpoint,
- Application structure viewpoint,
- Infrastructure viewpoint,
- Infrastructure usage viewpoint.

For a more detailed description and positioning of these design viewpoints within the ArchiMate framework please refer to the Detailed Level Requirements report see Appendix B.

These design viewpoint were chosen due to their properties. The fact that they represent a particular section of the ArchiMate framework and its detailed layer which should represent the client requirements. The criteria's used for determining which viewpoints express the requirements in a correct manner have to do with the requirements and the need of the OSS Team at Honeywell namely:

- Requirements of the client,
 - The need for integration,
 - The need for order,
 - The need for making tasks execution easier,
 - The need for security,
 - The need for efficiency,
 - The need for monitoring,
 - The need for visualisation,
 - The need for discussions.
- Information regarding:
 - Applications used,
 - Application integration,
 - Infrastructure,
 - Road map for eventual implementation,

The focus of the design viewpoints is determined by the requirements of the client. The request for integration of applications and the infrastructure which enables usage of these applications. Therefore for choosing the right viewpoint, the eyes were focused towards the viewpoints which were located within the application and the technology layer. The business layer became less important during this project. The reason for this, is the properties of the business processes itself which did not needed to be reinvented and were already identified. The need for integration of application is required using the business processes.

Another criteria which has contributed to the decision making of selecting a design viewpoint, is choosing the right element from the ArchiMate framework. Here the choice of design viewpoints is narrowed to viewpoints which are related to active and passive elements. The reason for this choice has also to do with the information needed for the client to see. The client at Honeywell [6] deems necessary to know the information regarding the objects involved for realising the application and infrastructure of the business processes. Therefore active elements have become part of the selection criteria. In order to realize this overview it is also necessary to display the exchange of actual information. Hence the choice for passive elements.



7.2 *ArchiMate models*

Selection of the design viewpoints narrows the selection of the models which are of important to the client. The next phase becomes the modelling or the actual designing of the selected viewpoints. As explained prior, the focus of this project was mainly on the application and the technology layer. Hence selected viewpoints will enhance this choice selecting. In the following paragraph to come, a short explanation and a brief motivation will be provided regarding the representation of the selected viewpoints.

- Actor cooperation viewpoint,
- Business processes viewpoint,
- Information structure viewpoint,
- Application cooperation viewpoint,
- Application connected to services viewpoint,
- Application usage viewpoint,
- Application structure viewpoint,
- Infrastructure viewpoint,
- Infrastructure usage viewpoint.

For a detailed description of the models made please refer to Appendix B.

The actor cooperation viewpoint displays the actors involved through the daily work and their interwoven relationships among themselves. The importance of this viewpoint is to elaborate at first which actors are going to be involved, now or possibly in the future, and also stated what their relation is towards each other. The importance of this information regarding actors is to be able to define the boundaries of those who participate within the system. By "system" it is meant the work environment which is in some sense determined through the architecture of the designed model. Through determining those who are part of the system and participate with it, it is possible to mould the system towards their choice of usage. The system is adapted to their usage, by enabling them to work efficiently and optimal. As far as security concerns the actors are identified and the demarcation of the participants are made clear, at the same time making sure to state what their role is. To view the actor cooperation viewpoint please refer to Appendix B.

The business process viewpoint shows the business processes of the organization. In this project the business processes did not need to be identified. The business processes were already identified through the organization itself. However the details of the business process have been designed. The goal had been to integrate the business process into applications and the technology layer, in such a way that the contribution would have been to enable the employee to work efficient and more optimized. Hence the need for identification were polarised in order to mention the business processes for the purpose of being able to show their relations with the application layer. In ArchiMate framework it is common to design each business processes in detail with the its relation with the application and technology layers. As stated before in this case the business processes are only used to act as a road towards the realization of the business processes supported by the application layer. For a detailed description please refer to Appendix B.

The information structure viewpoint shows which information is exchanged throughout the applications. The hierarchy regarding information flow is also displayed here to relate how the information is related towards each other. The purpose of this viewpoint is to show how the application exchange information to act as a support layer for the business layer. The realization of the business processes can be made possible by showing the relevant information which has to be in existence as well as exchanged. It is necessary for application integration and infrastructure to determine which information has to be exchanged with what. Due to the fact that enabling the communication between application, requires information exchange. In order to enable the communication between application, the infrastructure has to be met accordingly. For more details regarding the information structure viewpoint please refer to Appendix B.

The Application cooperation viewpoint shows the connectivity of the application components with each other. A distinction has been made to display the application which can directly be used by the actors and the application which can be used indirectly. The purpose of the viewpoint is to show which applications have the ability to communicate with other applications. By showing the application flow, the integration of various applications can be shown which on its turn meets the requirements of the client. For a detailed view of the application cooperation viewpoint please refer to Appendix B.



The Application connected to services viewpoint is part of the application cooperation viewpoint. The difference with the application cooperation viewpoint is the usage of services which is now involved within the designed architecture. It also shows which applications realise the offered services. The purpose is to display the connectivity of the applications with their services. These services can be a portal towards using the application itself or be a sort of automated intelligence. By showing which services are connected to which applications, the relationships of services with multiple applications are also made visible. The importance is to maintain the integrity of the integration of the previous views and maintaining the consistency throughout the designed models. For a detailed view and description please refer to Appendix B.

The Application usage viewpoint shows the multilayer of business with its services and applications. The purpose is to show, how the services enable the realization of the business processes mapped into applications. The business processes usage of multiple services enables the actors to achieve the actual process of their choice using the right application. The reason for designing this viewpoint is to form a complete picture of the business processes using the required services along side with its applications according to the specified requirements. For a detailed view of the application usage please refer to Appendix B.

The Application structure viewpoint shows how the application use the information objects. The information objects are not always used by one application alone. The multiple relation of various information objects with various application components are also visible within the design model. The reason for this design is to show the integration of various applications during exchange of information. This has to be according to the requirements in which integration is requested. For a detail description please refer to Appendix B.

The Infrastructure viewpoint shows the detailed view of the infrastructure. The infrastructure view is part of the technology layer. The purpose is to show the infrastructure which enables the realization of the applications. The reason behind this design model is to display the hardware required for realization of the entire architecture consist of and how their connectivity enables the simplification of the implementation phase. The connectivity between internal system and external system is also displayed. As far as the security concerns the design also shows where the important security checks must be placed to meet the requirements. For an detail overview please refer to Appendix B.

The Infrastructure usage viewpoint is also part of the technology layer which shows how the hardware components are related to the application components. The purpose is to show how each application uses various hardware in order to perform its intended task. The design purpose is to complete the picture which is required for the implementation phase by providing a multilayer design of the application and technology layer. The relationship of various application components are one of the important aspect of having the correct enterprise architecture. Without a proper connectivity of the right application with its infrastructure component, the realization of that particular application is not possible; at least not in the sense that it has met the required requirements. For an detail overview and description please refer to Appendix B.

7.3 Conclusion

To which group of actors does the client belong? What kind of model is the client interested in? These were the questions which were in our mind at the beginning of the design phase using ArchiMate framework. Finding an answer has not been easy due to various reasons. However those who seeks answer usually find one. The actor in this project belongs to the groups of designer, hence the interest into the application and the technology layer with the focus on the integration of applications to optimize daily work. Using ArchiMate itself has been a challenge to, due to its characteristics, the designed model of the enterprise architecture has been kept on a certain detail level throughout the design phase, which should provide a clear image for those who wants to implement the architecture for realization. The designed model of the enterprise architecture represent a model for handling documentation, monitoring the entire work, optimizing work, enabling using of automated work related features and tasks and more.

The designed models forms a theoretical background for the to be build real system. However due to the scope of this project the designed model has become an barrier between the real implementation and the



theoretical work. As a solution to see the results of the designed model and its implementation a configuration of such an, work, environment is preferable in order to test the accuracy of the designed models. Such a configuration is based on the configuring of a DMS.

By configuring a DMS to meet the requirements of the client and at the same time seeing whether the elements taken within the designed model will meet the elements needed to configure the DMS, to the level specified according to the requirements. By taking the theoretical design and turning it into, or at least compare, a practical form, the designed model will be tested to see whether it is satisfying or not. Naturally it is not unusual that certain aspects are not been foreseen by the designer, we are all humans after all, however the effort will be made to create a complete picture.

In the next chapter the practical aspect of a DMS will be illustrated through a case study.



8. Case study and evaluation

8.1 Introduction case study

The chosen views in ArchiMate were discussed in previous chapter 7. Those views were meant for helping to design the IT infrastructure of the OSS Team. More detailed description of the design can be read in Detailed Level Requirements, see Appendix B.

The problems that the OSS Team encounters is a common problem for organizations that doesn't have a clear structure for aligning their IT with their business yet. This problem will not only affect the efficiency and productivity of the work, it will also add more stress to the employees. Resulting in more frustrations among colleagues, thus affecting the atmosphere at work. Then this again can probably have an impact on the productivity as well. To give a short sketch of the situation, the following case study is provided.

Case study

In the OSS Team department four different actors are involved during a project. These are the client, sales, OSS Team and after sales. The client is the project creator, which communicate first with sales. After an agreement is made, the project can continue to the next phase. The OSS Team accepts the new project and start realizing this. As discussed before the OSS Team divides the tasks into seven phases see High Level Requirements in Appendix A. Each phase consists of sub phases, which needs to be documented. The workload will be divided between the members of the OSS Team. Resource and schedule will be made. The team members will receive emails about their part of the work, and they are kept up to date by the online collaboration site. Just to make sure that every document maintains acceptable quality by Honeywell standards, all created documentation needs to be reviewed first internally before sending it to the client. Because this process can take more than once, a revision number and version number are required to prevent miscommunications. Besides the version numbering a monitor service will keep all actions monitored. If the concerning document is ready, it will be approved by the manager and hereby ready to be sent to the client. Of course it will be natural that this document doesn't comply with the client's needs yet; Or that the client suddenly feel like inclining for a different solution. OSS Team will respond to this swiftly. The exhaustive template service will provide such convenience, the members of the team only needs to look up for the right part of the information and integrate it within the document. Finally when the project is finished, it will be carried over to the after sales department. All obtained knowledge are stored on the knowledge base service. Next time when similar problems occurs the team will be able to respond quickly.

8.2 SharePoint

Previously it is already mentioned that in order for an organization to work fluently, supported by a structured orientation of their daily work, a DMS is a necessity. Almost every information within an organization is documented either on paper or on digital format. This concerns from the simplest cost declaration forms till complex business related documentations. Nevertheless they are all crucial for the organization to function properly. With the right DMS the documentation can be managed automatically, which provides convenience in searching and finding.

Microsoft SharePoint is a platform containing an integrated suite for communication, collaboration of business solution purposes. This suite contains workflow creation, document management, or custom made web parts. The main focus is to let authorized users, in most cases project members to work together, share information about the latest news & facts, knowledge or best practices, objects such as files and items, and provide structure in the daily work using workflow mechanisms, schedules, and approval &



review processes. Aside from these, an underlying characteristic is that the sources are maintained centralized and it operates via HTTP, which can give more freedom in collaboration dependencies and can be tailored to different users. SharePoint distinguishes 33 different permission levels for user rights, which are categorized in three sections [27] [28] [29]. It starts from the top by defining the site permissions, to distinguish who are allowed to access the site. The people who are allowed to enter the site are defined by their user or groups permissions. And the items or documents in the lists and libraries are managed by the list permissions. Microsoft SharePoint serves as a framework for realizing websites with the before mentioned focuses.

The designed system for the OSS Team is modelled with ArchiMate. To see if the design meets the objectives of the OSS Team, SharePoint is being used to make the mapping. Considered that SharePoint contains so many functionality and extensibilities and according to Software choice, see Appendix C, and the result of the workshop SharePoint will be the first choice DMS. During the test a lot of common grounds were found. The most important functionalities of the ArchiMate design overlapped with the provided functionalities of SharePoint. These are:

- Management of documents,
- Template service,
- Knowledge base,
- Monitor service,
- Approval review procedure,
- Workflow
- Document library.

8.3 *SharePoint configuration*

A local SharePoint account has been used to set up a test environment for the testing and mapping of the designed ArchiMate models. Because the purpose of using this new system is to make the daily work more convenient for each member of the OSS Team. Therefore each member will start with his own personal start page. The most important news and recent announcements are viewed immediately.



[Portal OSS Honeywell]
Welcome John Doe
My Site
My Links
Help

All sites
Search
Advanced Search

Home
Project
Document libraries
Internal courses
Templates
Wiki
Knowledge base
FAQ
Discussion Board
Meeting
Status
Actions

View All Site Content
Documents
Reference documents
Projects
Calendar
< May 2001 >
S M T W T F S
1 2 3 4 5
6 7 8 9 10 11 12
13 14 15 16 17 18 19
20 21 22 23 24 25 26
27 28 29 30 31
Discussion
General Discussions
Team Discussions
Sites
Sub pages
Email
Site Hierarchy
Search Center
Sub page
Shared Documents
Announcements
Calendar
Links
OSS Wiki page
Tasks
Team Discussion
Recycle Bin

Home > [Current location]

OSS | Honeywell

Announcements
How to put and use documentation. 8/26/2009 8:55 AM
Example of an Visual representation of project folders structure.
Add new announcement

FEEDS
News FEED1
News FEED2
News FEED3

My Documents
Documents
Pictures

Meetings
Agenda Number Subject Time Owner
1 Introduction 09:00 - 09:15 Matthias Hupe
2 Feedback from last Weekly Minutes 09:15 - 09:30 Matthias Hupe
3 Component Design 09:30 - 10:00 Franziska Kühn

Project Status

Tasks
Assigned To Due Date Priority
Create Presentation Template 7/7/2009 (1) High
Approve last Weekly Minutes 7/7/2009 (2) Normal

Links
Hyperlink 1
Hyperlink 2

Team Members

Wireframe: BG navigation

Figure 19: Home site.

The SharePoint site is divided into eleven tabs, see Figure 19 and Appendix D. These tabs are called top link bars, which represents the related sub sites. The left part of each site is covered by quick links of the related document libraries. The content of the concerning sub site is viewed in the middle of the site. The most recent announcements are always shown on top. The right hand site of each site are occupied by the calendar, discussions, involved team members. This general lay out is kept consistent for each sub site.

A sub site for discussion board is added. This was initially not modelled in the ArchiMate models. However it is almost inevitable to include this with a collaboration platform. Because members of a project have to communicate, whether it is done physically or via a communication method. This discussion board will provide them the extra opportunity to do so. Valuable information for future use are stored in the knowledge base and Wiki page. The difference between these two is that the data and information about hardware and software are kept in the knowledge base. The remaining knowledge are kept in the Wiki pages.

One another point that was clear during meetings with the OSS Team, is that the majority of the team members preferred a more visualized appearance of the document structures. Microsoft SharePoint provides



possibility to add custom web parts. Each web part is considered as a web page and can be altered depending on the users wishes. To create these custom web parts, a free supporting tool Microsoft SharePoint designer is offered for the designers to use at their disposal. This tool is formally known as FrontPage, but now includes functionalities to create workflow to automated business processes for SharePoint. In Software choice, see Appendix C, a list of visualizing tools has been analysed. It was clear that most of them used a some kind of tree structure like to link document relations. In general there are two methods representing items relationships visually, and different ways of illustrations of the two methods, such as graph, tree, landscape and etc.. The first method is by using concept mapping and the second method is by using mind mapping. Differences between these two methods are that mind mapping is usually concentrating on one main concept, therefore the representation of the nodes are tree like, in contrast to concept mapping it may need a network like representation. When comparing these two ideas of mapping items, mind mapping seems to be more applicable. Mind map is claimed to be invented by Tony Buzan [30] and is a graphical method of making notes, illustrated in hierarchical forms divided in sub sections with the main concept placed in the centre.

In our case these items are documents sub divided into its corresponding phase, which are in relation with its concerning project. There is no relation between projects among. To realize the visual aspect of the system, integration of these mind map tools is useful. This can be read in SharePoint Configuration report in Appendix D.

8.4 Evaluation

8.4.1 Workshop, presentation and Questionnaires

In order to collect the overall feeling from the OSS Team towards the new design, a few methods are available. There are six [31] main methods to collect information:

- Questionnaires,
For fast and easy way of getting information from people in a neutral atmosphere.
- Interviews,
Used for complete understanding of personal feelings or impressions.
- Documentation review,
For getting impression of how without interruption.
- Observation,
Acquiring the information by watching how the subject interacts with the concerning aspects.
- Focus group,
Exploring a subject in depth by discussing it in a group.
- Case studies,
Complete understanding the persons experiences, comprehensive examination through cross comparison of cases.

Since time is very scarce for the OSS Team, it would be thoughtful to keep it effective and simple. A few of the above mentioned methods will take too much time and effort. It's decided to organize a small workshop of about an hour to present a small case of concept. This will elaborate what the design should look like, and how the members of the OSS Team will have to deal with in the future. Afterwards there will be a short discussion to comment on the advantages or disadvantages. When this is over, a questionnaire will follow. The purpose of this questionnaire is to steer the members for answering relevant questions. These answers will be used to be evaluated and analysed as results of the designed system and the devised policies. To make the results more transparent, it would be wise not to use too many open questions. Instead, using question types with a rating scale. Numbers are more easy to process.

As for the documentation review, it will be done by the supervisor at Honeywell.



8.5 Results

It is obvious that each project must be reviewed and evaluated. The objectives are to discover the unidentified problems and a way of avoidance of the problems during the future projects. The original plan was to hold a final presentation at the end of October 2009. However due to various reasons the presentation had been cancelled. The earliest available date for rescheduling of the presentation was mid December 2009. Unfortunately after deliberation the best solution seemed not to wait for the presentation but instead to anticipate the end results.

After reviewing the entire project and looking back at the expectations of the client, various results can be drawn. These results can be seen through the project developers as well as the client eyes. Taking wishes and demands of the client into consideration various objectives have been met. One of these objectives are the requirements for standards and policies, which have been determined through cooperation with the client itself. Regarding the workflow objective, these has been taken into consideration during the design and the configuration of the DMS. Other objective for monitoring the entire projects are also reflected within the design and the configuration of the DMS. Regarding the visualization of the information, the visual exploration of documentation has been designed for the OSS Team in order to achieve an easy way of browsing through documentations. Looking for a way of collaboration, sharing and online collaboration tools have been considered during the design. The reflection of this objective can be seen within the configuration of the DMS. Policies and standard issues related to security has been determined for various users for using the DMS. However the level of collaboration also depends on third party tools and the willingness of collaboration. In order to test the design in practice, it has been chosen to configure the design within the SharePoint environment which was the chosen software platform for a DMS.

Using SharePoint depends on various important factors, such as speed, configuration, third party applications, integration throughout the departments. The speed of SharePoint depends of the hardware and the connection speed. Hardware can be tweaked to deliver the maximum results however achieving this will have a price tag. Usage of new technologies will improve the speed of the servers dramatically, however this requires testing for durability and efficiency. SharePoint can also be tweaked to deliver an optimal performance, therefore configuring SharePoint will be crucial for its role as an excellent DMS and more. Usage and integration of third party applications within SharePoint is possible and has been made possible for the OSS Team. By integrating third party application such as Visio packages and visual explorations, the road will be open for online or offline collaboration. Attaching an external databases to SharePoint will enable usage of dynamic content which will be beneficial to its users. SharePoint has its strong suit however it will be strong as far as its users are. The variety and the spread of its usage throughout the OSS Team and other departments will enable SharePoint to grow and become more than just an another DMS. SharePoint configuration will be complete when in the future the design templates are made available for every employee to use and reuse. Today using various other templates will make OSS Team tasks more easier by using more standardisation with documentation of work environment.

Another important objective was to achieve a knowledge centre where information is exchanged and overview of the existing knowledge is made available. Within the SharePoint a configured knowledge centre enables the OSS Team to become independent of their email as an information source. By looking within the SharePoint knowledge becomes more open and easily accessible. Also configuration of a wiki based location enables the employees to feel free towards information sharing.

Looking at the project through critical eyes, one may point out that the design templates were not designed, however the reason for this problem lies with the lack of time and non unity regarding the design format. A proper configured DMS, in this case SharePoint, has been more important than the design templates during the last phases of the project. Also an important step has been achieved which was forcing the OSS Team to look at their own bottlenecks and try to find a solution through various meeting. The problem is now clear for every employee which will open their eyes towards the existence which no longer can be ignored.



9. Conclusion

In this report a specific case was presented how business processes and ICT facilities are interwoven. The way of working is not always structured and standardized in many organizations, which can stimulate aggravations in the workplace. One possible solution is by providing guidelines or policies issues to streamline workflows. This is an answer from the business perspective view. Another possible solution is by choosing the right ICT applications and the right ICT environment to support the daily time consuming jobs. Thus an answer from the technology standpoint. Often these two answers may conflict in some way, such as too high-tech ICT application, which is too fancy for the employees to use. Or perhaps some business processes that require more support from the ICT applications. A reason can be due to outdated legacy systems. The main challenge with respect to the interests of an organization is to align these two domains, business process and ICT. Just as with designing buildings, a fundamental approach is required to provide a solid bases for the structure to lean on. There are many methods and best practices available on enterprise architecture. Following an existing framework is a good way to deal with this problem. However not every garment will fit everybody shapes. It is a matter of extracting the right available theories into the practice. What became clear is that the business process should be clear from the beginning. It's not ICT that should be the highlighted, ICT should only serve as supporting tool for the employees within an organization. When business processes are identified, a way of working can be developed and constructed. From this point on it is a matter of fitting the right tools for the concerning activities. Although the practical case study was involved with a relative small group/department of a large organization, it can be stated that this problem can even also cause more trouble on a larger scale.

9.1 *Pitfalls*

The subject of this project was broad. There were many topics involved. Luckily the business processes were determined quickly. One of the hardest parts was to determine policies and standards, because the OSS Team consists of several engineers. Every member is accustomed to his own work manners. Assessments according to existing Honeywell policies were made on how the workflow should be in the future; because the general business process already contained 15 processes Appendix A, it required time for further elaboration. When this was accomplished it was a matter of finding the right supporting tools. In Software choice, Appendix C, three kind of solutions can be offered. It was not surprising that an off the shelf solution was chosen, because of its many other pleasing gains. Remembering the disadvantages of an off the shelf solution, the costs will not be a major factor, since the worldwide organization is using that system namely SharePoint. However for the facility of the department, its own "custom made" functionalities still needs to be implemented. The functionalities of the DMS have been examined and are most likely possible to be implemented within SharePoint as a whole. A more troublesome point can be using third party software to realise the visual aspects which is desired. Choosing third part application can be in contradiction with the chosen criteria's of using off the shelf solution.

In the future the designed system should also contain a template system. There were still disagreements on how this template system should be constructed. However the policies and standards for how to use design templates were determined. From the technological viewpoint, SharePoint is able to deal with the general idea, since it features a highly advanced library system. However there was not much attention paid to the security aspect of technological viewpoint. This will probably not be a major issue, due to security updates from the main supplier itself.

9.2 *Generalisation*

It is obvious that the designed system will not be applicable to all organizations. However the main idea is reusable. Regardless that this project is more concerned with a DMS, offering abilities to share documents leads to an online collaboration possibilities. The way of creating such a supporting system applies to all organizations. The main idea is to identify the business processes first. Then carefully choosing a



framework. Most of nowadays frameworks already possess a section dealing with identification of business processes. It is however more convenient to know them in prior of the project, as it provides the designers and shareholders a general view of the work to be done in future. This can stimulate more purposive actions. Besides working with process flows is more understandable even for laymen. To satisfy the demanding requirements in such a large system, it is required to collect loads of data for analysing behaviours of the users. If this is done the supporting technology can be decided.

9.3 Reflection

9.3.1 H. Safari Asl

Looking back at the project and drawing conclusions leads to self-criticism. One could say which lessons can be learned, what improvements can be done and what could have been done differently for the next projects in case a second chance is granted. The lessons learned during this project will help during the future projects. One of the important lessons I have learned is to state the problem definition very clearly and not deviate from it. One of the other lessons would be to encourage the involved actors more during the project to achieve more attraction and involvement for the project, to become more present as the executer of the project. Another option would have to been to start more controversial conversions in order to force the department to act or to take serious steps to achieve the end result. Perhaps a new approach would be to ask for more data before and during the project, however more is not equivalent to better results. Eventually it is the quality that matters not the quantity.

On personal note an improvement for the future projects would be to become more confident and to be more open during the production of a report.

9.3.2 Y.F. Tang

As stated before this project requires a soft system approach, which involves many actors. Engineering that we are used to know is about finding the most elegant and best solution to the problem. Soft system approach is more democratic and will satisfy more people. This is also a main challenge, because no single human think the same. Surely a group of people will share the same thoughts, it is the discrepancies that must be considered. What aspects will have more priority, what can be omitted? During this project, knowing the people who are involved with this project and will be using the to be designed system is important. Knowing their thoughts and wishes will benefit the overall design. Moreover it can also take away some pitfalls through thorough discussion. What could be improved during the course of the project is to involve more of these related people. To create awareness among them; not particular about the existing problems but also about the surrounding factors and possible solutions, which can lead to consensus. Also a firm constancy should be helpful during the process of the project. Because of the size of the project, it is hard to demarcate. Our attitude for obtaining data from people was perhaps flabbily. We should have been more demanding, however this could also create adverse feelings. Moreover we also had to consider the extreme workloads that the people already have. This also had some effect on achieving milestones, because it is a two ways procedure. Although from the technical viewpoint, we used most of the theories we were familiar with. Sometimes it was hard to make fast decisions on what to be useful and what not, since it has to be applied on practice. It is natural that the client is more concerned about the end result, but the basis should be firm. Which can provide more benefits for in the future. For the next time, I think it will not matter to interrupt people when they are busy, when it's beneficial for everybody in the end. Especially this kind of project requires deep involvements, we should gave more intermediate results to create consensus.



10. Future work & discussion

Everything reaches its end; and so did this thesis project. Even though attempts were made to complete each aspect of this project, the required time was not sufficient to complete the entire project desires and wishes. For this project, points of discussions and work have been left over for the future.

Various discussion points after this project will be to reach an agreement regarding the unity within the OSS Team. Having no unity will lead to frustration which in its turn results in sabotage of any attempt of reaching an agreement. Discussions will consume a lot of valuable time of the organization, however the importance and the benefits of the discussions held will surpass the valuable time lost. The OSS Team has to reach an agreement regarding the manner by which the design templates can be used. Also an agreement have to be reached regarding the content of various templates. Another point of discussion will be to reach an consensus regarding the standards and pollicises. Having designed a certain standards or policies will not be effective if no thoughts has been made regarding the actual following of standards. Due to the fact that each organization needs a set of standards, policies and requirements regardless of their frivolity.

In the future various tasks can be completed for this project. The most important tasks which should be completed is to implement the SharePoint. The SharePoint forms the heart of the OSS Team. By implementing the SharePoint, the actual work will become more hassle free. In the sense that document management, workflow, collaboration, team meetings, review, approve processes and many more important work related tasks will become more optimised and efficient. This followed by the design templates, which contribute to the work of each member of OSS Team. The design templates enable the effectiveness of the productivity of the OSS team. The design templates will ensure the uniformly of the designs which will be used for various projects. By recycling designs for projects, the efficiency of work will increase which will lead to less workload which in its turn leads to an better organization achievements.

Final words worth mentioning is that the point of introduction of standards, policies, and a new work environment called SharePoint are in order to change the way how the OSS Team looks and works with the current situation. In order to become more successful things have to change. This change may come with the actual use of new rules and environment. The new work environment should contribute to the way how the OSS Team operates. Even though not everyone is willing to change at first, but as change comes with everything so does it with habits. The time has arrived to set apart habits and frustration and try to contribute to the new way of handling work with the best options at hand.



11. Bibliography

- [1] Edward Fitzgerald, Omar Khayyam. *Rubaiyat of Omar Khayyam*. United Kingdom: Filiquarian Publishing, LLC, 1889.
- [2] Weill, Peter. "Innovating with information Systems: What do the most agile firms in the world do?" *Sixth e-Business Conference*. Barcelona, Spain: MIT Sloan CISR, 2007. 4.
- [3] Coalition, Workflow Management. *Workflow Management Coalition Terminology & Glossary*. Hampshire, United Kingdom, Feb 1999.
- [4] *Discovery Channel- The Ultimate Guide: ANTS*. Directed by Karen Partridge. Performed by Will Layman. 2008.
- [5] H. Safari Asl, Y.F. Tang. *Master Thesis project proposal*. Internal document, Delft: H. Safari Asl, Y.F. Tang, 2009.
- [6] Honeywell. *Honeywell*. 2009. <http://www51.honeywell.com/> (accessed 2009).
- [7] GE. "What Is Six Sigma?" *GE*. 2009. <http://www.ge.com/sixsigma/SixSigma.pdf> (accessed 2009).
- [8] Solutions, Honeywell Process. *Open Systems Services*. 2009. <http://hpsweb.honeywell.com/Cultures/en-US/Services/MaintenanceSupport/OpenSystemsServices/default.htm> (accessed 2009).
- [9] Jackson, Michael C. *Systems Methodology for the Management Sciences*. New York, United States of America: Plenum Press, 1991.
- [10] Checkland, Peter. *Systems thinking systems practice*. New York, United States of America: Wiley, 1999.
- [11] Bruijn, Hans, Ernst Ten Heuvelhof, and Roel In 't Veld. *Process Management*. New York, united States of America: Springer, 2004.
- [12] TechTarget. *Whatis?com Computer Dictionary*. 2009. <http://whatis.techtarget.com/> (accessed 2009).
- [13] IEEE. *IEEE*. 2009. <http://www.ieee.org/portal/site> (accessed 2009).
- [14] Zachman, John A.. *Zachman Institute for Framework Architecture*. 2009. <http://www.zachmaninternational.com/> (accessed 2009).
- [15] Grou, The open. *The Open Group Making standards work*. 2008. <http://www.opengroup.org/> (accessed 2009).
- [16] Dietz, Jan L.G. *Enterprise Ontology Theory and methodology*. Germany: Springer, 2006.
- [17] Group, The Open. *The Open Group Architecture Framework*. <http://www.opengroup.org/architecture/togaf8-doc/arch/toc.html>, 2009.
- [18] Group's, ArchiMate The Open. "ArchiMate." *The Open Group*. 2009. <http://www.archimate.org/> (accessed 2009).
- [19] Group, The Open. "ArchiMate 1.0 Specification." *Technical specification*. Zaltbommel, Netherlands: Van Haren Publishing, 02 2009.
- [20] Inc., Object Management Group. *Object Management Group/Business Process Management Initiative*. 2009. <http://www.bpmn.org/> (accessed 2009).
- [21] Defense, Department of. "DoD Architecture Framework." *The United States Department of Defense*. 2009. http://cio-nii.defense.gov/docs/DoDAF_Volume_I.pdf (accessed 2009).
- [22] Treasury, Department of the. *Treasury Enterprise Architecture Framework*. United States of America: EA Frameworks, LLC, 2000.
- [23] Dietz, Jan L.G. "extensible Architecture Framework (xAF)." *Nederlands Architectuur Forum*. 2009. http://www.naf.nl/content/bestanden/xaf-1.1_fe.pdf (accessed 2009).
- [24] Raj j Mukherji, PhD, & Csaba J Egyhazy, PhD. "The Architecture of a Modern Military Health Information System." *Perspect Health Information Management*, 01 06 2004: 11.



- [25] Hugo ter Doest, Maria Iacob, Marc Lankhorst (Ed.) & Diederik van Leeuwen. *Viewpoints Functionality and Examples*. Enschede, 2003-2004.
- [26] Lankhorst, Marc. *TI-Archimate*. 2009. <http://old.telin.nl/index.cfm?ID=252&context=253&language=nl> (accessed 2009).
- [27] AppDev Products, LLC. *Microsoft SharePoint Training*. 2009. <http://www.appdev.com/sps.asp> (accessed 2009).
- [28] Apptix, Inc. "Apptix SharePoint 2007 Training site." *Apptix*. 2008. <http://sptraining.sharepointsite.net/default.aspx> (accessed 2009).
- [29] Company, Amp Technology. *SharePoint Video Tutorials*. 2009. <http://www.sharepointhostingprovider.com/sharepoint-tutorials/> (accessed 2009).
- [30] Ltd, Immediasite. *buZanworld*. 2009. <http://www.buzanworld.com/> (accessed 2009).
- [31] Authenticity Consulting, LLC. *Free Management Library(sm)*. 2009. <http://www.managementhelp.org/> (accessed 2009).



Appendix

Internal documents delivered to Honeywell.



Appendix A

High Level Requirements

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Master thesis project

High level analysis of requirements

Honeywell B.V

&

Department: Information Architecture

Faculty: Electrical Engineering, Mathematics and Computer Science,

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1. Introduction

Several meetings with our daily supervisor C. Kleipool [1] have resulted in reaching an agreement for our approach towards analysis phase of the thesis project. The approach which has been chosen in our case is not unknown in the world of standardizations and reorganizations.

The purpose of this document is to provide a set of requirements at a high level for each phase which are included in the project. Not all the phases of an entire project are taken into account. Later on in paragraph 2.7 you can view which phases are included into the requirements analysis.

This document describes three general phases which will be used as pre and post output of the tasks.

2. Analyzing

For this project we have taken an unusual approach towards analyzing. Normally it is common to start analyzing by making an overview of the current situation before heading forwards into the future situation. The purpose is to make a clear distinction between the "As is situation" and the "To be situation". However in our case we have started with the thought process without knowing too many details about the current situation. This approach would benefit us, because we wouldn't be influenced by the current workflow.

We have chosen the top down approach due to the complexity of this project. In our view this approach could be the best manner to handle the problems at hand. First of all approaching the problem on a high level and afterwards breaking it down into more detailed pieces.

Between the analysing phase and the design phase, it is recommended to compare the analyzed project phases, with the real current way of working. This auditing enables us to compare the 'As is situation' to the 'To be situation'. By auditing, the usefulness and the feasibility of the analysed project phases are determined. This is necessary in order for the team to see whether the analysed project is actually realistic for the future way of work.

For this assignment it is required to point out the business process before we can recommend a solution for the problem within the OSS team. Besides pointing out, it's also practical that these business processes can be modelled. To realize this a certain method is being followed. This way can either be accomplished by following heuristics, modelling techniques, or frameworks. Many frameworks that we know are suitable for designing software applications. In order to make the relations between the business processes and their supporting IT applications we need to look in the field of enterprise architecture frameworks. An important reason using enterprise architecture is that we can use one uniform language to describe the to be system. It will capture the essentials of the business, IT, and its evolution. By giving a holistic view of the enterprise.

Among this field there are some well known enterprise architecture frameworks, such as the Zachman, Togaf, ArchiMate, IAF.

After a thorough analysis, ArchiMate seems to be an applicable framework to use for this assignment.

This framework is an open and independent modelling language. It embraces a few well established methods such as TOGAF and UML. This results in containing best of both worlds. ArchiMate is certainly not replacing these methods or modelling languages. One of the drawback of those languages is that views between domains are poorly defined, and the architectural vision is either concentrated on the business area or the software application area. ArchiMate describes the to be systems globally, which is called the metamodel. Visualization is a quick and understandable way of providing an overview of the system. ArchiMate provides such an aid for various layers as well as in high level as detailed level and their interdependencies.

The three layered structure that is being used separates the three domain of an enterprise. These three layers represents the business, applications and technology, which will be explained more in the detail later



on. The metamodel ensures that these three domain are modelled structurally and with their interdependency [15][16].

2.1 *ArchiMate*

Architecture descriptions are formal descriptions of an information system, organized in a way that supports reasoning about the structural and behavioural properties of the system and its evolution. They define the components or building blocks that make up the overall information system, and provide a plan from which products can be procured, and subsystems developed, that will work together to implement the overall system. It thus enables you to manage your overall IT investment in a way that meets the needs of your business.

To provide a uniform representation for such architecture descriptions, the ArchiMate enterprise architecture modelling language has been developed. It offers an integrated architectural approach that describes and visualizes the different architecture domains and their underlying relations and dependencies. In a short time, ArchiMate has become the open standard for architecture modelling in the Netherlands, it is also fairly well known in the international enterprise architecture community, and recently it has been brought under the aegis of The Open Group.

ArchiMate is a lightweight and scalable language in several respects:

- Its architecture framework is simple but comprehensive enough to provide a good structuring mechanism for architecture domains, layers, and aspects.
- The language incorporates modern ideas of the “service orientation” paradigm that promotes a new organizing principle in terms of (business, application, and infrastructure) services for organizations, with far-reaching consequences for their enterprise architecture.
- Although it intentionally resembles the Unified Modeling Language (UML), the ArchiMate modelling notation is intuitive and much lighter than currently proposed by UML 2.0. Nevertheless, the language is expressive enough to allow for the modelling of all layers (business, application, and technology infrastructure) and all aspects (structure, behaviour, and information) of an organization in an integrated way.
- The two enterprise architecture standards of The Open Group – TOGAF [2] and ArchiMate – complement each other and can be used well in combination.
- Finally, tool support for the ArchiMate language is already commercially available (from BiZZdesign, IDS Scheer, Casewise, Telelogic, and others) [3] [4] [5] [6] [7].

ArchiMate [6] [3] [7] [5] is a modelling language by which the architecture of an organization can be described. Usually the architecture and the structure of the whole organization is modelled. However in this project the modelling language is applied for a section of an organization namely the OSS Team at Honeywell.

BY using the three layer structure in combination with ArchiMate a powerful method for describing and visualization of an organization can be achieved.

The three layer structure of business, application and technology will categorise the essentials of an organization see Figure 1 all layers of the organization are highlighted thoroughly to design the as to be system.



Figure 20: Three layer structure [4].

ArchiMate uses certain relationships and symbols to describe each layer of the enterprise. These symbols and relationship have proven themselves to be a solid method of design. For an entire overview of the symbols and their meaning please refer to the manual of the ArchiMate see technical specification of ArchiMate 1.0 [4]

2.2 Layers



Figure 21: Business layer [4].

The business layer

Describes and categorizes the business processes and services of an organization. By making a distinction of the key business section of an enterprise and in this case the OSS Team, a simple overview of its business products and services performed by its actors are made visible [4].

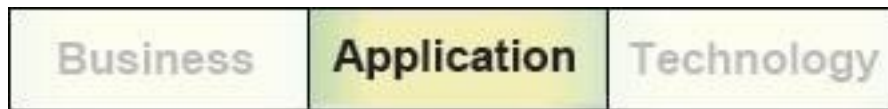


Figure 22: Application layer [4].

The application layer

Describes the key applications and their relationships with each other regarding the establishment of the services and the key business processes. By providing an overview of the relation and (software) application, the identified business processes can be realized [4].



Figure 23: Technology layer [4].

The technology layer

Describes the hardware needed for the realization of the application. By providing an blueprint of the infrastructure the application can communicate and relate information with each other to provide an accurate platform for the business processes and business functions' [4].

2.3 Phases

A project consists of several phases. Due to the fact that no two projects are the same a distinction has to be made regarding the size of the project. The idea is to make a distinction between two different sizes, namely:

- Large,
- Small projects.

Each size of the project should meet certain criteria's to determine in which exact phases should be executed. These criteria's are necessary to have a swift overview of the involved phases.



By defining different criteria's for a project you normally get different phases which are being executed within a project. However the choice is made to maintain one standard documentation format for all two sorts of projects but with various templates for each customised phase of the project.

Start-up requirement for each project:

Each project shall have a check list which is applicable for each phase of the project. This check list contains the phases and tasks and its status of each project phase. By updating check list an overview of the project is easily made.

Before the start of each project the following is required:

1. Determine the project size,
 - a. Using criteria's for project size.
2. Customize check list for each project,
3. Start project.

Furthermore these layers will be used as a guide and categorization for the design as well. Below a short description of each project phase and its sub phases will be given. Each phase contains a brief description of what is being done in that phase. Phases 1 through 3 are out of the scope of the purpose of this document.

1. Marketing [1]

- Brand and opportunities department.

2. Technology

- Also referred as DE (Design Engineering), this part of Honeywell develops new products and technology.

3. Sales

- Sales department create Quotation, in this stage the focus should be also on the IT part of the project.

4. Quotation

- Project deliveries,
 - Offer for things to deliver.
- FEED (Front End Engineering Design).
 - High Level Functional design.

5. Project engineering

- Handover
 - Contract details to understand what need to be done.
- Plan
 - Project plan with activities and dates,
 - Resources.
- FDS
 - Functional design specification
- Design
 - Detailed Design specifications.
- BOM (Bill of Material)
 - List of hardware/software which is needed for the project.

6. Implementation

- Installation and configuration of hardware and software.



7. Internal test

- Pre internal test before FAT test is performed. This test is not always performed.

8. FAT

- Factory Acceptance test, this test will be performed before products are shipped to customer site.

9. SAT

- Site Acceptance test, this test will be performed at customer site.
- Commissioning of plant. After test and issues resolved the plant is commissioned.

10. AMS (After Market Services)

- Service and support department, this includes also the TAC (Technical Assistance Centre).

On the next page an overview of the project phases is shown see Figure 6. In this figure also a flow of the phases is shown.

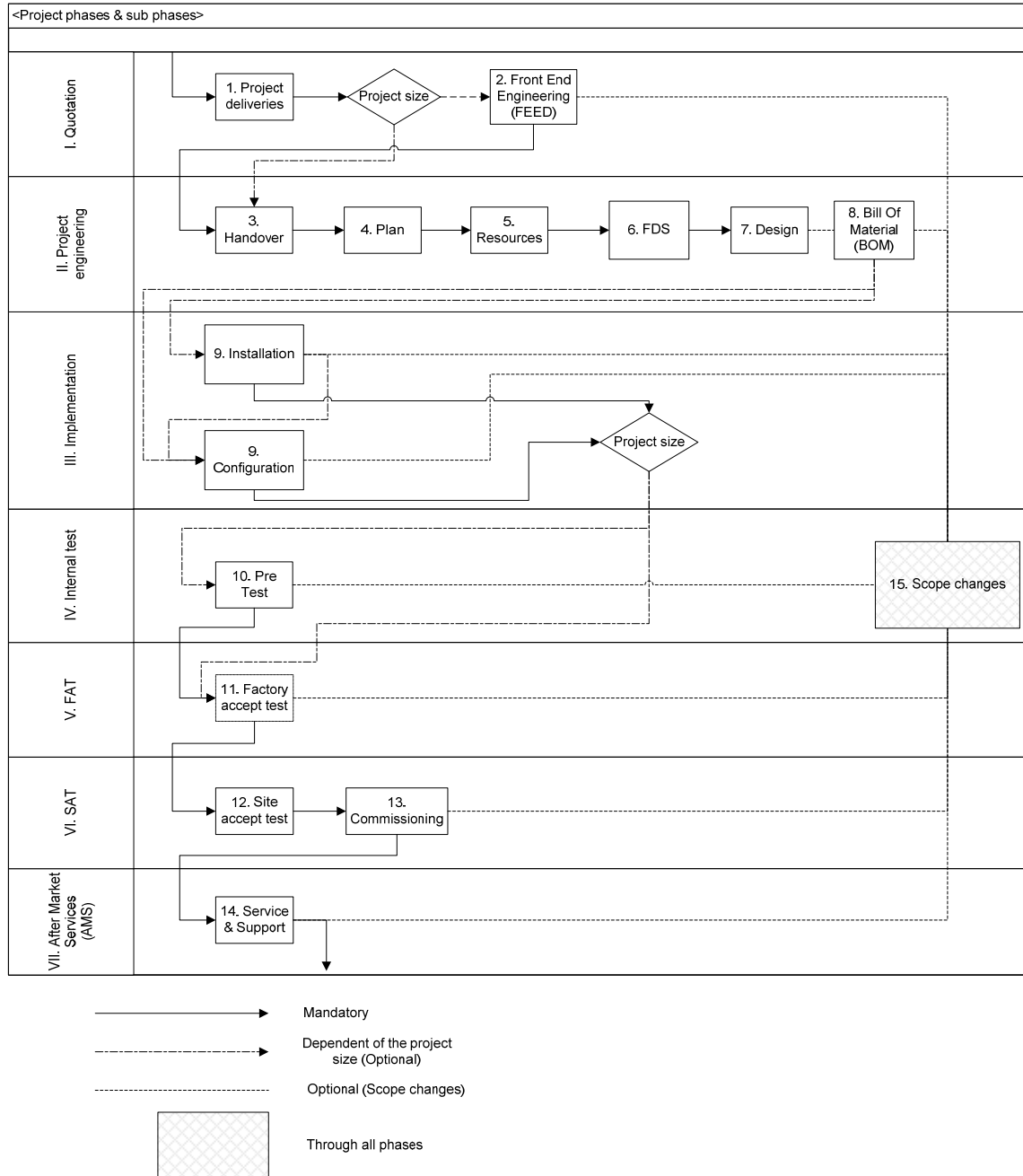


Figure 24: Project phases of OSS Team.



2.4 Honeywell business functions

Identifying the Honeywell business functions is the first step towards the identification of the architecture of the business processes, application and technology.

For the business functions of the OSS Team within Honeywell four roles are identified see Appendix A:

1. Client: provides the initial information and requirements for the future project.
2. Sales: provides information regarding products, services and relates the necessary information and requirements to the OSS Team.
3. OSS Team itself: Executes the project through processes during communication with client.
4. After sales: Provides services after the project has been executed. [4]

The scope of the execution process of a project for a client in regards with the OSS Team business functions are:

- Quotationing,
- Project engineering,
- Implementing,
- Internal testing,
- Factory testing,
- Site testing,
- After market servicing,
- Approval (QMS).

These are the key business functions which are executed by the OSS Team for the completion of a project. These business functions have an integrated relationship towards other business functions and towards the role members involved.

These relations are meant to exchange information with each other in order to be able to fulfil their tasks. For a complete overview of the business functions and their relationship with the role members please refer to Appendix A.

2.5 Integrated architecture

The integrated architecture [4] of the OSS Team describes the various levels of the business, application and technology layers. Within these levels services, processes, components and infrastructure of the business functions are identified. Each layer consist of the following layers in order to create an overview [4]:

1. Business layer:
 - a. Roles,
 - b. Business services,
 - c. Business phases.
2. Application layer:
 - a. Application services,
 - b. Application components.
3. Technology layer:
 - a. Infrastructure.

For all the project phases see chapter 2.3 are the integrated architecture of the layer identical. The only difference for all the business functions is noticeable within the layer of business phase's. In the following



chapter only the business function of the entire project process namely: quotationing will be enlightened thoroughly. All the other business functions can be viewed in the Appendix A.

2.5.1 Business layer

There are in total seven roles identified within the business layer. For each role a short description is provided.

2.5.1.1 Roles and actors [4]

Actors

In the, to be designed system there will be seven actors involved. Each of the actors has their own roles, and rights. The seven actor roles described here differs from the 4 actor roles described before in paragraph 2.4. These seven actor roles, mainly concerns with the interaction with the to be designed system. These actors are:

- A: Client.
- B: Author/owner.
- C: Requester.
- D: Reviewer.
- E: Approver.
- F: Member.
- G: Stakeholder.

Actors represent roles that can be performed by a person or a system, which are interacting with the to be designed system. In our case only actual persons are involved. Each of the above mentioned actors has their own roles and rights.

A: Client

Not to be confused with the client/server relationship. Client in our context is a person/customer who gives the order to the OSS team.

B: Author/owner

An author/owner is the individual who is responsible for the document development or change, acquiring approvals and providing the necessary deployment communication and training on said document [8].

C: Requester

A requester is a person who is applying for a review and approval of an document. This actor role is created because of the QMS review procedure. Here an author/owner can also become a requester.

D: Reviewer

A reviewer is a person who is inspecting and making comments on the content of a certain document.

E: Approver

A person who has the authorization to decide if a document passes according to certain criteria's or not, which will be ready to be sent to the client. These criteria's are predetermined within the QMS process.



F: Member

A member is a person who is able to access the archive obtaining documents or browsing through the knowledge base to consult for past experiences and information. A member can also become a Author/owner or a reviewer or a approver.

G: Stakeholder

Stakeholders are those functions that have direct (use) or indirect (affected) impact from a policy, process or procedure. Stakeholders should be, at a minimum, consulted on said document adds or changes before submitting for final approval and release [9].

Functional requirements [10]

For every actor a list of functional requirement is described [10]. Author/owner, requester, reviewer and approver are grouped together, because they show collaborative behavior in particular context. They represent the employees within Honeywell OSS Team. A client has only limited access to the system. Therefore client has a network/association relation with the Honeywell OSS Team employees, which decides the access for the client.

- A: Client.
- B: Author/owner.
- C: Requester.
- D: Reviewer.
- E: Approver.
- F: Member.
- G: Stakeholder.
- H: The to be designed system.

A: Client

- A.1 A client shall be able to view documents.
- A.2 A client shall be able to have limited access to documents.
- A.3 A client shall be able to review documents internally.
- A.4 A client shall be able to approve document internally.
- A.5 A client shall be able to edit documents internally.

B: Author/owner

- B.1 An author/owner shall be able to request documents.
- B.2 An author/owner shall be able to view documents.
- B.3 An author/owner shall be able to browse through archive.
- B.4 An author/owner shall be able to consult knowledge base.
- B.5 An author/owner shall be able to create a document.
- B.6 An author/owner shall be able to use templates.
- B.7 An author/owner shall be able to store documents.
- B.8 An author/owner shall be able to share documents internally and externally.
- B.9 An author/owner shall be able to access the system internally.
- B.10 An author/owner shall be able to access the systems externally.
- B.11 An author/owner shall be able to add knowledge to knowledge base.
- B.12 An author/owner shall be able to monitor the project.
- B.13 An author/owner shall be able to change the monitoring.



C: Requester

- C.1 A requester shall be able to request documents for a review.
- C.2 A requester shall be able to view documents.
- C.3 A requester shall be able to browse through archive.
- C.4 A requester shall be able to consult knowledge base.

D: Reviewer

- D.1 A reviewer shall be able to review documents.
- D.2 A reviewer shall be able to view documents.
- D.3 A reviewer shall be able to make notes/changes in a document.

E: Approver

- E.1 An approver shall be able to request documents.
- E.2 An approver shall be able to view documents.
- E.3 An approver shall be able to approve documents.
- E.4 An approver shall be able to decline documents.
- E.5 An approver shall be able to store the approved document.

F: Member

- F.1 A member shall be able to request documents.
- F.2 A member shall be able to view documents.
- F.3 A member shall be able to browse through archive.
- F.4 A member shall be able to consult knowledge base.
- F.5 A member shall be able to create a document.
- F.6 A member shall be able to use templates.
- F.7 A member shall be able to store documents.

G: Stakeholder

- G.1 A stakeholder shall be able to change review criteria's.
- G.2 A stakeholder shall be able to change approval criteria's.

H: The to be designed system

- H.1 The to be designed system shall be able to check information about the users.
- H.2 The to be designed system shall be able to distinguish users access levels.
- H.3 The to be designed system shall be able to receive documents.
- H.4 The to be designed system shall be able to share documents internally.
- H.5 The to be designed system shall be able to monitor users actions.
- H.6 The to be designed system shall be able to monitor project actions.
- H.7 The to be designed system shall be able to manage version numbers.
- H.8 The to be designed system shall be able to process scope changes
- H.9 The to be designed system shall be able to share documents externally.
- H.10 The to be designed system shall be able to store documents.
- H.11 The to be designed system shall be able to allow access to documents.
- H.12 The to be designed system shall be able to allow access to monitor service.
- H.13 The to be designed system shall be able to allow access to archive service.
- H.14 The to be designed system shall be able to allow access to knowledge base service.
- H.15 The to be designed system shall be able to change knowledge in the knowledge base.



Non functional requirements [10]

Besides the functional requirements there is another type of requirement which specifies something about the system itself, and how well it performs its functions. Non functional requirements are in contrast with functional requirements of a system. It will not describe the behavior or the functions of the system; instead it describes how the system should be functioning. Non functional requirements are related to quality issues. We have divided these quality issues into two categories:

1. Essential – absolutely necessary in order for users to make use of the system.
 2. Desirable. – improving users efficiency due to simple or intuitive usage.
- (If defined in a way that's verifiably measurable and unambiguous) ease-of-use.

1. Essential

- Availability
 - In the ideal situation the system should be operational for 24/7 basis. However 95% of 24/7 basis should suffice [11].
- Reliability
 - During operation the system should be at least 92% reliable [11].
- Error free
 - Even the best systems are prone to error. Best is to have a system that error wouldn't occur. However when these error occur, error messages should be clearly understandable and traceable.
- Security
 - The system should be able to determine user access and distinguish their access. level. Preventing unwanted users to gain access to the system.

2. Desirable

- Usability [12]
 - Learn ability (familiarity, consistency, predictability and simplicity).
 - The system should let users recognize aspects of past experiences.
 - The system should use same words and same lay outs for consistency preferably.
 - The system should behave in the way you may expect within the requirement specification.
 - The system should provide a simple interface.
 - Efficiency
 - Provide possibilities for lowering the amount of time that you take to do a particular task. Think of short cuts.
 - Memorability [12]
 - The system should minimize the user's memory load by making objects, actions, and options visible. The user should not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate [Ten Usability Heuristics, Jakob Nielsen].
 - Performance
 - The system should respond in a reasonable amount of time.



- Supportability
 - The system should provide enough feedback when error occurs in form of a log.
 - The system should provide enough help information in case knowledge is required to perform a handling by the system.
- Maintainability
 - The system should be upgradeable.
 - The system should be able to scale up.
 - The system should be able to recover after crash.
- User friendly
 - The system should be flexible.
 - The system should be easy to use.

The above mentioned on functional requirements are part of the characteristics of the to be system. Having specified the actors and their requirements, what remains is to determine their relationships towards each other. In Table 1 roles and relations are described and in Figure 6 the design, using ArchiMate language [4], can be viewed. For your information the relationships and the designs shown here regards the business function quotationing. In Appendix figure 2 all business functions can be viewed in their full.

Table 3: Role and relationships quotationing.

Actors	Related to	Description of the relationship
Client	author/owner, requester, reviewer, approver	This relationship is described as being in a network, in which information can be exchanged for further progress and to comply with the wishes of the client.
Member	author/owner, requester, reviewer, approver	Member can become a group actor to fulfil its role.
Author/Owner	Requester	Author/.owner is the requester in case a deliverable must be reviewed and approved
Requester	Reviewer	Requester triggers the role of reviewer which will be one of the members.
Reviewer	Approver	Reviewer triggers the role of approver which can also be a member
Stakeholder	-	Has a indirect influence on the aspect of review and approval process.

The Figure 7 shown below provides a visual visualization of this table in the modelling language of ArchiMate.

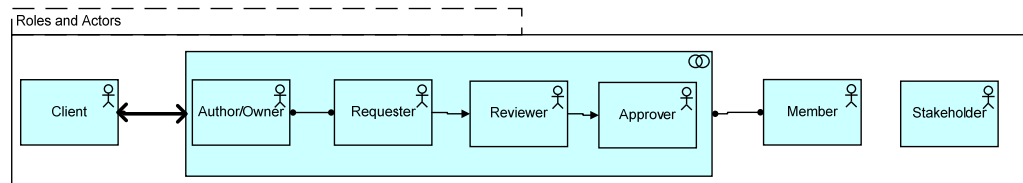


Figure 25: Roles and actors quotationing.

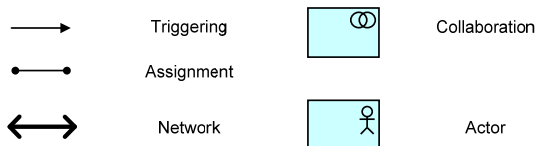


Figure 26: Legend.

For a complete overview of all the roles and actors and their relationships refer to Appendix A.

- Roles and actor for Quotationing view Appendix figure 2.
- Roles and actor for Project engineering view Appendix figure 3.
- Roles and actor for Implementing view Appendix figure 4.
- Roles and actor for Internal testing view Appendix figure 5.
- Roles and actor for Factory testing view Appendix figure 6.
- Roles and actor for Site testing view Appendix figure 7.
- Roles and actor for After Market Servicing view Appendix figure 8.
- Roles and actor for Approval (QMS) is predetermined.

2.5.1.2 Business services

There are four essential services which fulfil the services needed by the OSS Team. These services and their relations are described in Table 2 and designed in Figure 9.

Table 4: business services quotationing.

Service	Description	Used by
Project "portal" service	Acts as a portal for the beginning of all phases of the entire project.	author/owner, requester, reviewer, approver
Monitor service	Acts as a monitoring service to monitor the project phases and for the later stadia's of testing and completion of the project	author/owner, requester, reviewer, approver
Archive service	Provides a service by which all the previous projects can be viewed in a structure manner.	Member
Knowledge base service	Contain all knowledge regarding the project, which can be viewed	Member

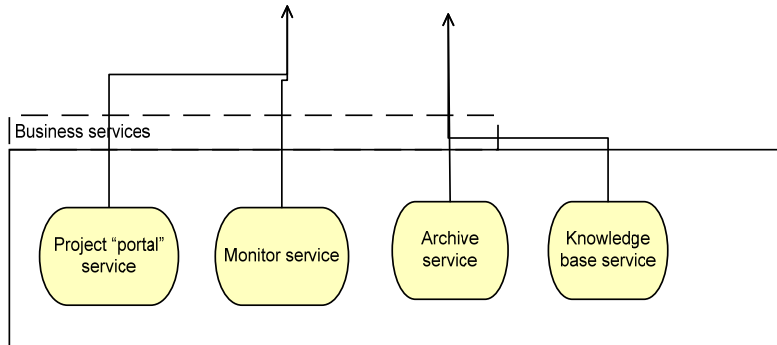


Figure 27: Business services quotationing.



Figure 28: Legend.

For a complete overview of all the business services and their relationships refer to Appendix A.

- Business services for Quotationing view Appendix figure 2.
- Business services for Project engineering view Appendix figure 3.
- Business services for Implementing view Appendix figure 4.
- Business services for Internal testing view Appendix figure 5.
- Business services for Factory testing view Appendix figure 6.
- Business services for Site testing view Appendix figure 7.
- Business services for After market servicing view Appendix figure 8.
- Business services for Approval (QMS) are predetermined.

2.5.1.3 Business phases

In business phases, the business processes of each business function are described and their relationships with the higher and lower layers are defined.

In Table 3 and Figure 11 the processes and relationships of the business function quotationing is described.

Table 5: Business phases quotationing.

Business processes	Description	Relationship towards Business services (Realization)
Project deliveries	Offer for things to deliver.	<ul style="list-style-type: none"> • Project "Portal", • Monitor service, • Archive service, • Knowledge base service.
FEED	High Level Functional design	
Scope changes	Process which enable to change the scope of the project.	

These three business processes are not always executed for the business function quotationing. The reason for this is due to the various project sizes. See chapter 2.3 phases for more details.

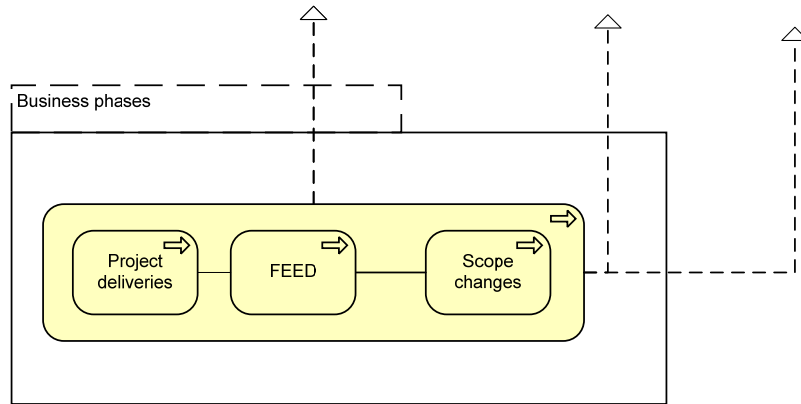


Figure 29: Business phases quotationing.

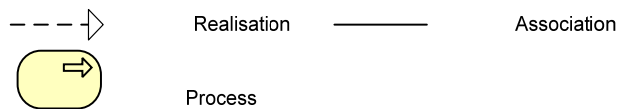


Figure 30: Legend.

For a complete overview of all the business phases and their relationships refer to Appendix A.

- Business phases for Quotationing view Appendix figure 2.
- Business phases for Project engineering view Appendix figure 3.
- Business phases for Implementing view Appendix figure 4.
- Business phases for Internal testing view Appendix figure 5.
- Business phases for Factory testing view Appendix figure 6.
- Business phases for Site testing view Appendix figure 7.
- Business phases for After market servicing view Appendix figure 8
- Business phases for Approval (QMS) are predetermined.



2.5.2 Application layer

2.5.2.1 Application services

Application service layer provides services by which the processes of the business phase can be executed. In Table 5 and Figure 12 the application services for the business function quotationing is described and illustrated.

Table 6: Application service quotationing.

Application service	Description	Relationship with business phase
Template service	Provides a service by which templates are provided for each of the specific project phases.	All these application services will be used by the upper business processes namely: <ul style="list-style-type: none">• Project deliveries• FEED• Scope changes
Approval (QMS)	The service by which all deliverables are reviewed and approved, in order to be communicated with the client.	
Document management service	The service by which all documents of the future, current and previous projects can be accessed, viewed, stored and shared.	
Knowledge base service	The application service by which the entire knowledge regarding the project can be accessed, viewed, changed and stored.	
Monitor service	Provides the application service by which the project can be monitored throughout the entire phases. Also the testing processes will be supported.	

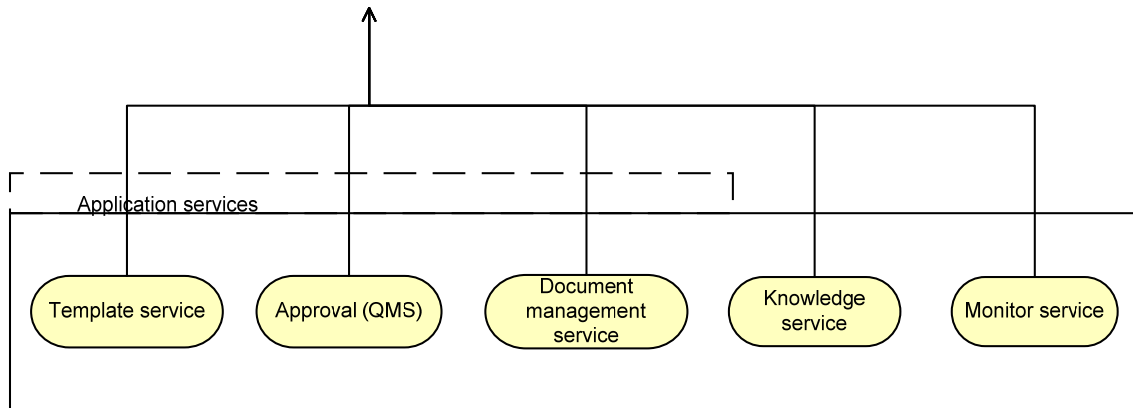


Figure 31: Application services quotationing.



Figure 32: Legend.

For a complete overview of all the application services and their relationships refer to Appendix A.

- Application services for Quotationing view Appendix figure 2.
- Application services for Project engineering view Appendix figure 3.
- Application services for Implementing view Appendix figure 4.
- Application services for Internal testing view Appendix figure 5.
- Application services for Factory testing view Appendix figure 6.
- Application services for Site testing view Appendix figure 7.
- Application services for After market servicing view Appendix figure 8.
- Application services for Approval (QMS) are predetermined.

2.5.2.2 Application components

The application components [4] enable the realization of the application services. In Table 5 and Table 6 description and relationships of the application components regarding the business function quotationing are described; and in Figure 14 an illustration of the application components quotationing is provided.



Table 7: Application components quotationing.

Application components	Description	Relationship towards application services (Realization)
Customer warehouse	The customer warehouse provides structure for the software entities which enable the access towards any information regarding customer.	<ul style="list-style-type: none"> Approval (QMS) Knowledge base service. The customer warehouse component enables the realization of approval (QMS), knowledge base service possible. Information regarding customer and the previous existing knowledge can be (re)used.
Template warehouse/portal	The template warehouse/portal provides structure entity of the application by which access and usage of the templates are assured.	<ul style="list-style-type: none"> Template service Template warehouse/portal component enables the realization of the template service.
Document management system	Document management system provides the structure entity of the applications by which documents can be accessed, used, shared and stored.	<ul style="list-style-type: none"> Document management service The Document management system component enables the realization of the document management service.
Knowledge management system	Knowledge management system provides the structure entity by which all knowledge regarding the projects, components and so on can be accessed and used accordingly.	<ul style="list-style-type: none"> Knowledge base service The component Knowledge management system enables the realization of the knowledge base services.
Monitor system	Monitor service provides the structure entity of the application by which projects and various project phases can be monitored.	<ul style="list-style-type: none"> Monitor service The monitor system component enables the realization of the monitor service.

Table 8: Application components quotationing.

Application components	Relationship with other application components (Used by)
Customer warehouse	Template warehouse/portal Monitor system
Template warehouse/portal	Document management system Monitor system
Document management system	Template warehouse/portal Knowledge management system Monitor system
Knowledge management system	Template warehouse/portal Monitor system
Monitor system	-

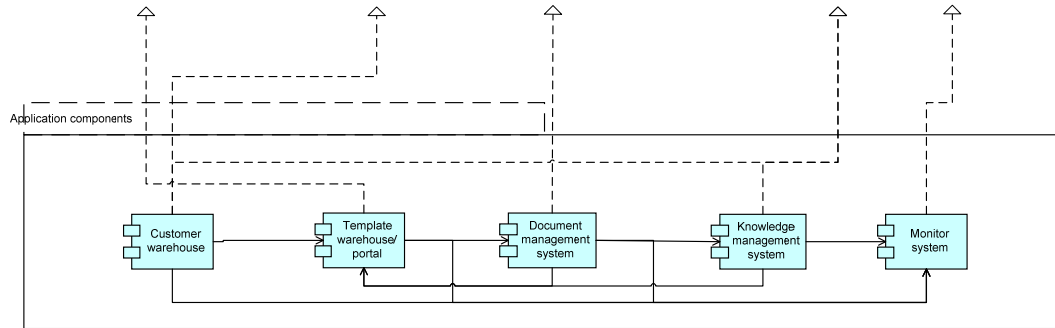


Figure 33: Application components quotationing.

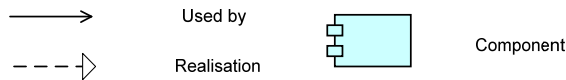


Figure 34: Legend.

For a complete overview of all the application components and their relationships refer to Appendix A.

- Application components for Quotationing view Appendix figure 2.
- Application components for Project engineering Appendix figure 3.
- Application components for Implementing view Appendix figure 4.
- Application components for Internal testing view Appendix figure 5.
- Application components for Factory testing view Appendix figure 6.
- Application components for Site testing view Appendix figure 7.
- Application components for After market servicing view Appendix figure 8.
- Application components for Approval (QMS) are predetermined.

2.5.3 Technology layer

2.5.3.1 Infrastructure

The infrastructure [4] describes the network and the hardware which is used for the realization of the application in the application components [4]. The infrastructure determines the technology layer of the enterprise in this case the OSS Team. By having a clear description and design of the future to be infrastructure, the path for developing and implementing it is made easy.

In Table 8 and Figure 16 this infrastructure is divided into three nodes. This choice has deliberately been made due to several reasons.

First of all a comparing has to be made prior to designing an infrastructure. Secondly the OSS Team at Honeywell has to agree with the choice of the to be designed infrastructure. Therefore three options have been made from the former experience and best practice. The choice of an infrastructure will flow from the comparing of the advantages and disadvantages of that particular infrastructure.

Table 9: Infrastructure quotationing.

Infrastructure	Description	Relationship towards application components
Off the shelf solution	The infrastructure consists of one complete application and software which enable the realization of the application components	Application components layer.
Custom made solution	This solution is an infrastructure which is custom build to fulfil the requirements of the user.	
Best of breed solution	This infrastructure consists of the software and applications which are the best in their own field.	

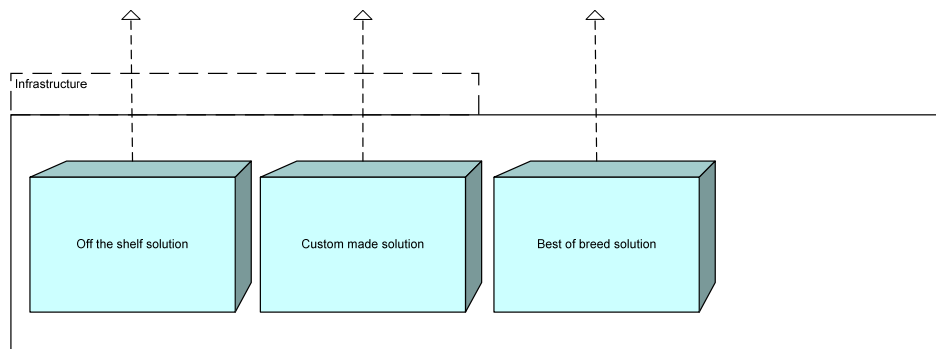


Figure 35: Infrastructure quotationing.



Figure 36: Legend.

For a complete overview of the entire infrastructure and their relationships refer to Appendix A.

- Infrastructure for Quotationing view Appendix figure 2.
- Infrastructure for Project engineering view Appendix figure 3.
- Infrastructure for Implementing view Appendix figure 4.
- Infrastructure for Internal testing view Appendix figure 5.
- Infrastructure for Factory testing view Appendix figure 6.
- Infrastructure for Site testing view Appendix figure 7.
- Infrastructure After market servicing view Appendix figure 8.
- Infrastructure for Approval (QMS) are predetermined.



2.6 General Requirements



Figure 37: Business layer [4].

Before heading forward to each business processes for determining of their requirement, a certain level of distinction has to be made. This is necessary in order to be able to have a clear overview of the requirements. Various distinctions have been made namely:

- Each project phase of the business functions has a certain general requirements.
- Each project phase of the business functions will have a separate three layered structure namely:
 - Business layer,
 - Application layer,
 - Technology layer.
- Within the three layer structure each project phase will be divided into four phases namely:
 - Phase startup,
 - Phase initiation,
 - Phase execution,
 - Phase closure.

It's required to follow the pre defined phases consecutively; this in order to prevent errors and miscommunications.

1. Phase startup

Has the purpose to act as a condition for starting the project sub phase. Documents or processes in this phase can act as a tool or means for achieving the results of the project phase.

2. Phase initiation

This phase contains the requirements for the documentation before the next project phase can start. It states what type of documentation is required and what the requirements of that documentation should be. This phase cannot begin without the approved documentations of the phase startup.

3. Phase execution

This phase regards the documents in the project phase itself. It contains the requirements for the documentations that contains the work of each project phase itself. Also the requirements for the main tasks are described. To be able to proceed to the next project phase, all output requirements must be met.

4. Phase closure

This phase contains the requirements for the documentations, which are ready for the next project phase or ready to be handed over to approval process and next to the client.

The exit condition of this phase is that documents should be reviewed and approved through the Approval (QMS) process in case client has to approve the documents.



2.6.1 Requirement for documentation

These general requirements are applicable to documentation for all phases. The purpose for setting up these requirements is to achieve a standard within the department. Miscommunications or the lack of understanding of each other's work will be prevented. To make sure that everyone can easily browse and look up information about documents, every document has the following requirements:

Document format:

1. A standard template must be used,
2. All documents must be a standard format
3. Final version of the documents must be in a standard format,
4. Communication of documentation with client must be secured for external view,
5. File names must have a standard convention.

Document FrontPage:

Standard template containing information about:

1. Author/Owner,
2. Requester,
3. Approver,
4. Project,
5. Document,
6. Status,
7. Version.

During the execution of an project, it is natural that the scope of the project changes due to various reasons. In order to be able to keep track these changes, there is a need for certain requirements which have to be followed.

- Changes must be written in a standard way,
- The project is monitored in order to keep track of changes executed,
- Check list of the scope changes is kept for the overall process,
- It should be stated where, what and which project phases is affected by the scope changes and started,
- Changes must be forwarded to the responsible member on time,
- Approval of changes by client as well as OSS Team through approval (QMS) process [8].

Furthermore there must be a standard manner by which changes could be monitored and tracked. This is necessary in order to be able to distinguish the documentation process and the changes which have had occurred during the project.

By monitoring and keeping track of the changes which occur during the project phases, consistency is assured.

2.7 Phase requirements



Figure 38: Business layer.

The following step describes the project phases. These project phases belong to the business layer of our system, which describes the business processes of the OSS department. Each phase can be considered as a different business process. The description is placed in a table with its corresponding phase. De input-, during-, output requirements are described in separated columns. Each output requirement of a phase is the input requirement for the following phase. At the same time these tables serve as business requirements in the business layer for in our architecture.

Since the OSS team requires a structured method to manage their documentation. In Appendix B the required documentation of each phase which is described in the tables bellow are illustrated see chapter 2.7.1 Quotationing. Basically each project consists of seven project phases. Each project phases has its own sub phases. In total there are fifteen sub phases. Not every sub phase is required to be followed. It depends heavily on the projects size, as mentioned before. In Appendix C, the flow of processes of each corresponding document is illustrated.

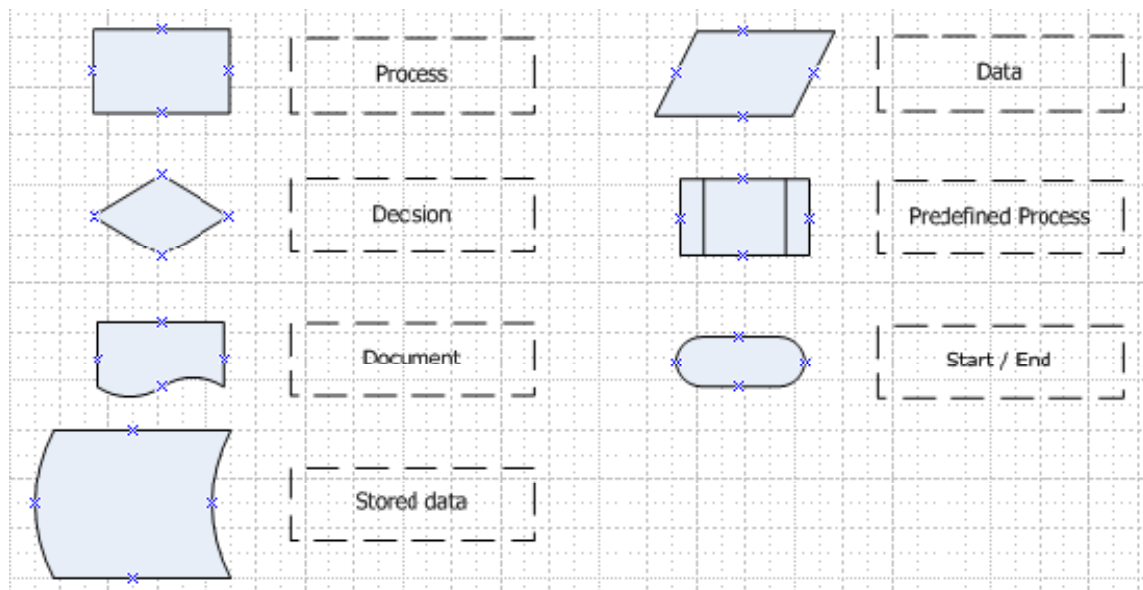


Figure 39: Legend of process flow used in sub phase.

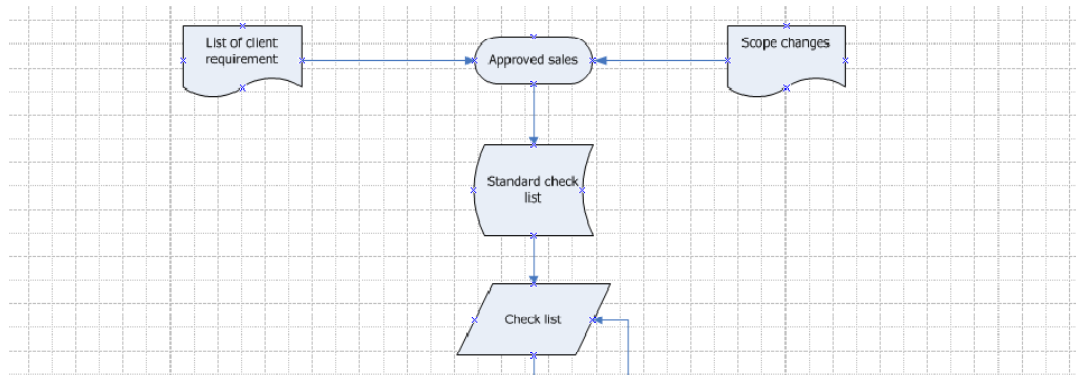


Figure 40: Start of sub phase quotation.

Each sub phase starts with the results of the previous sub phase. In the case of quotation, list of client requirements is required. Scope changes can be made at the start condition, if necessary. The standard checklist/checklist procedure is the first procedure that a user encounters. This step is determining if requirements for a small or large project is being used.

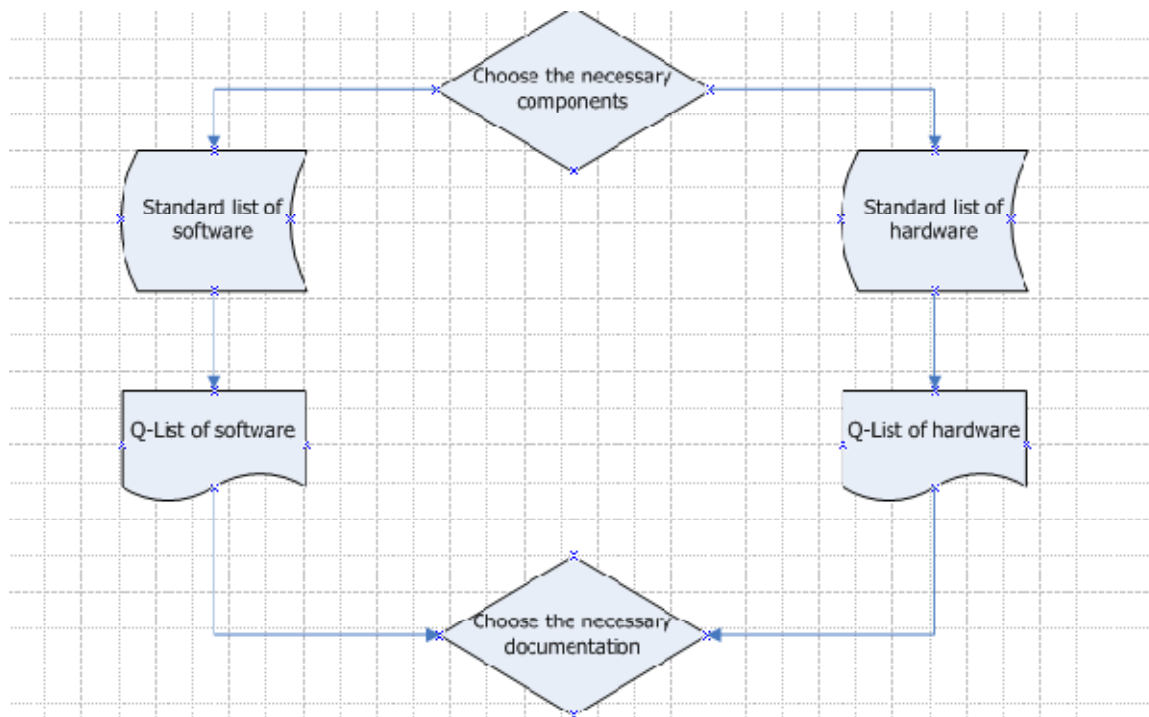


Figure 41: Decision making in a sub phase.

The diamond shape represents a decision. In Figure 23 the decision of choosing which components either software or hardware is being used.

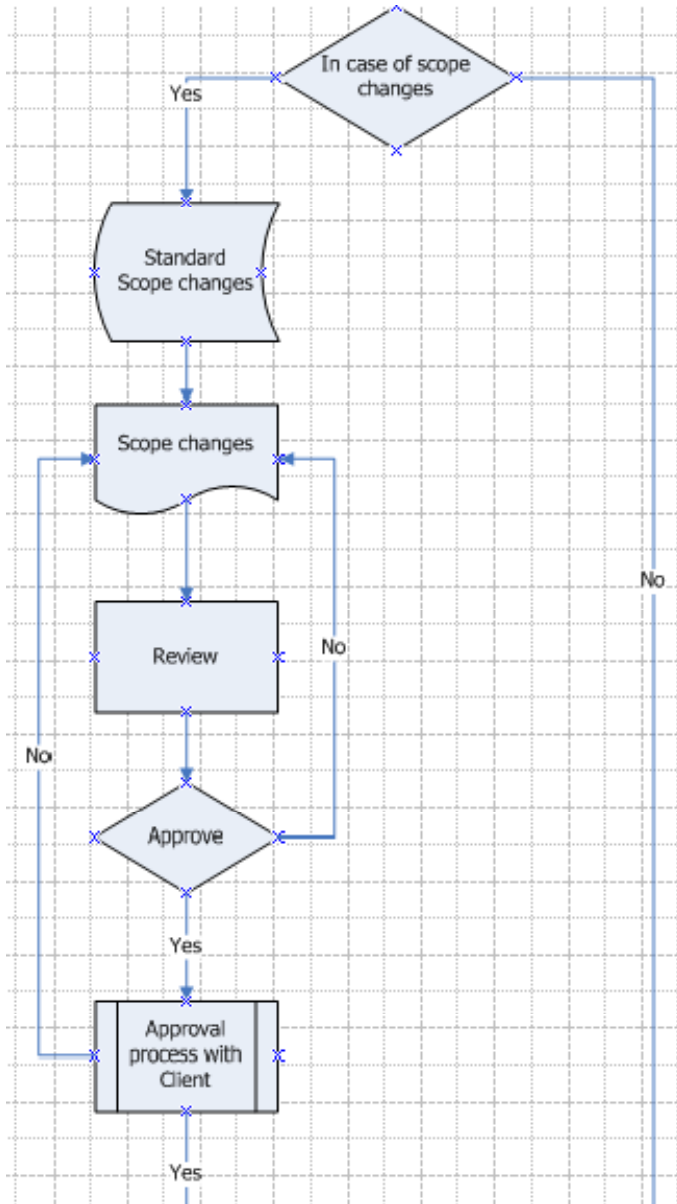


Figure 42: Scope change procedure.

If scope changes are required, the scope change procedure is done in the end of each sub phase. In the procedure client approval is needed. This review procedure differs from the QMS document life cycle process, because it would be preferable to avoid too much formality in this stadia. Eventually the scope change process will end up in the QMS approval process, which looks like in Figure 25.

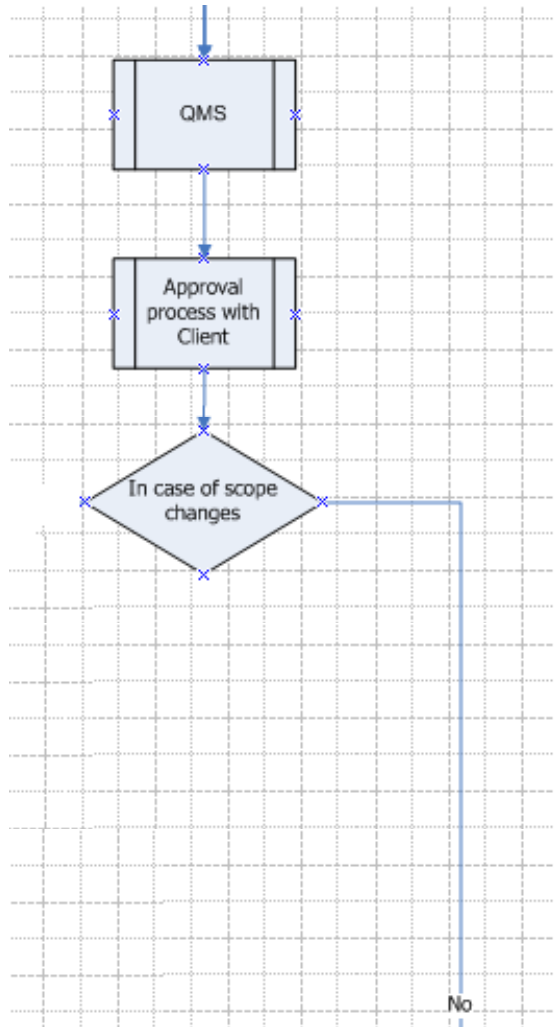


Figure 43: QMS client approval.

If the documentations are approved by the client and there is no more scope changes required, then this sub phase is finished, ready to be handed over to the next sub phase.

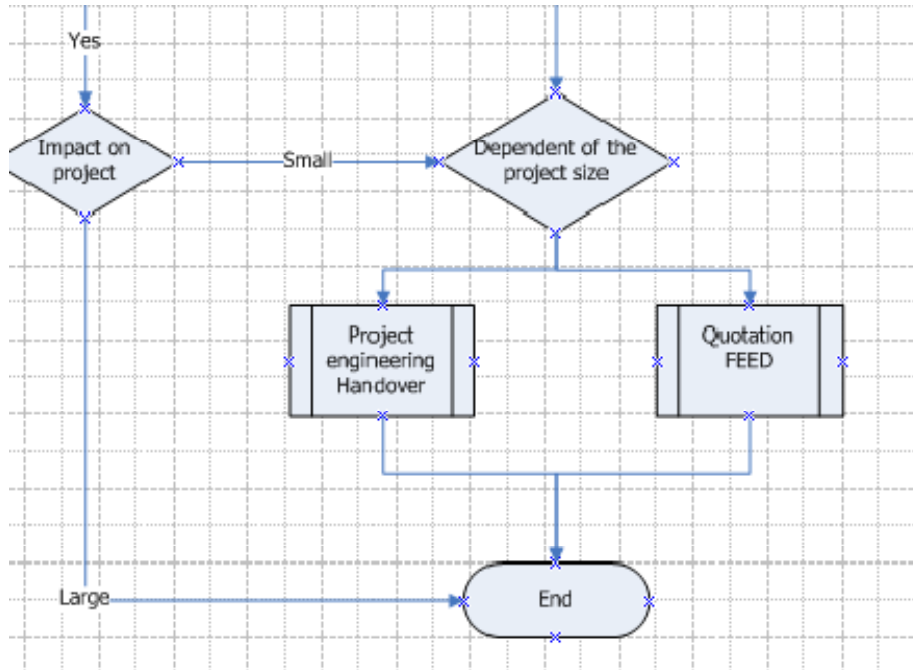


Figure 44: Ending of each sub phase.

In Figure 26, before ending the sub phase a decision to distinguish the project size is being made. In some small projects not all of the fourteen sub phases are required. The impact on project decision is related to scope change process. In cases of small scope change, these changes will be done swiftly. With major scope changes that can have large impact, the process will be ended, in order to start over with scope change in the appropriate concerning sub phase.

The tables make four distinctions [13] of each sub phase. These are the:

1. Phase startup, required to start up the concerning sub phase.
2. Phase initiation, required documentation in order to begin with further documentation in the sub phase
3. Phase execution, the to be produced documentation in the sub phase.
4. Phase closure, the finished resulting documentation of the sub phase.

For a complete overview of the illustrated document flow view Appendix B.



2.7.1 Quotationing

Table 10: Quotation, project deliveries.

Project phase name	Quotation			
Sub phase name	Project deliveries,			
Sub phase description	Offer for things to deliver.			
Steps	Phase startup	Phase Initiation	Phase execution	Phase closure
Requirements	1. List of client requirement.	1. Standard check list, 2. Standard list of software, 3. Standard list of hardware, 4. Standard list of Application standard, 5. Standard Scope changes, 6. Standard Budget estimate, 7. Standard Task responsibility, 8. Standard Feasibility study, 9. Standard Q-Scope.	1. Check list, 2. Q-List of software, 3. Q-List of hardware 4. List of Application standard, 5. Q-Scope, 6. Budget estimate, 7. Task responsibility, 8. Feasibility study, 9. Scope changes.	1. Approved Check list, 2. Approved Q-List of software, 3. Approved Q-List of hardware 4. Approved List of Application standard, 5. Approved Q-Scope, 6. Approved Budget estimate, 7. Approved Task responsibility, 8. Approved Feasibility study, 9. Approved scope changes.

For the quotation phase the following choice has been made:

In some projects, either project deliveries is made or either FEED or in some cases both sub phases are needed. Therefore one standard set of requirements is determined for both sub phases which can be adjusted accordingly to satisfy the output of the phases.

For a complete overview of the illustrated document flow view Appendix B1.



Table 11: Quotation, FEED.

Project phase name	Quotation			
Sub phase name	FEED (Front End Engineering Design)			
Sub phase description	High Level Functional design			
Steps	Phase startup	Phase Initiation	Phase execution	Phase closure
Requirements	1. List of client requirement.	1. Check list, 2. Standard list of software, 3. Standard list of hardware, 4. Standard list of Application standard, 5. Standard Scope changes, 6. Standard Budget estimate, 7. Standard Task responsibility, 8. Standard Feasibility study, 9. Standard Q-Scope.	1. Q-List of software, 2. Q-List of hardware 3. List of Application standard, 4. Q-Scope, 5. Budget estimate, 6. Task responsibility, 7. Feasibility study, 8. Scope changes.	1. Approved Q-List of software, 2. Approved Q-List of hardware 3. Approved List of Application standard, 4. Approved Q-Scope, 5. Approved Budget estimate, 6. Approved Task responsibility, 7. Approved Feasibility study, 8. Approved scope changes.

For the quotation phase the following choice has been made:

In some project, either project deliveries is made or either FEED or in some cases both sub phases are needed. Therefore one standard set of requirements is determined for both sub phases which can be adjusted accordingly to satisfy the output of the phases.

For a complete overview of the illustrated document flow view Appendix B2.



2.7.2 Project engineering

Table 12: Project engineering, handover.

Project phase name	Project engineering			
Sub phase name	Handover			
Sub phase description	Contract details to understand what need to be done			
Steps	Phase startup	Phase Initiation	Phase execution	Phase closure
Requirements	<ol style="list-style-type: none"> 1. Q-List of software, 2. Q-List of hardware, 3. List of Application standard, 4. Q-Scope, 5. Budget estimate, 6. Task responsibility, 7. Feasibility study. 	<ol style="list-style-type: none"> 1. Checklist, 2. Standard document templates, 3. Standard list of agreements made with sales, 4. List of client requirement, 5. Standard Details of the contract, 6. Standard Deliverables, 7. Standard Q-Scope, 8. Scope changes. 	<ol style="list-style-type: none"> 1. Details of the contract, 2. Document templates, 3. List of agreements made with sales, 4. Deliverables, 5. Scope changes. 	<ol style="list-style-type: none"> 1. Approved Details of the contract, 2. Approved Document templates, 3. Approved List of agreements made with sales, 4. Approved Deliverables, 5. Approved Scope changes.

For a complete overview of the illustrated document flow view Appendix B3.



Table 13: Project engineering, plan.

Project phase name	Project engineering			
Sub phase name	Plan			
Sub phase description	Plan with activities and dates			
Steps	Phase startup	Phase Initiation	Phase execution	Phase closure
Requirements	<ol style="list-style-type: none"> 1. Details of the contract, 2. List of agreements made with sales, 3. Deliverables, 4. Document templates. 	<ol style="list-style-type: none"> 1. Checklist, 2. Standard list of activities, 3. Standard Scope changes, 4. Standard P-Scope. 	<ol style="list-style-type: none"> 1. List of activities, 2. Start/ End date, 3. Milestones, 4. P-Scope, 5. Scope changes. 	<ol style="list-style-type: none"> 1. List of activities, 2. Start/ End date, 3. Milestones, 4. P-Scope, 5. Scope changes.

For a complete overview of the illustrated document flow view Appendix B4.

Table 14: Project engineering, resources.

Project phase name	Project engineering			
Sub phase name	Resources			
Sub phase description	-			
Steps	Phase startup	Phase Initiation	Phase execution	Phase closure
Requirements	<ol style="list-style-type: none"> 1. P-Scope, 2. Milestones, 3. Start/ End date. 	<ol style="list-style-type: none"> 1. Checklist, 2. Standard list of expertise, 3. List of activities, 4. Standard Scope changes. 	<ol style="list-style-type: none"> 1. List of expertise, 2. List of involved actors, 3. Responsibility list of activity for department /expertise, 4. Scope changes. 	<ol style="list-style-type: none"> 1. List of expertise, 2. List of involved actors, 3. Responsibility list of activity for department /expertise, 4. Scope changes.

For a complete overview of the illustrated document flow view Appendix B5.



Table 15: Project engineering, FDS.

Project phase name	Project engineering			
Sub phase name	FDS			
Sub phase description	-			
Steps	Phase startup	Phase Initiation	Phase execution	Phase closure
Requirements	<ol style="list-style-type: none"> 1. List of expertise, 2. List of involved actors, 3. Responsibility list of activity for department /expertise, 4. List of client requirements. 	<ol style="list-style-type: none"> 1. Checklist, 2. Standard functional design templates, 3. List of personnel, 4. P-List of hardware, 5. P-List of software, 6. Standard Scope changes. 	<ol style="list-style-type: none"> 1. List of available personnel, 2. Functional design templates, 3. Team members works schedule, 4. Glossary, 5. Scope changes. 	<ol style="list-style-type: none"> 1. List of available personnel, 2. Functional design templates, 3. Team members works schedule, 4. Glossary, 5. Scope changes.

For a complete overview of the illustrated document flow view Appendix B6.



Table 16: Project engineering, design.

Project phase name	Project engineering			
Sub phase name	Design			
Sub phase description	Detailed design specification			
Steps	Phase startup	Phase Initiation	Phase execution	Phase closure
Requirements	<ol style="list-style-type: none"> 1. List of expertise, 2. List of involved actors, 3. Responsibility list of activity for department /expertise, 4. List of client requirements. 	<ol style="list-style-type: none"> 1. Checklist, 2. Standard design templates, 3. List of personnel, 4. P-List of hardware, 5. P-List of software, 6. Standard Scope changes. 	<ol style="list-style-type: none"> 1. List of available personnel, 2. Design templates, 3. Team members works schedule, 4. Glossary, 5. Scope changes. 	<ol style="list-style-type: none"> 1. List of available personnel, 2. Design templates, 3. Team members works schedule, 4. Glossary, 5. Scope changes.

For a complete overview of the illustrated document flow view Appendix B7.

Table 17: Project engineering, BOM.

Project phase name	Project engineering			
Sub phase name	BOM (Bill of Material)			
Sub phase description	List of hardware/software which is needed for the project			
Steps	Phase startup	Phase Initiation	Phase execution	Phase closure
Requirements	<ol style="list-style-type: none"> 1. List of expertise, 2. List of involved actors, 3. Responsibility list of activity for department /expertise. 	<ol style="list-style-type: none"> 1. Checklist, 2. Q-List of hardware, 3. Q-List of software, 4. List of client requirements, 5. Standard Scope changes. 	<ol style="list-style-type: none"> 1. P-List of hardware, 2. P-List of software, 3. Scope changes. 	<ol style="list-style-type: none"> 1. P-List of hardware, 2. P-List of software, 3. Scope changes.

For a complete overview of the illustrated document flow view Appendix B8.



2.7.3 Implementing

Table 18: Implementation.

Project phase name	Implementation			
Sub phase name	Implementation			
Sub phase description	Installation and configuration of hardware and software			
Steps	Phase startup	Phase initiation	Phase execution	Phase closure
Requirements	<ol style="list-style-type: none"> 1. List of available personnel, 2. Design templates, 3. Glossary, 4. List of requirement. 	<ol style="list-style-type: none"> 1. P-List of required hardware, 2. P-List of required software, 3. Team members works schedule, 4. Checklist, 5. Standard list of procedures, 6. Standard list of install, 7. Standard list of configuration, 8. Standard manual, 9. Standard scope changes. 	<ol style="list-style-type: none"> 1. List of available manuals, 2. P-List of install, 3. P-List of configuration, 4. List of procedures, 5. List of role/task division, 6. Scope changes. 	<ol style="list-style-type: none"> 1. Approved list of available manuals, 2. Approved P-list of configuration, 3. Approved P-List of install, 4. Approved list of procedures, 5. Approved list of role/task division, 6. Approved scope changes.

For a complete overview of the illustrated document flow view Appendix B9.



2.7.4 Internal testing.

Table 19: Internal Test.

Project phase name	Internal test			
Sub phase name	-			
Sub phase description	Pre internal test before FAT test is performed.			
Steps	Phase startup	Phase initiation	Phase execution	Phase closure
Requirements	<ol style="list-style-type: none"> 1. List of procedures, 2. P-list of hardware, 3. P-list of software, 4. List of available manuals, 5. P-List of install, 6. P-List of configuration . 	<ol style="list-style-type: none"> 1. Check list, 2. Standard test phases, 3. Standard test procedures, 4. Standard error template, 5. Standard test documentation, 6. List of requirement, 7. List of role/task 8. Standard scope change 	<ol style="list-style-type: none"> 1. Test documentation, 2. List of test procedures, 3. Test phases, 4. Int-Error notation, 5. List of testers, 6. Image point, 7. Scope changes. 	<ol style="list-style-type: none"> 1. Approved Test documentation, 2. Approved test phases, 3. Approved Int-error notation 4. Approved scope changes, 5. List of testers, 6. Image point, 7. List of test procedures.

For a complete overview of the illustrated document flow view Appendix B10.



2.7.5 Factory testing

Table 20: FAT.

Project phase name	FAT			
Sub phase name	-			
Sub phase description	Factory Acceptance test, this test will be performed before products are shipped to customer site.			
Steps	Phase startup	Phase Initiation	Phase execution	Phase closure
Requirements	<ol style="list-style-type: none"> 1. List of procedures, 2. P-List of hardware, 3. P-List of software, 4. List of available manuals, 5. P-List of install, 6. P-List of configuration, 7. Test documentation, 8. Test phases, 9. Int-Error notation. 	<ol style="list-style-type: none"> 1. Check list, 2. Standard test phases, 3. Standard test procedures, 4. Standard test phases, 5. Standard error template, 6. Standard test, documentation, 7. List of client requirements, 8. Standard scope changes 9. Standard list of role/task division. 	<ol style="list-style-type: none"> 1. Test documentation, 2. List of test procedures, 3. Test phases, 4. FAT-Error notation, 5. List of testers, 6. Scope changes. 	<ol style="list-style-type: none"> 1. Approved test documentation, 2. Approved test phases, 3. Approved FAT-Error notation, 4. Approved scope changes, 5. List of test procedures, 6. List of testers.

For a complete overview of the illustrated document flow view Appendix B11.



2.7.6 Site testing

Table 21: SAT, Site Acceptance test.

Project phase name	SAT			
Sub phase name	Site Acceptance test			
Sub phase description	This test will be performed at customer site. After test and issues resolved the Plant is.			
Steps	Phase startup	Phase initiation	Phase execution	Phase closure
Requirements	<ol style="list-style-type: none"> 1. Test documentation, 2. Test phases, 3. FAT-Error notation. 	<ol style="list-style-type: none"> 1. Check list, 2. Standard test phases, 3. Standard test procedures, 4. Standard error template, 5. Standard test documentation 6. ,List of client requirements, 7. Standard scope changes, 8. List of role/task division. 	<ol style="list-style-type: none"> 1. Test documentation 2. List of procedures, 3. Test phases, 4. SAT-Error notation, 5. List of testers, 6. Scope changes. 	<ol style="list-style-type: none"> 1. Approved Test documentation 2. Approved Test phases, 3. Approved SAT-Error notation, 4. Approved scope changes, 5. List of procedures, 6. List of testers.

For a complete overview of the illustrated document flow view Appendix B12.



Table 22: Sat, commissioning.

Project phase name	SAT			
Sub phase name	Commissioning of plant			
Sub phase description	-			
Steps	Phase startup	Phase initiation	Phase execution	Phase closure
Requirements	<ol style="list-style-type: none"> 1. Test documentation, 2. Test phase, 3. SAT-Error notation. 	<ol style="list-style-type: none"> 1. Check list, 2. Standard commissioning check list, 3. Standard error template, 4. List of client requirements, 5. Standard scope changes. 	<ol style="list-style-type: none"> 1. Commissioning check list, 2. SAT_C-Error notation, 3. Scope changes. 	<ol style="list-style-type: none"> 1. Approved commissioning check list, 2. Approved SAT_C-Error notation, 3. Approved scope changes.

For a complete overview of the illustrated document flow view Appendix B13.



2.7.7 After market servicing

Table 23: AMS (After Market Services).

Project phase name	AMS (After Market Services)			
Sub phase name	-			
Sub phase description	Service and support department, this includes also the TAC (Technical Assistance Centre)			
Steps	Phase startup	Phase initiation	Phase execution	Phase closure
Requirements	1. Commissioning check list.	1. Check list, 2. P-List of hardware, 3. P-List of software, 4. Standard list of total available services, 5. Standard list of handover documents, 6. Standard knowledge base, 7. List of requirements, 8. Standard scope changes.	1. Knowledge base, 2. List of agreed services after, 3. List of manuals or information documents of software/hardware, 4. List of handover documents, 5. Scope changes	1. Approved knowledge base, 2. Approved list of agreed services after, 3. Approved list of manuals or information documents of software/hardware, 4. Approved list of handover documents, 5. Approved scope changes.

For a complete overview of the illustrated document flow view Appendix B14.



2.7.8 Approval (QMS) [8]

The QMS Document life cycle process is an existing process created by Honeywell. In Figure 27 the process flow consisting of seven process steps can be seen.

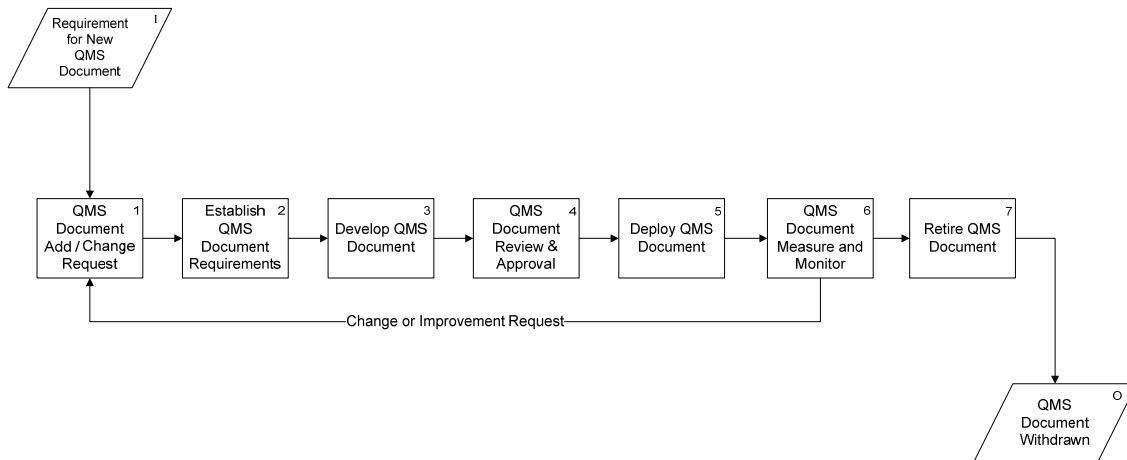


Figure 45: QMS process map [8].

Table 24: Approval (QMS).

Project name	phase	Approval (QMS)		
Sub phase name		-		
Sub description	phase	Review process of documentations with the client.		
Steps		Phase startup	Phase initiation	Phase execution
Requirements		1. Request for review process has started.	1. Waiting for review of the document.	1. Review of the document.
				1. Approved document.



2.7.9 Scope changes

Table 25: Scope changes.

Project phase name	Scope changes			
Sub phase name	-			
Sub phase description	Scope changes which occur within each project phase and have effect on the whole project			
Steps	Phase startup	Phase initiation	Phase execution	Phase closure
Requirements	1. Scope has changed.	1. Standard check list, 2. List of client requirement, 3. Description, 4. Standard project Phases, 5. Standard list of hardware, 6. Standard list of software, 7. Standard deliverables, 8. Standard list of activities, 9. Standard scope change, 10. Standard P-Scope, 11. Standard Q-Scope, 12. Standard List of expertise.	1. Check list, 2. Time schedule, 3. Q-List of hardware, 4. Q-List of software, 5. P-List of hardware, 6. P-List of software, 7. Milestones, 8. Deliverables, 9. List of activities, 10. List of roles/tasks, 11. List of involved actors, 12. List of expertise, 13. Q-Scope , 14. P-Scope , 15. Project Phases, 16. List of client requirement.	1. Check list, 2. Time schedule, 3. Q-List of hardware, 4. Q-List of software, 5. P-List of hardware, 6. P-List of software, 7. Milestones, 8. Deliverables, 9. List of activities, 10. List of roles/tasks, 11. List of involved actors, 12. List of expertise, 13. Q-Scope , 14. P-Scope , 15. Project Phases, 16. List of client requirement.

For a complete overview of the illustrated document flow view Appendix B15.



3. Software

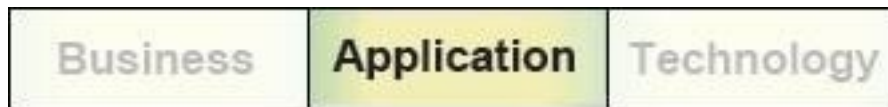


Figure 46: Application layer [4].

3.1 Document management

The second layer in the ArchiMate framework is the application layer. In this layer (re-usable) software components are being described. This viewpoint [4] [5] [3] describes how the business processes are being supported by software applications. This can be a part of one or more applications or it can be a complete software package. The relations between the different components will be made, in order to identify collaborations and interactions between applications. In the next five sub paragraphs the requirements of the applications are explained.

3.1.1 Document storing (On hold for further discussion)

The storage of the documentation should be a universal structure. By having one universal structure there is unity within the documentation structure.

Requirements which are applicable to both storage and structure of folders:

- Each project should be placed under its own project space,
- The phases of a project should be categorized and placed under its own category, for better overview,
- All documentations should be stored and most important is per project there should be a separate location for containing:
 - Glossary,
 - Password,
 - Manuals,
 - Templates,
 - Final version documentations.

From experience it is clear that the work progress would run more efficient if document templates are being used. As in chapter 2.3 some high level details about a typical document template is discussed. It should contain the same title page with consistent version number notation, same letter type, and same style. However in the current situation finding the suitable template can be a cumbersome job. A template service should provide the convenience of finding the right template during the creation of a document. An allowed user should be able to browse through the template service.



3.1.2 Document sharing

The sharing of the documentation should be performed in a standard format. By a standard format the target will have a universal manner to share documents within the team and with an external party. The way of sharing will be determined later on in the project. In negotiations with the team a best solution for sharing will be determined.

A point of order, sharing of the documents with an external party is made possible by defining a space where "final version" documentation are stored. By having this space only documents which are allocated as ready for client will be shared. It is also desirable to classify documents with certain security levels. You may think this as of documents that can be seen by only the department, or can be seen by some clients, or can be seen by a third party. Later on in the project the desirable way of sharing will be coordinated with the team at Honeywell.

By limiting the access of the client to minimum security risks are avoided.

Sharing of the documents must meet a certain criteria's:

- One universal tool for sharing documents,
- Sharing with an external party will be in a universal manner,
- Sharing is only possible to those with the right access policy.

Experience can be gained from each project. Valuable knowledge should be kept, in order to prevent mistakes for future projects and in order to finish the work quicker. A knowledge base system will provide such functionalities [14].

3.1.3 Revision management

Due to involvement of multiple parties with access to documentations, revision management is required. A system that monitors who has accessed documents and keeps track of who has made modifications and where the modifications are made. An additional requirement is to define what the role of the user is. This is related to security issues. Users that have access to documents are classified to certain security levels.

In Appendix C, it is clear that every sub phase will be ended by a review session. These review session is for maintaining high quality of the delivered product to the client. The document lifecycle process of reviewing documentations is already thoroughly investigated by Honeywell. Therefore we will benefit from the quality management system (QMS) for documentations if incorporating in our application service layer.

3.1.4 Document security

The documents must be shared in a secure environment. In this way only the people with the right authorization will be able to access the documentations.

- If documents must be viewed or accessed from the outside world, there are two options to choose from:
 1. First option: the documents are placed in a separate location called "final " in which access is granted to and from,
 2. Second option: The documents are labelled with security levels. By labelling these documents access can be limited to certain persons.
- As mentioned before, final version of the documentation has to be protected in case it is send to the clients. Any communication which takes place over an unsecured network determined by the team has to protected securely,
- A location containing the security log-ins used for the project must be made during a project. This space must have clear defined access rights.
- Security policies will be applicable to all documents expect stated otherwise,
- Security access is limited to the team itself and the necessary personnel with the right authorities.



Monitoring should be additional to security issues, which serves the project phases and for the later stages of testing and completion of the project.

3.1.5 Document relationship (On hold for further discussion)

In order for the employees to perform their job more easily, it should be possible for them to use a link indication to different sub phases of the project.

The goal is to have a central location within the file system structure, where e.g. documents, templates and configuration documents are located and stored. It should be possible to dynamically link these documentations and templates to sub phase of the project.

In our system the application service layer consists of five services, which are:

- Document management,
- Approval (QMS),
- Template service,
- Knowledge base service,
- Monitor service.

3.2 Technology layer



Figure 47: Technology layer [4].

The technology layer consists of two categories requirements [4]. These are structural requirements, and behavioural requirements.

Structural requirements, physical computational resource:

- Device requirements:
 - Server computer
- Network requirement
 - Internet

The behavioural requirements are more general then the structural requirements. We provide three kind of solutions here. Each kind of solutions can be realized for example with or without database; windows or non-windows environment, web-based or web service application.

System software requirements, classified as behavioural concepts:

- Off the shelf solution
 - Must meet all the above mentioned requirements of previous chapters.
- Custom made solution
 - Costs can be very high, and requires expertise to implement.
 - Must meet all the above mentioned requirements of the previous chapters.
- Best of breed solution
 - Can meet all the above mentioned requirements of previous chapters.
 - Use one too many available solutions.
 - Some expertise needed to glue separate solutions.

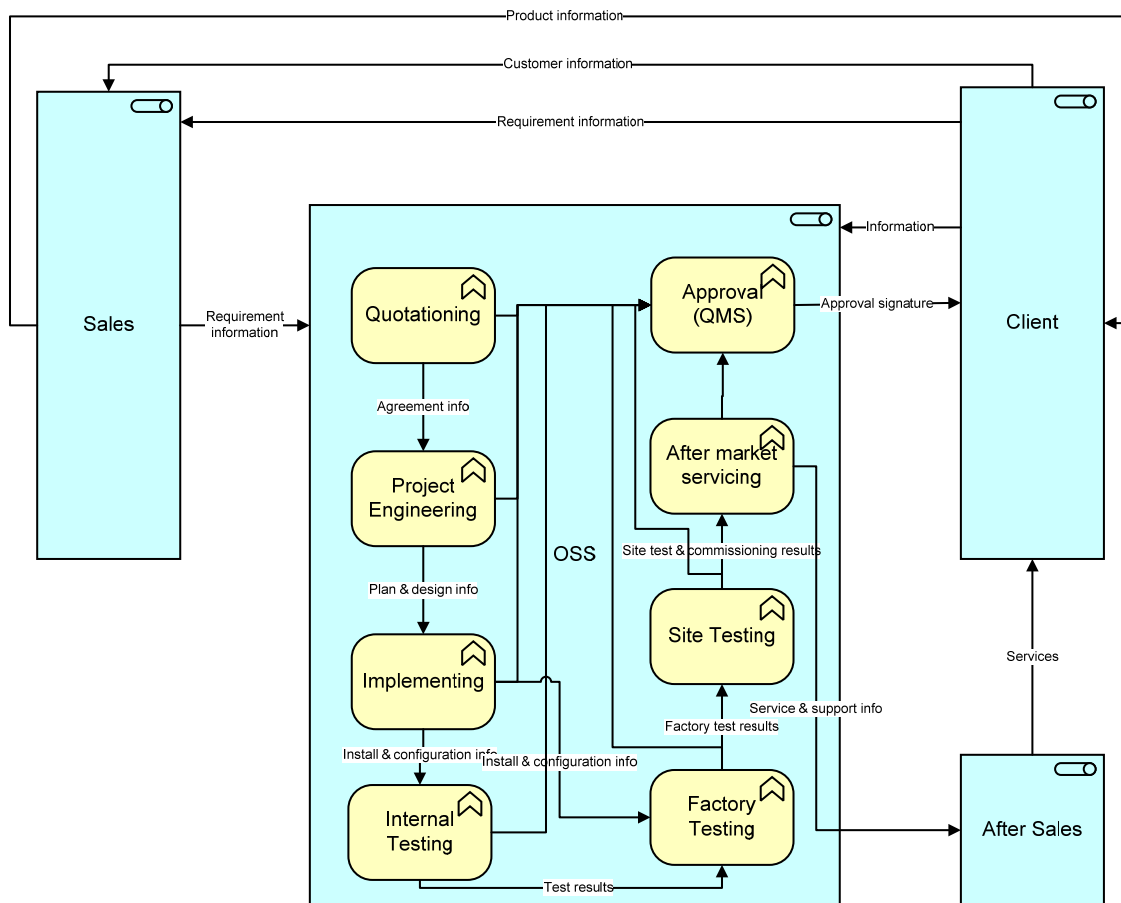


4. Bibliography

- [1] *Honeywell*. <http://www51.honeywell.com/>.
- [2] TOGAF. *The Open Group Architecture Framework (TOGAF) Version 8.1.1, Enterprise Edition*. The Open Group, 2008.
- [3] Group's, ArchiMate The Open. <http://www.ArchiMate.org/>. (accessed 2009).
- [4] —. "ArchiMate 1.0 Specification." *Technical specification*. Van Haren Publishing, 02 2009.
- [5] Group, The Open. "The ArchiMate Forum of The Open Group." <http://www.opengroup.org/ArchiMate/>. 2009. <http://www.opengroup.org/ArchiMate/downloads.htm> (accessed 2009).
- [6] Lankhorst, Marc. *TI-ArchiMate*. <http://old.telin.nl/index.cfm?ID=252&context=253&language=nl> (accessed 2009).
- [7] team, Marc Lankhorst and the ArchiMate. *ArchiMate Language Primer*. TELEMATICA INSTITUUT / ARCHIMATE CONSORTIUM, 04 26, 2008.
- [8] Procedure, HPS Standard Operating. *G-SOP-QA. 1.2.1.1 - QMS Document Add_Change Request*.
- [9] Procedure, HPS Standard Operating. *G-SOP-QA. 1.2.1.1 - QMS Document Add_Change Request*.
- [10] —. *Object oriented programming*.
- [11] Ting-A-Kee, Marcus. *Non-functional requirements: Availability & Capacity*. <http://rationalizedthoughts.blogspot.com/2006/04/non-functional-requirements.html>.
- [12] Nielsen, Jakob. *Ten Usability Heuristics*. 2005. http://www.useit.com/papers/heuristic/heuristic_list.html.
- [13] *Project Document Flow*. <http://www.canberra.edu.au/icts/pmo/pm-uc/document-flow>.
- [14] Gallupe, Brent. "Knowledge management systems: surveying the landscape." *International Journal of Management Reviews*, March 2001: 61-77.
- [15] Marc lanckhorst et al. *Enterprise architecture at work*. <http://www.springerlink.com/content/n54302/?p=f3f6c388dd304bf6bbdfa70649914121&pi=0>
- [16] Harmen van den Berg, Hans Bosma, Gertjan Dijk, Hans van Drunen, Jan van Gijsen, Frank Langeveld, Joost Luijpers, Thé Nguyen, Ger Oosting, Robert Slagter, Egon Willemsz. *ArchiMate in de praktijk*. <https://doc.freeband.nl/dsweb/GetRendition/Document-62664/html>

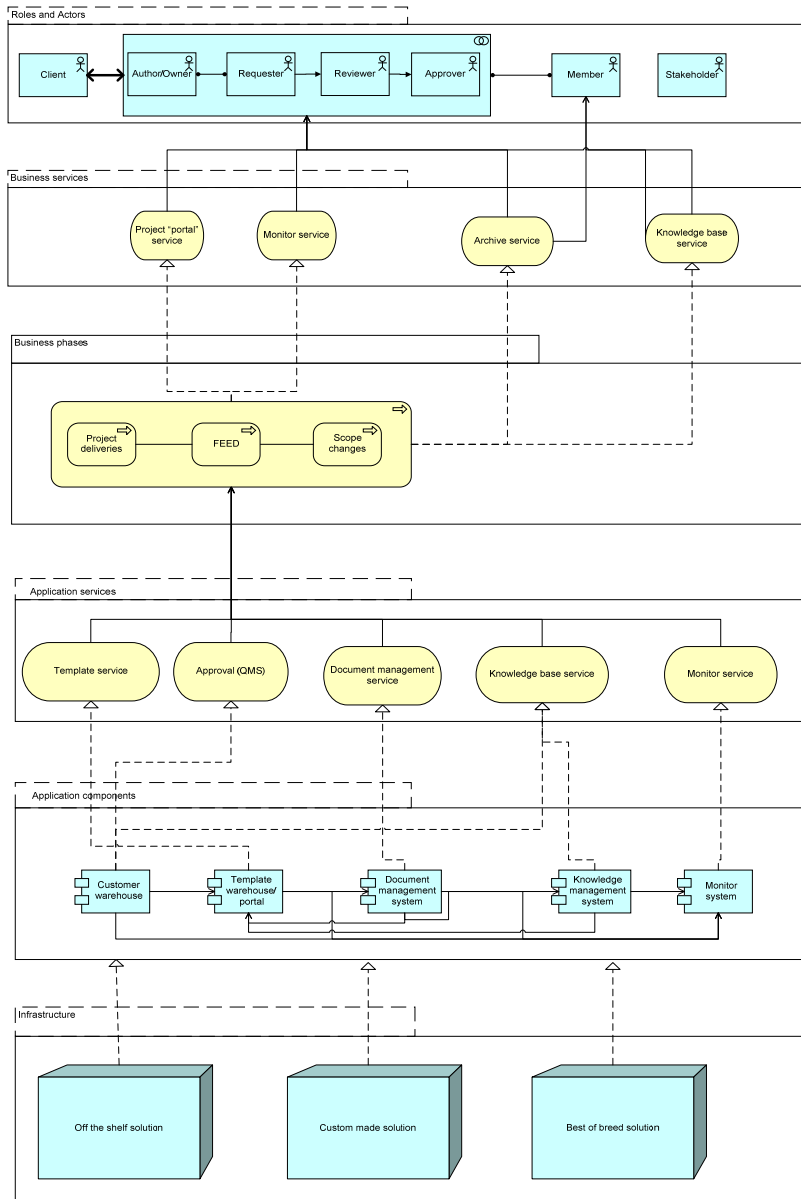
Appendix

Appendix A



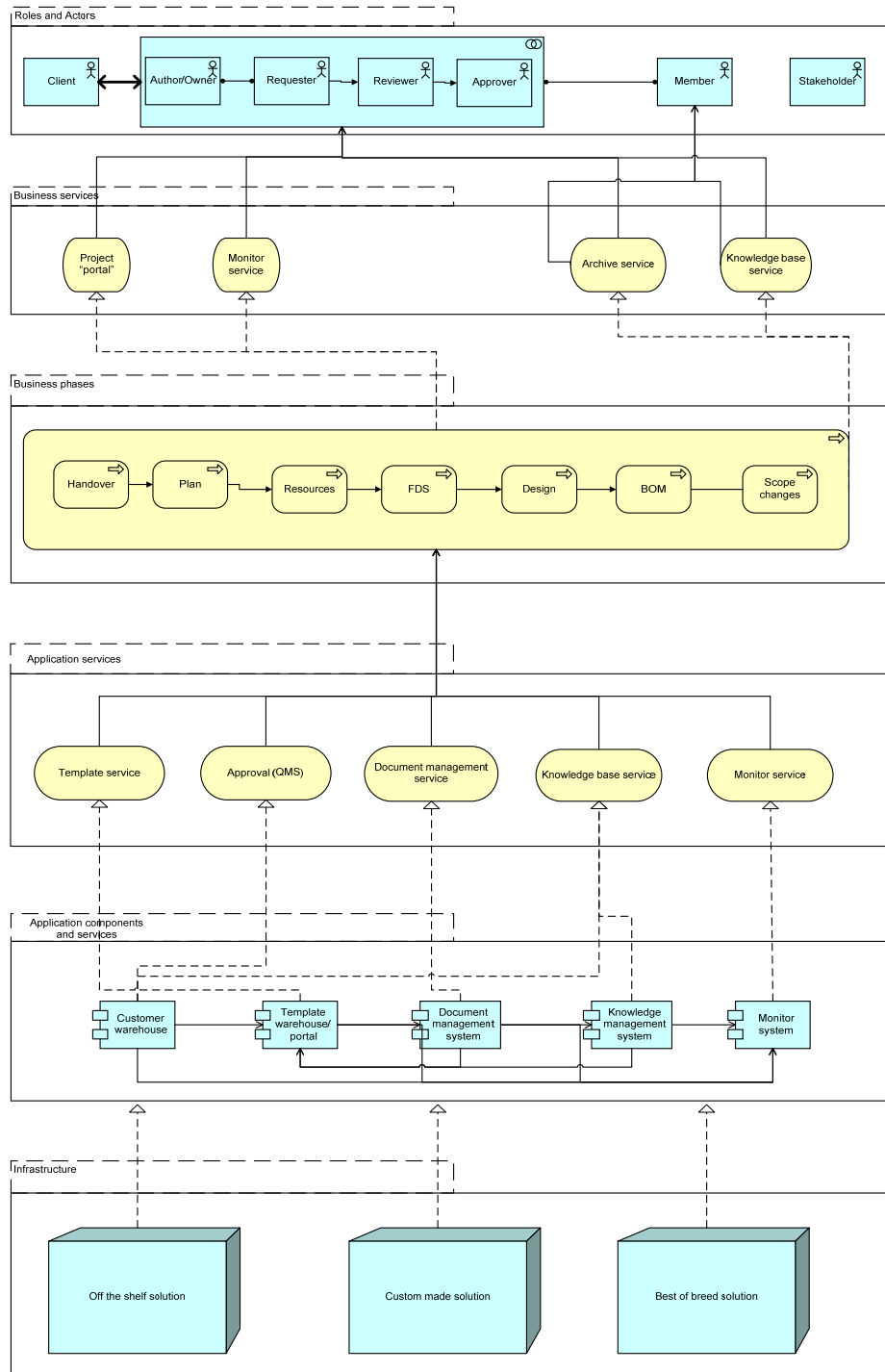
Appendix figure 1: Over view of the Business functions.

Appendix A1



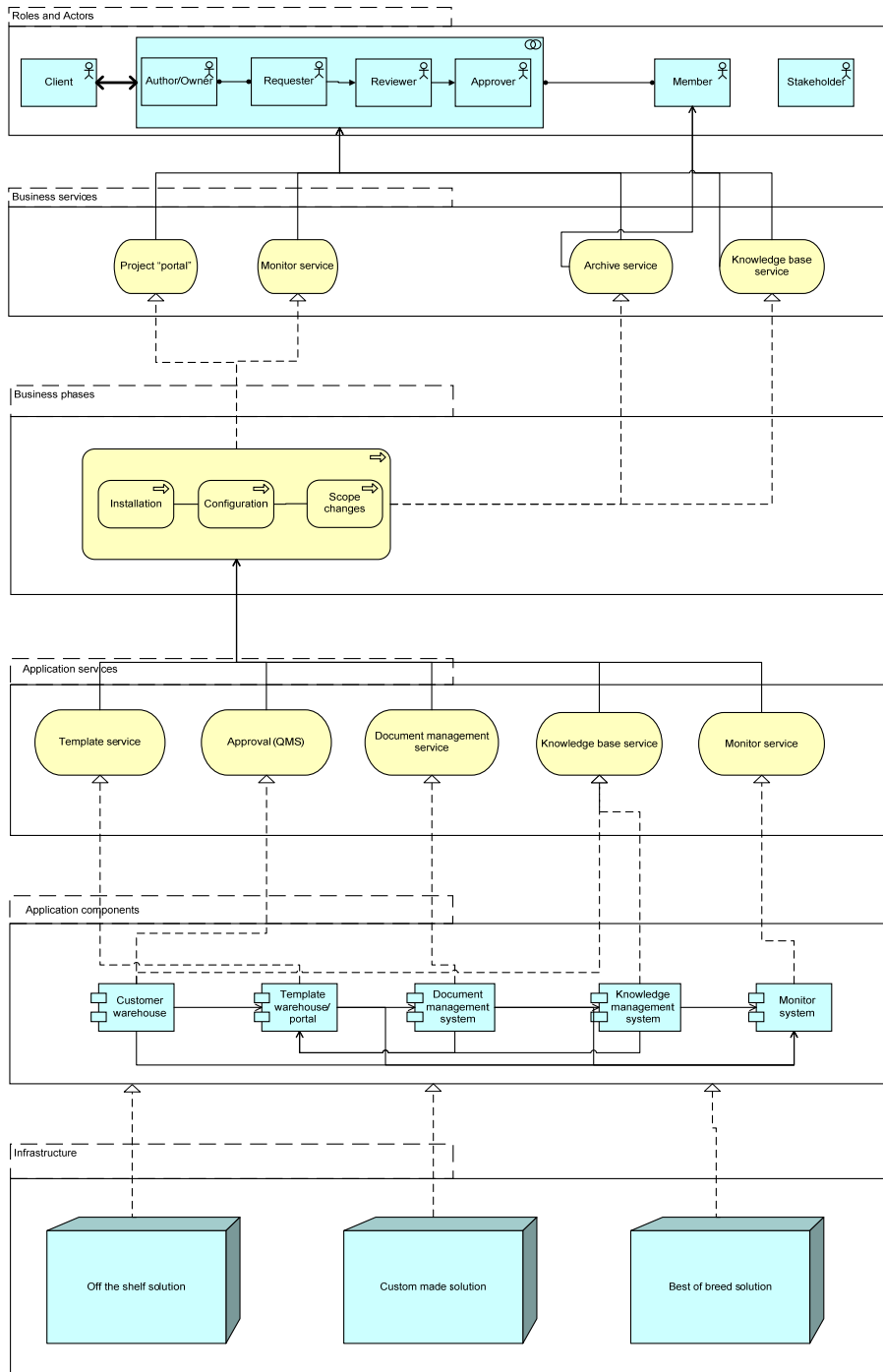
Appendix figure 2: Integrated architecture quotationing.

Appendix A2



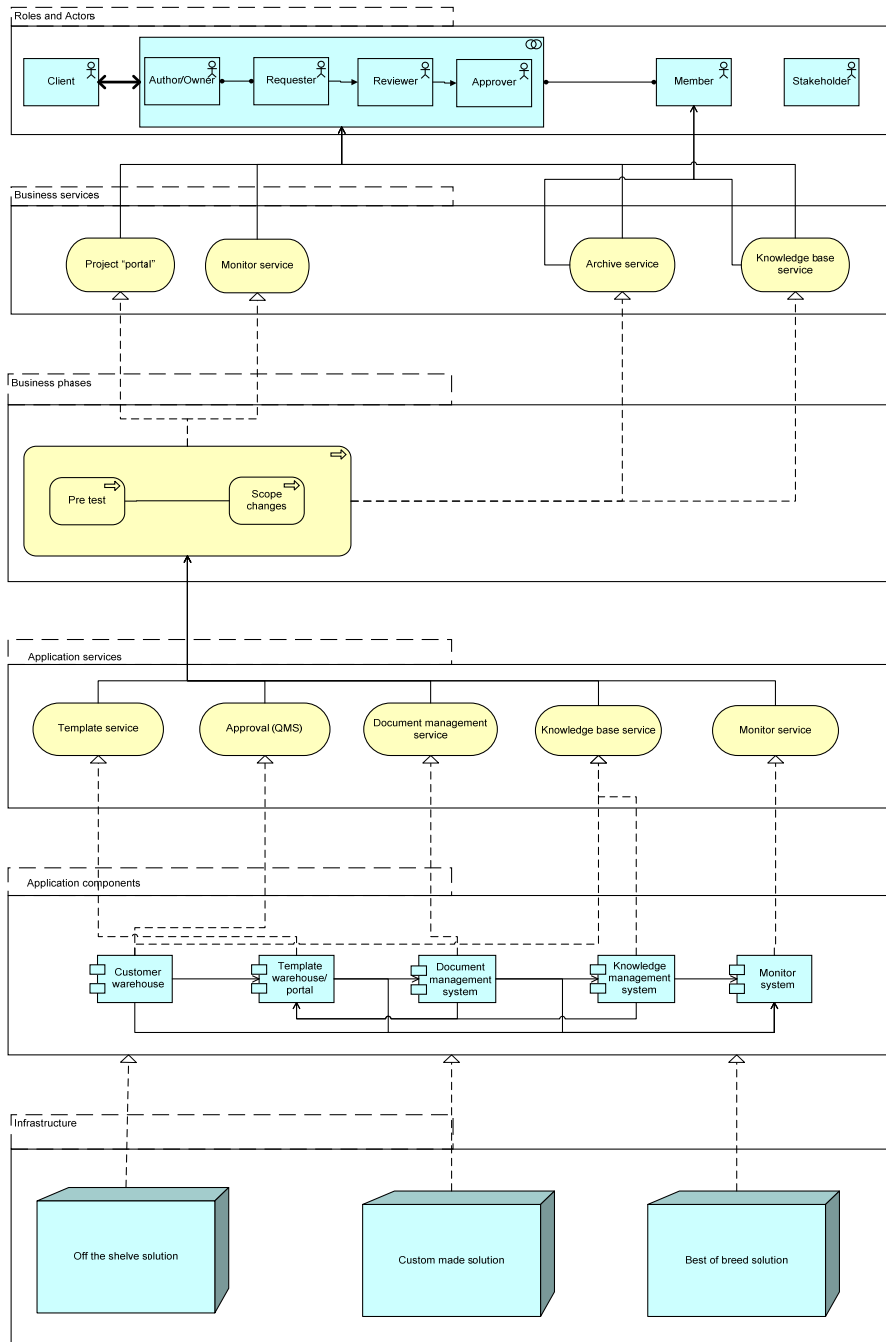
Appendix figure 3: Integrated architecture project engineering.

Appendix A3



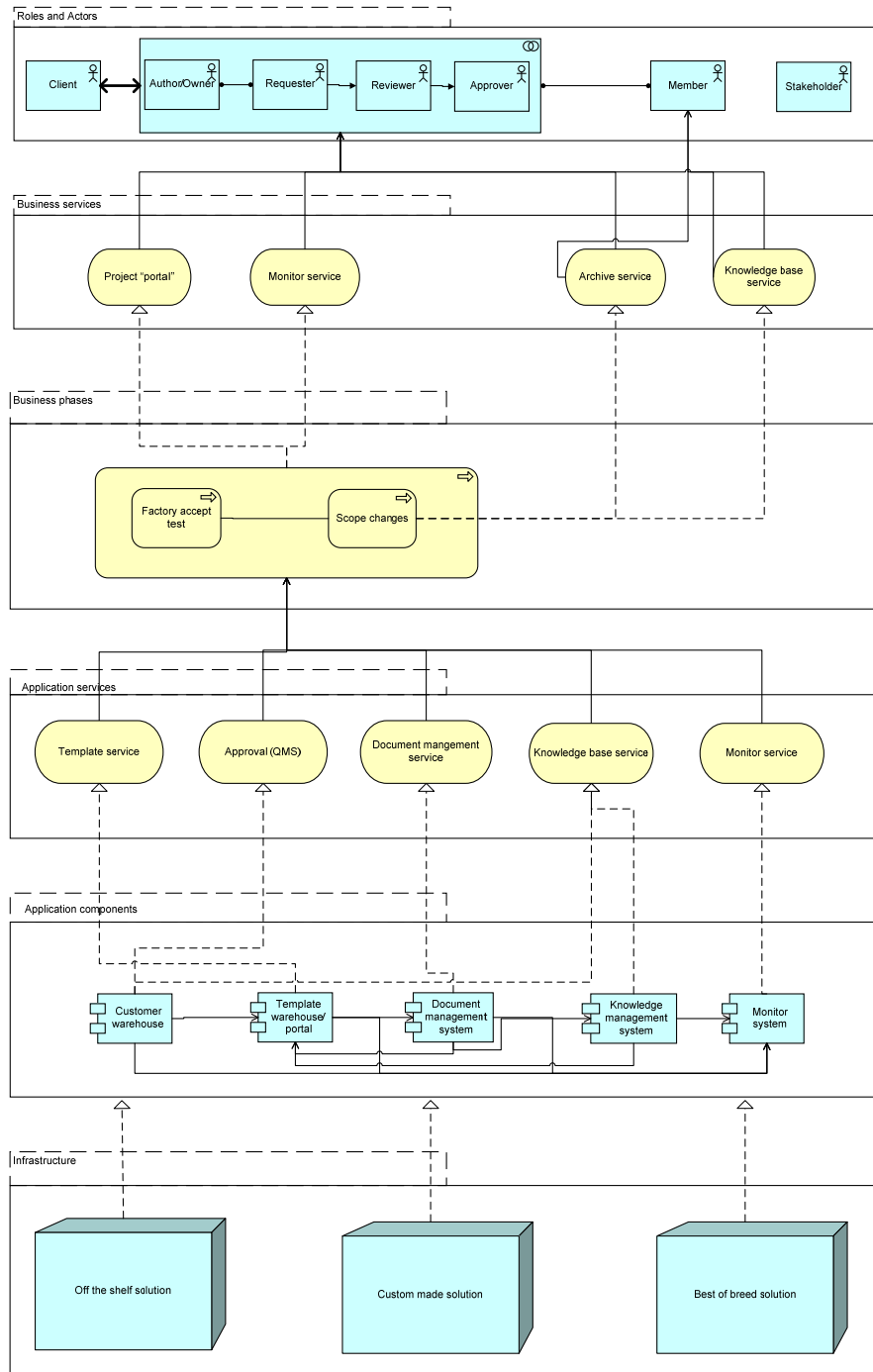
Appendix figure 4: Integrated architecture implementing.

Appendix A4



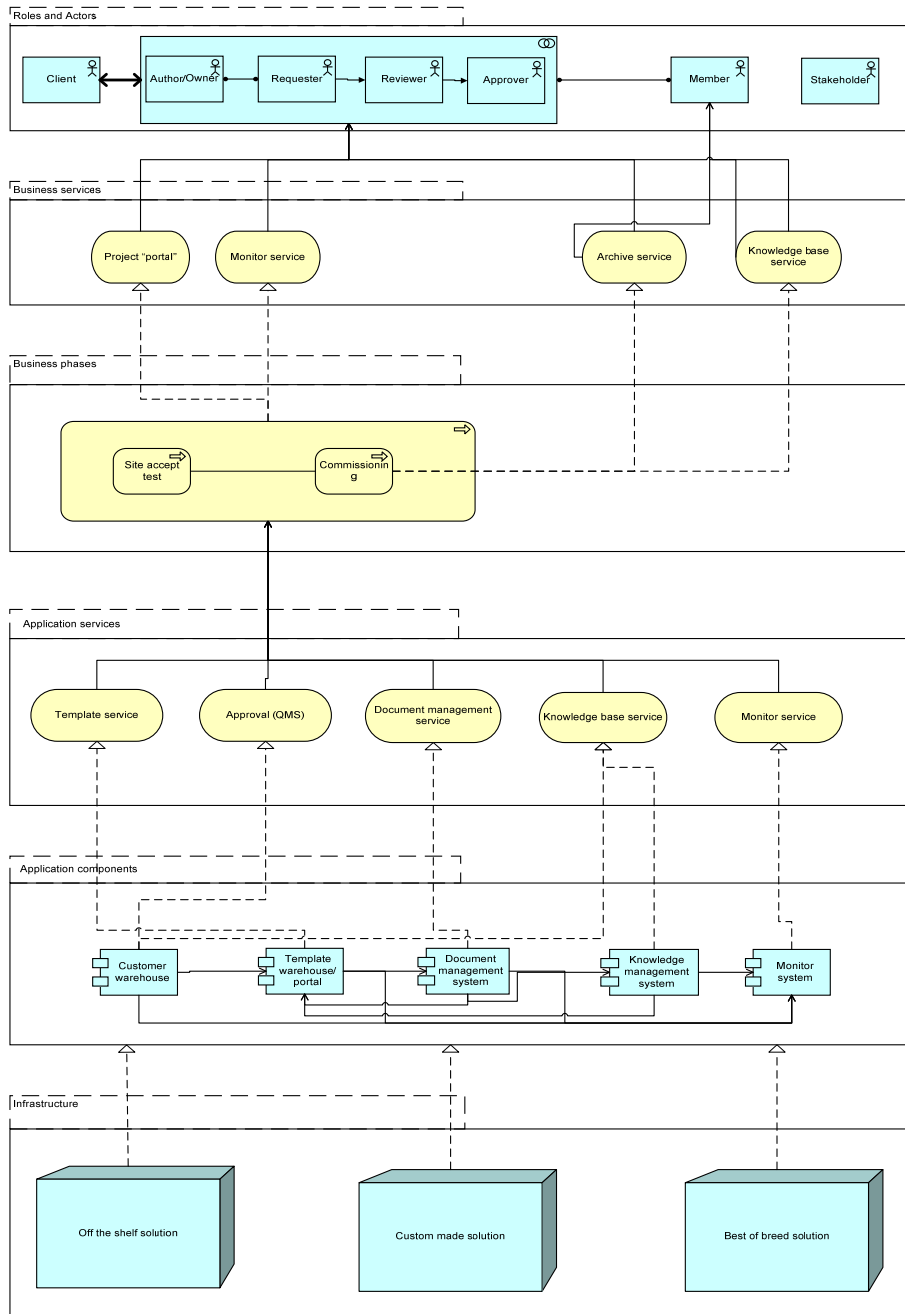
Appendix figure 5: Integrated architecture internal testing.

Appendix A5



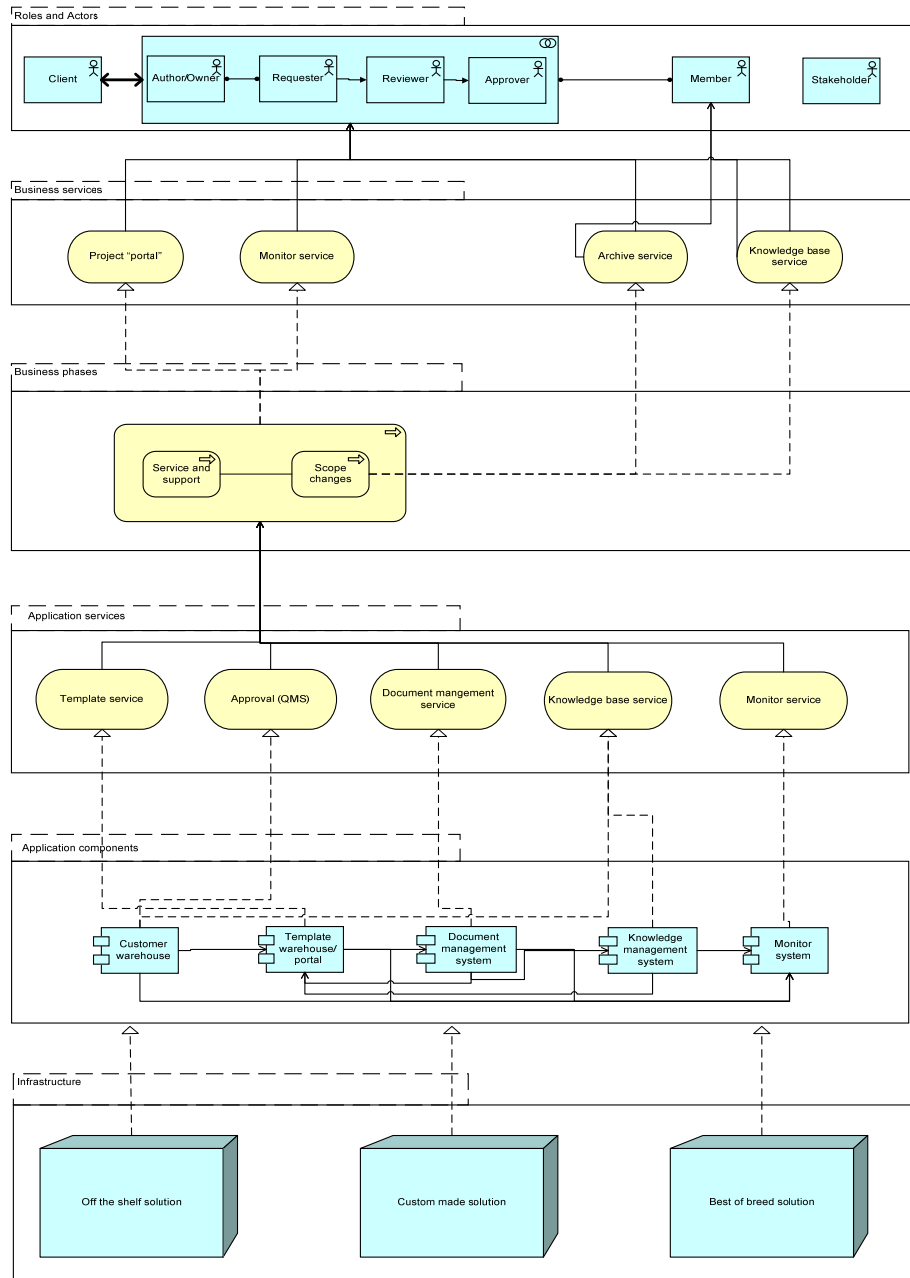
Appendix figure 6: Integrated architecture factory testing.

Appendix A6



Appendix figure 7: Integrated architecture site testing

Appendix A7

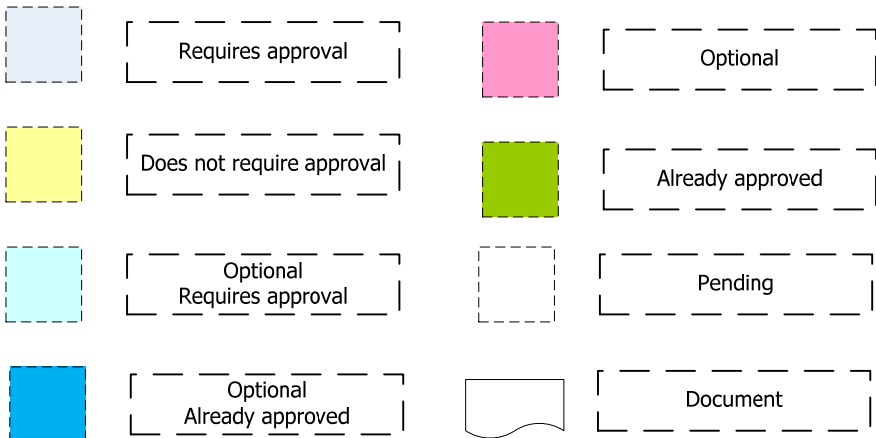


Appendix figure 8: Integrated architecture after market servicing.



Appendix B

Legend about documents flow.



Appendix figure 9: Legend document flow.

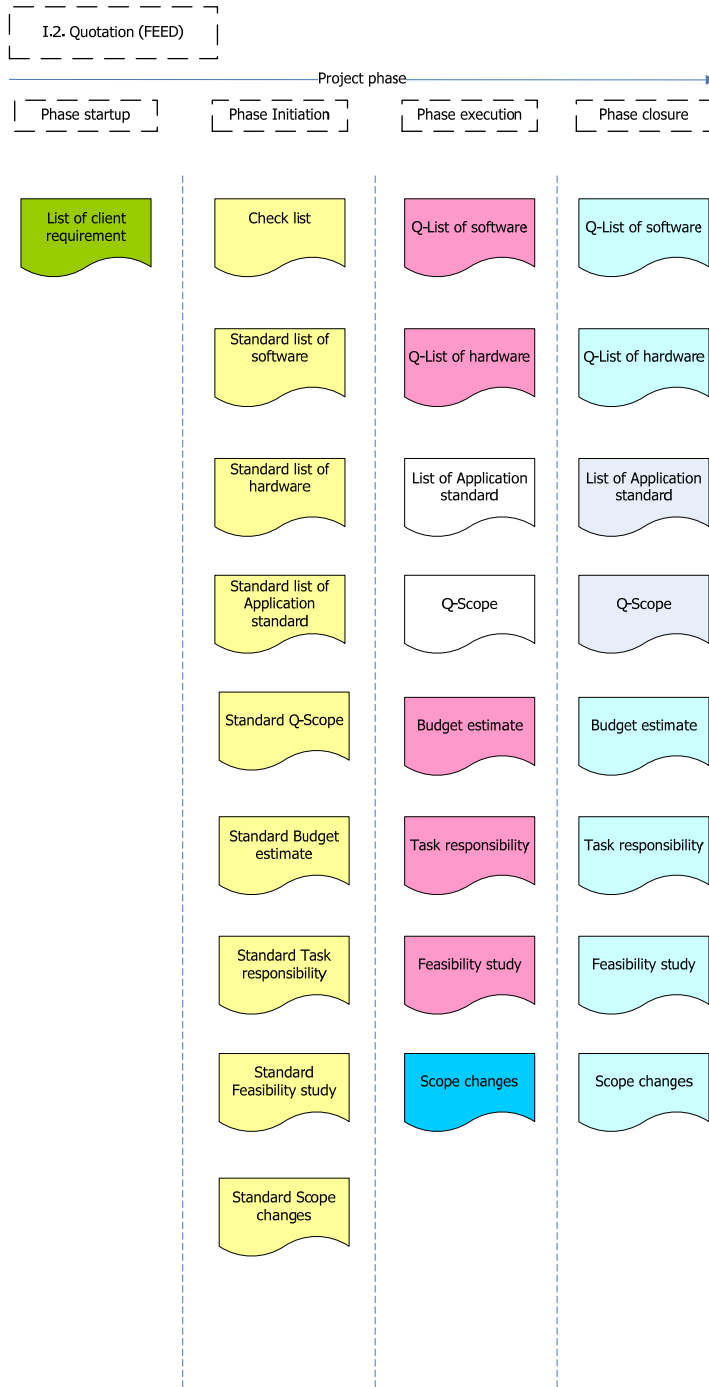
Appendix B1



Appendix figure 10: Document flow quotation, project deliveries.



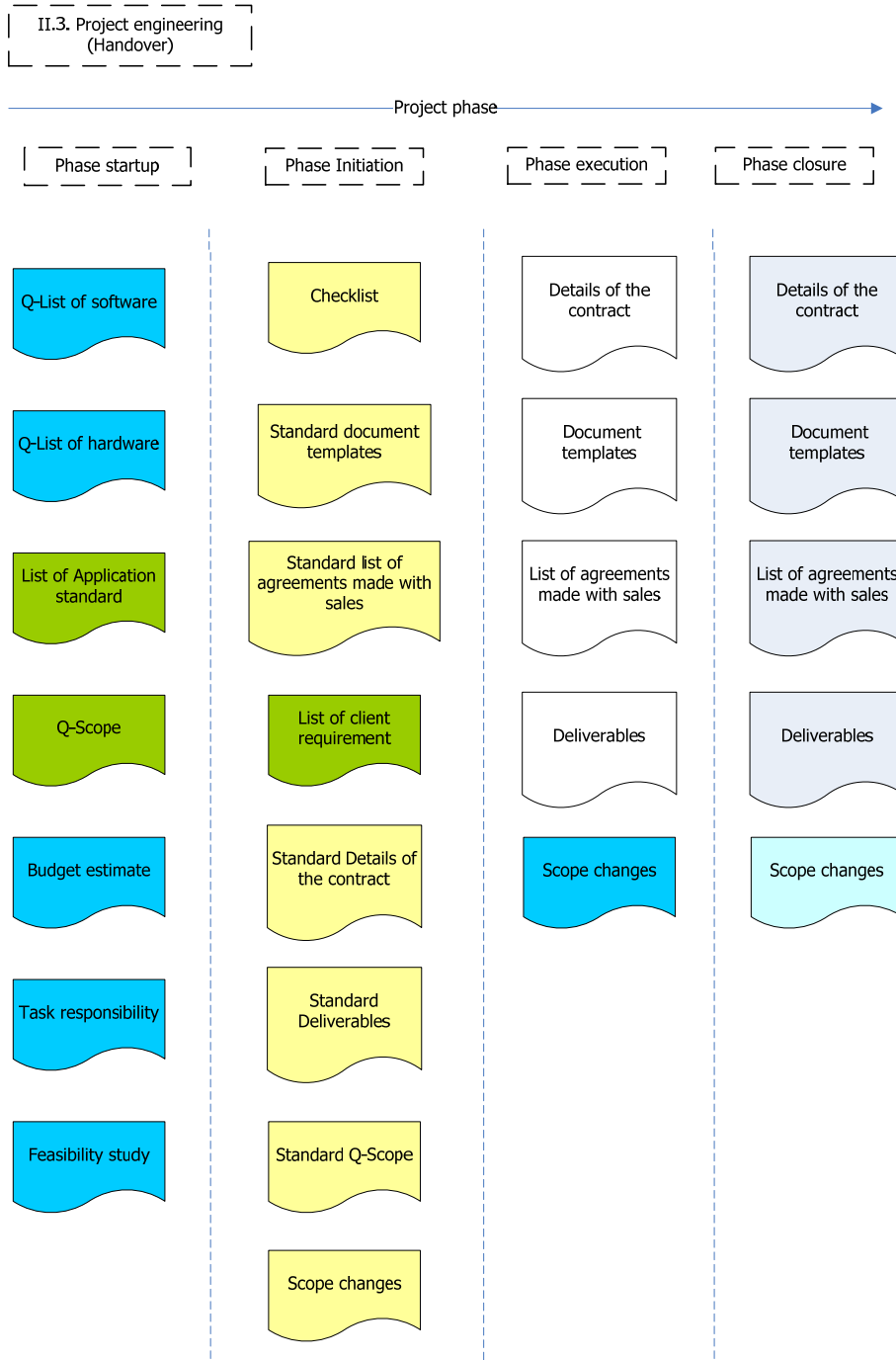
Appendix B2



Appendix figure 11: Document flow quotation, FEED.



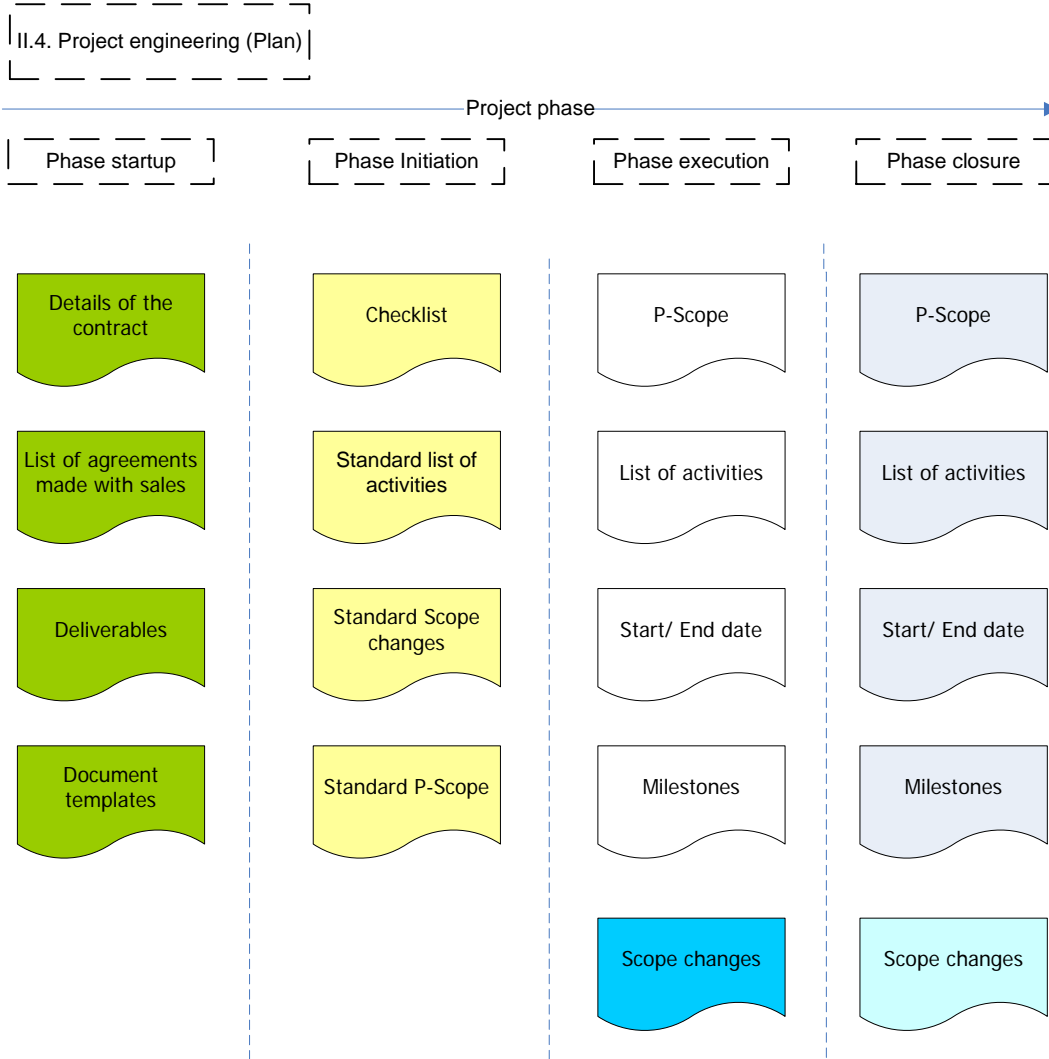
Appendix B3



Appendix figure 12: Document flow project engineering, handover.



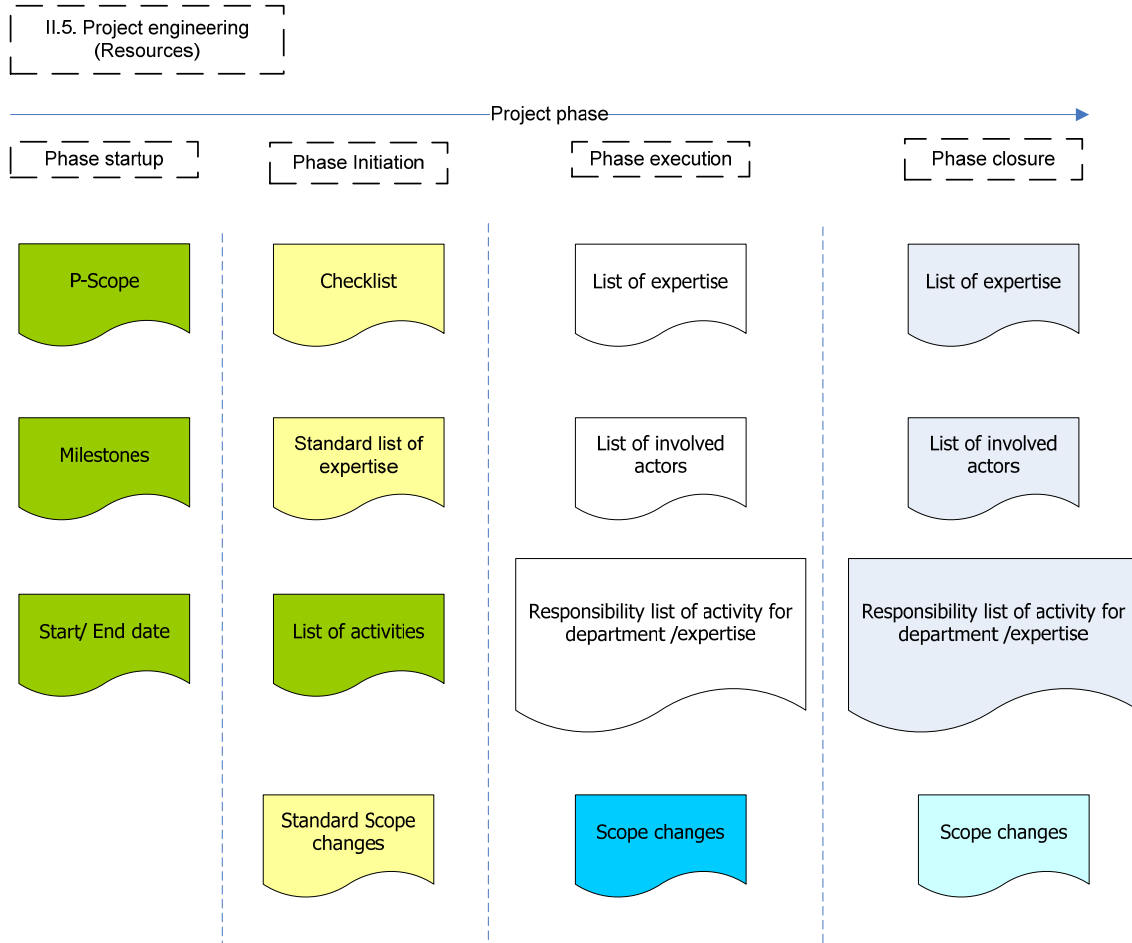
Appendix B4



Appendix figure 13: Document flow project engineering, plan.



Appendix B5

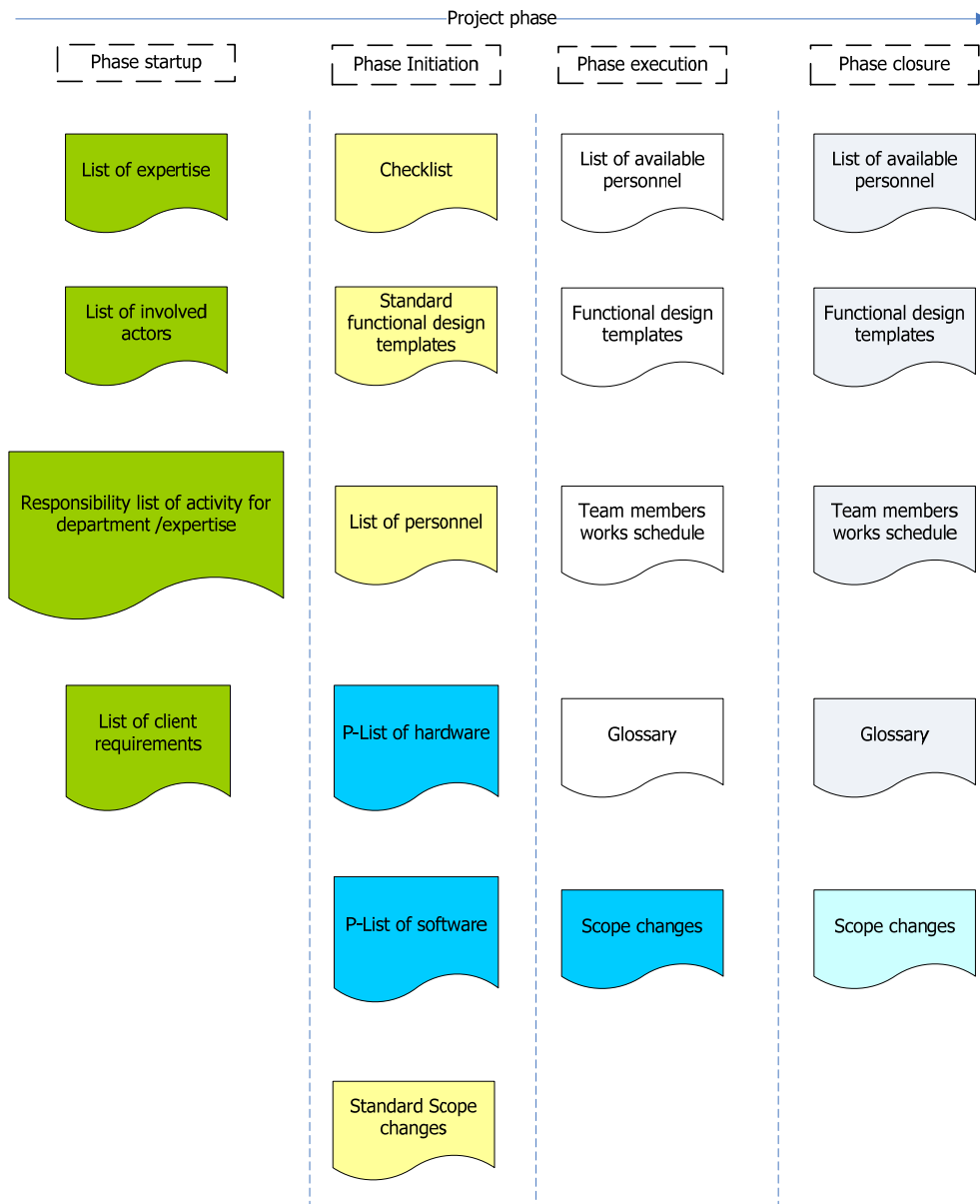


Appendix figure 14: Document flow project engineering, resources.



Appendix B6

II.6. Project engineering (FDS)



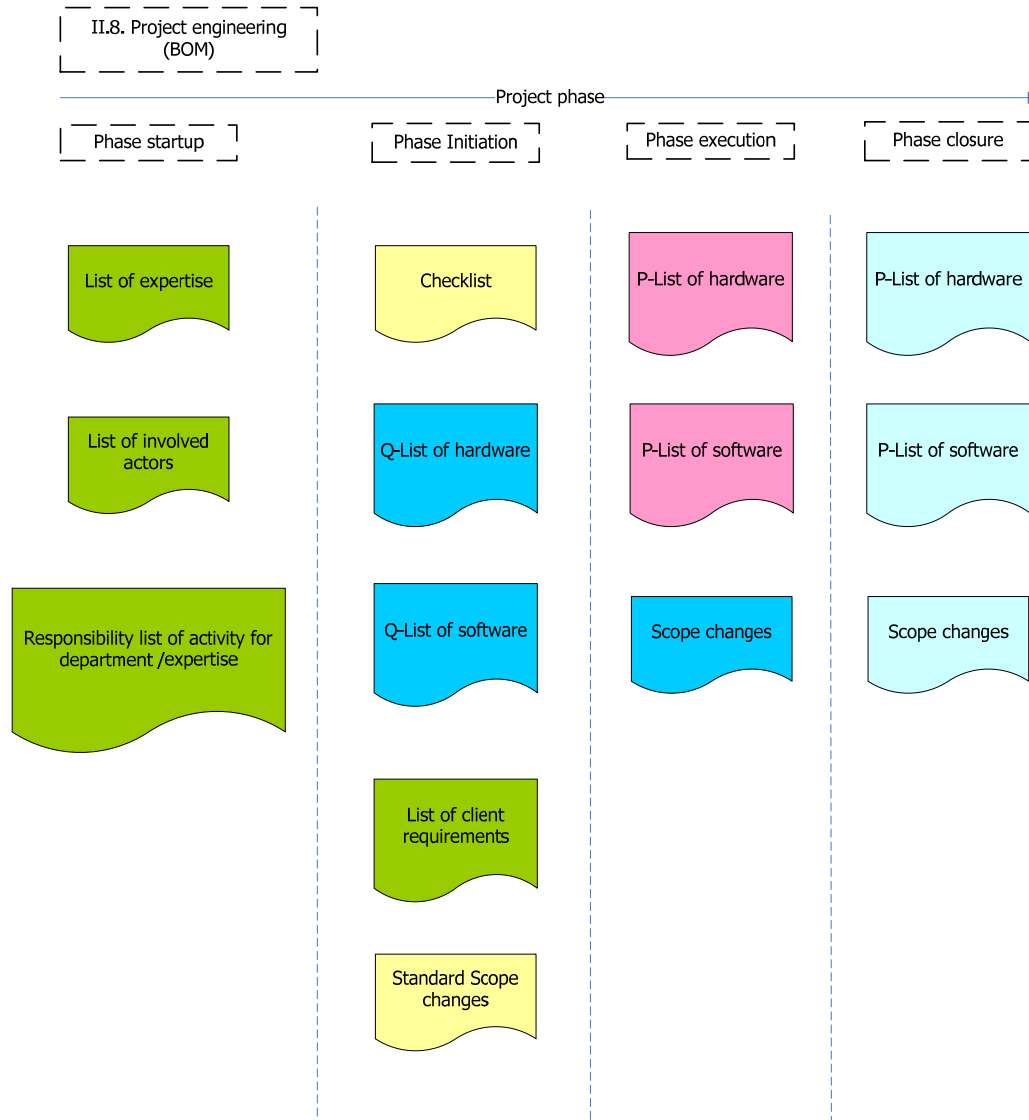
Appendix figure 15: Document flow project engineering, FDS.

Appendix B7



Appendix figure 16: Document flow project engineering, Design.

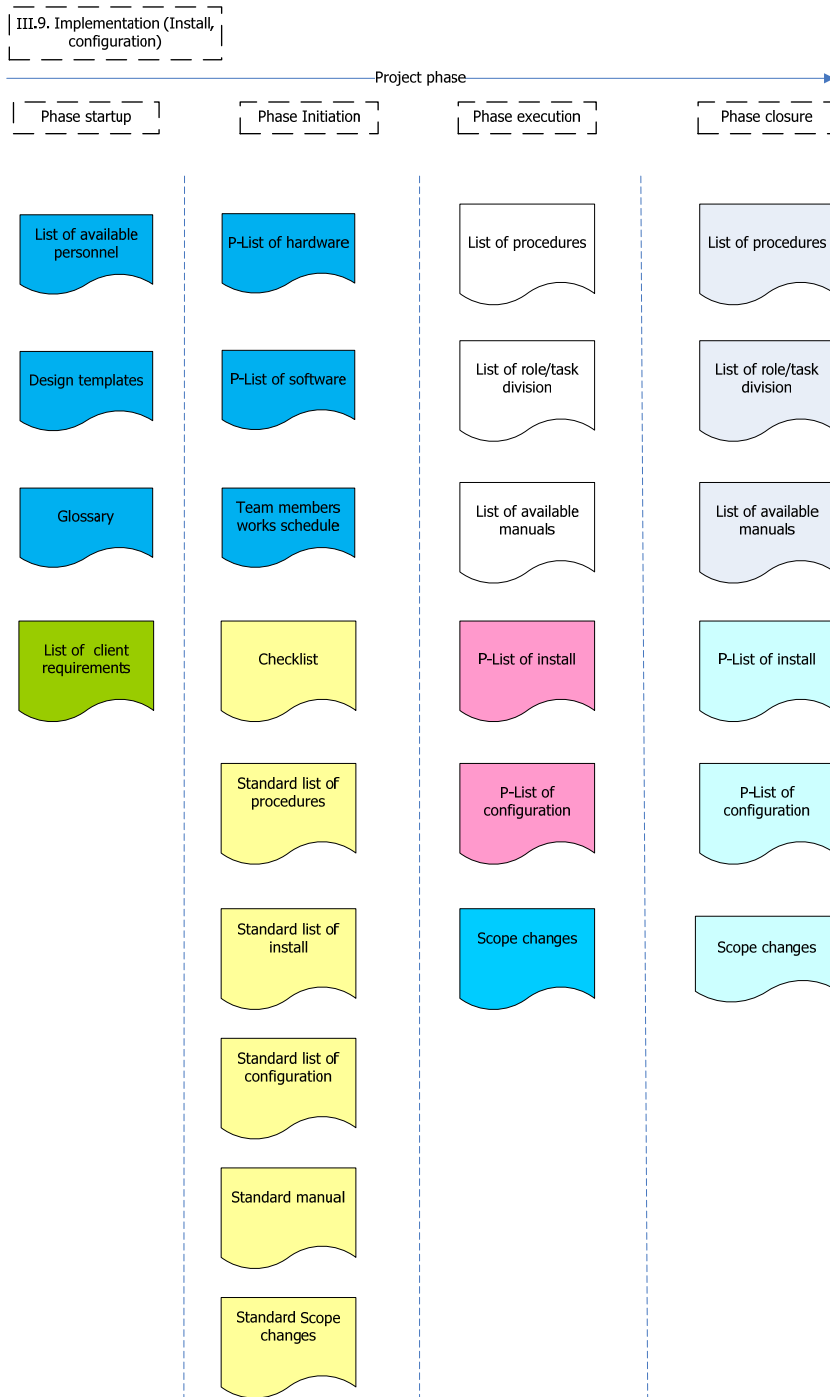
Appendix B8



Appendix figure 17: Document flow project engineering, BOM.



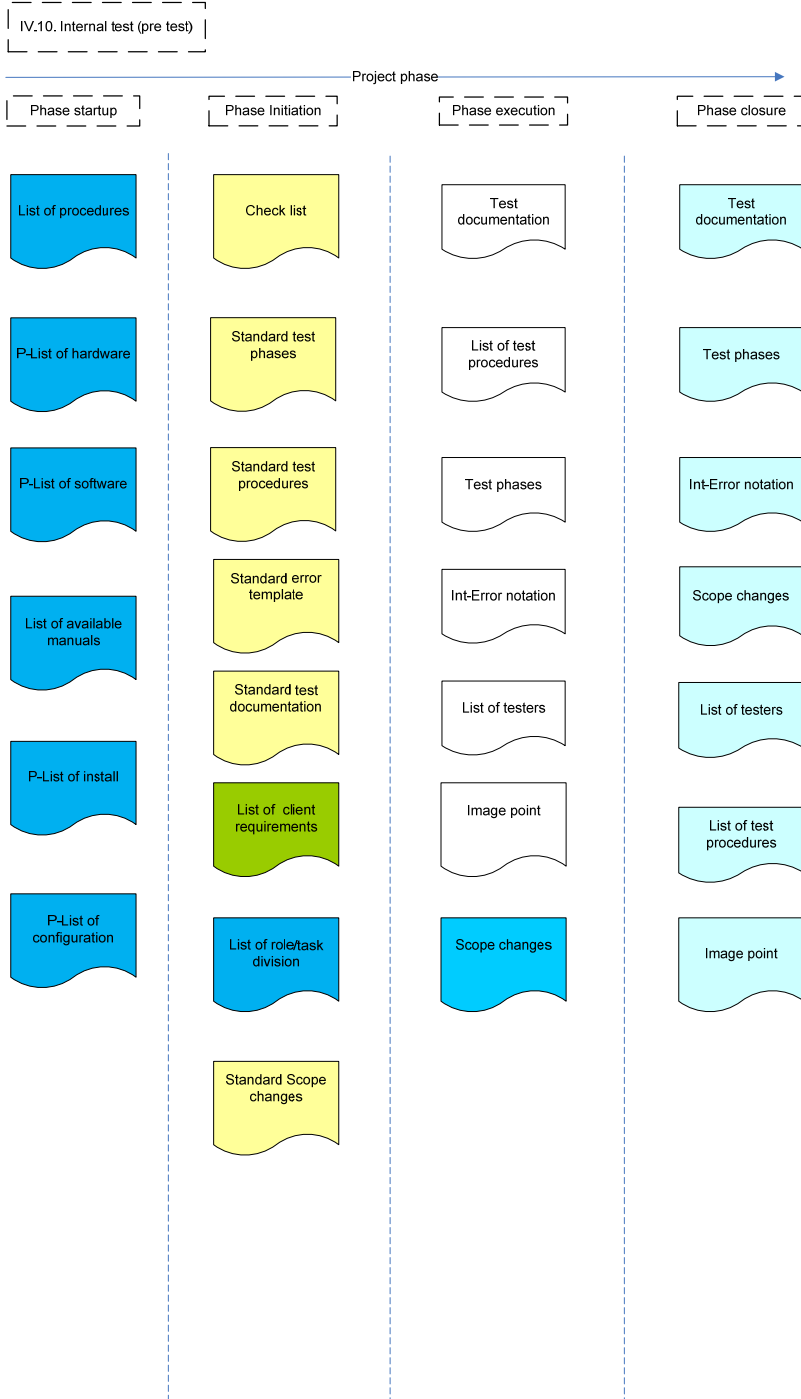
Appendix B9



Appendix figure 18: Document flow implementation, install, configuration.



Appendix B10

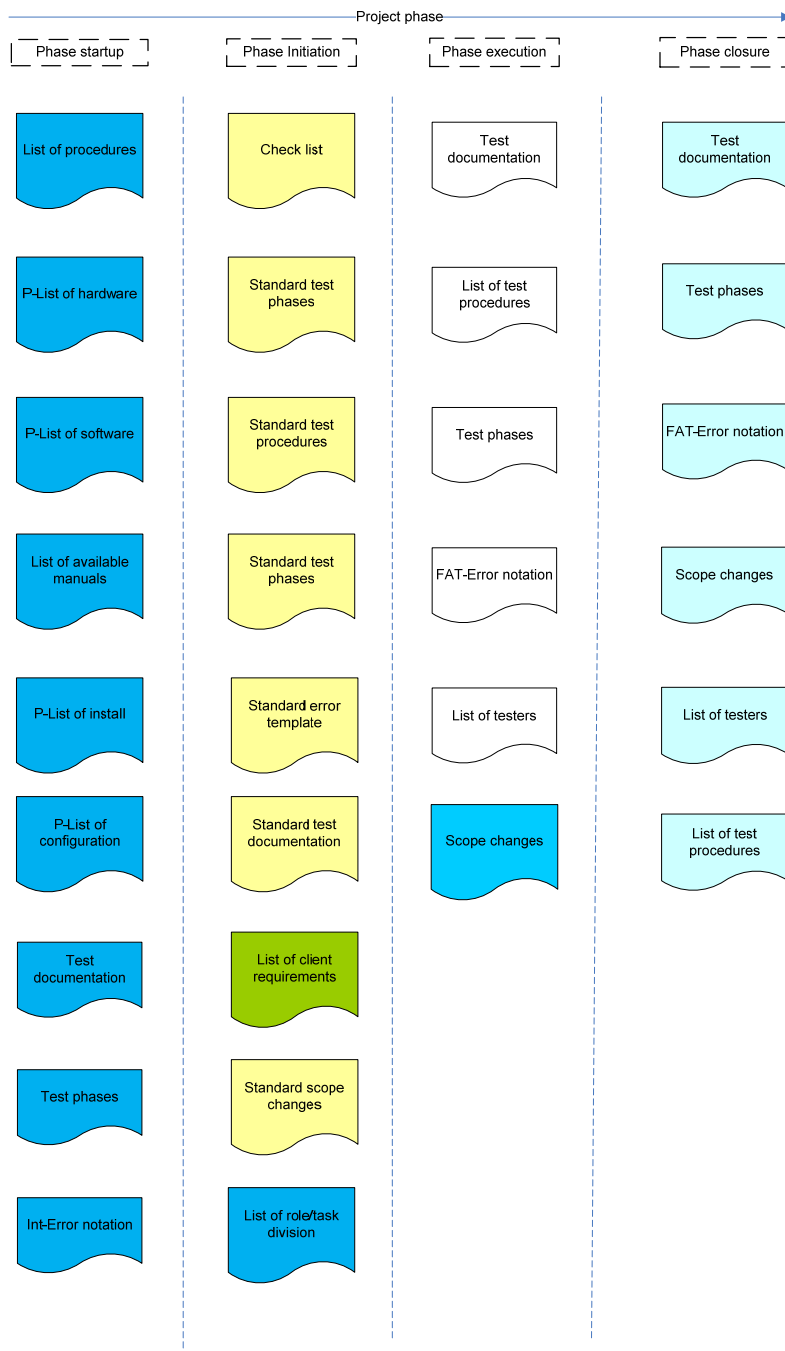


Appendix figure 19: Document flow internal test, pre test.



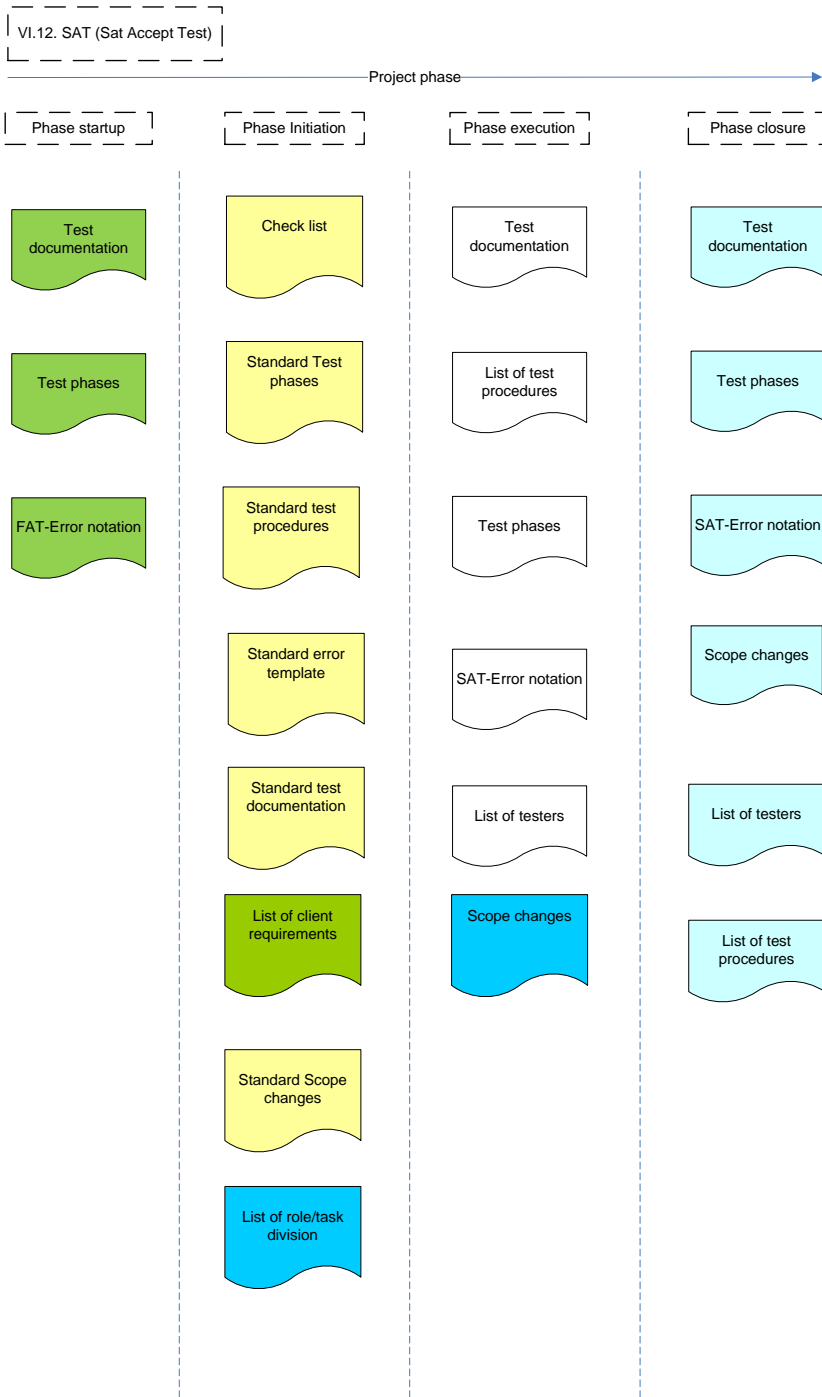
Appendix B11

V.11. FAT (factory accept test)



Appendix figure 20: Document flow FAT, factory accept test.

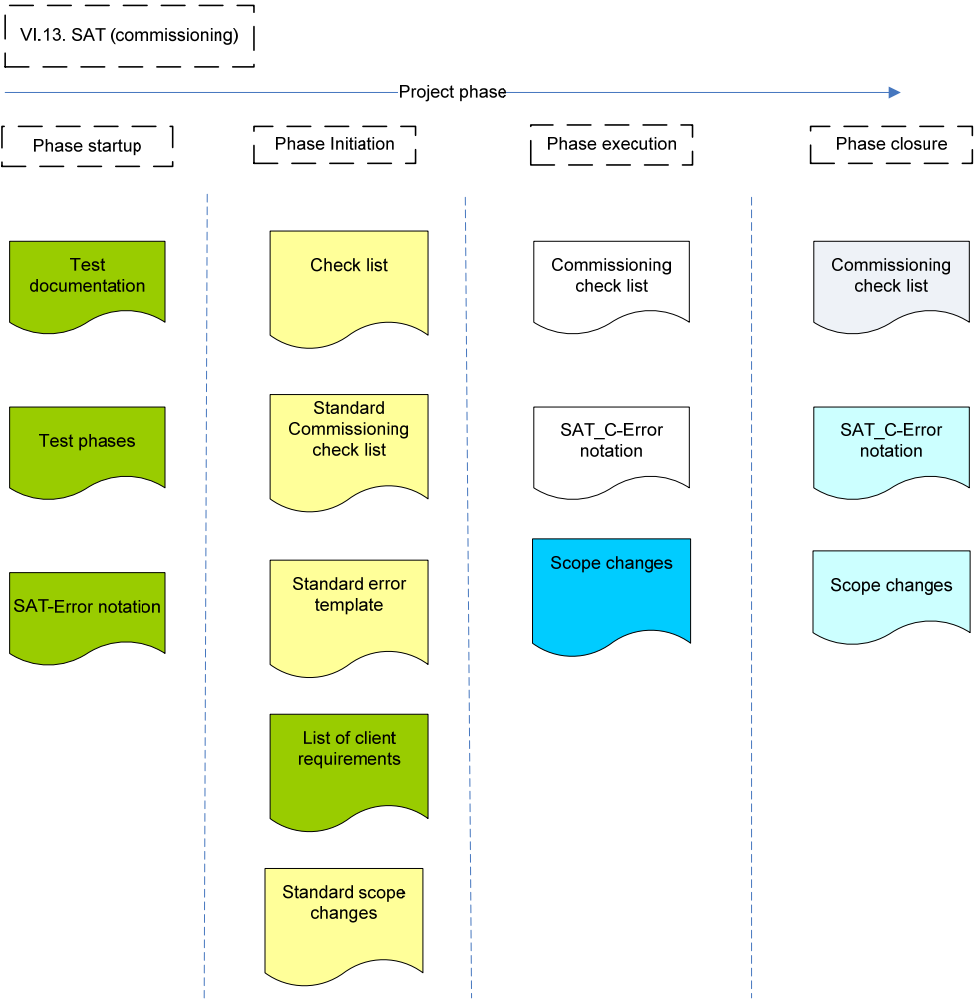
Appendix B12



Appendix figure 21: Document flow SAT, Site Accept Test.



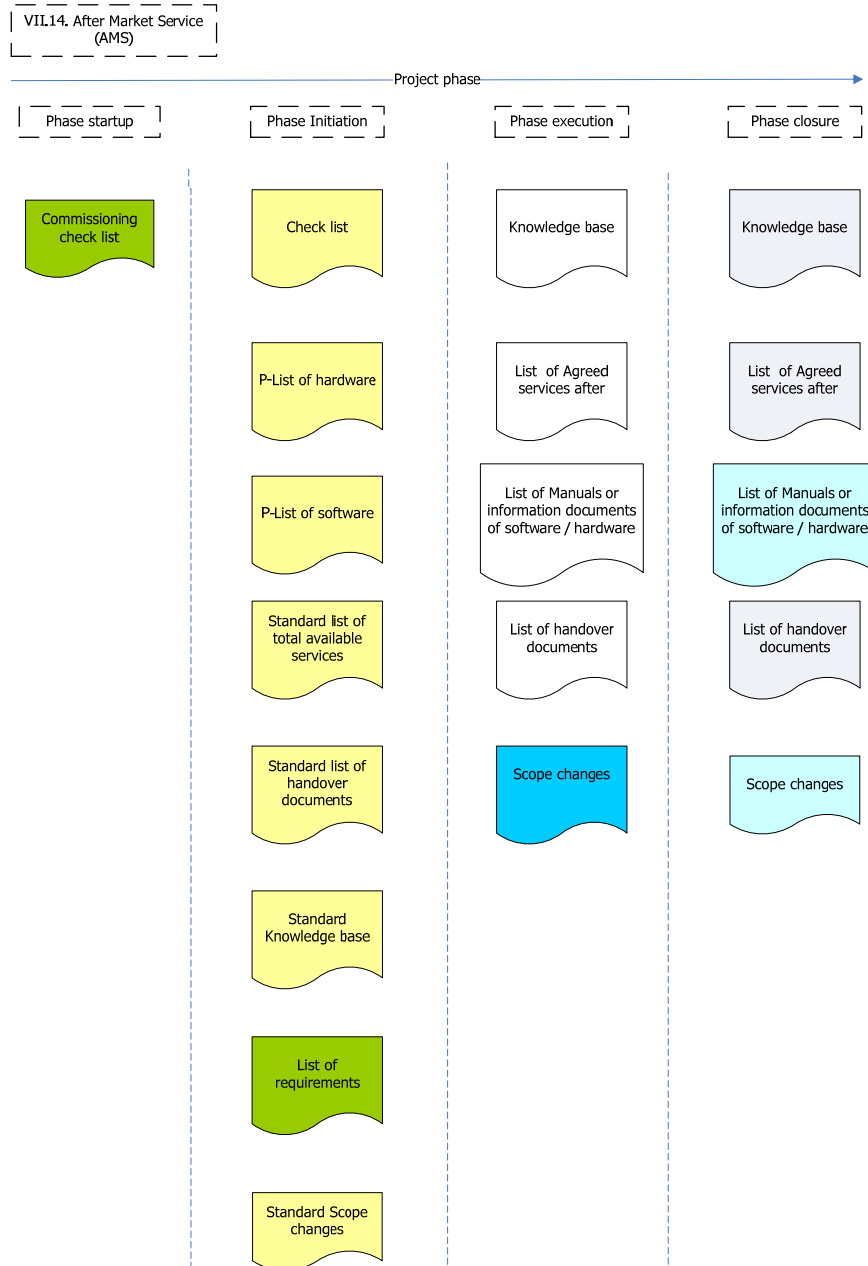
Appendix B13



Appendix figure 22: Document flow SAT, commissioning.



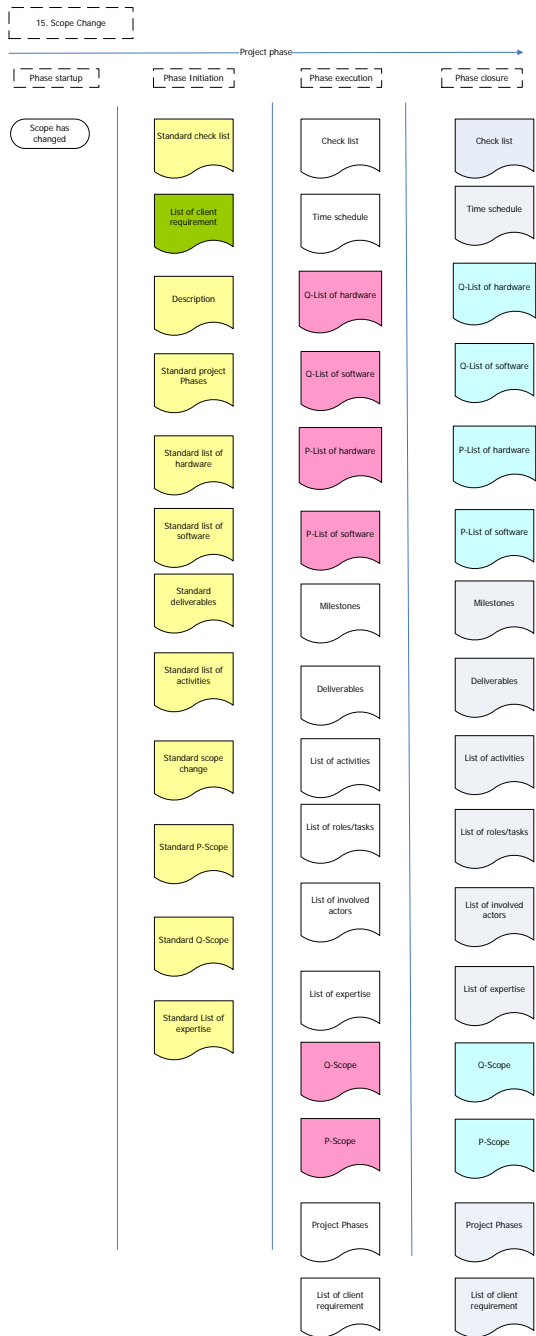
Appendix B14



Appendix figure 23: Document flow After Market Service, AMS.



Appendix B15

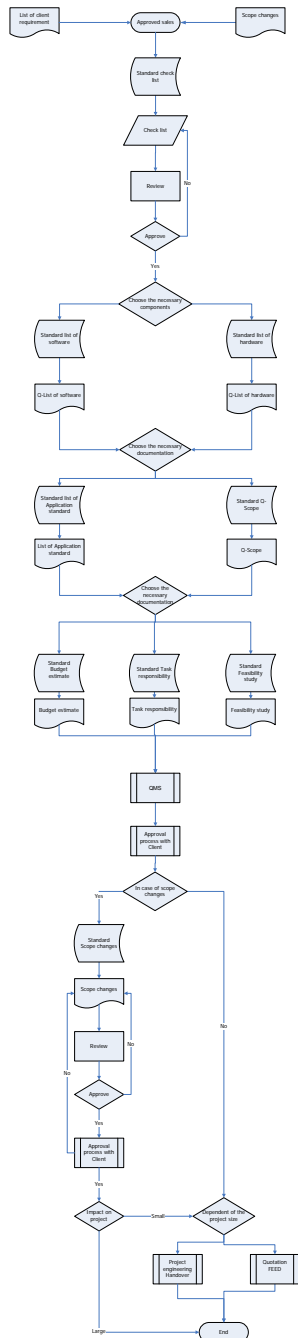


Appendix figure 24: Document flow Scope changes.



Appendix C

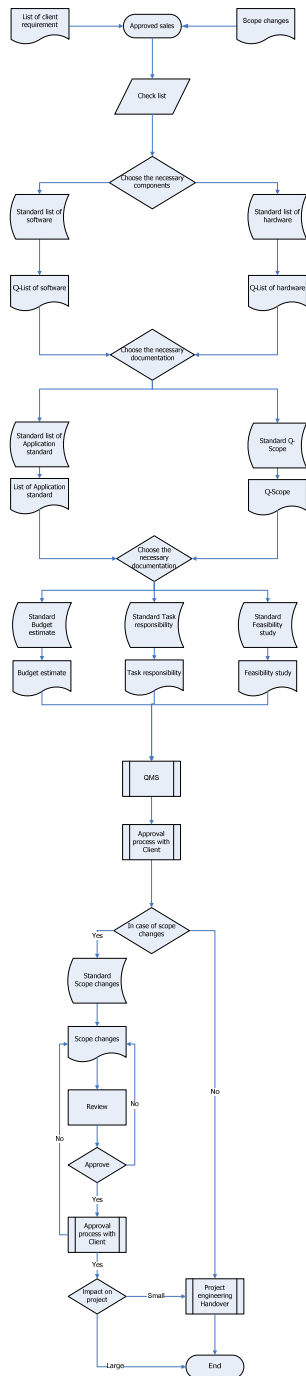
Appendix C1



Appendix figure 25: Process flow quotation, project deliveries.



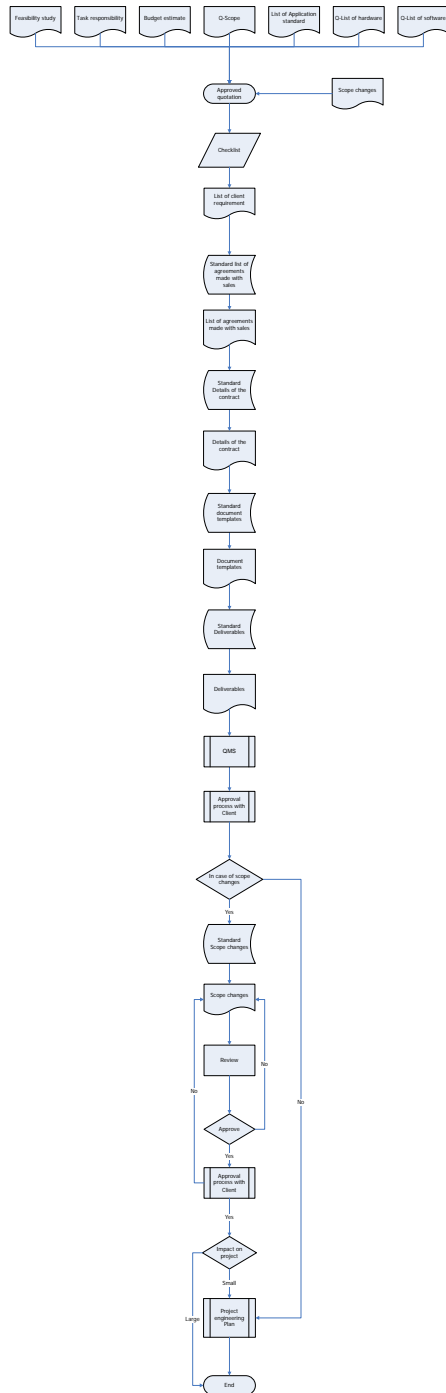
Appendix C2



Appendix figure 26: Process flow quotation, FEED.



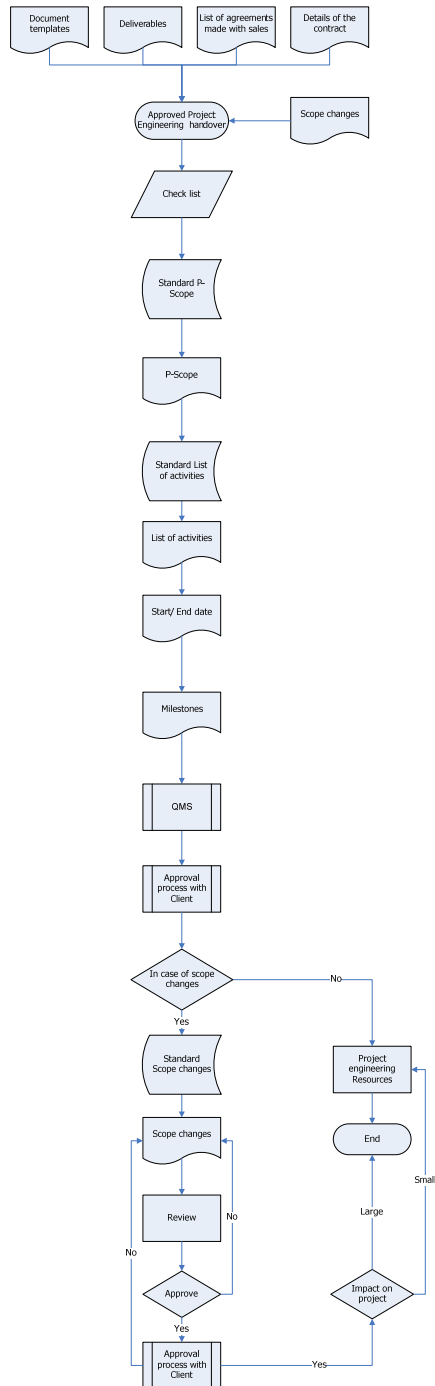
Appendix C3



Appendix figure 27: Process flow project engineering, handover.



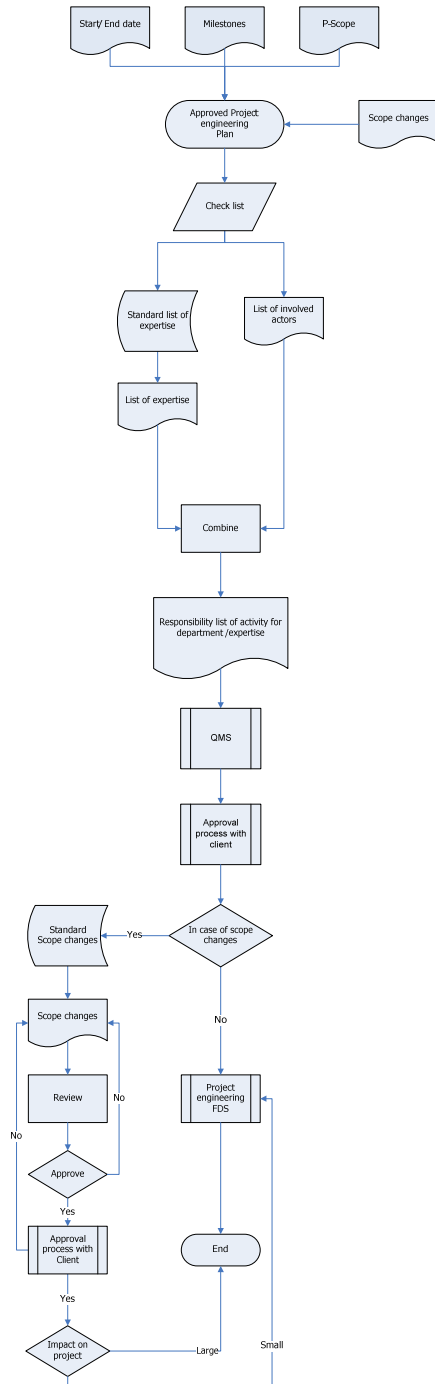
Appendix C4



Appendix figure 28: Process flow project engineering, plan.



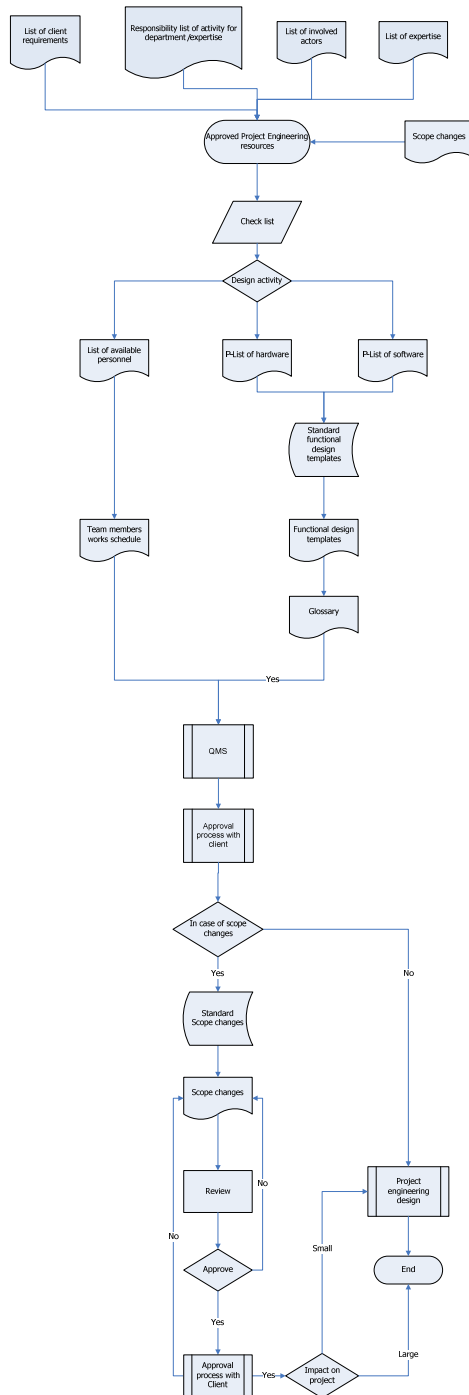
Appendix C5



Appendix figure 29: Process flow project engineering, resources.

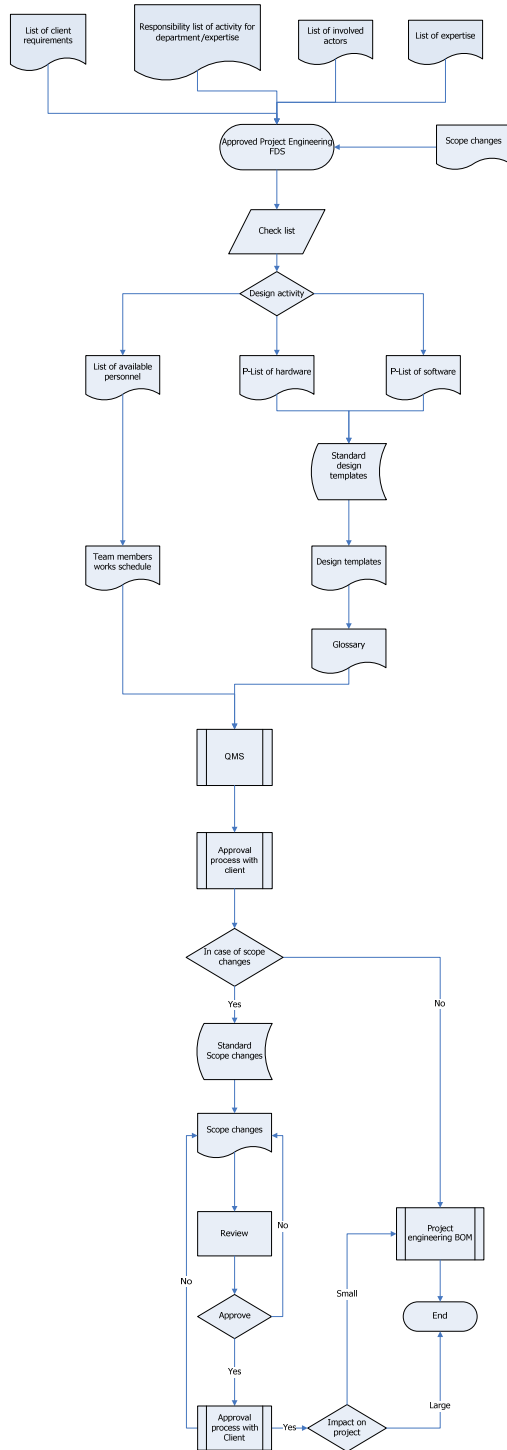


Appendix C6



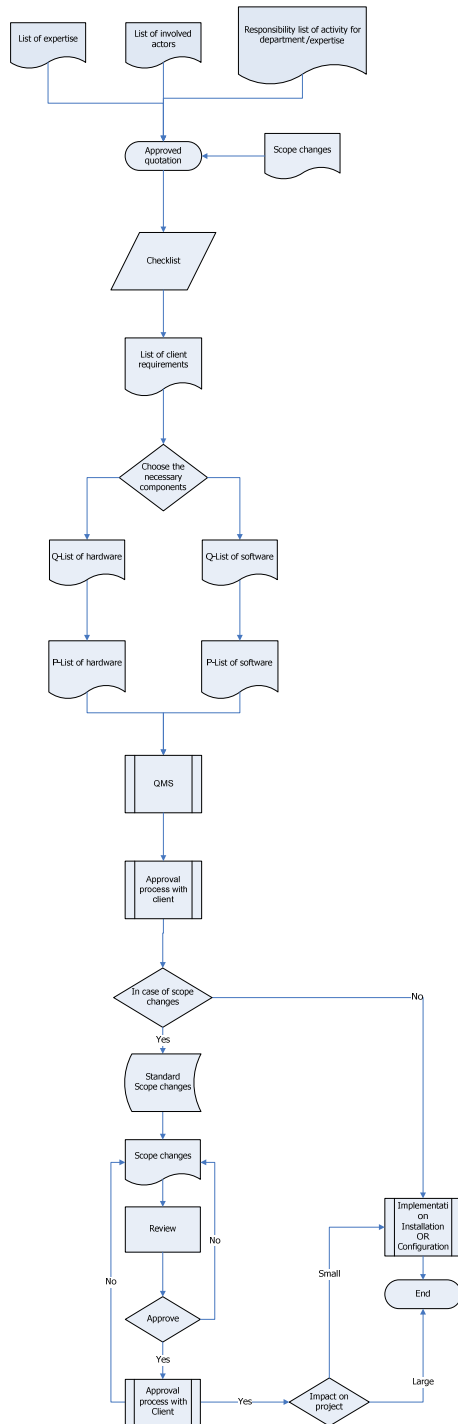
Appendix figure 30: Process flow project engineering, FDS

Appendix C7



Appendix figure 31: Process flow project engineering, design.

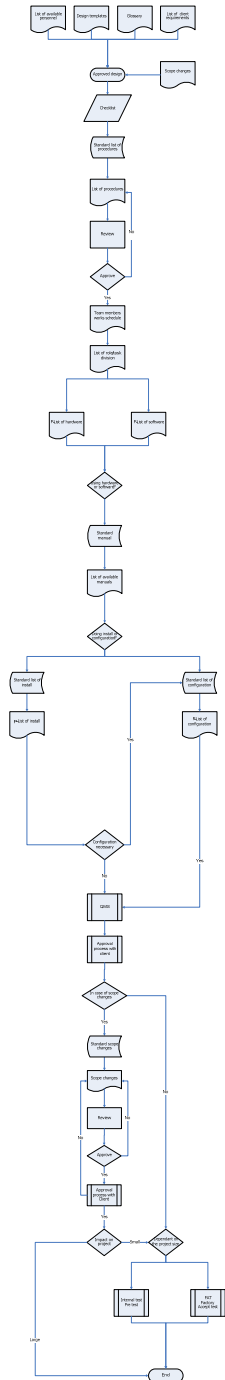
Appendix C8



Appendix figure 32: Process flow project engineering, BOM.

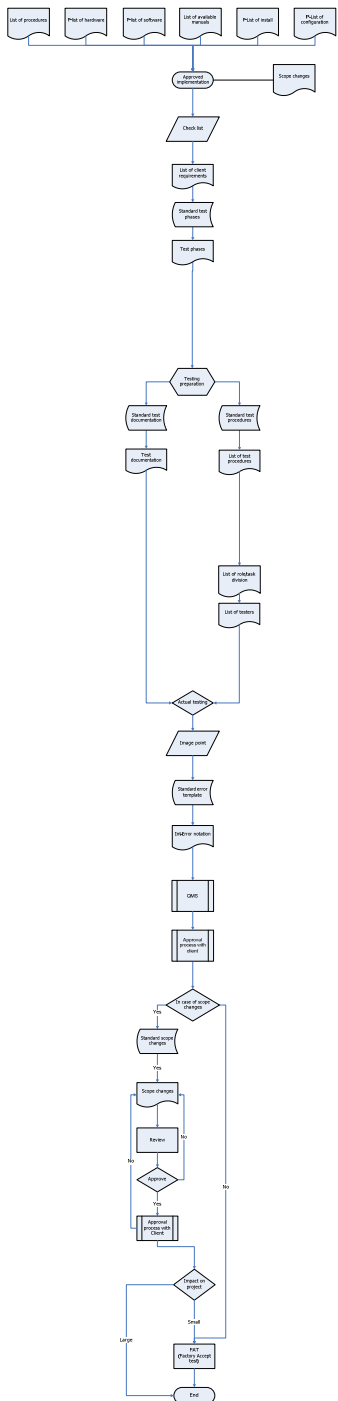


Appendix C9



Appendix figure 33: Process flow implementation, installation, and configuration.

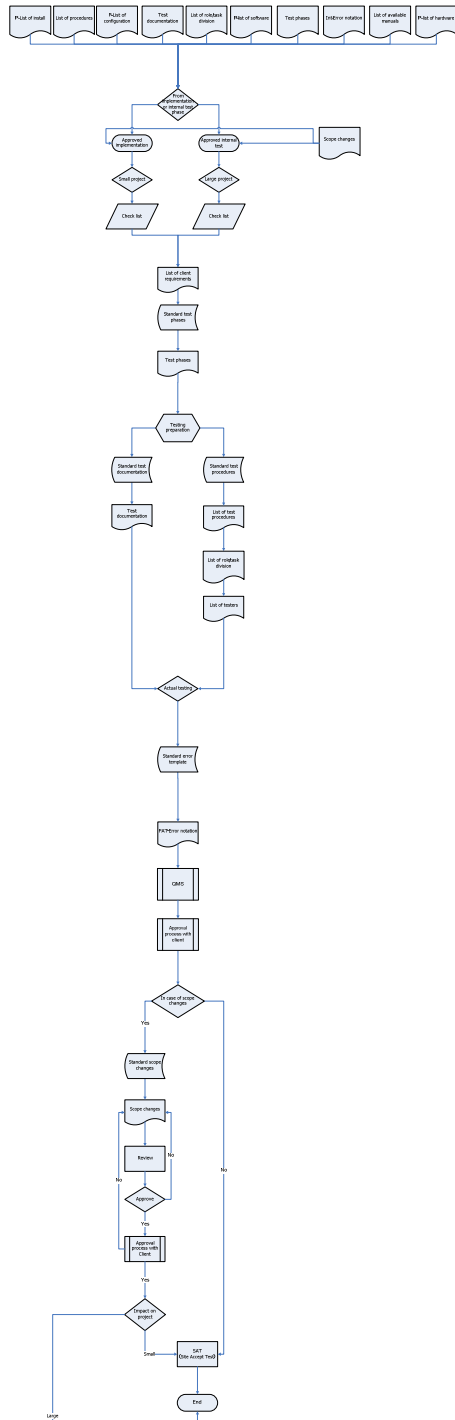
Appendix C10



Appendix figure 34: Process flow Internal test, pre test.



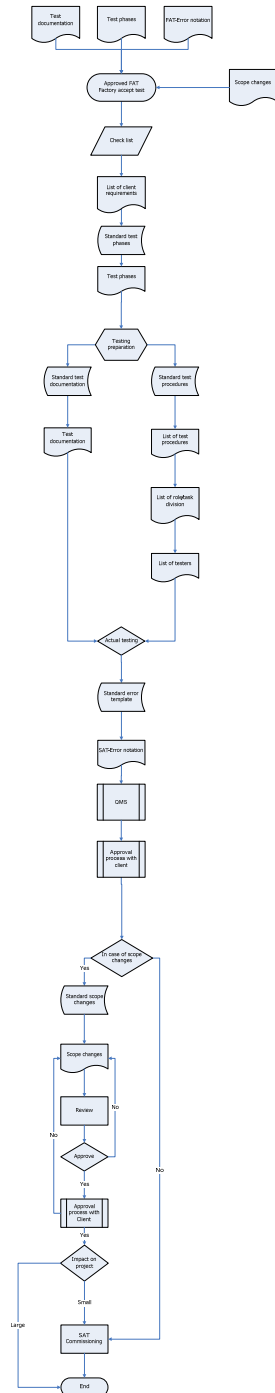
Appendix C11



Appendix figure 35: Process flow FAT, factory accept test.

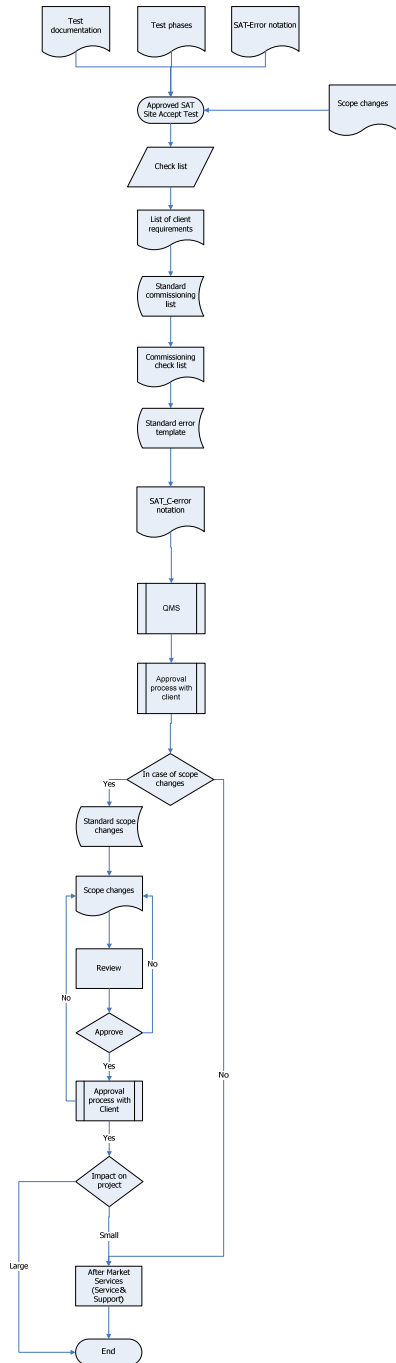


Appendix C12



Appendix figure 36: Process flow SAT, Site Accept Test.

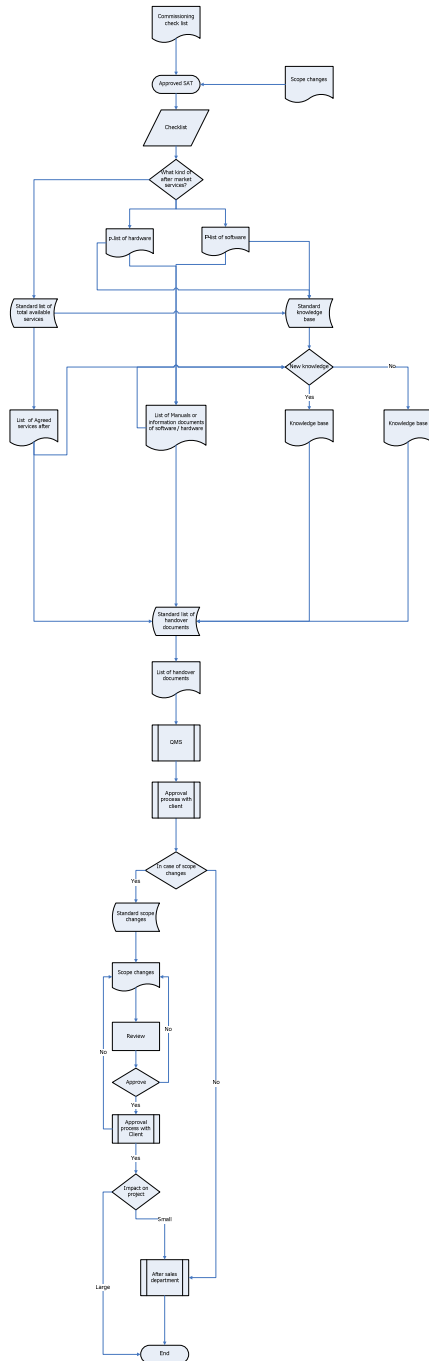
Appendix C13



Appendix figure 37: Process flow SAT, commissioning.

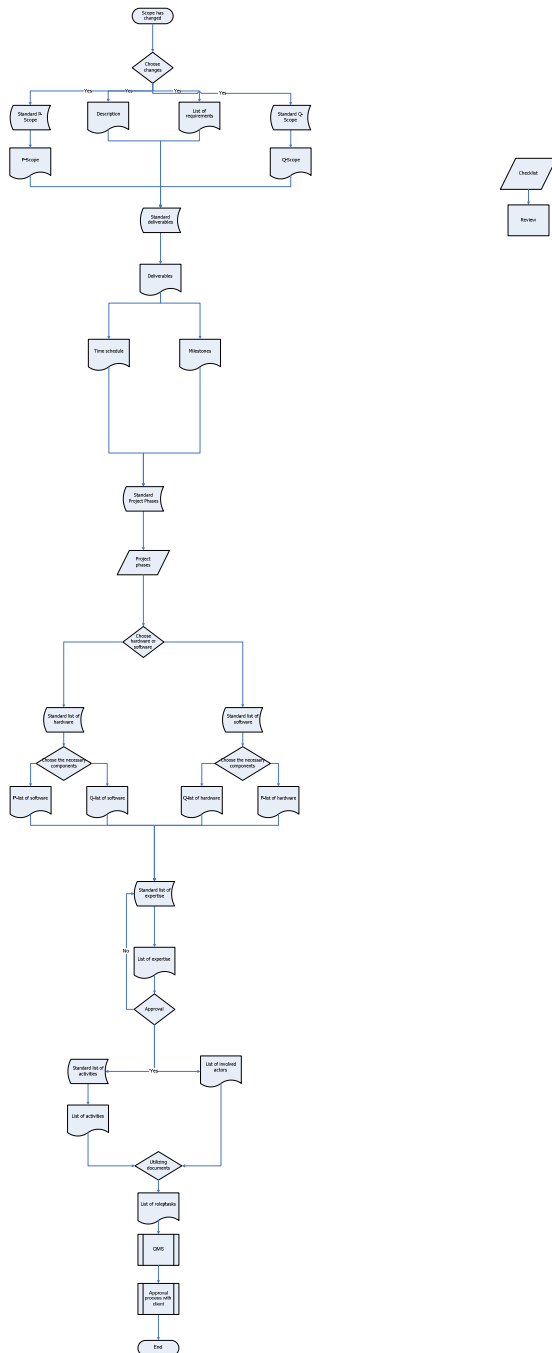


Appendix C14



Appendix figure 38: Process flow AMS, After market service.

Appendix C15



Appendix figure 39: Process flow Scope changes.



Appendix B

Detailed Level Requirements

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Master thesis project

Detailed level analysis of requirements

Honeywell B.V

&

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Faculty: Electrical Engineering, Mathematics and Computer Science,

Delft University of Technology

Status: 1.Delivered to be approved.

Version: 0.4

Date: August 2009



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1. Introduction

The detailed requirement document provides a design of the total infrastructure with its appropriated applications, services and business processes. In order to be able to provide such a design, it is necessary to visualize the viewpoint of the ArchiMate [1] Design process. These viewpoints will be elaborated in the coming chapters. Furthermore the documentation detailed will be described. The documentation details describe the information within the documentation for each project phase individually. By distinguishing this information, determining the future templates of each project phase is made easy. Last but not least the policies regarding various way of working, share, storage and templates is determined.

2. Goal & scope

The goal of this report is to provide a design of the enterprise architecture for the OSS Team [2] using ArchiMate [1] viewpoints which are essential for the OSS Team. These viewpoints, which can be viewed in chapter 4, show the blue print and the relationship between various layers and inter layers.

After a few extensive meetings, it is clear that custom made solutions are out of the question. Therefore the design that we are creating must be either an off the shelf solution or a best of breed solution. This also means that our design path is guided by these last two solutions.

Furthermore there is a need for determining the information of the documentations and policies by which each OSS Team member has to be obliged to, in order to work in an effective and efficient way.

3. General ArchiMate viewpoints

Due to the involvement of various actors and stakeholders within an enterprise, there is a need for distinguishing the architecture description in order to establish a coherent architecture. First there is a need to classify the viewpoints from the point of view of the actors. For these purpose three distinctions is made namely see Figure 1:

1. Designing:
Design viewpoints support architects and designers in the design process. Those involved are e.g.: Architects, Software developer, Designers.
2. Deciding:
Decision viewpoints assist managers in the process of decision making. Those involved are e.g.: Product manager, CEO.
3. Informing:
These viewpoints inform the stakeholders regarding the enterprise architecture. Those involved are e.g.: Customer, Employee [3] [1].

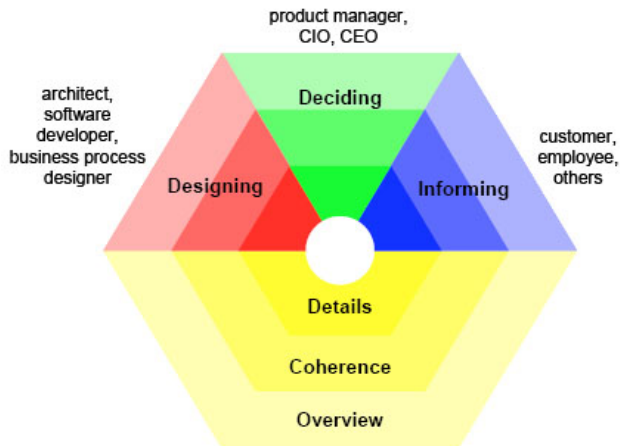


Figure 48: Classification framework for viewpoints [3].

After having classified the view of the viewpoint, it is necessary to characterize the content of the views. This characterization also regards the ArchiMate framework [3] see Figure 2. Three distinctions have been made namely see Figure 1:

1. Details:
Views typically focus on one layer and aspect of the ArchiMate framework.
2. Coherence:
The focus is on either multiple layers or multiple aspects to point out the architecture relations or application usage.
3. Overview:
The focus is to addresses both multiple layers and aspects to present an overview.

Environment

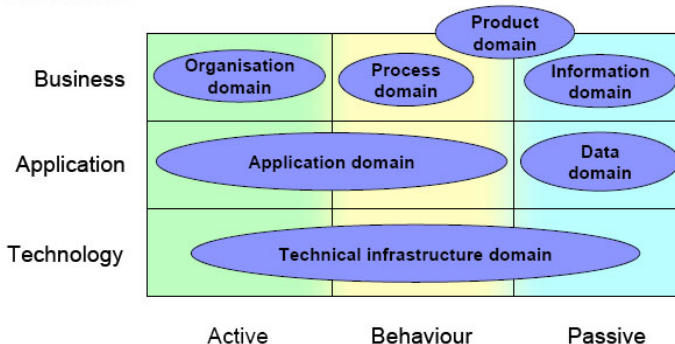


Figure 49: ArchiMate Framework [3].

In order to be able to determine which viewpoints are necessary to design the enterprise architecture, two choices have to be made. First the actor and second the characterization of the content. In the case of the OSS Team [2] the choice has been made to view at the situation from the eye of designers and for characterization all layers will be designed. However a comment would be in place to state that the detailed level will not contain the UML schematics of the applications. The reason for this choice is due to the fact that the OSS Team will not use a custom build solution as their choice for enterprise architecture [4] The ArchiMate framework [3], see Figure 2, can be further dissected into the following views for more detailed viewpoints namely:

1. Composition viewpoints see Figure 3.

2. Cooperation viewpoints see Figure 4.
3. Support viewpoints see Figure 5.
4. Realization viewpoints see Figure 6.

These viewpoints will be elaborated later on in the report.

Each viewpoint is divided into a matrix. The rows of the matrix consist of the three layer architecture of the ArchiMate [5] [6] [1] [3] namely:

1. Business layer.
2. Application layer.
3. Technology layer.

The columns of the matrix are a specified type of concept namely:

1. Active elements.
The active structure elements are the subjects. These are the business actors, but it can also be the application components and devices that would start using behaviour.
2. Behaviour elements.
The behaviour element can be seen as a verb. It describes the dynamic part of the system. It defines the actions what will and what should be done.
3. Passive elements.
The passive structure elements are the objects on which behaviour is performed. In this aspect, data objects information objects are meant.

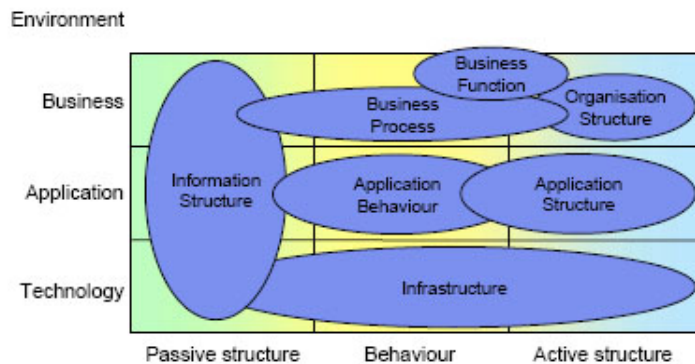


Figure 50: Composition viewpoint [3].

The composition viewpoint consists of the following viewpoints:

- Business function,
- Business process
- Organisation structure,
- Information structure,
- Application behaviour,
- Application structure,
- Infrastructure.

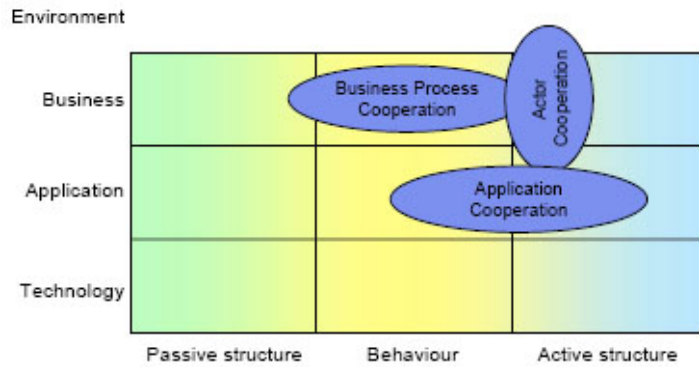


Figure 51: Cooperation viewpoint [3].

The cooperation viewpoint consists of the following viewpoints:

- Business process cooperation,
- Actor cooperation,
- Application cooperation.

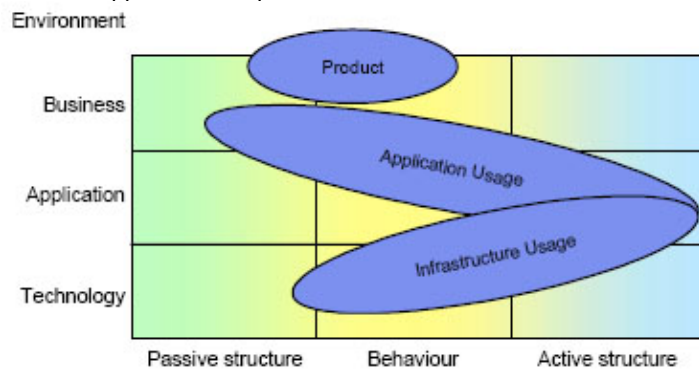


Figure 52: Support viewpoint [3].

The support viewpoint consists of the following viewpoints:

- Product,
- Application usage,
- Infrastructure usage.

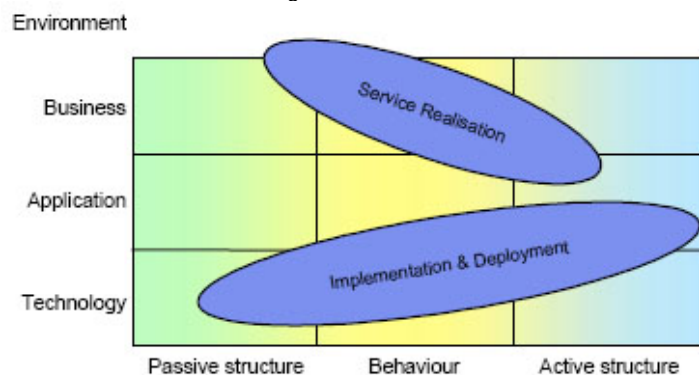


Figure 53: Realization viewpoint [3].

The realization viewpoint consists of the following viewpoints:

- Service realization,
- Implementation and deployment.

There are no right and wrong combination of these viewpoints. Neither is there a compulsory set of viewpoints which has to be designed in order to be able to design the enterprise architecture. Through the choice of the actor and the viewpoints, the designer can choose which viewpoints are most qualified to provide a design of the enterprise architecture. Hence various combinations of the views is possible [1] [3]. Further on the viewpoints will be elaborated in order to describe their differences.

3.1 Design viewpoints

Introductory Viewpoint

The introductory viewpoint gives a typical illustration of the design, providing only little details which make it also understandable for non-architects. Other reasons for providing minimal details in this starting point is not to give the impression that everything is already fixed.

Organisation Viewpoint

The organisation viewpoint shows the structure of the organisation. Also competencies, responsibilities and authority of the enterprise is shown and identified [3].

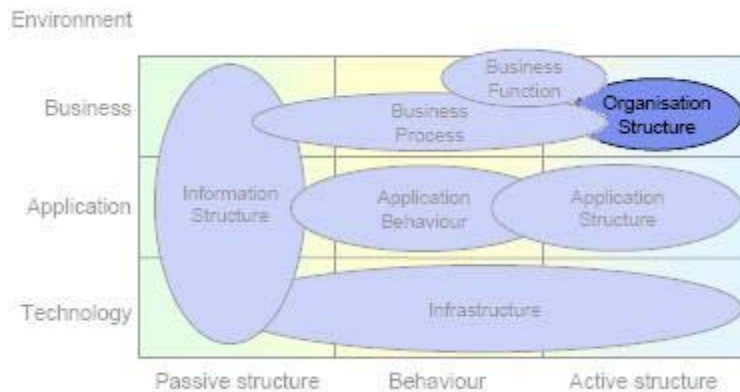


Figure 54: Organisation viewpoint [3].

As shown in Figure 7, the organisation viewpoint belongs to business layer and active structure element.

Business Function Viewpoint

The business function viewpoint identifies the essential activities and its business units. By reducing complexity the main business function of an organisation will be determined [3].

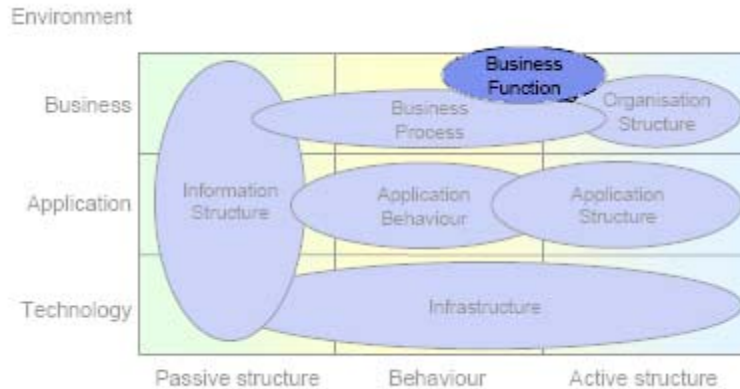


Figure 55: Business function viewpoint [3].

As shown in Figure 8, the business function viewpoint belong to business layer and behaviour, active structure element

Business Process Viewpoint

The business process viewpoint shows the structure of the business processes. By showing the consistency and completeness of the business processes the responsibilities will be elaborated.

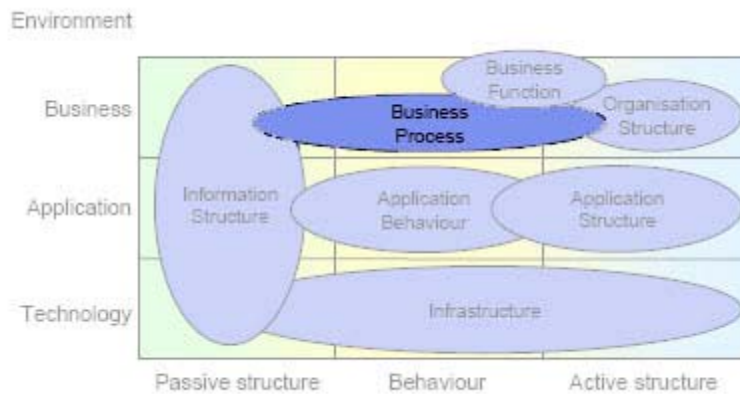


Figure 56: Business process viewpoint [3].

As shown in Figure 9, the business process viewpoint belongs to business, application layer and behaviour, active, passive structure element.

Information Structure Viewpoint

The information structure viewpoint shows how information is used within an enterprise or a specific business process or application.

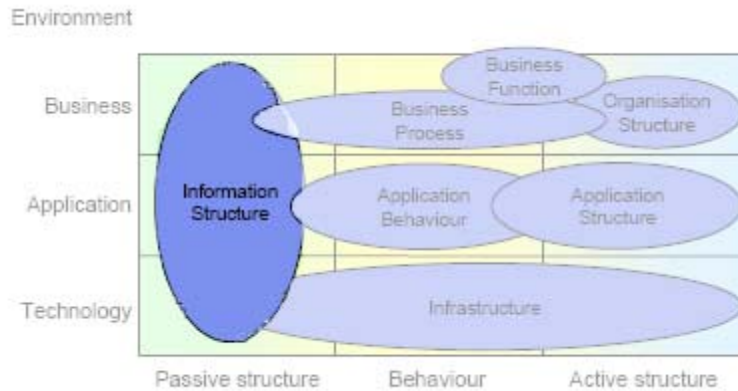


Figure 57: Information structure viewpoint [3].

As shown in Figure 10, the information structure viewpoint belongs to the passive structure element.

Application Structure Viewpoint

The application structure viewpoint shows the main structure of the application and hence helps to reduce the complexity.

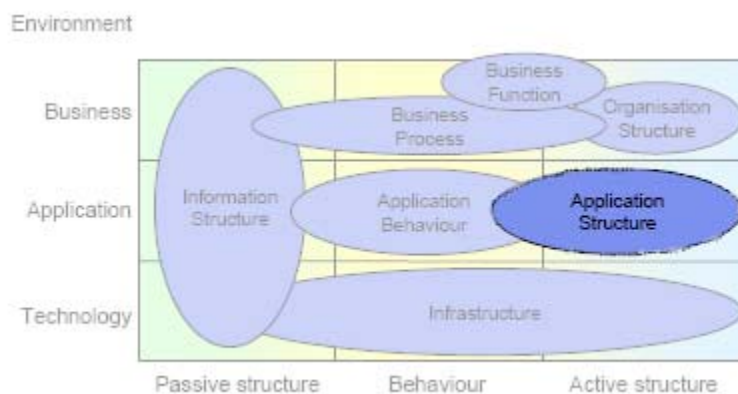


Figure 58: Application structure viewpoint [3].

As shown in Figure 11, the application structure viewpoint belongs to the application layer and active, passive structure element.

Application Behaviour Viewpoint

Application behaviour viewpoint describes the behaviour of an application or component.

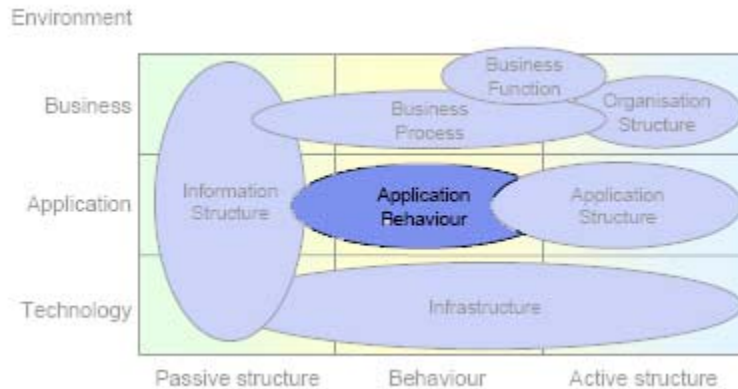


Figure 59: Application behaviour viewpoint [3].

As shown in Figure 12, the application behaviour viewpoint belongs to the application layer and overlaps the passive structure, and the behaviour elements.

Infrastructure Viewpoint

The infrastructure viewpoint shows the hardware and the software upon which the application layer resides on.

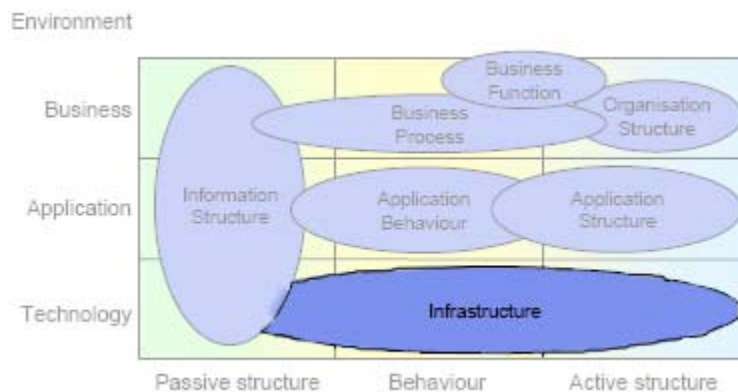


Figure 60: Infrastructure viewpoint [3].

As shown in Figure 13, the infrastructure viewpoint belongs to the technology layer and behaviour, active structure element.

Actor Cooperation Viewpoint

The relation of the actors among each other and with their environment is being described. Environment is meant the external parties such as customers, and business partners.

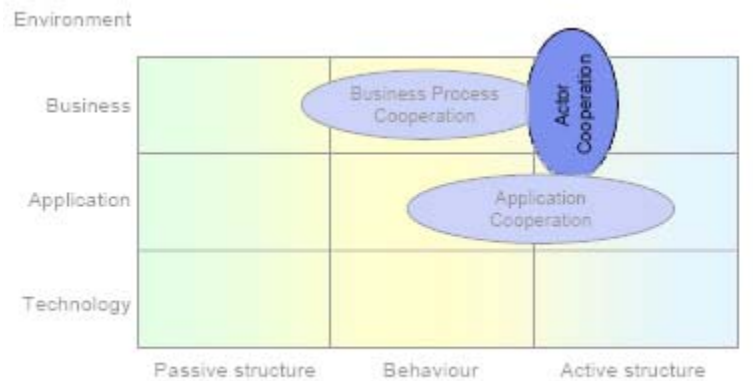


Figure 61: Actor cooperation viewpoint [3].

As shown in Figure 14, the actor cooperation viewpoint belongs to the business layer and the active structure element.

Business Process Cooperation Viewpoint

The business process cooperation viewpoint shows the cooperation of the various business processes with each other and their surrounding environment.

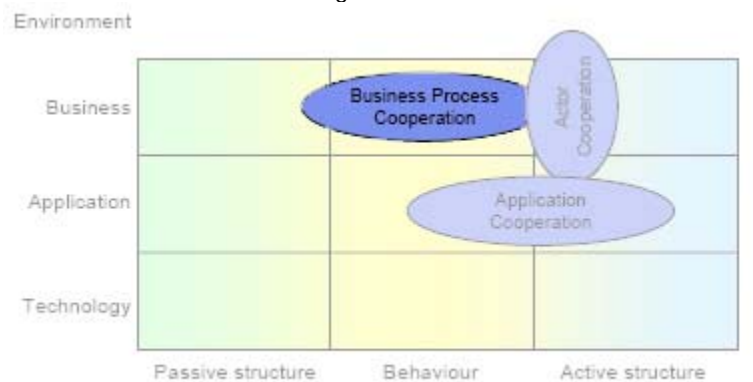


Figure 62: Business process cooperation viewpoint [3].

As shown in Figure 15, the business process cooperation viewpoint belongs to business, application layer and behaviour, active, passive structure element.

Application Cooperation Viewpoint

Relations between applications are elaborated in this viewpoint. It describes the dependencies of information flows between the applications or the offered services. This viewpoint is suitable for providing the application landscape of an organization.

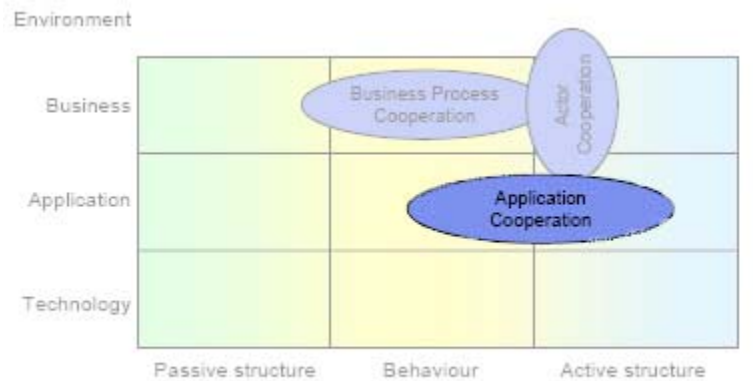


Figure 63: Application cooperation viewpoint [3].

As shown in Figure 16, the application cooperation viewpoint belongs to the application layer and overlaps the behaviour and active structure elements.

Product Viewpoint

The product viewpoint shows the value of the product toward the client.

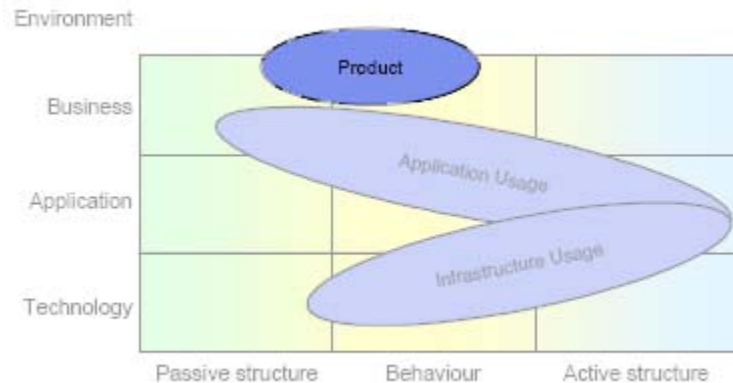


Figure 64: Product viewpoint [3].

As shown in Figure 17, the product viewpoint belongs to business, application layer and behaviour, active structure element.

Application Usage Viewpoint

Application usage viewpoint shows how applications are used to support the business processes. It also shows how applications can be used by each other.

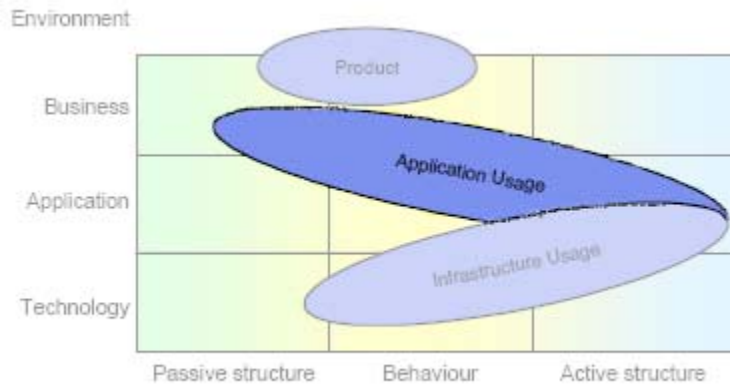


Figure 65: Application usage viewpoint [3].

As shown in Figure 18, the application usage viewpoint belongs mainly to the application layer and overlaps the passive structure, the behaviour and active structure elements.

Infrastructure Usage Viewpoint

The infrastructure usage viewpoint shows how the software and hardware and their support for the applications.

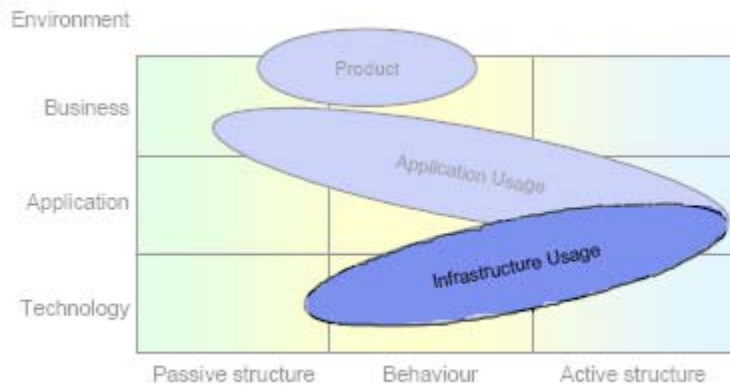


Figure 66: Infrastructure usage viewpoint [3].

As shown in Figure 19, the infrastructure usage viewpoint belongs to the application, technology layer and to active, behaviour structure element.

Service Realization Viewpoint

In this viewpoint it will be shown how the business services are realized by the underlying processes and sometimes by the underlying application components as well.

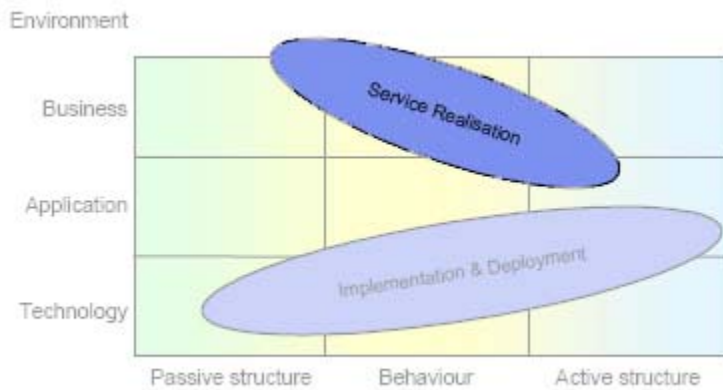


Figure 67: Service realization viewpoint [3].

As shown in Figure 20, the service realization viewpoint belongs to the business layer and the behaviour structure element.

Implementation & Deployment Viewpoint

Here the (logical) applications are described how to be mapped to (physical) artefacts. Thus showing how applications are deployed on the infrastructure.

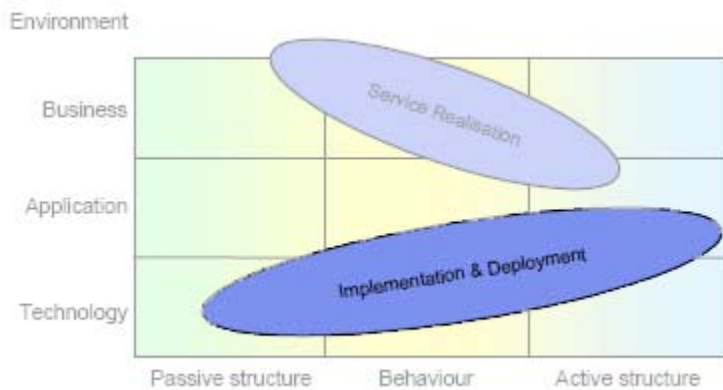


Figure 68: Implementation and deployment viewpoint [3].

As shown in Figure 21, implementation and development viewpoint belongs mainly to the technology layer and overlaps the passive structure, the behaviour and active structure elements.



4. Selected ArchiMate viewpoints

In previous chapter all the design views are given in order to provide a general understanding for the reader. As previously mentioned a selection of these viewpoints is needed to provide a design of the enterprise architecture. This selection is privileged to the choice of the designer. In the case of OSS Team, the designer chose the following viewpoints for the purpose of detail design.

The business layer:

- Actor cooperation,
- Business process viewpoint.

The application layer:

- Information structure,
- Application cooperation,
- Application usage,
- Application structure viewpoint.

The technology layer:

- Infrastructure,
- Infrastructure usage viewpoints.

An elaboration is at its place. The designer chose these viewpoints due to two reasons in particular. First the business processes of the OSS Team were already defined so there is no need for reinventing the wheel once it's invented. The second reason behind this selection is that the focus is on application integration and realization, this in order to improve the way of working and less frustration.

Before heading towards the description of the viewpoints first a set of definitions should explain the meaning of terms used for the drawing of the viewpoints.

- Actor:
Actors are the users. These users can have either direct or indirect contact with the system. Their use of the system is dependent of their limitation.
- Process:
By processes is meant the work flow by which a certain task must be performed.
- Service:
Service can be defined in a very broad way. However in this case the use of service is to provide a useful aid for assisting a user's demand for certain needed functionality for accomplishing his/her work.
- Application:
Application is the actual program by which a task can be performed. For example MS Word is such an application.
- Infrastructure:
Infrastructure consists of the hardware and software elements that is supporting the applications.



4.1 Business layer

4.1.1 Actor Cooperation Viewpoint

As shown in Appendix A1 the actor cooperation viewpoint displays which actors are involved and their relationship with each other.

Table 26: Actor cooperation.

Name	Description	Function	Function description	Relationship (Aggregation (originates))	Relationship description
Client	The customer	Role	The role of actor is fulfilled by a group of stakeholders.		
OSS Team	OSS Team located at Honeywell [2].	Actor	The main actor who is also the main stakeholder.		
Sales After sales	Department	Role	The role of actor is fulfilled by a group of stakeholders.		
Negotiation Contracting Project handover Project design Project handover to support	These are the tasks that the actor performs in cooperation of each other.	Collaboration	The collaboration describes in which manner the actors will be dealing with each other.	Client, Sales	The aggregator could have more than 1 relation with other subjects. However these processes will exist but not start without either of the aggregators.
				Client, Sales	
				OSS Team, Sales	
				OSS Team	
				OSS Team, After sales	

4.1.2 Business Process Viewpoint

In the business process viewpoint the business functions with their own business processes are illustrated. In Appendix A2 the overall view of this viewpoint is shown. Full details of the business processes will not be given. This is already discussed in the phase of the high level requirements documents.



Table 27: Business process.

Business function	Description	Business process	Description
Template management	In order to create documents rapidly, guiding pieces in documents containing references among other information are required.	<ol style="list-style-type: none"> 1. Receive template request. 2. Search. 3. Add. 4. Edit. 5. Store. 6. Inform. 	<ol style="list-style-type: none"> 1. Getting a request for an action in the template management system. 2. Look up for a template. 3. Add a new template. 4. Edit a template. 5. Save a template in the database. 6. Consult the information's contained in a template document.
Document management	Documents are being created based on templates. Documents can be handled to the according business processes.	<ol style="list-style-type: none"> 1. Receive new document request. 2. Edit. 3. Store. 4. Request status register. 5. Inform. 6. Search. 	<ol style="list-style-type: none"> 1. For creating a new document. 2. Edit documents. 3. Save documents. 4. To see in what status a document is. 5. Consult a document. And indicate which document is the latest version. 6. Look up for a document.
Knowledge management	All gained knowledge which are relevant must be saved for consulting.	<ol style="list-style-type: none"> 1. Receive. 2. Edit. 3. Store. 4. Add. 5. Search. 6. Inform. 	<ol style="list-style-type: none"> 1. Processing knowledge inquiry requests. 2. Edit a piece of existing knowledge. 3. Save knowledge in database. 4. Add new knowledge. 5. Look up for knowledge. 6. Consult a piece of knowledge. And notify what the most recent knowledge is.
Monitoring	To observe the state of the (document) system.	<ol style="list-style-type: none"> 1. Status register 2. Status view 3. Status update 	<ol style="list-style-type: none"> 1. Record status. 2. To see what the status is. 3. Renew status.
Approval	It is compulsory to check each delivered document. First a review is done, then an approval process decides whether it will be accepted or not.	<ol style="list-style-type: none"> 1. Receive review request. 2. Review performed. 3. Receive approval request. 4. Accept approval. 5. Reject approval. 6. Inform client approval request. 	<ol style="list-style-type: none"> 1. Inquire a review for a document. 2. Review is being done. 3. Inquire an approval for a document. 4. Document is accepted. 5. Document is rejected. 6. Indicate if a document is reviewed and/or accepted.



Table 2: Business process.

Business function	Description	Business process	Description
CRM	Organized client information for supporting client-OSS Team alignment.	<ol style="list-style-type: none"> 1. Receive client information. 2. Inform client information. 	<ol style="list-style-type: none"> 1. Getting client information. 2. Inquire client information.
Resource handling	Distributing man hours for project. And for overview of available man hours.	<ol style="list-style-type: none"> 1. Receive employee information request. 2. Update employee information. 3. Inform employee information. 	<ol style="list-style-type: none"> 1. Inquire employee information. 2. Modify employee's information with the latest data. 3. Consult.
HW, SW handling	Distributing HW and SW for project.	<ol style="list-style-type: none"> 1. Receive HW, SW information request. 2. Update HW,SW information. 3. Edit. 4. Store. 5. Search. 6. Add. 7. Inform HW, SW information. 	<ol style="list-style-type: none"> 1. Inquire information for HW or SW. 2. Modify HW or SW information with the latest data. 3. Edit HW or SW document 4. Save HW or SW document. 5. Look up a HW or SW document. 6. Add new HW or SW document. 7. Consult HW or SW document. And indicate the latest versions.
Handover handling	Dealing with handover of a project to the client.	<ol style="list-style-type: none"> 1. Receive handover information request. 2. Inform handover information. 	<ol style="list-style-type: none"> 1. Inquire handover information. 2. Consult handover information and indicate what the latest status is.
Activity handling	Dealing with activity during project life cycle.	<ol style="list-style-type: none"> 1. Receive activity information request. 2. Inform activity information. 	<ol style="list-style-type: none"> 1. Inquire activity information. 2. Consult activity information and indicate what the latest status of an activity is.



4.2 Application layer

4.2.1 Information Structure Viewpoint

The information structure viewpoints, provides a design of the structure of the information exchanged throughout the enterprise architecture. It shows their interwoven relationship with each other and which information is exchanged to other information objects. For the overall viewpoint see Appendix figure 7 in Appendix A3. In below description and relations of these information objects are described.

Table 28: Information structure.

Object	Object description	Sub object	Sub object description	Relationship	Parent	Child	With	Description
Client	Client information.			1. Communication. 2. Association.			1. OSS Team, Sales, After sales. 2. CRM	OSS team, Sales and After sales communicate with the client. CRM contains information of the client.
Sales	Sales information.			1. Communication.			1. OSS Team, Client.	OSS Team and client communicate with sales.
After sales	After sales information.			1. Communication.			1. Client, OSS Team.	Client and OSS Team communicate with After sales.



Table 3: Information structure.

Object	Object description	Sub object	Sub object description	Relationship	Parent	Child	With	Description
OSS Team	OSS Team information.			1. Communication. 2. Composition. 3. Aggregation.		2. Activity, Status. 3. Template request, Template Collection, Employee information, HW,SW Collection, Template Collection, Knowledge base, Document Collection, Document request.	1. Client, Sales, After sales.	Client, Sales and After sales communicate with the OSS Team. Activity and Status are bounded to the start of a project executed by the OSS Team. Template request, Template Collection, Employee information, HW,SW Collection, Template Collection, Knowledge base, Document Collection and Document request are not bound to the new project executed by OSS Team.
CRM	Contains information of the client within Honeywell.			1. Association. 2. Specialisation.		2. Name ID, Project ID, Name, Project Name.	1. Client, Template Collection.	Client and Template Collection are related with CRM. Name ID, Project ID, Name and Project Name are part of CRM information.



Table 3: Information structure.

Object	Object description	Sub object	Sub object description	Relationship	Parent	Child	With	Description
		Name ID	Information regarding Name ID.	1. Specialisation.	1. CRM			See CRM for more information.
		Project ID	Information regarding project ID.					
		Name	Information regarding Name of client.					
		Project Name	Information regarding Project name.					
HW, SW Collection	Contains information about hardware and software.			1. Aggregation. 2. Association. 3. Specialisation.	1. OSS Team.	3. HW, SW.	2. Document Collection, Template Collection, Employee information, Knowledge base.	HW, SW Collection is not bound by the OSS Team. Document Collection, Template Collection, Employee information and Knowledge base have relations with HW, SW Collection. HW an SW are part of HW, SW Collection.
		HW	Information regarding Hardware.	1. Specialisation.	1. HW, SW Collection.			See HW, SW Collection.
		SW	Information regarding Software.					



Table 3: Information structure.

Object	Object description	Sub object	Sub object description	Relationship	Parent	Child	With	Description
Employee information	Contains information about the employees.			1. Aggregation. 2. Association. 3. Specialisation.	1. OSS Team.	3. Name, Expertise, Schedule.	2. HW, SW Collection, Document Collection, Template Collection, Activity.	Employee information is not bound by the OSS Team. HW, SW Collection, Document Collection, Template Collection and Activity are related with employee information. Name, Expertise and schedule are part of employee information.
		Name	Information regarding Name of employee.	1. Specialisation.	1. Employee information.			See Employee information.
		Expertise	Information regarding the expertise.					
		Schedule	Information regarding schedule of employee.					
Template request	Contains information about request of a template.			1. Aggregation.	1. OSS Team, Template Collection.			Template request is not bound by the OSS Team and Template Collection.



Table 3: Information structure.

Object	Object description	Sub object	Sub object description	Relationship	Parent	Child	With	Description
Template Collection	Contains information about templates.			<ol style="list-style-type: none"> 1. Aggregation. 2. Composition. 3. Association. 4. Triggering. 	<ol style="list-style-type: none"> 1. OSS Team. 	<ol style="list-style-type: none"> 1. Template Request. 2. FDS Template Collection, DDS template Collection. 	<ol style="list-style-type: none"> 3. Activity, CRM, HW,SW Collection, Employee information, Knowledge base, Document Collection, Status. 4. Document Collection. 	<p>Template Collection is not bound by the OSS Team ad Template request.</p> <p>FDS Template Collection and DDS template Collection are bound by Template Collection.</p> <p>Activity, CRM, HW,SW Collection, Employee information, Knowledge base, Document Collection and Status are related to Template Collection.</p> <p>Document Collection is triggered by Template Collection.</p>



Table 3: Information structure.

Object	Object description	Sub object	Sub object description	Relationship	Parent	Child	With	Description
		FDS Template Collection	Contains information about the Functional Design Specification templates.	1. Composition. 2. Specialisation.	1. Template Collection	2. Windows base build template, Network FDS template, Network System Management FDS template, Network Security FDS template, Domain FDS template, Wireless FDS template, Backup/restore FDS template, Active Directory template, Time synchronization template.		FDS Template Collection is bound to Template Collection. Windows base build template, Network FDS template, Network System Management FDS template, Network Security FDS template, Domain FDS template, Wireless FDS template, Backup/restore FDS template, Active Directory template and Time synchronization template, are part of FDS Template Collection.



Table 3: Information structure.

Object	Object description	Sub object	Sub object description	Relationship	Parent	Child	With	Description
		DDS Template Collection	Contains information about the Detailed Design Specification templates.	1. Composition. 1. Specialisation.	1. Template Collection	2. Network DDS template, Network diagram template, Network Security template, Network System Management Design template, Wireless DDS template, Domain DDS template, Naming convention network nodes template, Backup/restore DDS template, Active Directory template, Time synchronization template.		DDS Template Collection is bound to Template Collection. Network diagram template, Network Security template, Network System Management Design template, Wireless DDS template, Domain DDS template, Naming convention network nodes template, Backup/restore DDS template, Active Directory template and Time synchronization template, are part of DDS Template Collection.



Table 3: Information structure.

Object	Object description	Sub object	Sub object description	Relationship	Parent	Child	With	Description
FDS Template Collection	Contains information about the Functional Design Specification templates.			1. Composition. 2. Specialisation.	1. Template Collection.	2. Windows base build template, Network FDS template, Network System Management FDS template, Network Security FDS template, Domain FDS template, Wireless FDS template, Backup/restore FDS template, Active Directory template, Time synchronizati on template.		See FDS Template Collection.



Table 3: Information structure.

Object	Object description	Sub object	Sub object description	Relationship	Parent	Child	With	Description
		Windows base build template	Information regarding windows base build.	1. Specialisation.	1. FDS Template Collection.			See FDS Template Collection.
		Network FDS template	Information regarding network FDS					
		Network System Management FDS template	Information regarding network system management .					
		Network Security FDS template	Information regarding network security.					
		Domain FDS template	Information regarding domain.					



Table 3: Information structure.

Object	Object description	Sub object	Sub object description	Relationship	Parent	Child	With	Description
		Wireless FDS template	Information regarding wireless.	1. Specialisation.	1. FDS Template Collection.			See FDS Template Collection.
		Backup/restore FDS template	Information regarding backup and restore.					
		Active Directory template	Information regarding active directory					
		Time synchronization template	Information regarding time synchronization.					



Table 3: Information structure.

Object	Object description	Sub object	Sub object description	Relationship	Parent	Child	With	Description
DDS Template Collection	Contains information about the Detailed Design Specification templates.			1. Composition. 2. Specialisation.	1. Template Collection.	2. Network DDS template, Network diagram template, Network Security template, Network System Management Design template, Wireless DDS template, Domain DDS template, Naming convention network nodes template, Backup/restore DDS template, Active Directory template, Time synchronization template.		See DDS Template Collection.



Table 3: Information structure.

Object	Object description	Sub object	Sub object description	Relationship	Parent	Child	With	Description
		Network DDS template	Information regarding network DDS.	1. Specialisation.	1. DDS Template Collection.			See DDS Template Collection.
		Network diagram template	Information regarding network diagram.					
		Network Security template	Information regarding network security.					
		Network System Management Design template	Information regarding network system management design.					
		Wireless DDS template	Information regarding wireless.					
		Domain DDS template	Information regarding domain.					



Table 3: Information structure.

Object	Object description	Sub object	Sub object description	Relationship	Parent	Child	With	Description
		Naming convention network nodes template	Information regarding naming convention network nodes.	1. Specialisation.	1. DDS Template Collection.			See DDS Template Collection.
		Backup/restore DDS template	Information regarding backup and restore.					
		Active Directory template	Information regarding active directory.					
		Time synchronization template	Information regarding time synchronization.					
Document request	Contain information about document request.			1. Triggering. 2. Aggregation.	2. OSS Team, Document Collection.		1. Status. Activity.	Status is triggered By Document request. Activity triggers Document Request. Document request is not bound by OSS Team and Document Collection.



Table 3: Information structure.

Object	Object description	Sub object	Sub object description	Relationship	Parent	Child	With	Description
Document Collection	Contains information about documents.			1. Aggregation. 2. Triggering. 3. Association. 4. Specialisation.	1. OSS Team.	1. Document request. 4. Text document, Drawing document.	2. Template Collection 3. Template Collection, Employee information, HW,SW Collection, Activity, Status, Knowledge base.	Document Collection is not bound by OSS Team. Document Request is not bound by Document Collection. Document Collection is triggered by Template Collection. Template Collection, Employee information, HW,SW Collection, Activity, Status and knowledge base are related to document Collection. Text document and drawing document are part of document Collection.
		Text document	Information regarding text documents.	1. Specialisation.	1. Document Collection.			See Document Collection.
		Drawing document	Information regarding drawings documents.					



Table 3: Information structure.

Object	Object description	Sub object	Sub object description	Relationship	Parent	Child	With	Description
Knowledge base	Contains information about knowledge.			1. Aggregation. 2. Association. 3. Specialisation.	1. OSS Team.	3. Consult knowledge, Component knowledge.	2. Template Collection, HW, SW Collection, Employee information, Document Collection.	Knowledge base is not bound by the OSS Team. Template Collection, HW, SW Collection, Employee information and Document Collection are related to Knowledge base. Consult knowledge and Component knowledge are part of knowledge base.
		Consult knowledge	Information regarding consulting.	1. Specialisation.	1. Knowledge base.			See Knowledge base.
		Component knowledge	Information regarding components.					



Table 3: Information structure.

Object	Object description	Sub object	Sub object description	Relationship	Parent	Child	With	Description
Activity	Contains information about activities.			1. Composition. 2. Association. 3. Triggering.	1. OSS Team.		3. Document request. Status. 2. Employee information, Template Collection, Document Collection.	Activity is bound by the OSS Team. Employee information, Template Collection and Document Collection are related to Activity. Status is triggered by Activity. Document request is triggered by Activity.
Status	Contains information about the status.			1. Composition. 2. Association. 3. Triggering.	1. OSS Team.		2. Document Collection, Template Collection, 3. Activity, Document request.	Status is bound by the OSS Team. Document Collection and Template Collection are related to Status. Status is triggered by Activity. Status is triggered by Document request.



4.2.2 Application Cooperation Viewpoint

Application cooperation viewpoint shows the relations between applications Appendix A4. The information flows of these relations are depicted in Appendix figure 16, with Table 4 as elaboration. In Appendix figure 17 shows the connections between the applications with its services, this will be elaborated by Table 5.

Table 29: Application Cooperation (Overall).

Component	Component description	Relation with	Relation description
Template application	Application for dealing with different templates, used for creating documents.	<ol style="list-style-type: none"> 1. Document management system. 2. Information retrieval system. 	<ol style="list-style-type: none"> 1. Template application is asking the appropriate template document from the document management system, in return the desired template document is given back. 2. Information retrieval is asking information from template application, in return template application is giving information back.
Document management system	Managing documents in an orderly manner.	<ol style="list-style-type: none"> 1. Template application. 2. Knowledge base portal. 3. Monitoring system. 4. Mail application. 	<ol style="list-style-type: none"> 1. See template application. 2. Knowledge base can request document from document management system, and store knowledge in the document management system. 3. Document management system gives information about document status to the monitor system. 4. Through mail application information could be mailed towards others.
Monitor system	Keep track of documents.	<ol style="list-style-type: none"> 1. Information retrieval system. 2. Document management system. 	<ol style="list-style-type: none"> 1. Information retrieval system sends information to the monitor system. 2. Monitor system gets information from the document management system.



Table 4: Application Cooperation (Overall).

Component	Component description	Relation with	Relation description
Information retrieval system	Get or send data to retrieve information from other components.	<ol style="list-style-type: none"> 1. Template application. 2. Monitor system. 3. CRM application. 4. Employee administration application. 5. Knowledge base portal. 	<ol style="list-style-type: none"> 1. See template application. 2. See monitor system. 3. CRM application sends client information to the information retrieval system. 4. Employee administration application sends employee information to the information retrieval system. 5.
Knowledge base portal	Providing or accumulate gained knowledge.	<ol style="list-style-type: none"> 1. Document management system. 2. Information retrieval system. 3. Mail application. 	<ol style="list-style-type: none"> 1. See document management system. 2. See information retrieval. 3. Knowledge base portal sends pieces of knowledge to an email. Or knowledge in an email can be send to the knowledge base.
Mail application	Handling email traffic.	<ol style="list-style-type: none"> 1. Document management system. 2. Knowledge base portal. 	<ol style="list-style-type: none"> 1. See document management system. 2. See knowledge base portal.
CRM application	Application managing for client information.	<ol style="list-style-type: none"> 1. Information retrieval system. 	<ol style="list-style-type: none"> 1. See information retrieval system.
Employee administration application	Application managing for employee information.	<ol style="list-style-type: none"> 1. Information retrieval system. 	<ol style="list-style-type: none"> 1. See information retrieval system.

Table 5 on the next page differs from Table 4. In Table 5 relations with services are illustrated.



Table 30: Application Cooperation (Applications connected to services).

Component	Component description	Service	Service description	Relation	Relation description
Template application	Application for dealing with different templates, used for creating documents.	<ol style="list-style-type: none"> 1. Template service. 2. Knowledge base service. 3. Document management service. 4. Print service. 5. Search service. 6. Information retrieval service. 	<ol style="list-style-type: none"> 1. Service for handling templates. 2. Service for handling knowledge. 3. Service for managing documents. 4. Service for printing. 5. Service for searching objects, such as documents. 6. Service for retrieving information. 	<ol style="list-style-type: none"> 1. Realization. 2. Used by. 3. Used by. 4. Used by. 5. Used by. 6. Used by. 	Template application is realizing, thus providing the template service. However it is using knowledge service, document management service, print service, search service and information retrieval service to execute its jobs.
Document management system	Managing documents in an orderly manner.	<ol style="list-style-type: none"> 1. Document management service. 2. Print service. 3. Search service. 4. Approval service. 5. Information retrieval service. 6. Template service. 	<ol style="list-style-type: none"> 1. See service description template application. 2. See 1. 3. See 1. 4. Service for approving documents. 5. See 1. 6. See 1. 	<ol style="list-style-type: none"> 1. Realization. 2. Realization. 3. Realization. 4. Realization. 5. Used by. 6. Used by. 	Document management system is realizing, thus providing the document management service, print service, search service and approval service. Information retrieval service and template service are used by document management system to handle their data.
Monitor system	Keep track of documents.	<ol style="list-style-type: none"> 1. Monitor service. 2. Document management service. 3. Approval service. 	<ol style="list-style-type: none"> 1. Service for monitoring document life cycle. 2. See service description template application. 3. See 2. 	<ol style="list-style-type: none"> 1. Realization. 2. Used by. 3. Used by. 	Monitor system is realizing, thus providing the monitor service. It is using document management service and approval service to transfer data.



Table 5: Application Cooperation (Applications connected to services).

Component	Component description	Service	Service description	Relation	Relation description
Information retrieval system	Get or send data to retrieve information from other components.	<ol style="list-style-type: none"> 1. Information retrieval service. 2. Document management service. 3. Monitor service. 4. Template service. 5. Knowledge base service. 	<ol style="list-style-type: none"> 1. Service for retrieving information. 2. Service for managing documents. 3. Service for monitoring document life cycle. 4. Service for handling templates. 5. Service for handling knowledge. 	<ol style="list-style-type: none"> 1. Realization. 2. Used by. 3. Used by. 4. Used by. 5. Used by. 	Information retrieval system is realizing, thus providing the information retrieval service. It also uses document management service, monitor service, template service and knowledge base service to get or send information.
Knowledge base portal	Providing or accumulate gained knowledge.	<ol style="list-style-type: none"> 1. Knowledge base service. 2. Document management service. 3. Print service. 4. Search service. 	<ol style="list-style-type: none"> 1. See service description information retrieval system. 2. See 1. 3. Service for printing. 4. Service for searching objects. 	<ol style="list-style-type: none"> 1. Realization. 2. Used by. 3. Used by. 4. Used by. 	Knowledge base portal is realizing knowledge base service. It uses document management to manage documents, print service to print the knowledge and search service to look up knowledge.
Mail application	Handling email traffic.	<ol style="list-style-type: none"> 1. Print service. 2. Search service. 3. Document management service. 	<ol style="list-style-type: none"> 1. Service for printing. 2. Service for searching objects, such as documents. 3. Service for monitoring document life cycle. 	<ol style="list-style-type: none"> 1. Used by. 2. Used by. 3. Used by. 	Mail application uses print service for printing email, search service to search emails, and document service to handle email files.
CRM application	Application for managing client information.	<ol style="list-style-type: none"> 1. Information retrieval service. 	<ol style="list-style-type: none"> 1. Service for retrieving information. 	<ol style="list-style-type: none"> 1. Used by. 	CRM application is used by information retrieval to get customer information.
Employee administration application	Application for managing employee information.	<ol style="list-style-type: none"> 1. Information retrieval service. 	<ol style="list-style-type: none"> 1. Service for retrieving information. 	<ol style="list-style-type: none"> 1. Used by. 	Employee administration application is used by information retrieval to get employee information.



4.2.3 Application Usage Viewpoint

In application usage viewpoint the relationship between application and services and business functions are shown. In Appendix A6 the overall design can be seen. By applying a multilayer overview the designer will be able to comprehend which application is required for which services and functions. In Table 6 description of the relationships are described. Here only the layer between the services and the business functions will be described. The layer between services and application is already described in previous chapter.

Table 31: Application usage.

Business Function	Services	Relationship	Description
Template management	<ol style="list-style-type: none"> 1. Print service. 2. Search service. 3. Template service. 4. Document management service. 	Used by	<ol style="list-style-type: none"> 1. Print service is used for printing the templates. 2. Search service is used for searching through the templates. 3. Template service is used to perform all the necessary tasks related to templates. 4. Document management service is used to perform all related tasks regarding templates.
Document management	<ol style="list-style-type: none"> 1. Approval service. 2. Print service. 3. Document management service. 4. Search service. 5. Monitor service. 		<ol style="list-style-type: none"> 1. Approval service is used by the Document management to perform all the approval processes. 2. Print service is used by document management to perform print related tasks. 3. Document management service is used to perform all the tasks which are related to document management processes. 4. Search service is used to perform search. 5. Monitor service is used to monitor all the monitor related processes.
Knowledge management	<ol style="list-style-type: none"> 1. Print service. 2. Search service. 3. Knowledge base service. 		<ol style="list-style-type: none"> 1. Print service is used for printing purposes of the knowledge. 2. Search service is used for searching. 3. Knowledge service is used to perform all the related knowledge base tasks.



Table 6: Application usage.

Business Function	Services	Relationship	Description
Monitoring	1. Monitor service. 2. Information retrieval service.	Used by	1. Monitor service is used to perform all the monitoring tasks. 2. Information retrieval service is used to extract information.
Approval	1. Approval service. 2. Monitor service.		1. Approval service is used to perform all the approval tasks. 2. Monitor service is used to monitor the approval process.
CRM	1. Information retrieval service.		1. Information retrieval service is used to extract information from CRM.
Resource handling	1. Information retrieval service.		1. Information retrieval service is used to extract information for Resource handling.
HW,SW handling	1. Search service. 2. Information retrieval service.		1. Search service is used for searching. 2. Information retrieval service is used to extract information from HW, SW handling.
Handover handling	1. Information retrieval service.		1. Information retrieval service is used to extract information of Handover handling
Activity handling	1. Information retrieval service.		1. Information retrieval service is used to extract information of activity handling.



4.2.4 Application Structure Viewpoint

Application structure viewpoint shows structure of the applications. This for better understanding the relation between applications and data objects. In appendix A7 this viewpoint is illustrated.



Table 32: Application Structure.

Component	Component description	Object	Relationship description
Template application	Application for dealing with different templates, used for creating documents.	1. HW, SW Collection data. 2. Project information data. 3. Client information data. 4. Template Collection data	The associated data of template application are for creating the concerning document.
Document management system	Managing documents in an orderly manner.	1. HW, SW Collection data. 2. Project information data. 3. Client information data. 4. Document Collection data.	The data objects associated here needs the document management system to manage their documents.
Information retrieval system	Get or send data to retrieve information from other components.	1. Template Collection data. 2. HW, SW Collection data. 3. Client information data. 4. Project information data. 5. Employee information data. 6. Mail data. 7. Activity data. 8. Status data. 9. Knowledge base Collection data	Through connection with the entire system, information can be retrieved for other applications and purposes. By automatically doing this process only the information which has to be retrieved needs to be entered. The rest of processes is done by the system itself.
Knowledge base portal	Providing or accumulate gained knowledge.	1. Knowledge base Collection data.	Knowledge base Collections data belongs to the knowledge vase portal application/component.
Monitor system	Keep track of documents.	1. Status data. 2. Activity data.	Status data and activity data are associated with monitor system.
Mail application	Handling email traffic.	1. Mail data.	Mail application associates with mail data object.
CRM application	Application for managing client information.	1. Client information data. 2. Project information data.	CRM application associates with client information data object and its corresponding project information data object
Employee administration application	Application for managing employee information.	1. Project information data. 2. Employee information data.	Employee administration application associates with employee information data object and its corresponding project information.



4.3 Technology layer

4.3.1 Infrastructure Viewpoint

The infrastructure viewpoint shows the infrastructure of the enterprise architecture. It displays how the hardware and network are connected throughout the organization. The technology layer of the ArchiMate is detailed in this viewpoint and infrastructure usage viewpoint. In Appendix A8 the overall design can be viewed. In Table 8 and Table 9 the description of the infrastructure viewpoint can be viewed. Two distinct separations have been made namely:

- **Extern systems:**
The extern system regards the systems which do not reside within the same environment as the 'enterprise architecture'. This means for example that the CRM system of the Email application can reside else than the entire Document management system. This distinction has been due to the fact that some systems are not important to the OSS Team in order to be managed by themselves.
- **Intern Systems:**
Intern system regards the system and applications which do reside within the 'enterprise architecture'. These systems are important to the OSS Team in such a way that has to be able to use them properly and be able to manage.



Table 33: Infrastructure (Extern).

Name	Description	Part of	Description	Connected through	Connected to	description
Extern						
CRM	Customer relationship management contains information. In this case it is considered to be an extern system.			LAN Firewall	1. Information retrieval system.	The purpose is to extract information from the CRM.
Employee administration application	Contains information of the employees. In this case it is considered to be an extern system.				1. Information retrieval system.	The purpose is to extract information of the employee.
Email system	Provides the email service. In this case it is considered to be an extern system.				1. DMS. 2. API.	Through connection with DMS email can be accessed from the DMS. In order to be able to perform the tasks which are necessary for email service a connection is required.
API	Provides the application by which email service can be performed.	1. Email system.	Part f the email system.		1. Email system.	See email system.



Table 34: Infrastructure (Intern).

Name	Description	Part of	Description	Connected through	Connected to	description
Intern						
Monitor system	The system by which the entire architecture can be monitored for the purposes of document and task managements.			LAN Firewall (All systems connect through a LAN and a firewall to other systems)	1. Database server. 2. Interface.	Is connected to a database for monitoring purposes. Also an interface will provide for the information overview.
Interface	Provides the interface by which monitor status can be acquired.				1. Monitor system.	See monitor system.
Knowledge base system	Provides the system which contains all sorts of knowledge.				1. Database server. 2. Interface.	Through connection with the database knowledge is stored and used. Through an interface user can use the system.
Search service	By which knowledge can be searched.	1. Knowledge base system.	Search service is part of the knowledge base system.			
LDAP	Lightweight directory access protocol enables the modifications and queuing of the directory services [7].					
Filter	Makes sure the right knowledge is filtered for viewing.					
Interface	Provides the user interface of the knowledge base system.				1. Knowledge base system.	Purpose is to communicate with the knowledge base system.



Table 9: Infrastructure (Intern).

Name	Description	Part of	Description	Connected through	Connected to	description
Intern						
DMS	Is the document management system [8] [9].	1. DMS.	Being part of the DSM makes sure that the services can be provided.	LAN Firewall (All systems connect through a LAN and a firewall to other systems)	1. Database server. 2. Email system. 3. TCP/IP Internet.	Through a connection for a database, mail and internet all the tasks of the Document management process can others can be performed.
Template service	Provides the service by which template related processes can be performed					
LDAP	Lightweight Directory Access Protocol is an application protocol for queuing and directory services modifications [10].					
Search service	Provides the search within the documents and templates.					
DCA	Document conversion application provides the possibility to convert documents to other formats [11].					
Collaboration repository	Also called groupware are the repository for applications by which workgroup systems are supported [7].					
Interface	Provides user interface of the DMS and template.				1. DMS.	Purpose is to communicate with the DMS.



Table 9: Infrastructure (Intern).

Name	Description	Part of	Description	Connected through	Connected to	description
Intern						
Information retrieval system	Provides the system by which information can be retrieved from other sources. This is an automatic system. BY providing the necessary input information the system will retrieve the output automatically.			LAN Firewall (All systems connect through a LAN and a firewall to other systems)	1. Database server. 2. CRM. 3. Employee administration application.	The necessary components by which information has to be retrieved from.
Filter	Provides the filtering processes for the requested information.	1. Information retrieval system	Part of the information retrieval system.			
Database server	Contains all the information of the enterprise architecture.				1. Message queuing	Through connecting with the message queuing, deadlocks are avoided.
SQL database	The sort of database.	1. Database server	Part of database server.			
Middleware [12]	Provides the mediator between the applications and facilities.				1. Message queuing. 2. DMS. 3. Information retrieval system. 4. Knowledge base system. 5. Print system	By acting as the mediator between various systems, the communication and handling of the information will run smoothly with the database.
Message queuing	Handles the message queues.				1. Database server. Middleware	By Connecting to database and middleware, avoidance of a deadlock or loosing messages is made possible.



Table 9: Infrastructure (Intern).

Name	Description	Part of	Description	Connected through	Connected to	description	
Intern							
Monitoring repository [13]	A warehouse for monitor purpose.	1. SQL database.	All repositories are part of the SQL database.	LAN Firewall (All systems connect through a LAN and a firewall to other systems)	1. Through middleware to the database.	By bridging the connection between applications and database functionality of the database can be fully used.	
Index search repository	A warehouse for the search index purpose.						
File repository	A warehouse for file storage.						
Print repository	A warehouse for printing tasks.						
Knowledge base repository	A warehouse for knowledge base data.						
Meta data repository	A warehouse for meta data.	1. SQL database.	All repositories are part of the SQL database.			1. Through middleware to the database.	
Print system	The system for printing.					1. Database server. 2. Print.	Through connecting with the database and a printer, all the print related tasks can be performed.
Spool system	Enables the flushing of the requests [7].	1. Print system.	Part of the print system.			1. Print system.	Prints the request of the print system.
Print	The hardware for printing.					1. DMS. 2. Remote clients. 3. Remote client OSS.	Connects the outside world to the inside world.
TCP/IP Internet	Connection with the outside world.					1. TCP/IP Internet.	Enables the possibility for connecting to the systems.
Remote clients	To enter the system remotely.						
Remote clients OSS Team.	To enter the system remotely.						



4.3.2 Infrastructure Usage Viewpoint

In this infrastructure usage viewpoint shows how applications are supported by the software and hardware infrastructure. This viewpoint is important to give an overview for analysing the performance and scalability of the infrastructure. For the total overview see Appendix A9.

Table 35: Infrastructure usage.

Component	Device	Relationship description
Template application	1. Database server. 2. Print system. 3. DMS.	Template uses the database server to store or retrieve template documents. It uses the print system for printing template documents. It uses DMS for managing documents in general.
Document management system	1. Database server. 2. Print system. 3. DMS.	Document management system uses database server for storing or retrieving documents. Uses the print service to print documents and uses the DMS in order to be able to manage documents.
Knowledge base portal	1. Knowledge base system. 2. Database server. 3. Print system. 4. DMS.	Knowledge base portal uses the knowledge base system to share or acquire knowledge. The database server is for storing or retrieving knowledge information. Print system is being used for printing knowledge documents. DMS is for managing knowledge information.
Monitor system	1. Monitor system. 2. Database server. 3. DMS.	Monitor system uses the monitor system to keep track of the state of the system and uses database server to store these data.
Mail application	1. Email system. 2. Print system.	Mail application uses the email system for email traffic. If emails are required to be printed out, print system is being used.
Information retrieval system	1. Information retrieval system. 2. Database server. 3. Employee administration application. 4. CRM.	Information retrieval system uses information retrieval system to operate. It uses the database to retrieve or store data. It uses employee administration application and CRM to retrieve information.
CRM application	1. CRM.	CRM application uses the CRM infrastructure to operate.
Employee administration application	1. Employee administration application.	The employee administration application uses the employee administration application to operate.



5. Document Detail

The business processes were described in the high level requirement document. Each phase can be considered as a different business process. The required to be created documents for each sub phase were determined. In this chapter the details for these documents will be discussed. Two tables will be used for describing each sub phase. The first table is to highlight the execution of the sub phase, which means creating these documents. The second table is to elaborate what information these documents should contain.

5.1 Quotationing

5.1.1 Project deliveries

In Table 11 the execution of the sub phase project deliveries is described. There are 9 points listed, with the last point as optional. Scope change occurs only when needed, therefore point nine made bold. The following sub phases are elaborated in this way as well.

Table 36: Quotation high level documents.

Project phase name	Quotation
Sub phase name	Project deliveries,
Sub phase description	Offer for things to deliver.
Requirements	10. Check list, 11. Q-List of software, 12. Q-List of hardware 13. List of Application standard, 14. Q-Scope, 15. Budget estimate, 16. Task responsibility, 17. Feasibility study, 18. Scope changes ¹ .

Table 12 shows which documents subjects with its corresponding requirements are created during a sub phase. As illustrated in the table each document requires a whole different set of requirements. Some subjects are combined together because of close relation.

¹ Optional



Table 37: Quotationing detailed level documents.

Subjects	Required information for the document
<ul style="list-style-type: none"> Check list 	<ul style="list-style-type: none"> Project phase included/excluded, Project phase time schedule, Status of project phase, Project phase tasks included/excluded, Project phase task time schedule, Status project phase task, Project phase approval, Sub phase included/excluded, Sub phase time schedule, Status of sub phase, Sub phase tasks included/excluded, Sub phase task time schedule, Status sub phase task. Sub phase approval, Optional section of checklist: Scope changes phases included/excluded, Scope changes sub phases included/excluded, Scope changes tasks included/excluded, Scope changes time schedule, Status scope changes, Scope changes approval.



Table 12: Quotationing detailed level documents.

Subjects	Required information for the document
<ul style="list-style-type: none"> Q-list of hardware, Q-list of software, Approved agreement of the customer, 	<ul style="list-style-type: none"> Hardware: <ul style="list-style-type: none"> Supplier: <ul style="list-style-type: none"> Standard, Non standard. Custom: <ul style="list-style-type: none"> Standard requirements, Custom requirements. Name, Model, Manufacturer, Version, Update, ID, Price, Quantity, Description: <ul style="list-style-type: none"> Short description, Functional description, Tutorials, Manuals, Abbreviation. Approval. Software: <ul style="list-style-type: none"> Supplier: <ul style="list-style-type: none"> Standard, Non standard. Custom <ul style="list-style-type: none"> Standard requirements, Custom requirements. Name, Manufacturer, Version, Update, ID, Price, Quantity, Description: <ul style="list-style-type: none"> Short description, Functional description, Tutorials, Manuals, Abbreviation. Approval.



Table 12: Quotationing detailed level documents.

Subjects	Required information for the document
	<ul style="list-style-type: none"> • Scope change: <ul style="list-style-type: none"> ○ Description, ○ As is, ○ As to be, ○ Phases: <ul style="list-style-type: none"> ▪ Project phase, ▪ Sub phase, ▪ Project phases affected, ▪ Sub phases affected. ○ Tasks: <ul style="list-style-type: none"> ▪ Task, ▪ Task affected. ○ Person, ○ Time schedule, ○ Approval.
<ul style="list-style-type: none"> • Feasibility study, • Budget estimate, 	<ul style="list-style-type: none"> • Background. • Project Organisation Structure. • Communication Plan. • Quality Plan. • Time constraints. • Benefits. • Disadvantages. • Project Tolerances. • Project Controls. • Project Funding. • Tasks. • Time schedule. • Project costs. • Risks management.
<ul style="list-style-type: none"> • List of Application standards, 	<ul style="list-style-type: none"> • Application: <ul style="list-style-type: none"> ○ Name, ○ Functionality, ○ Purpose, ○ Approval.
<ul style="list-style-type: none"> • Task responsibility list. 	<ul style="list-style-type: none"> • Tasks, • Role division, • Time schedule.
<ul style="list-style-type: none"> • Scope of the project. 	<ul style="list-style-type: none"> • Stakeholders, <ul style="list-style-type: none"> ○ Clients, ○ Third party manufactures. • Risks, <ul style="list-style-type: none"> ○ Schedule, ○ Budget. • Deliverables, • Costs, • Constraints deadlines.



5.1.2 Feed

Table 38: FEED high level documents.

Project phase name	Quotation
Sub phase name	FEED (Front End Engineering Design)
Sub phase description	High Level Functional design
Requirements	9. Q-List of software, 10. Q-List of hardware 11. List of Application standard, 12. Q-Scope, 13. Budget estimate, 14. Task responsibility, 15. Feasibility study, 16. Scope changes ² .

² Optional.



Table 39: FEED detailed level document.

Subjects	Required information for the document
<ul style="list-style-type: none"> • Q-list of hardware, • Q-list of software, • Approved agreement of the customer, 	<p>Components:</p> <ul style="list-style-type: none"> • Hardware: <ul style="list-style-type: none"> • Supplier: <ul style="list-style-type: none"> ○ Standard, ○ Non standard. • Custom: <ul style="list-style-type: none"> ○ Standard requirements, ○ Custom requirements. • Name, • Model, • Manufacturer, • Version, • Update, • ID, • Price, • Quantity, • Description: <ul style="list-style-type: none"> ○ Short description, ○ Functional description, ○ Tutorials, ○ Manuals, ○ Abbreviation. • Approval. • Software: <ul style="list-style-type: none"> • Supplier: <ul style="list-style-type: none"> ○ Standard, ○ Non standard. • Custom <ul style="list-style-type: none"> ○ Standard requirements, ○ Custom requirements. • Name, • Manufacturer, • Version, • Update, • ID, • Price, • Quantity, • Description: <ul style="list-style-type: none"> ○ Short description, ○ Functional description, ○ Tutorials, ○ Manuals, ○ Abbreviation. • Approval.



Table 14: FEED detailed level document.

Subjects	Required information for the document
	<ul style="list-style-type: none"> • Scope change: <ul style="list-style-type: none"> ○ Description, ○ As is, ○ As to be. ○ Phases: <ul style="list-style-type: none"> ▪ Project phase, ▪ Sub phase, ▪ Project phases affected, ▪ Sub phases affected. ○ Tasks: <ul style="list-style-type: none"> ▪ Task, ▪ Task affected. ○ Person. ○ Time schedule, ○ Approval
<ul style="list-style-type: none"> • Feasibility study, • Budget estimate, 	<ul style="list-style-type: none"> • Background. • Project Organisation Structure. • Communication Plan. • Quality Plan. • Time constraints. • Benefits. • Disadvantages. • Project Tolerances. • Project Controls. • Project Funding. • Tasks. • Time schedule. • Project costs. • Risks management.
<ul style="list-style-type: none"> • List of Application standards, 	<ul style="list-style-type: none"> • Application: <ul style="list-style-type: none"> ○ Name, ○ Functionality, ○ Purpose, ○ Approval.
<ul style="list-style-type: none"> • Task responsibility list. 	<ul style="list-style-type: none"> • Tasks • Role division • Time schedule.
<ul style="list-style-type: none"> • Scope of the project 	<ul style="list-style-type: none"> • Stakeholders <ul style="list-style-type: none"> ○ Clients ○ Third party manufactures • Risks <ul style="list-style-type: none"> ○ Schedule ○ budget • Deliverables • Costs • Constraints deadlines



5.2 *Project engineering*

5.2.1 Handover

Table 40: Handover high level documents.

Project name	phase	Project engineering
Sub name	phase	Handover
Sub description	phase	Contract details to understand what need to be done
Requirements		6. Details of the contract, 7. Document templates, 8. List of agreements made with sales, 9. Deliverables, 10. Scope changes ³ .

³ Optional.



Table 41: Handover detailed level documents.

Subjects	Required information for the document
<ul style="list-style-type: none"> • Details of the contract, • List of agreements made with sales (consultant), • Deliverables, • Agreements about document templates. 	<ul style="list-style-type: none"> • Project details, <ul style="list-style-type: none"> ○ Name, ○ Location, ○ Description, ○ Stakeholders, ○ Duration, ○ Overview <ul style="list-style-type: none"> ▪ Deliverables, <ul style="list-style-type: none"> • Description, • Delivery date, • Delivery extended date. ▪ Project phases, <ul style="list-style-type: none"> • Project tasks. ▪ Process and department process flow ▪ System configuration, ▪ Technical specifications (high level), ○ Agreements: <ul style="list-style-type: none"> ▪ Templates, ▪ Miscellaneous. • Scope change: <ul style="list-style-type: none"> ○ Description, ○ As is, ○ As to be. ○ Phases: <ul style="list-style-type: none"> ▪ Project phase, ▪ Sub phase, ▪ Project phases affected, ▪ Sub phases affected. ○ Tasks: <ul style="list-style-type: none"> ▪ Task, ▪ Task affected. ○ Person. ○ Time schedule, ○ Approval.



5.2.2 Plan

Table 42: Plan high level documents.

Project phase name	Project engineering
Sub phase name	Plan
Sub phase description	Plan with activities and dates
Requirements	6. List of activities, 7. Start/ End date, 8. Milestones, 9. P-Scope, 10. Scope changes ⁴ .

⁴ Optional.



Table 43: Plan detailed level documents.

Subjects	Required information for the document
<ul style="list-style-type: none"> List of activities, start date, end date, Scope of project, Milestones. 	<ul style="list-style-type: none"> Project goals Project objectives Project Owner, Stakeholders, Customer delivery list, Project manager Project team members, List of project deliverables Scope of the project Project constraints Project timeline (schedule) <ul style="list-style-type: none"> Milestones Delivery dates <ul style="list-style-type: none"> Start date phases, Start date tasks, End date project End date tasks, Duration project, Duration tasks. Identifying work break down structure Project costs, <ul style="list-style-type: none"> Per phase, Total. Project unexpected costs (risk), <ul style="list-style-type: none"> Per phase, Total. Scope change: <ul style="list-style-type: none"> Description, As is, As to be. Phases: <ul style="list-style-type: none"> Project phase, Sub phase, Project phases affected, Sub phases affected. Tasks: <ul style="list-style-type: none"> Task, Task affected. Person. Time schedule, Approval.



5.2.3 Resources

Table 44: Resources high level documents.

Project phase name	Project engineering
Sub phase name	Resources
Sub phase description	-
Requirements	5. List of expertise, 6. List of involved actors, 7. Responsibility list of activity for department /expertise, 8. Scope changes ⁵ .

⁵ Optional.



Table 45: Resources detailed level documents.

Subjects	Required information for the document
List of available resources: <ul style="list-style-type: none"> List of expertise, List of involved actors for the project, Responsibility list of activity for department/expertise. 	<ul style="list-style-type: none"> Project section: <ul style="list-style-type: none"> Phase name, Task name, Start date phase, Start date tasks Milestones, Phase Duration, Task duration, End date phases, End date Tasks, Phase delay, <ul style="list-style-type: none"> Start date, End Date, Duration, Reason. Task delay, <ul style="list-style-type: none"> Start date, End Date, Duration, Reason. Expertise: <ul style="list-style-type: none"> Expert field, Expert information, <ul style="list-style-type: none"> Name, Function, Department. Availability: <ul style="list-style-type: none"> Start, End. Duration



Table 20: Resources detailed level documents.

Subjects	Required information for the document
	<ul style="list-style-type: none"> ○ Involved departments: <ul style="list-style-type: none"> ▪ Internal: <ul style="list-style-type: none"> • Name, • Function, • Role. ▪ External: <ul style="list-style-type: none"> • Name, • Function, • Role. • Scope change: <ul style="list-style-type: none"> ○ Description, ○ As is, ○ As to be. ○ Phases: <ul style="list-style-type: none"> ▪ Project phase, ▪ Sub phase, ▪ Project phases affected, ▪ Sub phases affected. ○ Tasks: <ul style="list-style-type: none"> ▪ Task, ▪ Task affected. ○ Person. ○ Time schedule, ○ Approval.



5.2.4 FDS

Table 46: FDS high level documents.

Project phase name	Project engineering
Sub phase name	FDS
Sub phase description	-
Requirements	6. List of available personnel, 7. Functional design templates, 8. Team members works schedule, 9. Glossary, 10. Scope changes ⁶ .

⁶ Optional.



Table 47: FDS detailed level documents.

Subjects	Required information for the document
<ul style="list-style-type: none"> • Standard design templates, • List of hardware used, • List of software used, • Glossary. 	<ul style="list-style-type: none"> • Standard FDS templates: <ul style="list-style-type: none"> ○ Windows base build template, ○ Network FDS template, ○ Network system management FDS template, ○ Network security FDS template, ○ Domain FDS template, ○ Wireless FDS template, ○ Backup/restore FDS template, ○ Active directory template, ○ Time synchronization template. • Components <ul style="list-style-type: none"> ○ Hardware: <ul style="list-style-type: none"> ▪ Supplier: <ul style="list-style-type: none"> • Standard, • Non standard. ▪ Custom: <ul style="list-style-type: none"> • Standard requirements, • Custom requirements. ▪ Name, ▪ Model, ▪ Manufacturer, ▪ Version, ▪ Update, ▪ ID, ▪ Price, ▪ Quantity, ▪ Description: <ul style="list-style-type: none"> • Short description, • Functional description, • Tutorials, • Manuals, • Abbreviation. ▪ Approval.



Table 22: FDS detailed level documents.

Subjects (during)	Requirement for the document
	<ul style="list-style-type: none"> ○ Software: <ul style="list-style-type: none"> ▪ Supplier: <ul style="list-style-type: none"> • Standard, • Non standard. ▪ Custom <ul style="list-style-type: none"> • Standard requirements, • Custom requirements. ▪ Name, ▪ Manufacturer, ▪ Version, ▪ Update, ▪ ID, ▪ Price, ▪ Quantity, ▪ Description: <ul style="list-style-type: none"> • Short description, • Functional description, • Tutorials, • Manuals, • Abbreviation. ▪ Approval. • List of abbreviation <ul style="list-style-type: none"> ○ Abbreviation ○ Full name, ○ ID. • Scope change: <ul style="list-style-type: none"> ○ Description, ○ As is, ○ As to be. ○ Phases: <ul style="list-style-type: none"> ▪ Project phase, ▪ Sub phase, ▪ Project phases affected, ▪ Sub phases affected. ○ Tasks: <ul style="list-style-type: none"> ▪ Task, ▪ Task affected. ○ Person. ○ Time schedule, ○ Approval.
<ul style="list-style-type: none"> • Available Personnel, • Team members work schedule, 	<ul style="list-style-type: none"> • List of employees: <ul style="list-style-type: none"> ○ Name, ○ Function, ○ Availability dates <ul style="list-style-type: none"> ▪ Start, ▪ End. ○ Availability duration.



5.2.5 Design

Table 48: Design high level requirements.

Project phase name	Project engineering
Sub phase name	Design
Sub phase description	Detailed design specification
Requirements	6. List of available personnel, 7. Design templates, 8. Team members works schedule, 9. Glossary, 10. Scope changes ⁷ .

⁷ Optional.



Table 49: Design detailed level requirements.

Subjects	Required information for the document
<ul style="list-style-type: none"> • Standard design templates, • List of hardware used, • List of software used, • Glossary. 	<ul style="list-style-type: none"> • Standards DDS templates: <ul style="list-style-type: none"> ○ Network DDS template, ○ Network diagram template, ○ Network security template, ○ Network system management design template, ○ Wireless DDS template, ○ Domain DDS template ○ Naming convention network nodes template, ○ Backup/restore DDS template, ○ Active directory template, ○ Time synchronization template. • Components <ul style="list-style-type: none"> ○ Hardware: <ul style="list-style-type: none"> ▪ Supplier: <ul style="list-style-type: none"> • Standard, • Non standard. ▪ Custom: <ul style="list-style-type: none"> • Standard requirements, • Custom requirements. ▪ Name, ▪ Model, ▪ Manufacturer, ▪ Version, ▪ Update, ▪ ID, ▪ Price, ▪ Quantity, ▪ Description: <ul style="list-style-type: none"> • Short description, • Functional description, • Tutorials, • Manuals, • Abbreviation. ▪ Approval.



Table 24: Design detailed level requirements.

Subjects	Required information for the document
	<ul style="list-style-type: none"> ○ Software: <ul style="list-style-type: none"> ▪ Supplier: <ul style="list-style-type: none"> • Standard, • Non standard. ▪ Custom <ul style="list-style-type: none"> • Standard requirements, • Custom requirements. ▪ Name, ▪ Manufacturer, ▪ Version, ▪ Update, ▪ ID, ▪ Price, ▪ Quantity, ▪ Description: <ul style="list-style-type: none"> • Short description, • Functional description, • Tutorials, • Manuals, • Abbreviation. ▪ Approval. • List of abbreviation <ul style="list-style-type: none"> ○ Abbreviation ○ Full name, ○ ID. • Scope change: <ul style="list-style-type: none"> ○ Description, ○ As is, ○ As to be. ○ Phases: <ul style="list-style-type: none"> ▪ Project phase, ▪ Sub phase, ▪ Project phases affected, ▪ Sub phases affected. ○ Tasks: <ul style="list-style-type: none"> ▪ Task, ▪ Task affected. ○ Person. ○ Time schedule, ○ Approval.
<ul style="list-style-type: none"> • Available Personnel, • Team members work schedule, 	<ul style="list-style-type: none"> • List of employees: <ul style="list-style-type: none"> ○ Name, ○ Function, ○ Availability dates <ul style="list-style-type: none"> ▪ Start, ▪ End. ○ Availability duration.



5.2.6 BOM

Table 50: BOM high level requirements.

Project phase name	Project engineering
Sub phase name	BOM (Bill of Material)
Sub phase description	List of hardware/software which is needed for the project
Requirements	4. P-List of hardware, 5. P-List of software, 6. Scope changes ⁸ .

⁸ Optional.



Table 51: BOM detailed level requirements.

Subjects	Required information for the document
<ul style="list-style-type: none"> • P-List of hardware, • P-List of software, 	<p>Components</p> <ul style="list-style-type: none"> • Hardware: <ul style="list-style-type: none"> ○ Supplier: <ul style="list-style-type: none"> ▪ Standard, ▪ Non standard. ○ Custom: <ul style="list-style-type: none"> ▪ Standard requirements, ▪ Custom requirements. ○ Name, ○ Model, ○ Manufacturer, ○ Version, ○ Update, ○ ID, ○ Price, ○ Quantity, ○ Description: <ul style="list-style-type: none"> ▪ Short description, ▪ Functional description, ▪ Tutorials, ▪ Manuals, ▪ Abbreviation. ○ Approval. • Software: <ul style="list-style-type: none"> ○ Supplier: <ul style="list-style-type: none"> ▪ Standard, ▪ Non standard. ○ Custom <ul style="list-style-type: none"> ▪ Standard requirements, ▪ Custom requirements. ○ Name, ○ Manufacturer, ○ Version, ○ Update, ○ ID, ○ Price, ○ Quantity, ○ Description: <ul style="list-style-type: none"> ▪ Short description, ▪ Functional description, ▪ Tutorials, ▪ Manuals, ▪ Abbreviation. ○ Approval.



Table 26: BOM detailed level requirements.

Subjects	Required information for the document
	<ul style="list-style-type: none">• Scope change:<ul style="list-style-type: none">○ Description,○ As is,○ As to be.○ Phases:<ul style="list-style-type: none">▪ Project phase,▪ Sub phase,▪ Project phases affected,▪ Sub phases affected.○ Tasks:<ul style="list-style-type: none">▪ Task,▪ Task affected.○ Person.○ Time schedule,○ Approval.



5.3 Implementation

Table 52: Implementation high level requirements.

Project phase name	Implementation
Sub phase name	Implementation
Sub phase description	Installation and configuration of hardware and software
Requirements	7. List of available manuals, 8. P-List of install, 9. P-List of configuration, 10. List of procedures, 11. List of role/task division, 12. Scope changes ⁹ .

⁹ Optional.



Table 53: Implementation detailed level requirements.

Subjects	Required information for the document
<ul style="list-style-type: none"> List of procedures 	<ul style="list-style-type: none"> Activity description Trigger Policy Roadmap
<ul style="list-style-type: none"> P-List of install, P-List of configuration, List of available manuals, 	<ul style="list-style-type: none"> Hardware: <ul style="list-style-type: none"> Supplier: <ul style="list-style-type: none"> Standard, Non standard. Custom: <ul style="list-style-type: none"> Standard requirements, Custom requirements. Name, Model, Manufacturer, Version, Update, ID, Price, Quantity, Description: <ul style="list-style-type: none"> Short description, Functional description, Tutorials, Manuals, Abbreviation. Approval. Software: <ul style="list-style-type: none"> Supplier: <ul style="list-style-type: none"> Standard, Non standard. Custom <ul style="list-style-type: none"> Standard requirements, Custom requirements. Name, Manufacturer, Version, Update, ID, Price, Quantity, Description: <ul style="list-style-type: none"> Short description, Functional description, Tutorials, Manuals, Abbreviation. Approval.



Table 28: Implementation detailed level requirements.

Subjects	Required information for the document
	<ul style="list-style-type: none"> • List of abbreviation <ul style="list-style-type: none"> ○ Abbreviation ○ Full name, ○ ID. • Scope change: <ul style="list-style-type: none"> ○ Description, ○ As is, ○ As to be. ○ Phases: <ul style="list-style-type: none"> ▪ Project phase, ▪ Sub phase, ▪ Project phases affected, ▪ Sub phases affected. ○ Tasks: <ul style="list-style-type: none"> ▪ Task, ▪ Task affected. ○ Person. ○ Time schedule, ○ Approval.
<ul style="list-style-type: none"> • List of role/task division¹⁰ (optional). 	<ul style="list-style-type: none"> • List: <ul style="list-style-type: none"> • Activity: <ul style="list-style-type: none"> ○ Task, ○ Sub task, ○ Description, ○ Executer, ○ Start date, ○ Target completion date, ○ Actual completion date, ○ Anticipated results, ○ Actual results. • Setbacks: <ul style="list-style-type: none"> ○ Task, ○ Description, ○ Executer, ○ Solution.

¹⁰ It is recommended to keep a list containing who did what, when etc. This list will help to keep an overview of the project tasks and in cases of troubleshooting will become useful.



5.4 Internal test

Table 54: Internal test high level requirements.

Project phase name	Internal test
Sub phase name	-
Sub phase description	Pre internal test before FAT test is performed.
Requirements	8. Test documentation, 9. List of test procedures, 10. Test phases, 11. Int-Error notation, 12. List of testers, 13. Image point, 14. Scope changes ¹¹ .

¹¹ Optional.



Table 55: Internal test detailed level requirements.

Subjects	Required information for the document
<ul style="list-style-type: none"> • Standard test phases , • Standard test documentation, • Standard error notation, • List of testers, • List of test procedures. 	<ul style="list-style-type: none"> • Test plan ID, • Test name, • Project ID, • Project name, • Project phase, • Project sub phase, • Goals, • Scope • Availability of test engineers, <ul style="list-style-type: none"> o Person, o Function, o Start date, o End date, o Duration. • Availability of test resources: <ul style="list-style-type: none"> o Hardware, o Software, o Person, o Other. • Modules to test: <ul style="list-style-type: none"> o Required, o Not required • Approach, • Test strategy, <ul style="list-style-type: none"> o Test duration, o Testing tasks, o Purpose of test task, o Types of testing, o Levels of testing, o Configuration management, o Results of test tasks, o Error notation, <ul style="list-style-type: none"> ▪ Task, ▪ Description, ▪ Solution, • Criteria: <ul style="list-style-type: none"> o Pass, o Fail. • Manual testing details, • Automation test details, • Lack of resources: <ul style="list-style-type: none"> o Hardware, o Software, o Person, o Other. • Time schedule: <ul style="list-style-type: none"> o Start date, o End date, o Duration, o Milestones.



Table 30: Internal test detailed level requirements.

Subjects	Required information for the document
	<ul style="list-style-type: none"> • Resource planning: <ul style="list-style-type: none"> o Start date, o End date, o Duration, o Hardware, o Software, o Person, o Other. • Risks and contingency plan: <ul style="list-style-type: none"> o Activity, o Task, o Test phase, o Resources, o Goal, o Duration. • Approved <ul style="list-style-type: none"> o Person, o Date, • Disapproved: <ul style="list-style-type: none"> o Person, o Date, o Reason, • Scope change: <ul style="list-style-type: none"> o Description, o As is, o As to be. o Phases: <ul style="list-style-type: none"> ▪ Project phase, ▪ Sub phase, ▪ Project phases affected, ▪ Sub phases affected. o Tasks: <ul style="list-style-type: none"> ▪ Task, ▪ Task affected. o Person, o Time schedule, o Approval.
<ul style="list-style-type: none"> • Image point, 	<ul style="list-style-type: none"> • Image tool, • Image Date, • Project ID, • Test ID, • Responsible person during test, • Design Document.



5.5 Factory test

Table 56: Factory test high level requirements.

Project phase name	FAT
Sub phase name	-
Sub phase description	Factory Acceptance test, this test will be performed before products are shipped to customer site.
Requirements	7. Test documentation, 8. List of test procedures, 9. Test phases, 10. FAT-Error notation, 11. List of testers, 12. Scope changes ¹² .

¹² Optional.



Table 57: Factory test detailed level requirements.

Subjects	Required information for the document
<ul style="list-style-type: none"> • Standard test phases, • Standard test documentation, • Standard error notation, • List of testers. • List of test procedures. 	<ul style="list-style-type: none"> • Test plan ID, • Test name, • Project ID, • Project name, • Project phase, • Project sub phase, • Goals, • Scope, • Availability of test engineers, <ul style="list-style-type: none"> o Start date, o End date, o Duration. • Availability of test resources: <ul style="list-style-type: none"> o Hardware, o Software, o Person, o Other. • Modules to test: <ul style="list-style-type: none"> o Required, o Not required. • Approach, • Test strategy <ul style="list-style-type: none"> o Test duration, o Testing tasks, o Purpose of test task, o Types of testing, o Levels of testing, o Configuration management, o Results of test tasks, o Error notation, <ul style="list-style-type: none"> ▪ Task, ▪ Description, ▪ Solution. • Criteria: <ul style="list-style-type: none"> o Pass, o Fail. • Manual testing details, • Automation test details, • Lack of resources: <ul style="list-style-type: none"> o Hardware, o Software, o Person, o Other. • Time schedule: <ul style="list-style-type: none"> o Start date, o End date, o Duration, o Milestones.



Table 32: Factory test detailed level requirements.

Subjects	Required information for the document
	<ul style="list-style-type: none"> • Resource planning: <ul style="list-style-type: none"> ○ Start date, ○ End date, ○ Duration, ○ Hardware, ○ Software, ○ Person, ○ Other. • Risks and contingency plan: <ul style="list-style-type: none"> ○ Activity, ○ Task, ○ Test phase, ○ Resources, ○ Goal, ○ Duration. • Approved, <ul style="list-style-type: none"> ○ Person, ○ Date, • Disapproved: <ul style="list-style-type: none"> ○ Person, ○ Date, ○ Reason, • Scope change: <ul style="list-style-type: none"> ○ Description, ○ As is, ○ As to be. ○ Phases: <ul style="list-style-type: none"> ▪ Project phase, ▪ Sub phase, ▪ Project phases affected, ▪ Sub phases affected. ○ Tasks: <ul style="list-style-type: none"> ▪ Task, ▪ Task affected. ○ Person. ○ Time schedule, ○ Approval.



5.6 SAT

5.6.1 Site accept test

Table 58: Site accept test high level requirements.

Project phase name	SAT
Sub phase name	Site Acceptance test
Sub phase description	This test will be performed at customer site. After test and issues resolved the Plant is.
Requirements	7. Test documentation, 8. List of procedures, 9. Test phases, 10. SAT-Error notation, 11. List of testers, 12. Scope changes ¹³ .

¹³ Optional.



Table 59: Site accept test detailed level requirements.

Subjects	Required information for the document
<ul style="list-style-type: none"> • Standard test phases, • Standard test documentation, • Standard error notation, • List of testers. • List of test procedures. 	<ul style="list-style-type: none"> • Test plan ID, • Test name, • Project ID, • Project name, • Project phase, • Project sub phase, • Goals, • Scope, • Availability of test engineers, <ul style="list-style-type: none"> ◦ Start date, ◦ End date, ◦ Duration. • Availability of test resources: <ul style="list-style-type: none"> ◦ Hardware, ◦ Software, ◦ Person, ◦ Other. • Modules to test: <ul style="list-style-type: none"> ◦ Required, ◦ Not required • Approach, • Test strategy, <ul style="list-style-type: none"> ◦ Test duration, ◦ Testing tasks, ◦ Purpose of test task, ◦ Types of testing, ◦ Levels of testing, ◦ Configuration management, ◦ Results of test tasks, ◦ Error notation, <ul style="list-style-type: none"> ▪ Task, ▪ Description, ▪ Solution, • Criteria: <ul style="list-style-type: none"> ◦ Pass, ◦ Fail. • Manual testing details, • Automation test details, • Lack of resources: <ul style="list-style-type: none"> ◦ Hardware, ◦ Software, ◦ Person, ◦ Other. • Time schedule: <ul style="list-style-type: none"> ◦ Start date, ◦ End date, ◦ Duration, ◦ Milestones.



Table 34: Site accept test detailed level requirements.

Subjects	Required information for the document
	<ul style="list-style-type: none"> • Resource planning: <ul style="list-style-type: none"> o Start date, o End date, o Duration, o Hardware, o Software, o Person, o Other. • Risks and contingency plan: <ul style="list-style-type: none"> o Activity, o Task, o Test phase, o Resources, o Goal, o Duration. • Approved <ul style="list-style-type: none"> o Person, o Date, • Disapproved: <ul style="list-style-type: none"> o Person, o Date, o Reason, • Scope change: <ul style="list-style-type: none"> o Description, o As is, o As to be. o Phases: <ul style="list-style-type: none"> ▪ Project phase, ▪ Sub phase, ▪ Project phases affected, ▪ Sub phases affected. o Tasks: <ul style="list-style-type: none"> ▪ Task, ▪ Task affected. o Person. o Time schedule, o Approval.



5.6.2 Commissioning

Table 60: Commissioning high level requirements.

Project phase name	SAT
Sub phase name	Commissioning of plant
Sub phase description	-
Requirements	4. Commissioning check list, 5. SAT_C-Error notation, 6. Scope changes ¹⁴ .

¹⁴ Optional.



Table 61: commissioning detailed level requirements.

Subjects	Required information for the document
<ul style="list-style-type: none"> Commissioning check list, Standard error notation. 	<ul style="list-style-type: none"> Commissioning checklist ID, Commissioning name, Project ID, Project name, Project phase, Project sub phase, Availability of test engineers, <ul style="list-style-type: none"> Start date, End date, Duration. Engineer name, Engineer ID, Function, Commissioned resources: <ul style="list-style-type: none"> Hardware Software, Person, Other. Approach, Approved design documents, Approved scope, Environmental needs, Criteria, <ul style="list-style-type: none"> Pass, Fail. Time schedule: <ul style="list-style-type: none"> Start date, End date, Duration, Milestones. Resource planning: <ul style="list-style-type: none"> Start date, End date, Duration, Hardware, Software, Person, Other, Risks and contingency plan.



Table 36: commissioning detailed level requirements.

Subjects	Required information for the document
	<ul style="list-style-type: none"> • Scope change: <ul style="list-style-type: none"> o Description, o As is, o As to be. o Phases: <ul style="list-style-type: none"> ▪ Project phase, ▪ Sub phase, ▪ Project phases affected, ▪ Sub phases affected. o Tasks: <ul style="list-style-type: none"> ▪ Task, ▪ Task affected. o Responsible person during commissioning, o Time schedule, o Approval



5.7 AMS

Table 62: AMS high level requirements.

Project phase name	AMS (After Market Services)
Sub phase name	-
Sub phase description	Service and support department, this includes also the TAC (Technical Assistance Centre)
Requirements	6. Knowledge base, 7. List of agreed services after, 8. List of manuals or information documents of software/hardware, 9. List of handover documents, 10. Scope changes ¹⁵ .

¹⁵ Optional.



Table 63: AMS detailed level requirements.

Subjects	Required information for the document
<ul style="list-style-type: none"> List of Manuals or information documents of software / hardware, Knowledge base (KB), 	<ul style="list-style-type: none"> Hardware: <ul style="list-style-type: none"> Supplier: <ul style="list-style-type: none"> Standard, Non standard. Custom: <ul style="list-style-type: none"> Standard requirements, Custom requirements. Name, Model, Manufacturer, Version, Update, ID, Price, Quantity, Description: <ul style="list-style-type: none"> Short description, Functional description, Tutorials, Manuals, Abbreviation. Warranty <ul style="list-style-type: none"> Type, Start date, End date, Duration, Price. KB: <ul style="list-style-type: none"> Known issues: <ul style="list-style-type: none"> Problem, Solutions. Unknown issues, <ul style="list-style-type: none"> Problem, Solution. Software: <ul style="list-style-type: none"> Supplier: <ul style="list-style-type: none"> Standard, Non standard. Custom <ul style="list-style-type: none"> Standard requirements, Custom requirements. Name, Manufacturer, Version, Update, ID, Price, Quantity,



Table 38: AMS detailed level requirements.

Subjects	Required information for the document
	<ul style="list-style-type: none"> ○ Description: <ul style="list-style-type: none"> • Short description, • Functional description, • Tutorials, • Manuals, • Abbreviation. ○ Warranty: <ul style="list-style-type: none"> • Type, • Start date, • End date, • Duration, • Price. ○ KB: <ul style="list-style-type: none"> • Known issues: <ul style="list-style-type: none"> • Problem, • Solutions. • Unknown issues, <ul style="list-style-type: none"> • Problem, • Solution. • Scope change: <ul style="list-style-type: none"> ○ Description, ○ As is, ○ As to be. ○ Phases: <ul style="list-style-type: none"> • Project phase, • Sub phase, • Project phases affected, • Sub phases affected. ○ Tasks: <ul style="list-style-type: none"> • Task, • Task affected. ○ Responsible person for aftermarket sales. ○ Time schedule, ○ Approval.
<ul style="list-style-type: none"> • List of total available services, • List of Agreed services after, 	<ul style="list-style-type: none"> • Service management, • Parts management, • Upgrade assessment, • Yearly systems check, • After sales support.
<ul style="list-style-type: none"> • List of handover documents, 	<ul style="list-style-type: none"> • Hardware specifications, <ul style="list-style-type: none"> ○ List of hardware, • Software specifications, <ul style="list-style-type: none"> ○ List of software, • Design specifications, • Implementation specifications.



5.8 Approval

Table 64: Approval high level requirements.

Project phase name	Approval (QMS)
Sub phase name	-
Sub phase description	Review process of documentations with the client.
Requirements	1. Review of the document.

Table 65: Approval detailed level requirements.

Subjects	Required information for the document
Employee information	<ul style="list-style-type: none">• Name of approver,• Date,• Signature.



5.9 Scope change

Table 66: Scope change high level requirements.

Project phase name	Scope changes
Sub phase name	-
Sub phase description	Scope changes which occur within each project phase and have effect on the whole project
Requirements	17. Check list, 18. Time schedule, 19. Q-List of hardware, 20. Q-List of software, 21. P-List of hardware, 22. P-List of software, 23. Milestones, 24. Deliverables, 25. List of activities, 26. List of roles/tasks, 27. List of involved actors, 28. List of expertise, 29. Q-Scope , 30. P-Scope , 31. Project Phases, 32. List of client requirement.



Table 67 Scope change detailed level requirements.

Subjects	Required information for the document
	<ul style="list-style-type: none"> • Standard template: <ul style="list-style-type: none"> ○ English language. ○ Grammar for all documentation is set to English (country). • Standard spacing, <ul style="list-style-type: none"> ○ Paragraphs, ○ Tables, <ul style="list-style-type: none"> ▪ Table of content, ▪ Table of figures. ○ Figures, ○ Bibliography/reference, ○ Appendix. • Common writing style, <ul style="list-style-type: none"> ○ Font size, ○ Font type, ○ Honeywell logo, ○ Client logo, ○ Header, ○ Footnote. • Scope change: <ul style="list-style-type: none"> ○ Description, ○ As is, ○ As to be. ○ Phases: <ul style="list-style-type: none"> ▪ Project phase, ▪ Sub phase, ▪ Project phases affected, ▪ Sub phases affected. ○ Tasks: <ul style="list-style-type: none"> ▪ Task, ▪ Task affected. ○ Person. ○ Time schedule,



6. Detailed requirements policies

In this chapter general policies will be mentioned which will help to improve the overall work flow and efficiency. Bear in mind that dictating these policies will not act as a strict follow through guide for the everyday work. However it will act as a safety line in the daily usage.

6.1 General policies

The following policies will act as general policies which will be applicable to all situations as required.

- A check list is always used to maintain the integrity of the project and project steps.
- In case checklist does not cover sufficient support, in deliberation a project plan is followed for the processes.
- A document regarding project phases will be assembled using a template.
- In case a template regarding the appropriate phase does not exist, one will be created in cooperation of the OSS Team.
- Version control must always be maintained.
- Occurrence of changes to a document should lead to a new version of the document.
- The author is free to upgrade the version of his/hers own document at his disclosure.
- An updated document must be indicated to those concerned.

6.2 Document management

6.2.1 Document naming

Document naming is crucial in identification of the documents. Therefore the following document naming is recommendable:

- Documents must have a universal naming for each phase of each project.
- Document must be identifiable through naming abbreviations.
- A list of all the naming abbreviation must be at hand and accessible at all time.
- All Documents regarding project must contain abbreviation regarding the project and project phase and version number.
- Version number must be stated at all times.
- Each document must be distinct with other documents by the way of version control.
- Documents must contain an explanation of the name abbreviation.
- A status monitor must be kept of the steps and the tasks and updates must be provided.

6.2.2 Document creation

Policies regarding the creation of a document are:

- All documents must have the OSS Team layout template.
- A change to the layout of template is only applied by the appropriate personnel in cooperation with the OSS Team.
- All documentation which is meant for delivery of the project phase must have the same format as the intended template.
- Final version of documents must be converted to a universal format such as PDF [14].
- All information regarding author, project, date and project phase must be stated within the document.
- Indication must be provided when a document is being created.



6.2.3 Document editing

Policies regarding editing of a document are:

- Editing a document must be in approval of the author. In case of no approval comments or an indication of the to be change piece could be provided.
- Before all editing within the document track changes must be kept.
- In applications where the functionality track change is available, it must be used for editing purposes.
- In applications where there is a lack of track changes functionality, a colour font must be chosen in order to indicate changes. The colour of track changes must be stated within the document for identification.
- All Comments regarding the document must be mentioned clearly. Use of the comment tool is a must for application with this functionality. Otherwise usage of one's own judgment for indication is authorized.

6.2.4 Document storage

The policies regarding the document storage are the following:

- Storage of the documents will be at a central location.
- The structure of the storage unit will be in accordance of the OSS Team.
- The structure is always followed.
- Adapting the structure must occur in cooperation of the OSS Team in advance.
- Prior to a project the structure of the documents storage is determined accordance to category of the project.
- Relevant documents must be stored under their own appropriate directory.
-

6.2.5 Document sharing

Policies regarding document sharing are:

- Documents can only be shared with the authorized personnel.
- The author can determine whether a person is authorized to view his work.
- Documents must be shared with those who are the reviewer and approver.
- A document must be signed and approved before it can be shared with a third person outside OSS Team.
- Sharing must be contained to a secure environment.
- Templates must be shared with every OSS Team member.
- All relevant documentation regarding the projects must be shared with every member of the OSS Team.
- Knowledge base must be shared with every member of the OSS Team.
- Documentation which have to be shared with a third party must be identified prior to being shared
- Sharing with a third party can take place in several ways:
 - Through mail messages.
 - Providing access to the shared document within the Honeywell system.

6.3 Security

Policies regarding security:

- Documents which are shared through mail must be encrypted according to Honeywell standards [2].
- Documents which are shared through mail must be password protected. This password may not be send within the same message.
- Access to third part for sharing purpose must only provided to the pre specified location within Honeywell. Also access rights must be limited to the minimal requirements.



- Moving documents on the mobile storage units must be contained to the utmost necessary. In those cases encrypting documentation is highly recommended.
- Passwords should be stored in different documentation. Only reference to the appropriate documentation is required.
- A secure environment with minimum access must be provided for keeping the data sensitive documentation.
- All documentation containing passwords and data sensitive information should be password protected. These passwords should be located at different directory.
- Documentation containing password and sensitive information cannot be copied or moved without taking appropriate approval steps and measures.
-

6.4 Template management

6.4.1 Template creation

Templates will be outdated or incorrect after a while. Or there can be some new technology that is needed during projects, which require new templates. Template creation is for creating new templates to be used in design documents.

- There must be an agreement for creating a (new) template.
- Template documents must have a universal naming.
- Template documents should differ for internal or external usage.
- FDS templates should contain the minimal compulsory index.
- DDS templates should contain the minimal compulsory index.
- There should be a logical consistency between relationships of an FDS and its corresponding DDS.
- Final versions of template documents should be in an agreed format, to be used as components for design documents.
- Templates must be created by one person namely the owner.
- Templates must comply with the layout style of the OSS Team.

6.4.2 Template edit

Template editing is for adjusting the information in an existing template document. This will be used when information of the required template is incorrect or out dated.

- Allowing editing a template document, first consult with the owner of the template document.
- Make clearly visible what has been altered.
- After editing template document, update revision number and date.

6.4.3 Template storage

Templates are the building blocks of design documents. In order to be made available for every member of the OSS Team, it should be stored somewhere accessible for every member.

- Store final versions of template document on a central location.
- Use agreed file names, version, and date.
- Template must be reviewed before approval.
- Only store a template document if it's approved.
- The structure of the storage unit will be in accordance of the OSS Team.
- The structure is always followed.



6.4.4 Template sharing

The purpose of sharing template is that each member of the OSS Team can create design documents more efficiently, by using templates and import them into their documents. Following these policies will help making so.

- There should be one person who is responsible for a template.
- The shared template should serve as building blocks for the FDS and DDS.
- It's not intended to duplicate information. Instead make references to other documents.
- In case of a template being shared, it must occur securely.

6.5 Knowledge management

6.5.1 Knowledge adding

Experiences or valuable research knowledge must be stored and shared with others or serve as reminders. Although all knowledge is valuable, only the essence is needed for storage.

- There must be a consensus in needing a piece of knowledge.
- If knowledge concerns technical details. Record the knowledge in a universal method.
- Use an agreed syntax to write down the knowledge.

6.5.2 Knowledge edit

It is possible that available knowledge has to be adjusted for the interest of quality management. The following knowledge edit policies can be followed.

- Allowing editing knowledge, first consult with the owner of the concerning knowledge.
- Make clearly visible what has been altered.
- After editing piece of knowledge, add updaters name and date.

6.5.3 Knowledge storage

Templates are the building blocks of design documents. In order to be made available for every member of the OSS Team, it should be stored somewhere accessible for every member.

- Store knowledge on a central location.
- Use agreed title names.
- Only store pieces of knowledge if it's approved.
- The structure of the storage unit will be in accordance of the OSS Team.
- The structure is always followed.

6.5.4 Knowledge sharing

Sharing knowledge is in the best interest for members who doesn't know or are uncertain about a certain subject. Verified knowledge can be a reference to fragments in a design.

- There should be a person who is responsible for a piece of knowledge.
- Users who like to make use of the knowledge comply with the policies made for knowledge-adding, knowledge-edit, and knowledge-storage.
- Sharing knowledge must preferably occur in the manner approved by the OSS Team.

6.6 Review

Review process is intended for finishing up a document for finalizing. The document will be thoroughly analysed and evaluated to.

- First a request for an review must be made by traceable manner.
- The to be reviewed document should be accessible for the OSS Team.



- The to be reviewed document should follow standard checklist. To see if critical components are mentioned.
- There should be a reviewer appointed to a ready to be reviewed document.
- Changes during review must be clearly highlighted.
- After review, document name must be altered properly to distinguish itself.
- Reviewed document must be returned to the original owner.
- Owner must be updated of the reviewed status.
- Repeat review process if necessary, until the review is accepted.

6.7 Approval

For the approval process two distinctions has been made namely:

- Internal:
The internal approval regards the approval process which takes place within the OSS Team itself. Each document which has to be delivered must first be approved within the OSS Team by another person than the author. This process also called Quality Management System [15] already exists within Honeywell [2]. However this process has been found a bit tedious. Therefore an adaptation of this process will be advisable.
- External:
The external approval concerns the approval process by which a delivered document has to be approved by the client. This process is already predefined within the Honeywell.

6.7.1 Approval internal

Policies regarding the internal approval process:

- An approval process will not start unless the document has been reviewed.
- The approval process must be requested to a third person other than the author and the reviewer. In most cases the responsibility resides with the project manager.
- The project manager must be informed of the process request through a communication manner of which the status can be recorded.
- Approval process may take a period of time. The duration of this period is dependent of the project size. Also the project schedule of the project can have influence on the duration of the approval processes.
- The project manager has to either reject or approve the document on the day of the deadline for approval.
- Rejection must be indicated within the document as well as in the communication message.
- The status of the document must be updated through the entire processes.
- The reason of the rejection must clearly be stated



6.7.2 Approval External

This process is already defined within Honeywell. So no changes have to be made with the already existing policy [15].

6.8 *Scope changes*

Complying with scope changes is a tedious process. That is why before processing the scope changes, it's better to distinguish if the scope change is large or not. This can speed up the process of applying the scope changes.

- Scope changes should only occur in consultation with client.
- Determine if scope change is large or minor.
- Determine which phase requires the scope changes.
- Determine which phases are also related to change due to scope change.
- Make clearly which part needs scope changes.
- Highlight the altered parts.
- Use proper file names.
- Make ready for review process.
- Formally inform all involved members of the to be applied scope changes before hand.



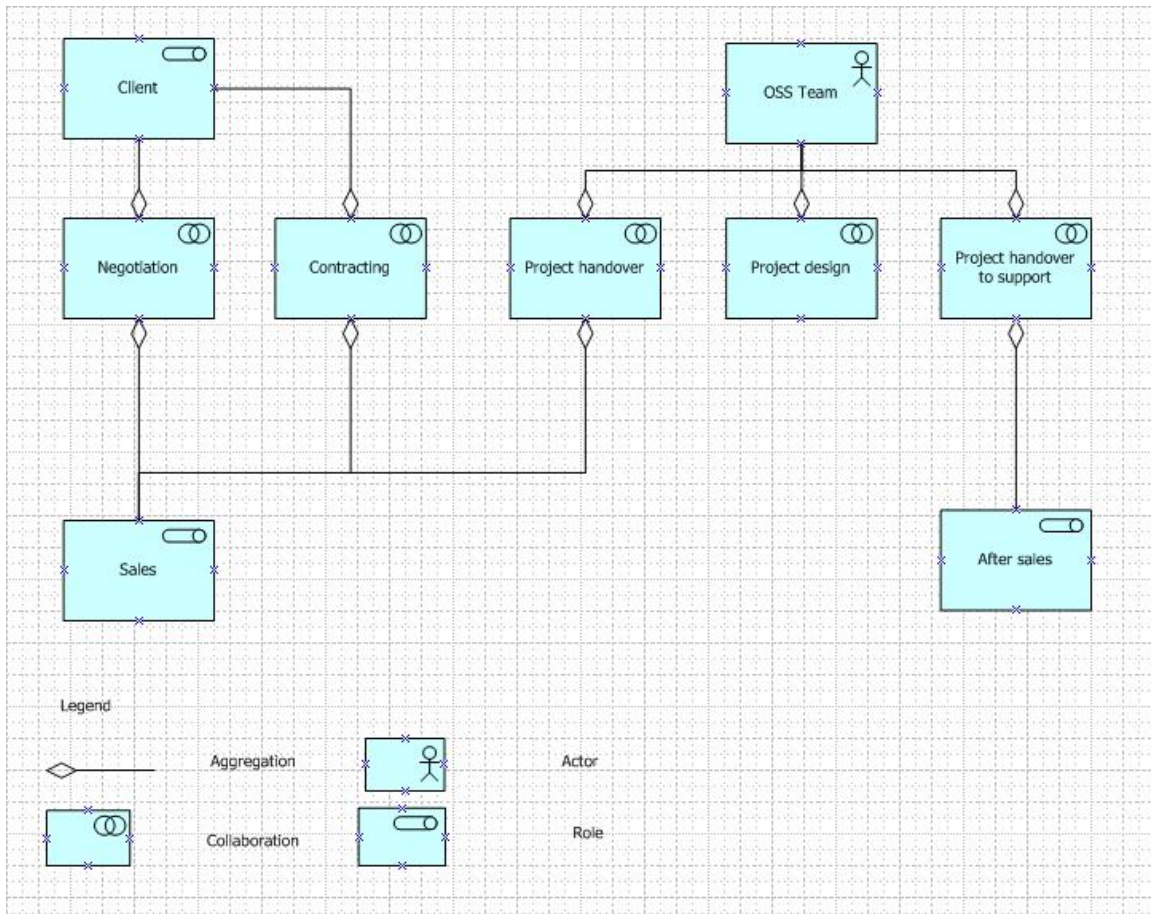
7. Bibliography

- [1] al., Marc Lankhorst et. „Enterprise Architecture at Work.“ In *Enterprise Architecture at Work*, door Marc Lankhorst et al., 334. Springer, 2005.
- [2] *Honeywell*. 2009. <http://www51.honeywell.com/> (accessed 2009).
- [3] Hugo ter Doest, Maria Jacob, Marc Lankhorst (Ed.) & Diederik van Leeuwen. *Viewpoints Functionality and Examples*. Enschede, 2003-2004.
- [4] H. Safari Asl, Y.F. Tang. „Software choice.“ Internal advisory, 2009.
- [5] Group's, ArchiMate The Open. <http://www.archimate.org/>. (accessed 2009).
- [6] Group, The Open. „ArchiMate 1.0 Specification.“ *Technical specification*. Van Haren Publishing, 02 2009.
- [7] Corporation., Answers. *Answers.com*. 2009. <http://www.answers.com> (accessed 2009).
- [8] Microsoft. *Microsoft Office SharePoint Server 2007*. <http://office.microsoft.com/nl-nl/sharepointserver/FX100492001043.aspx> (accessed 2009).
- [9] Inc., The Computer Language Company. *PCMag.com*. 2009. <http://www.pcmag.com> (accessed 2009).
- [10] Foundation, OpenLDAP. *OpenLDAP*. 1998-2009. <http://www.openldap.org/> (accessed 2009).
- [11] Farlex, Inc. *TheFreeDictionary*. 2009. <http://encyclopedia2.thefreedictionary.com> (accessed 2009).
- [12] Defining Technology, Inc. *Middleware Resource Center*. 1997-2008. <http://www.middleware.org/> (accessed 2009).
- [13] Farlex, Inc. 2009. <http://www.thefreedictionary.com/> (accessed 2009).
- [14] Incorporated., Adobe Systems. *Adobe Acrobat*. 2009.
<http://www.adobe.com/nl/products/acrobat/?promoid=BPBVM> (accessed 2009).
- [15] Procedure, HPS Standard Operating. *G-SOP-QA.1.2.1.1 - QMS Document Add_Change Request*.

Appendix

Appendix A

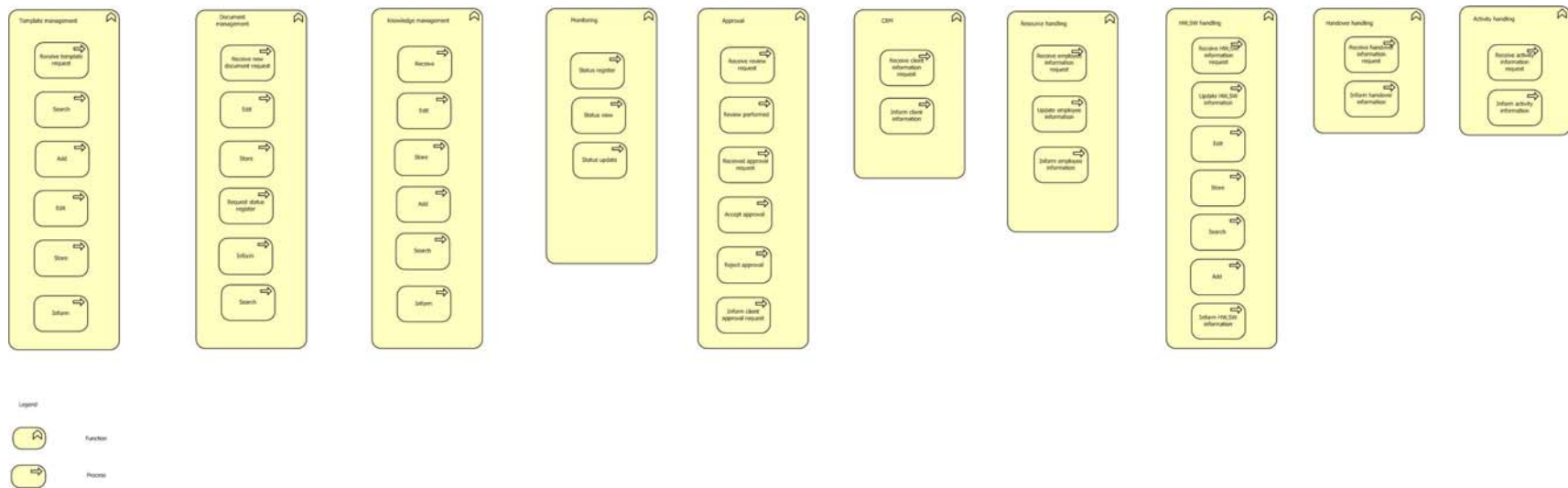
Appendix A1



Appendix figure 40: Actor cooperation viewpoint.



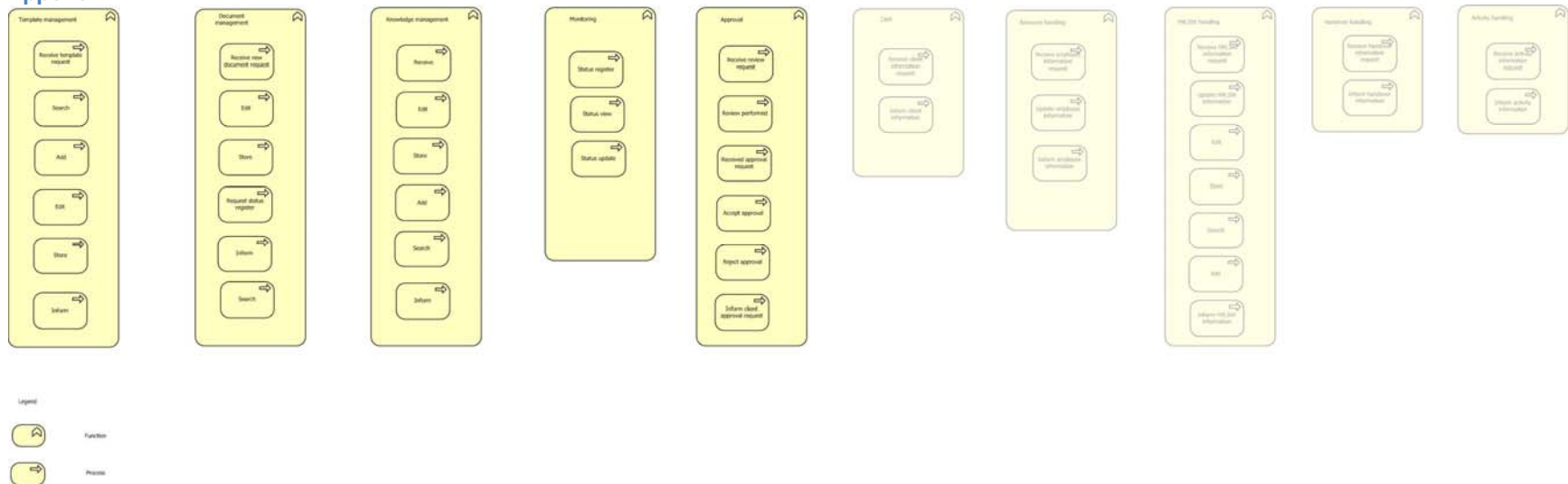
Appendix A2



Appendix figure 41: Business processes viewpoint (Overall).



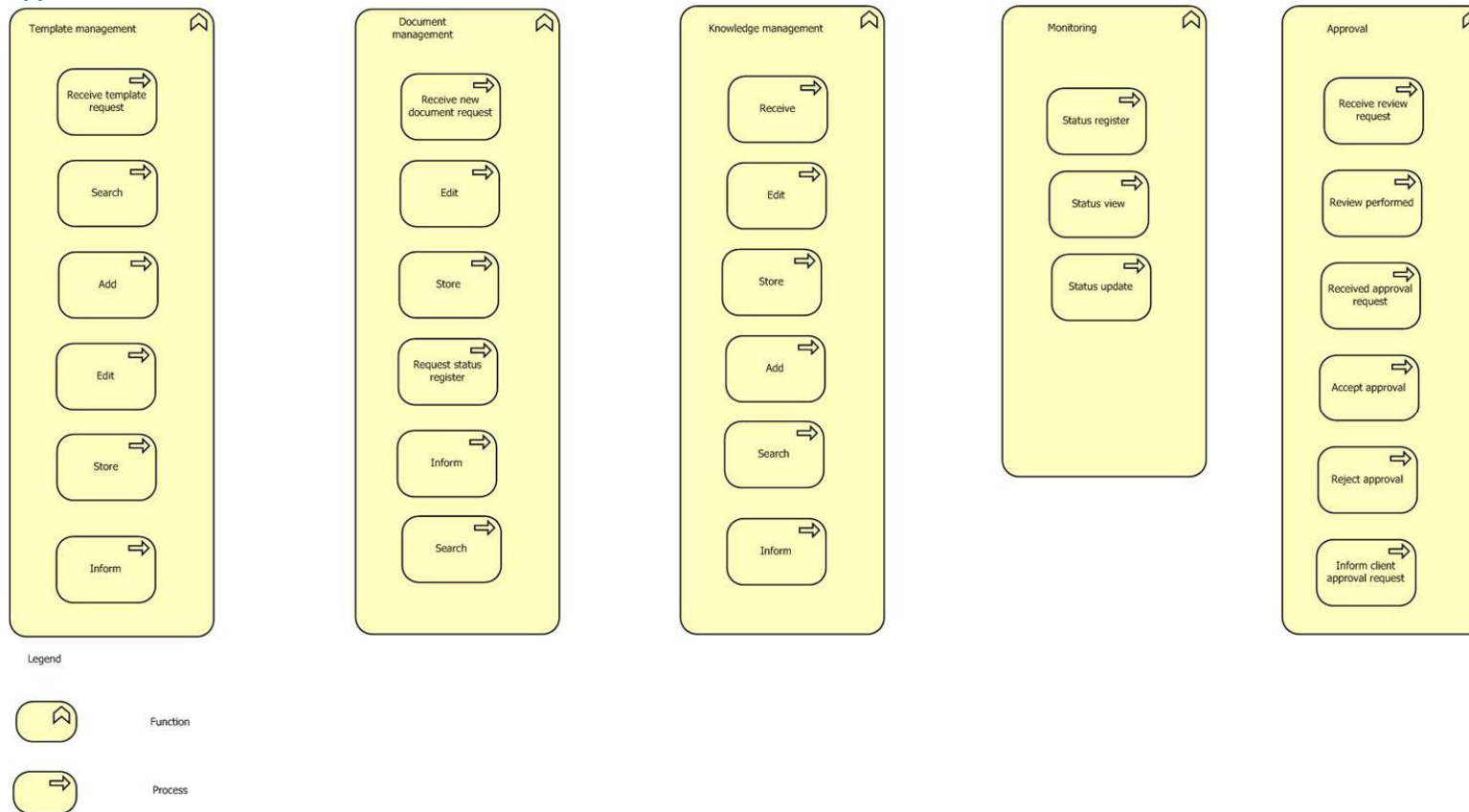
Appendix A2.1



Appendix figure 42: Business processes viewpoint (Highlight left).



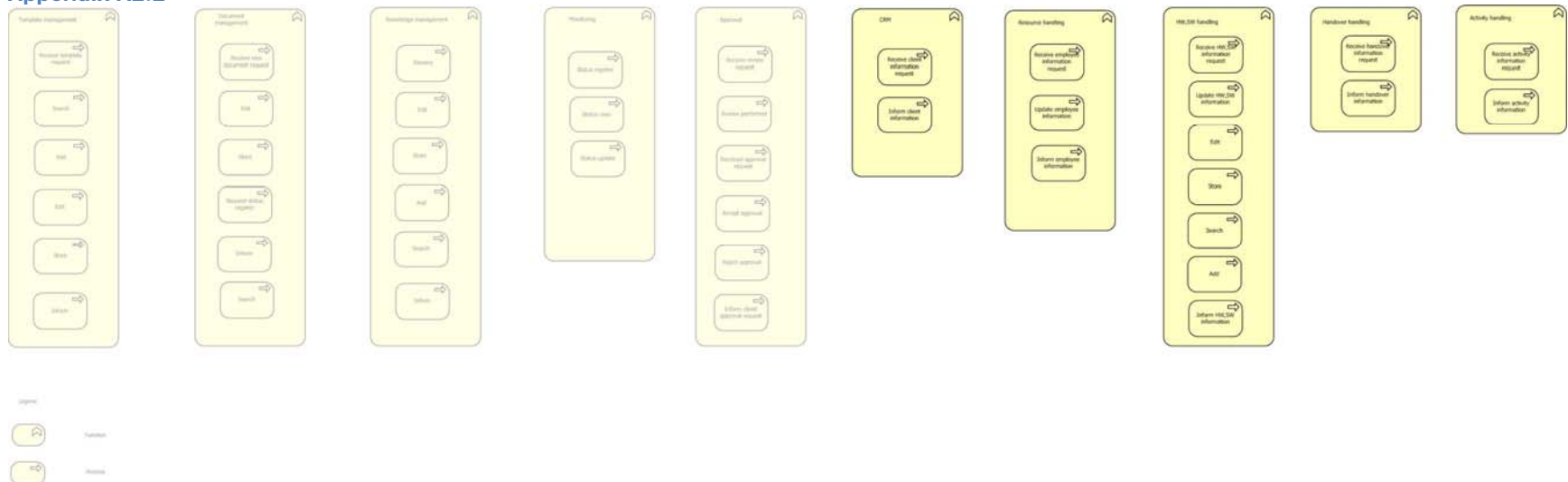
Appendix A2.1.1



Appendix figure 43: Business processes viewpoint (Left).



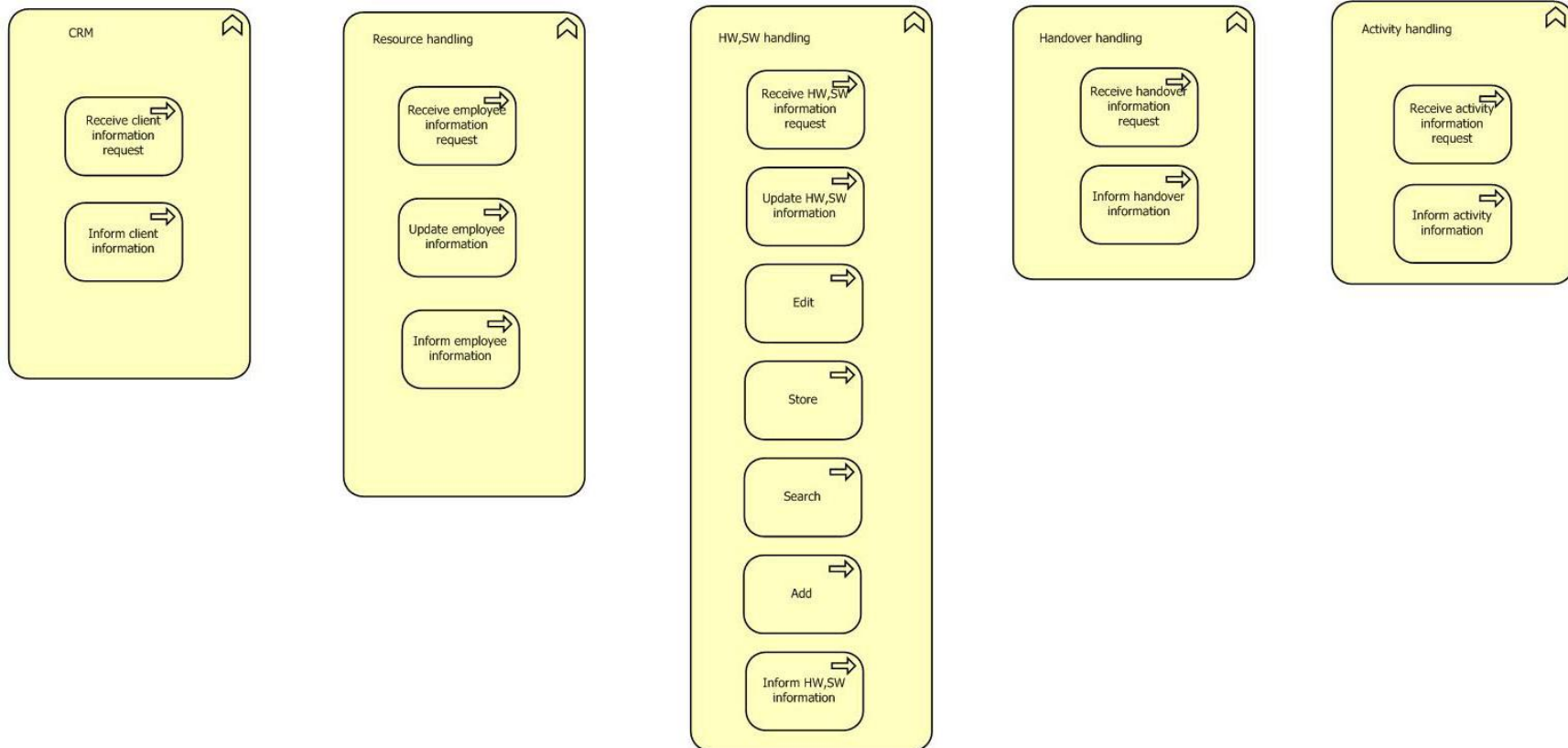
Appendix A2.2



Appendix figure 44: Business processes viewpoint (Highlight right).



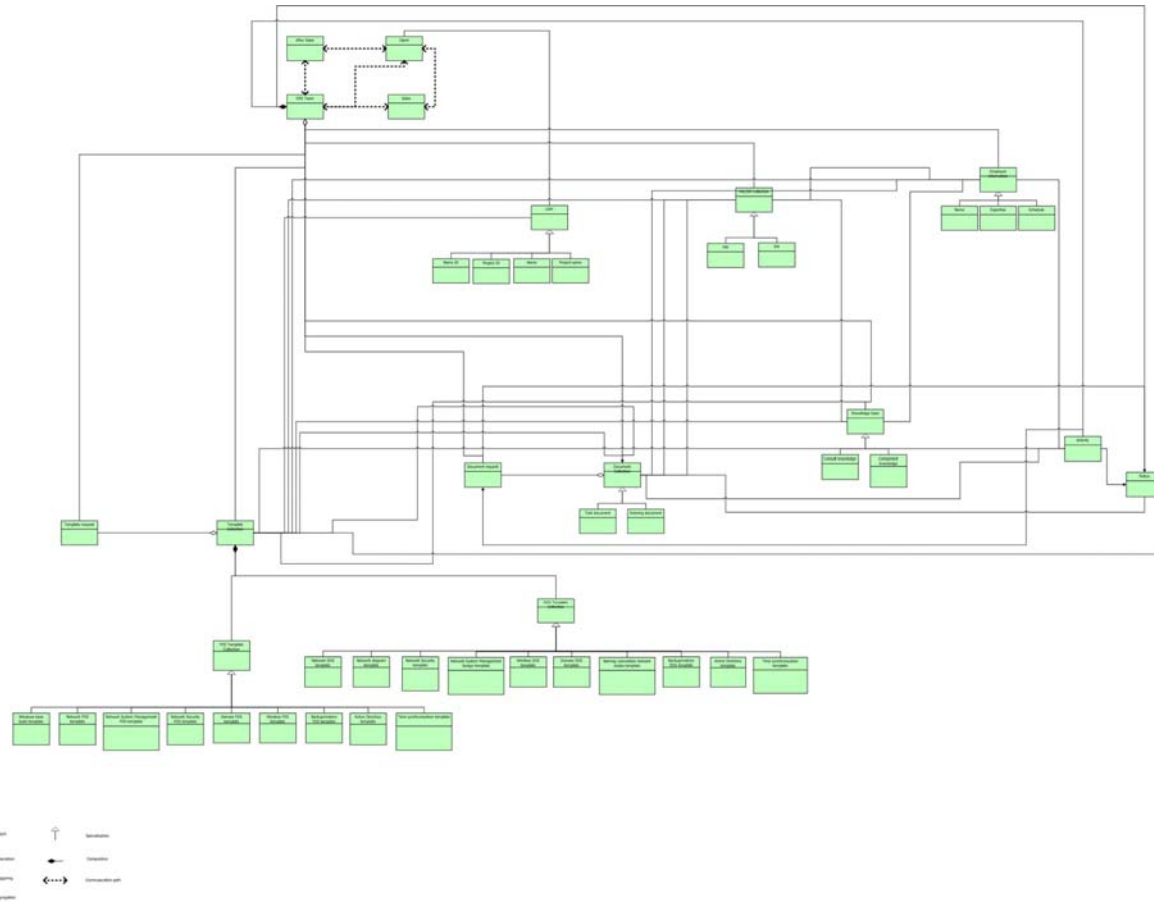
Appendix A2.2.1



Appendix figure 45: Business processes viewpoint (Right).



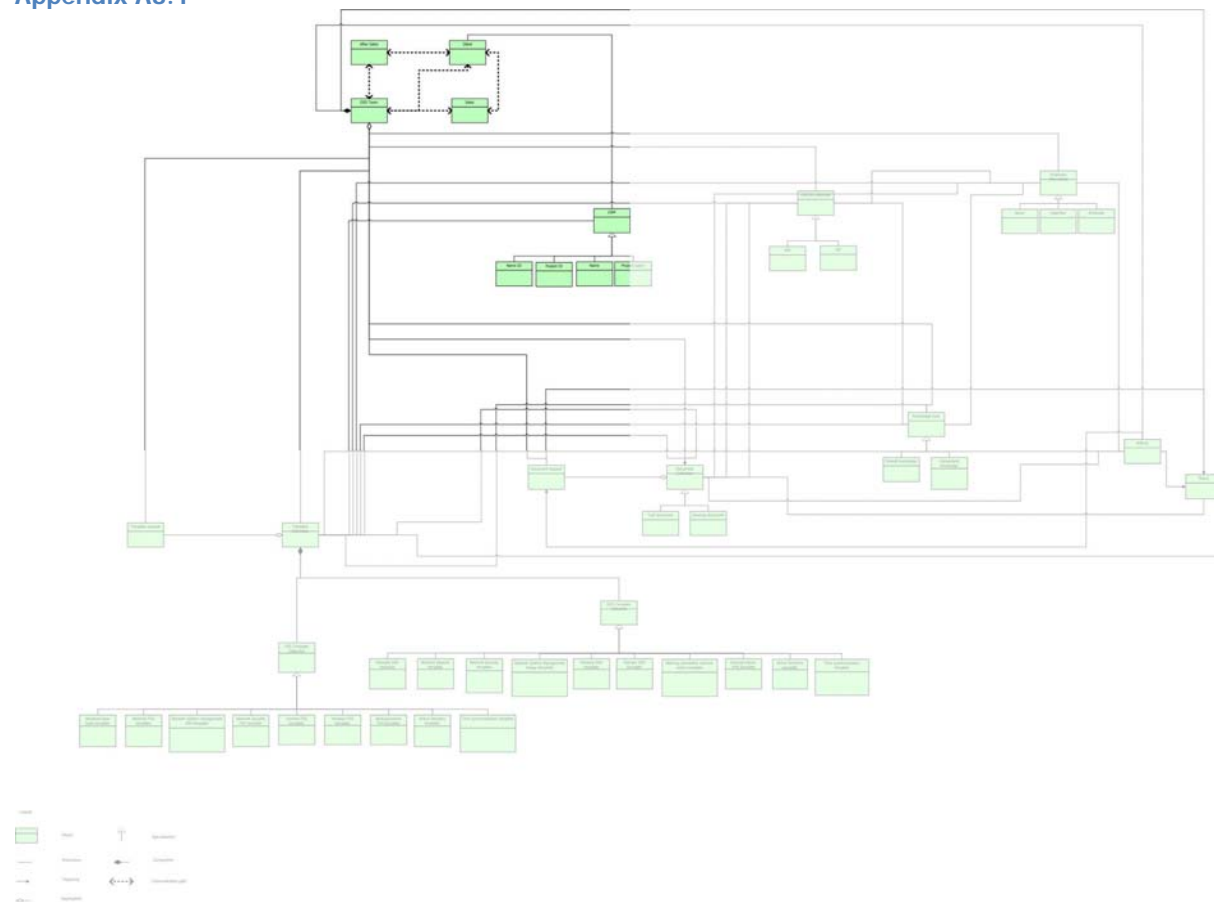
Appendix A3



Appendix figure 46: Information structure viewpoint (Overall).

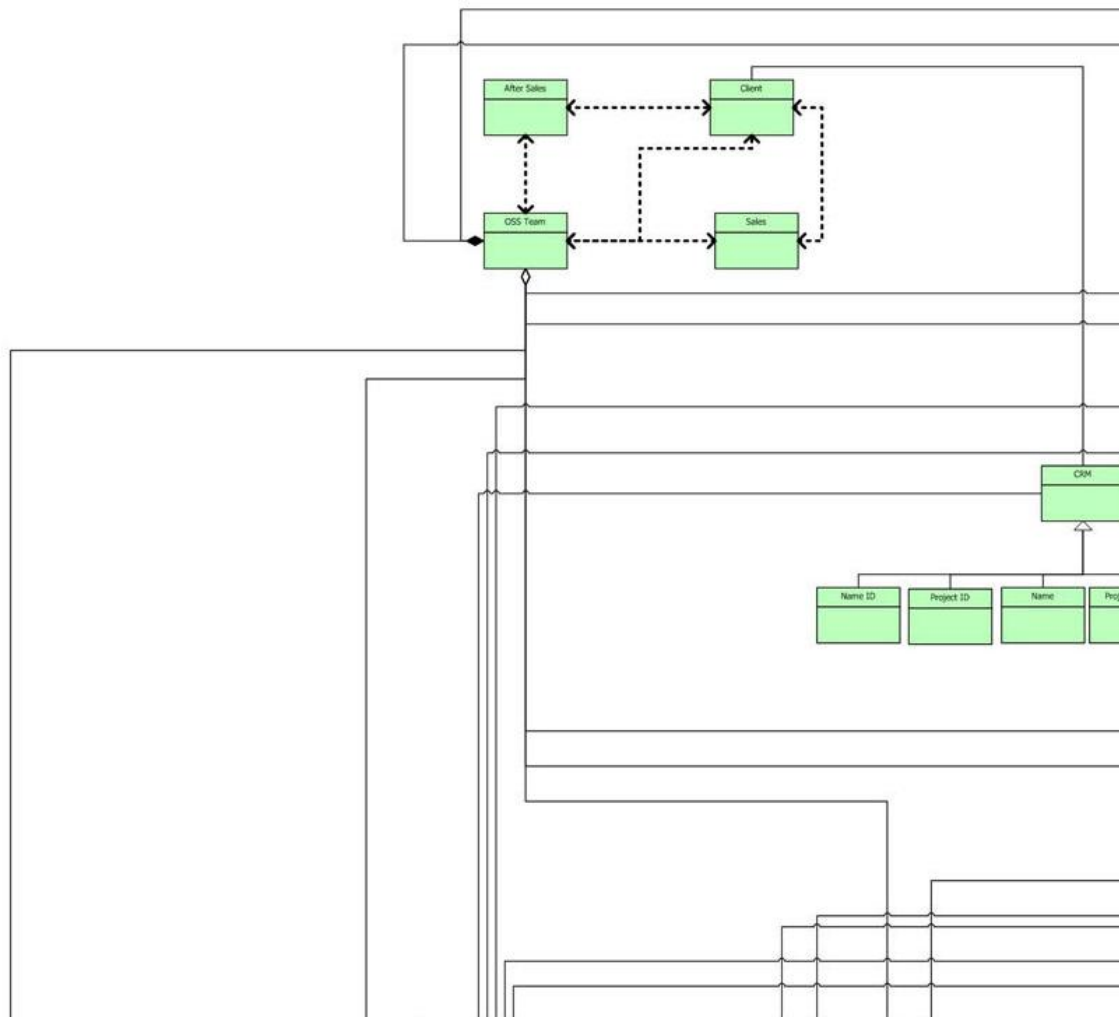


Appendix A3.1



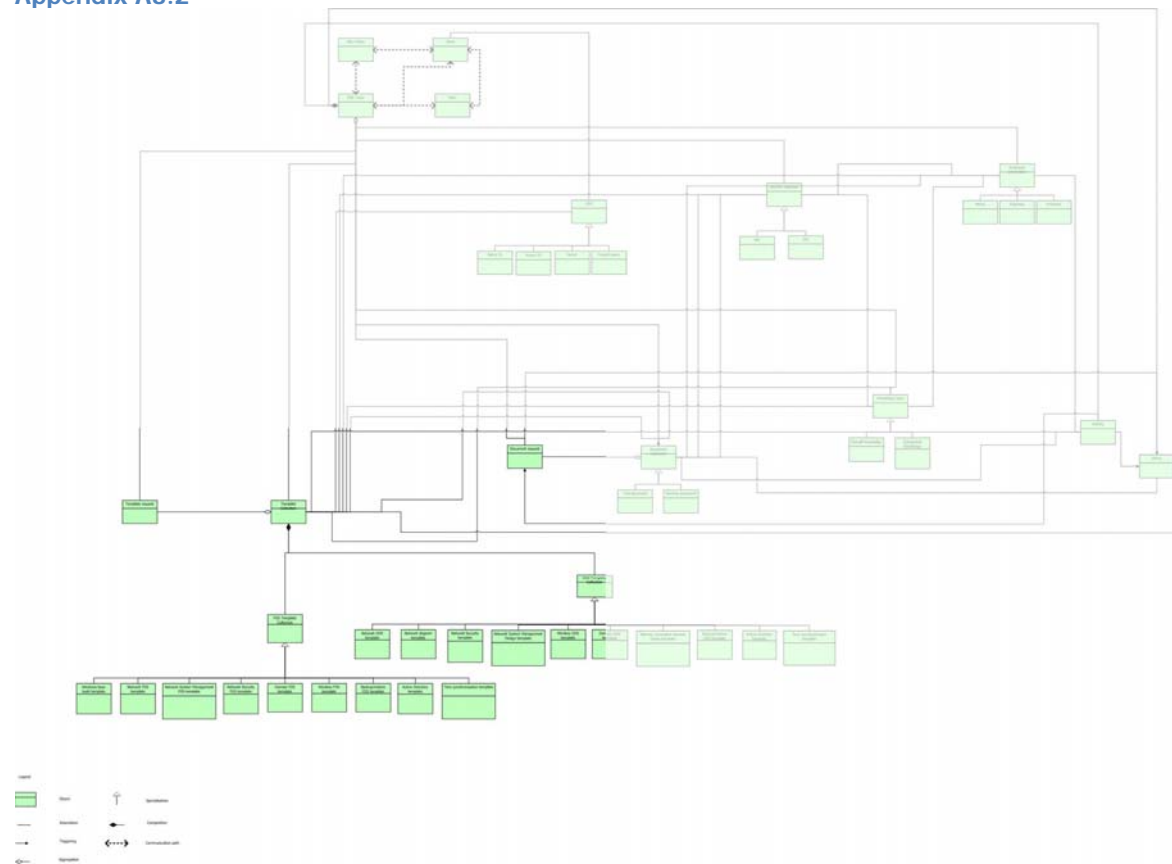
Appendix figure 47: Information structure viewpoint (Highlight Upper left).

Appendix A3.1.1



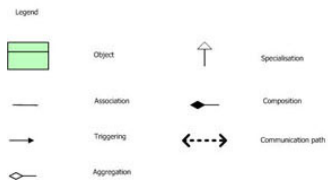
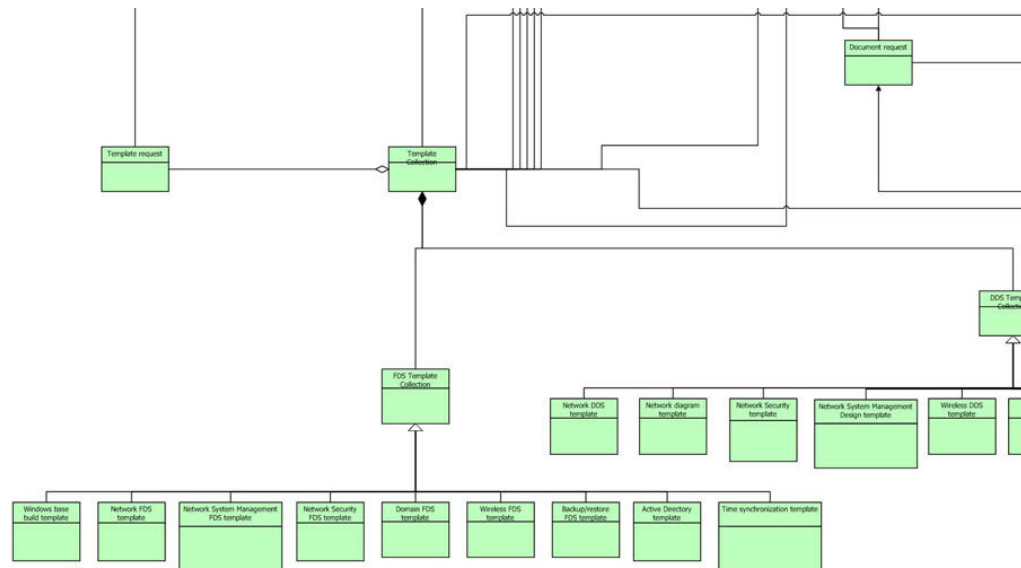
Appendix figure 48: Information structure viewpoint (Upper left).

Appendix A3.2



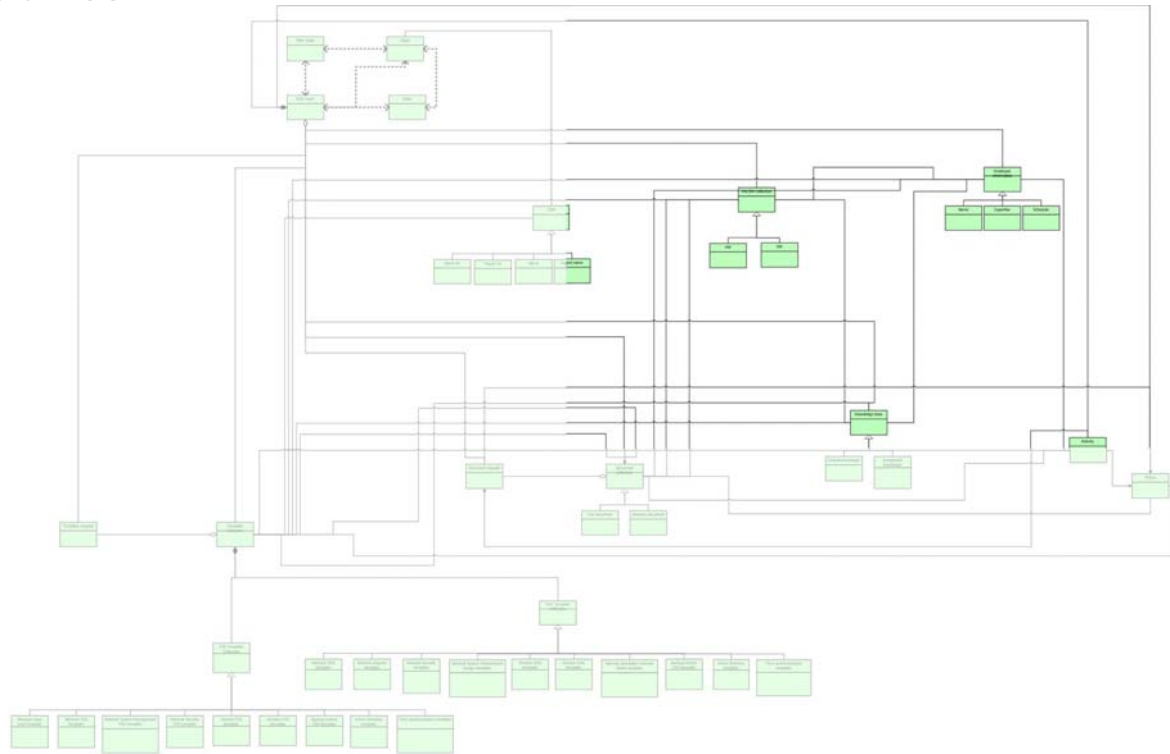
Appendix figure 49: Information structure viewpoint (Highlight Lower left).

Appendix A3.2.1



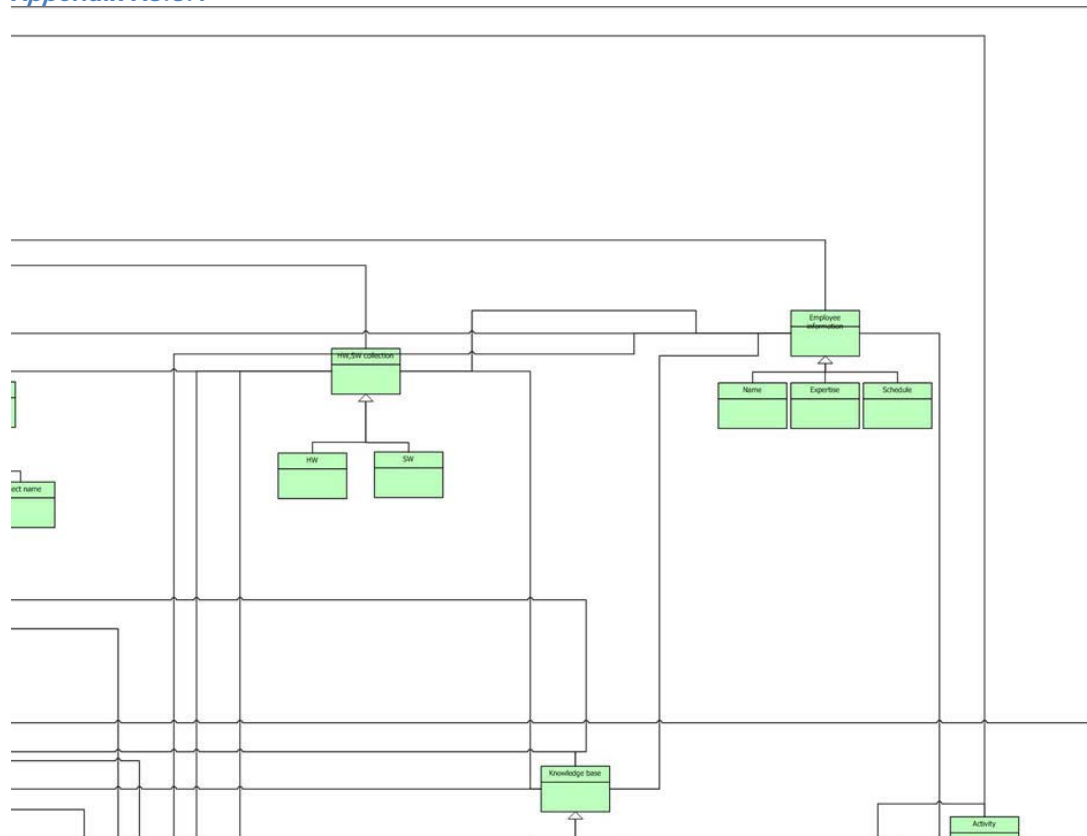
Appendix figure 50: Information structure viewpoint (Lower left).

Appendix A3.3



Appendix figure 51: Information structure viewpoint (Highlight Upper right).

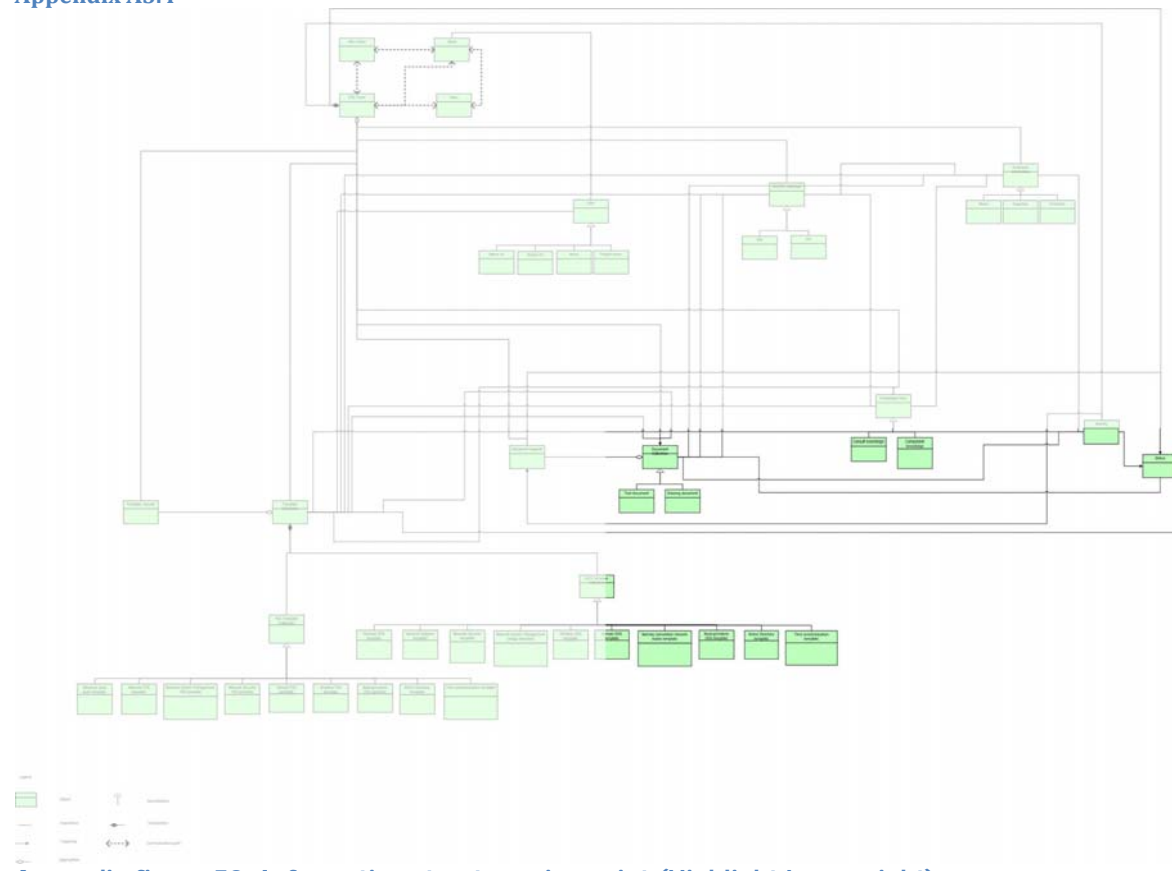
Appendix A3.3.1



Appendix figure 52: Information structure viewpoint (Upper right).



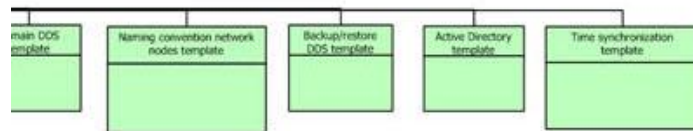
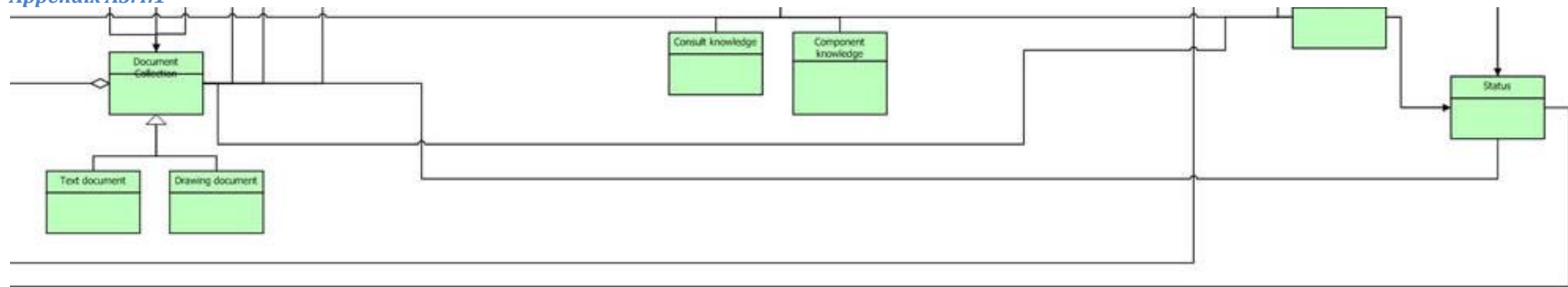
Appendix A3.4



Appendix figure 53: Information structure viewpoint (Highlight Lower right).

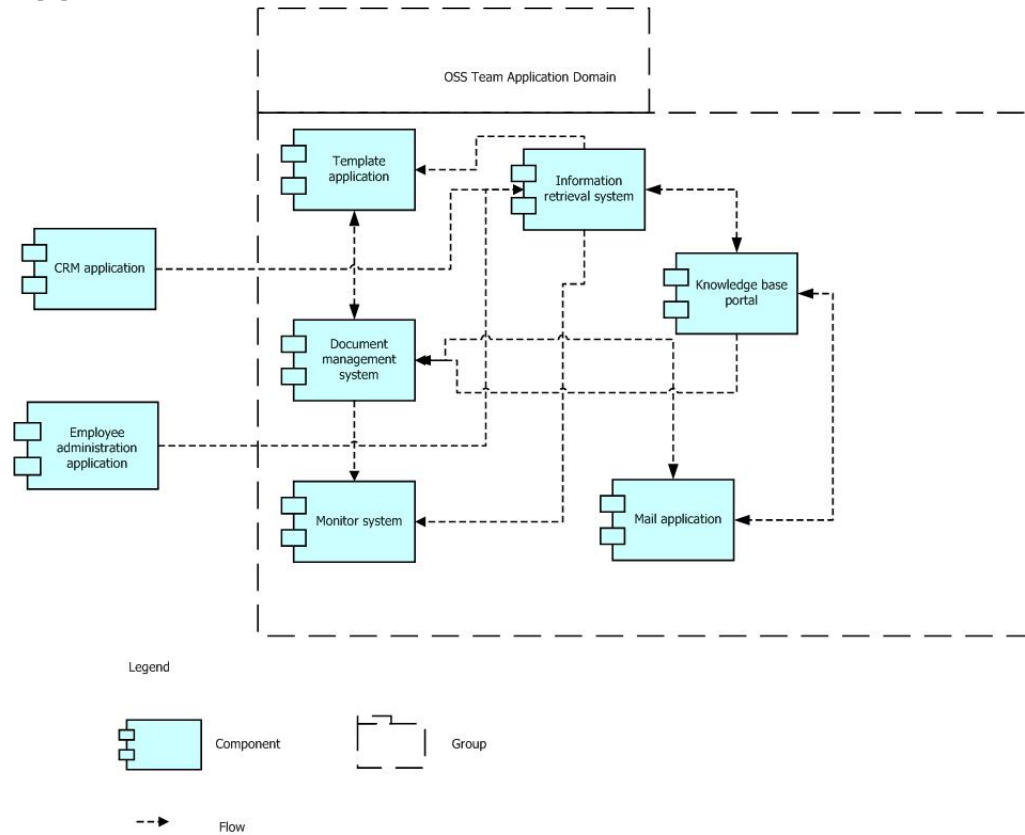
Honeywell

Appendix A3.4.1



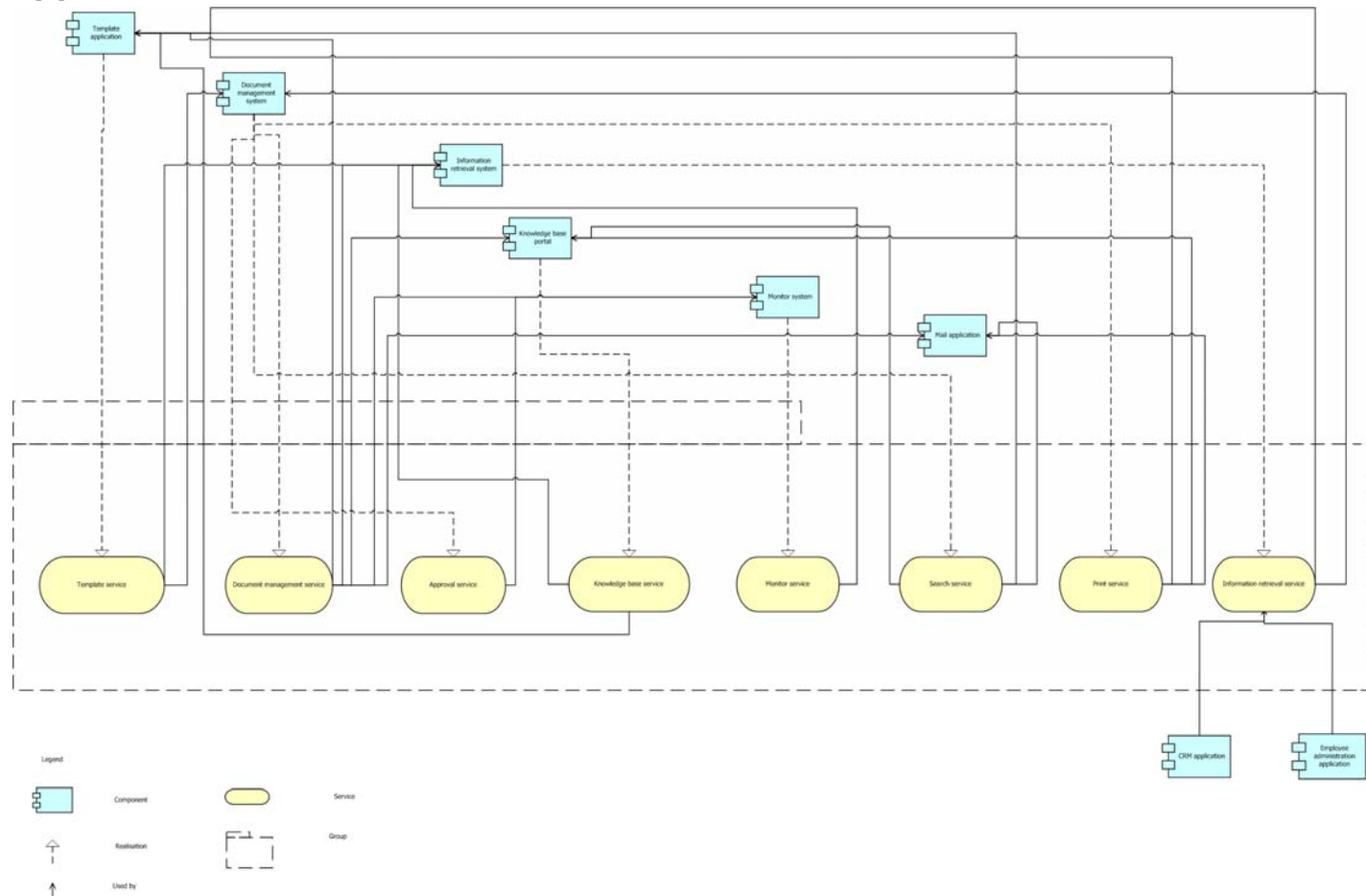
Appendix figure 54: Information structure viewpoint (Lower right).

Appendix A4



Appendix figure 55: Application cooperation viewpoint (Overall).

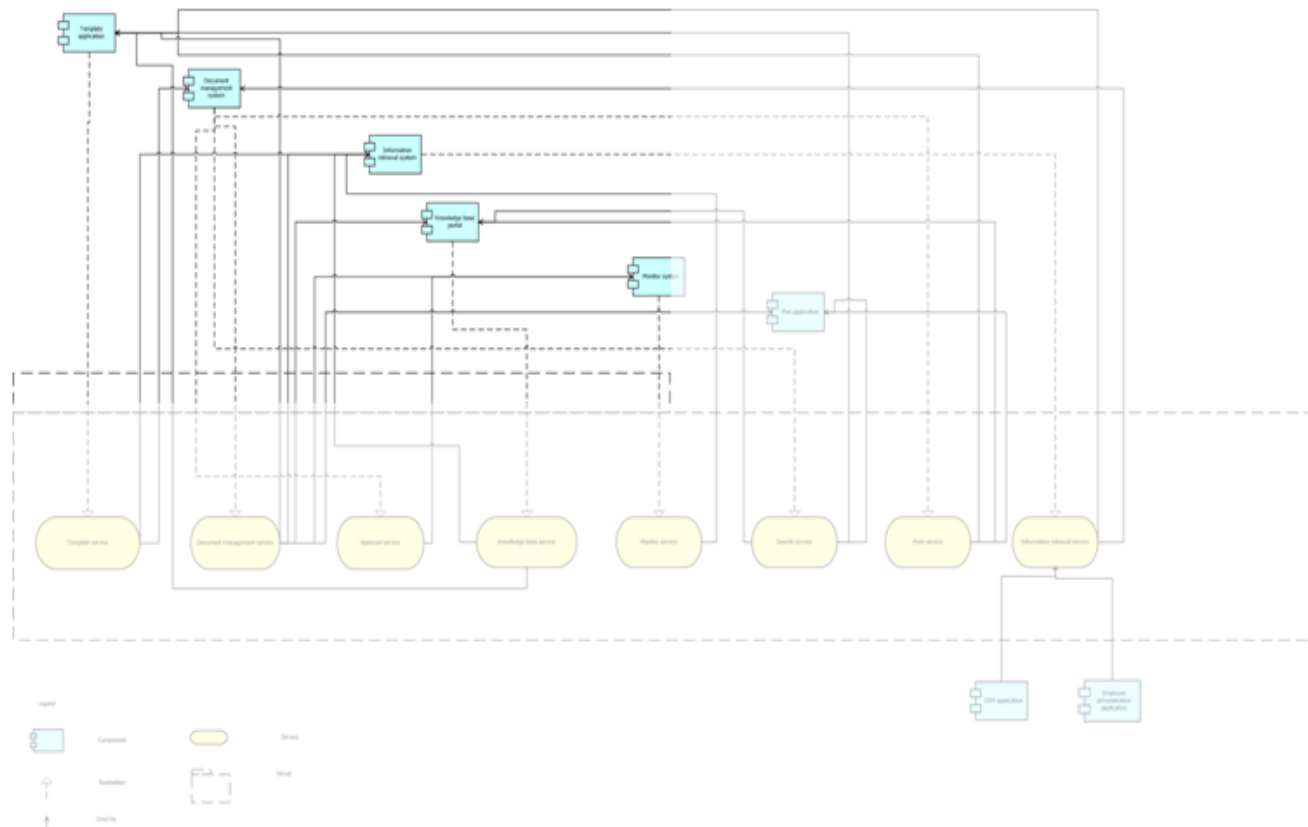
Appendix A5



Appendix figure 56: Application connected to services (Overall).

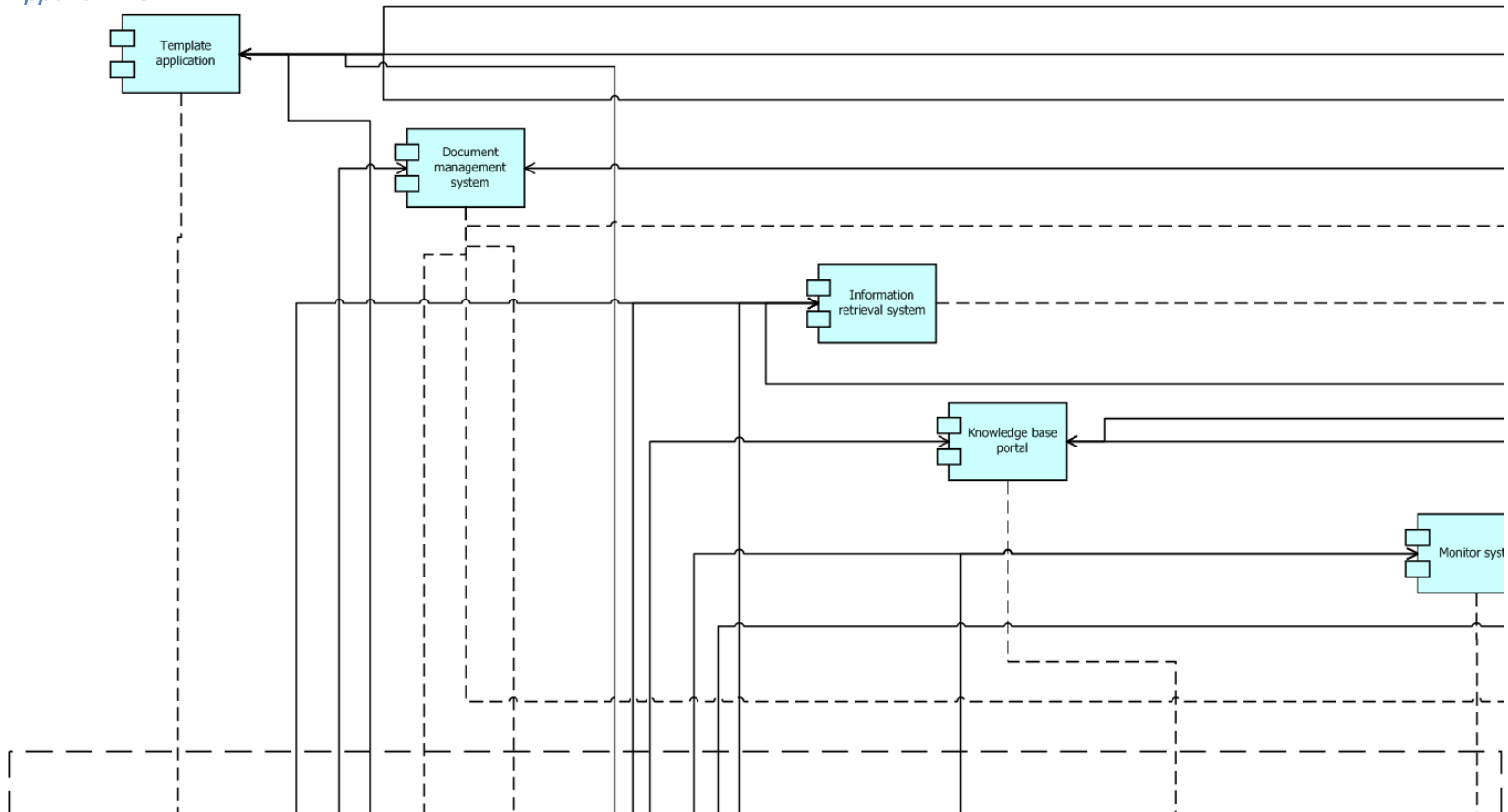


Appendix A5.1



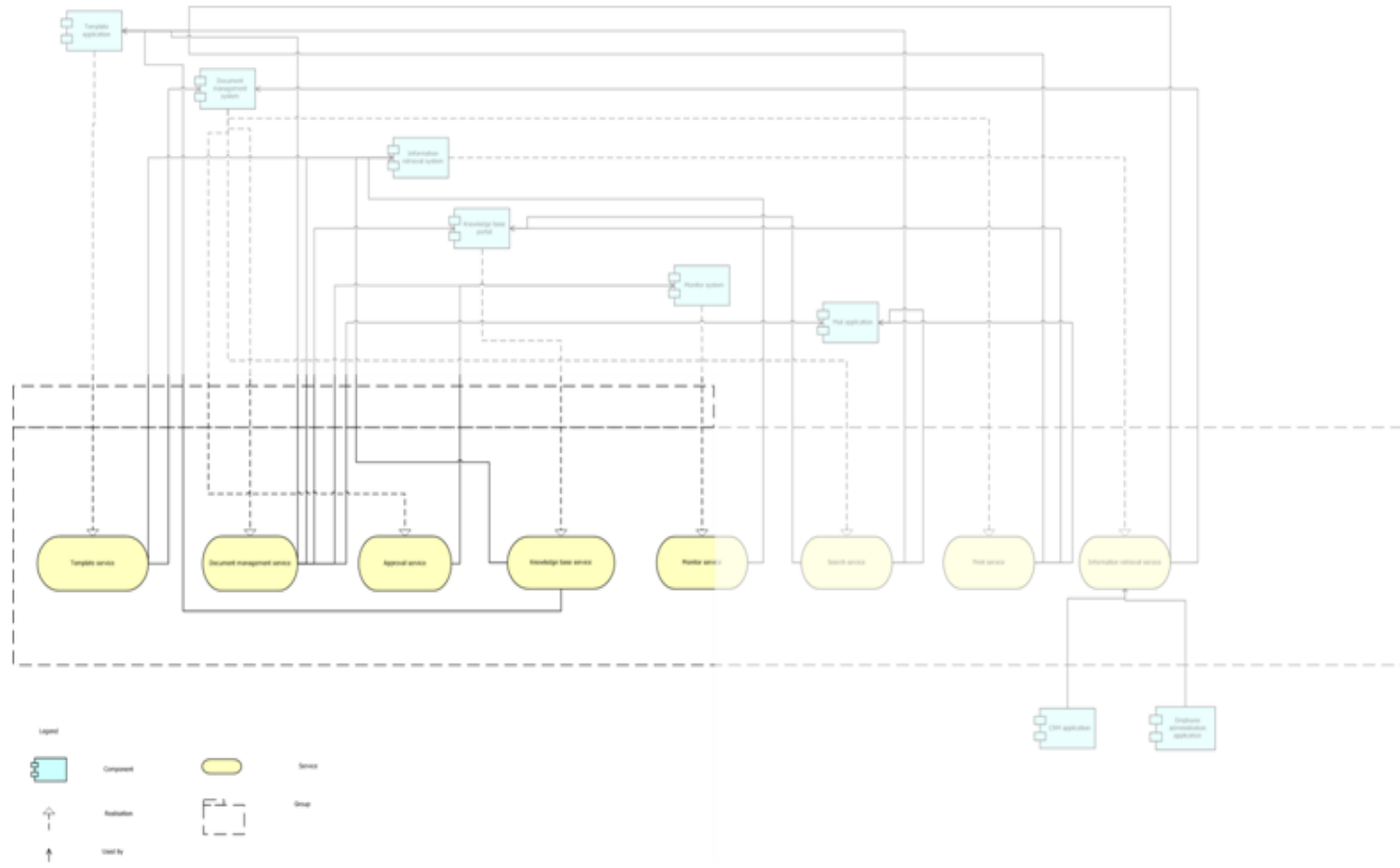
Appendix figure 57: Application connected to services (Highlight Upper left).

Appendix A5.1.1



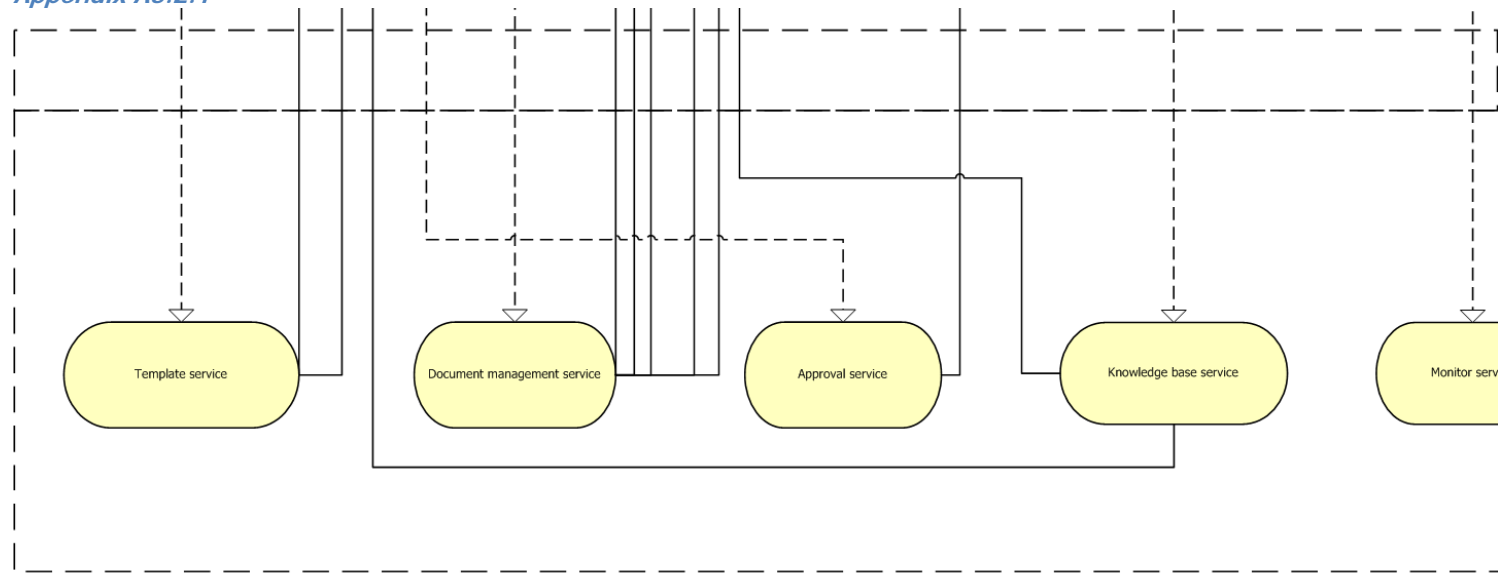
Appendix figure 58: Application connected to services (Upper left).

Appendix A5.2



Appendix figure 59: Application connected to services (Highlight Lower left).

Appendix A5.2.1



Legend



Component



Service



Realisation



Group

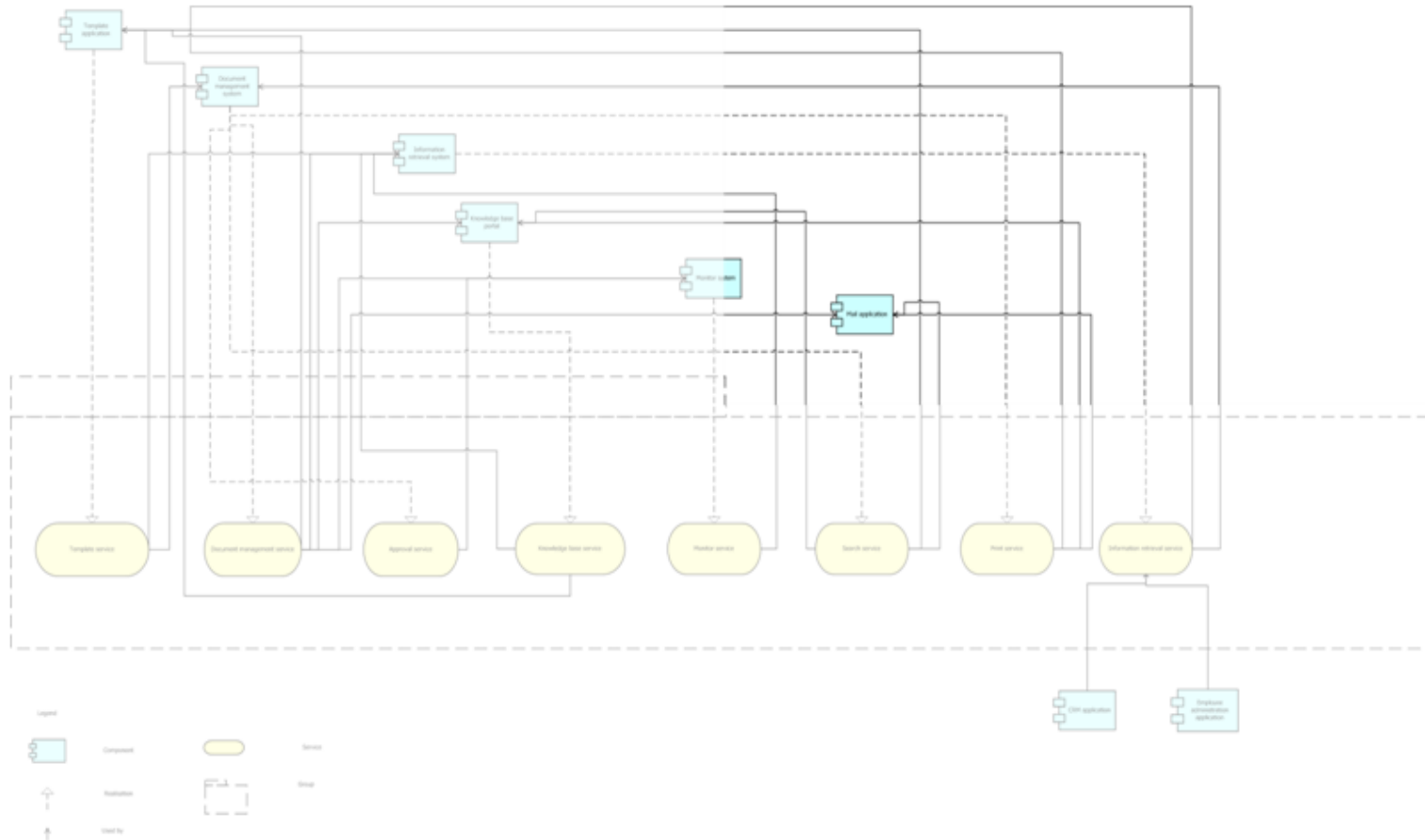


Used by

Appendix figure 60: Application connected to services (Lower left).



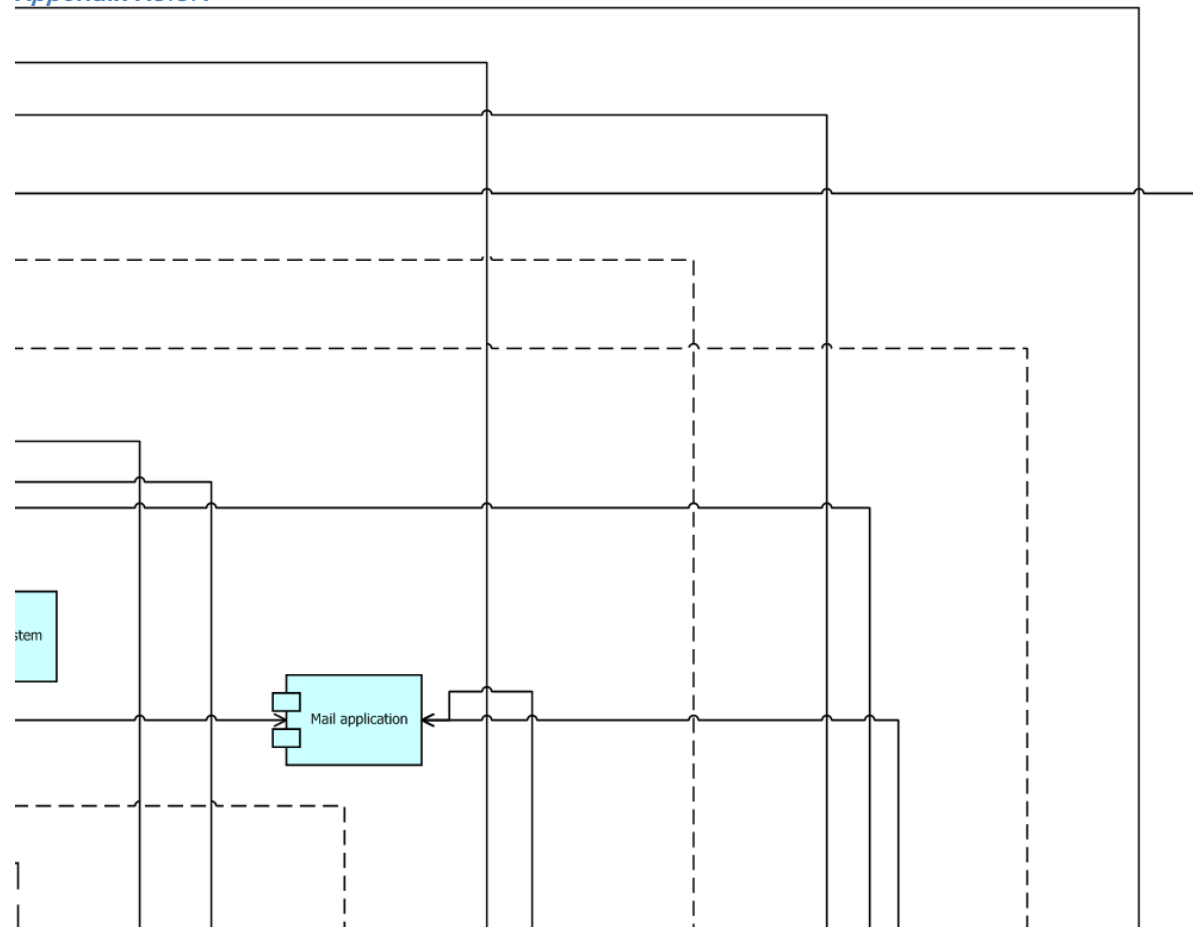
Appendix A5.3



Appendix figure 61: Application connected to services (Highlight Upper right).

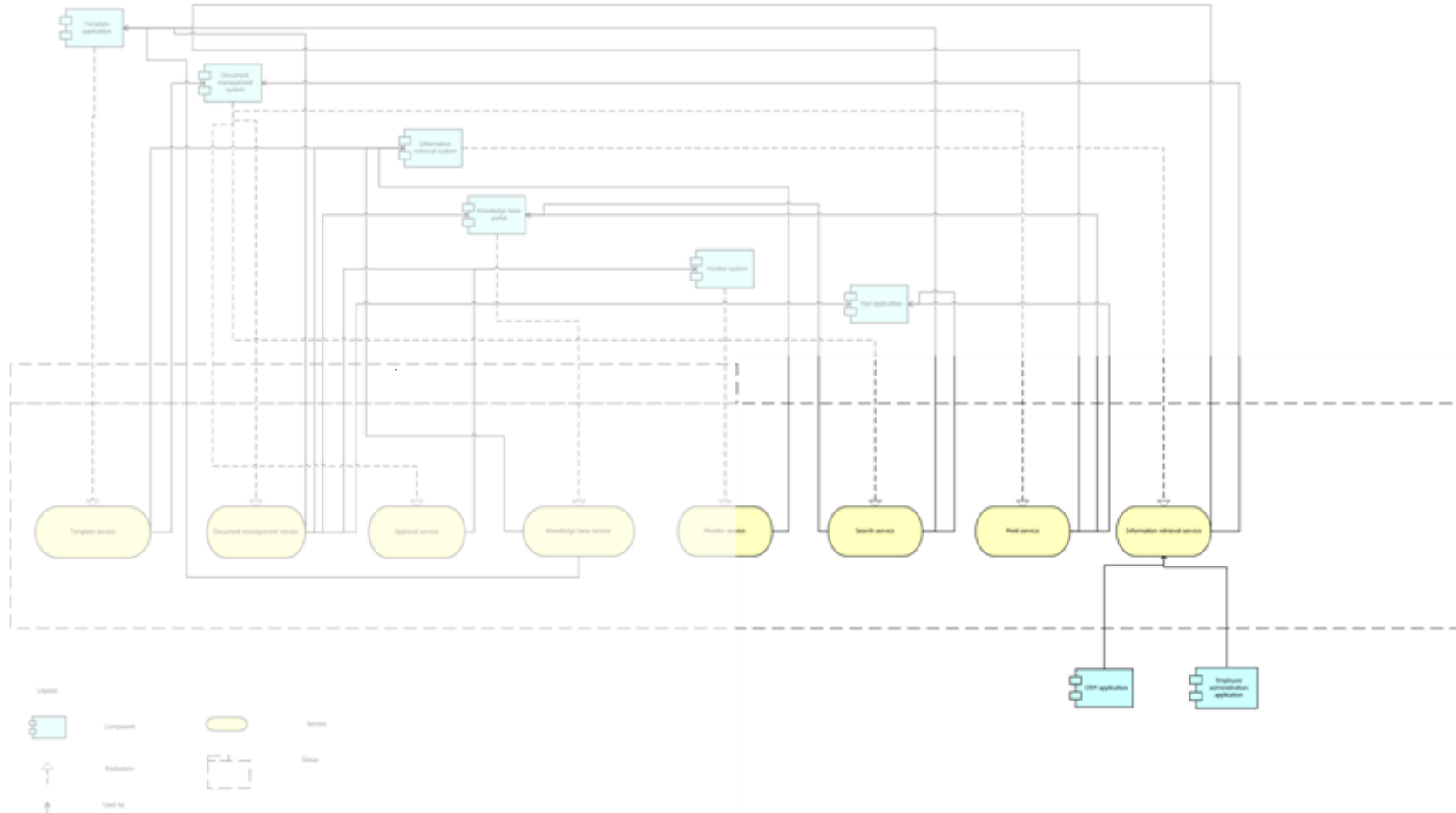


Appendix A5.3.1



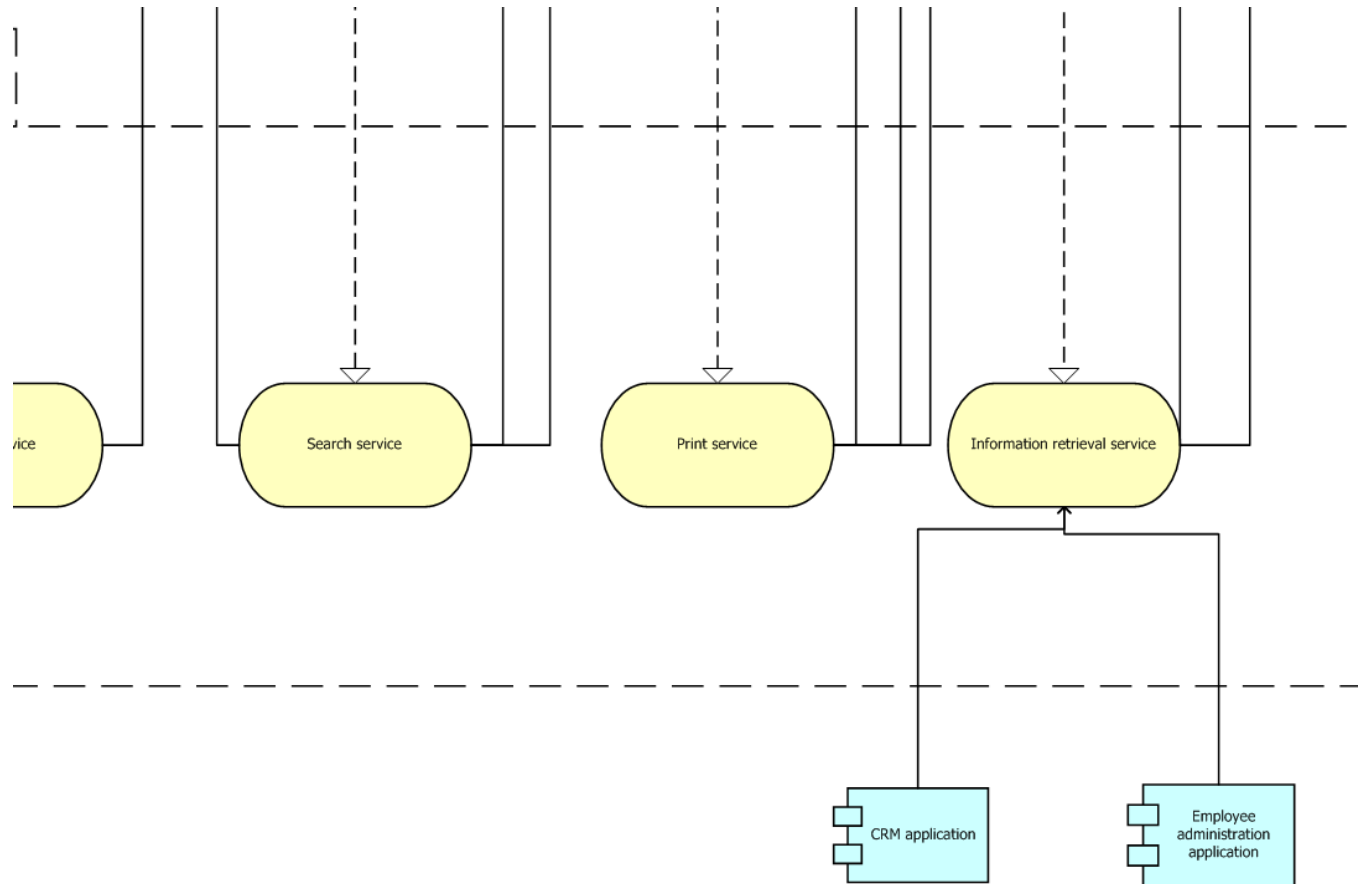
Appendix figure 62: Application connected to services (Upper right).

Appendix A5.4



Appendix figure 63: Application connected to services (Highlight Lower right).

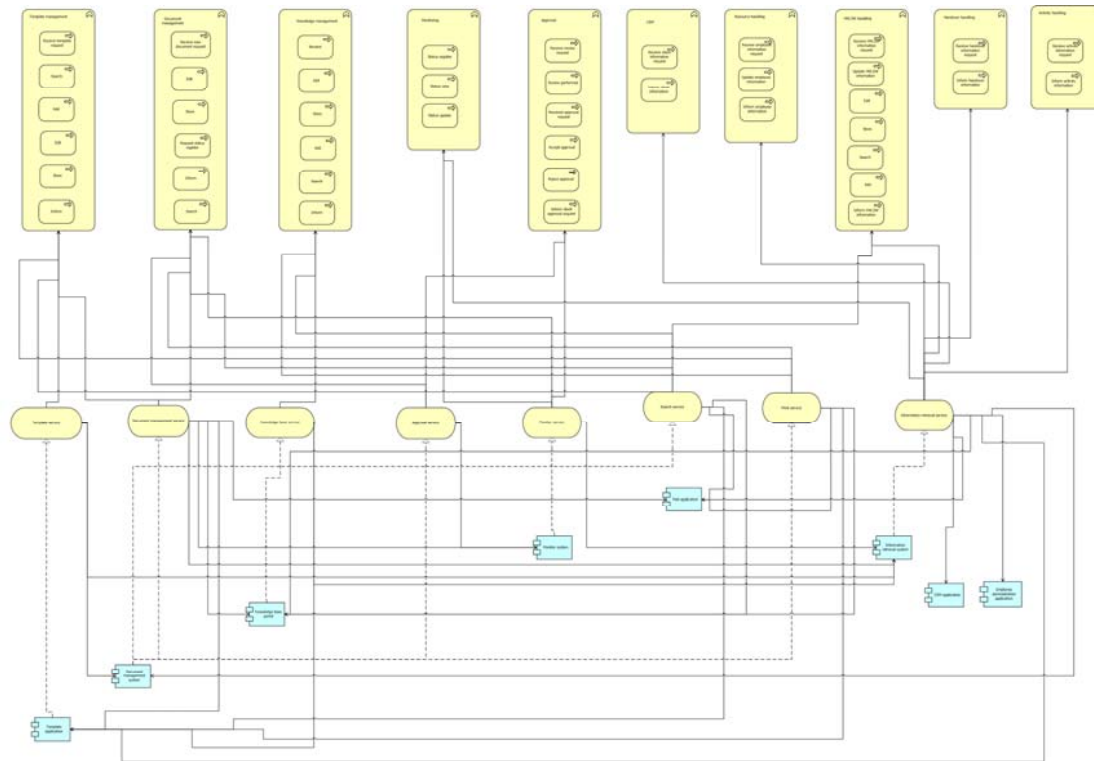
Appendix A5.4.1



Appendix figure 64: Application connected to services (Lower right).



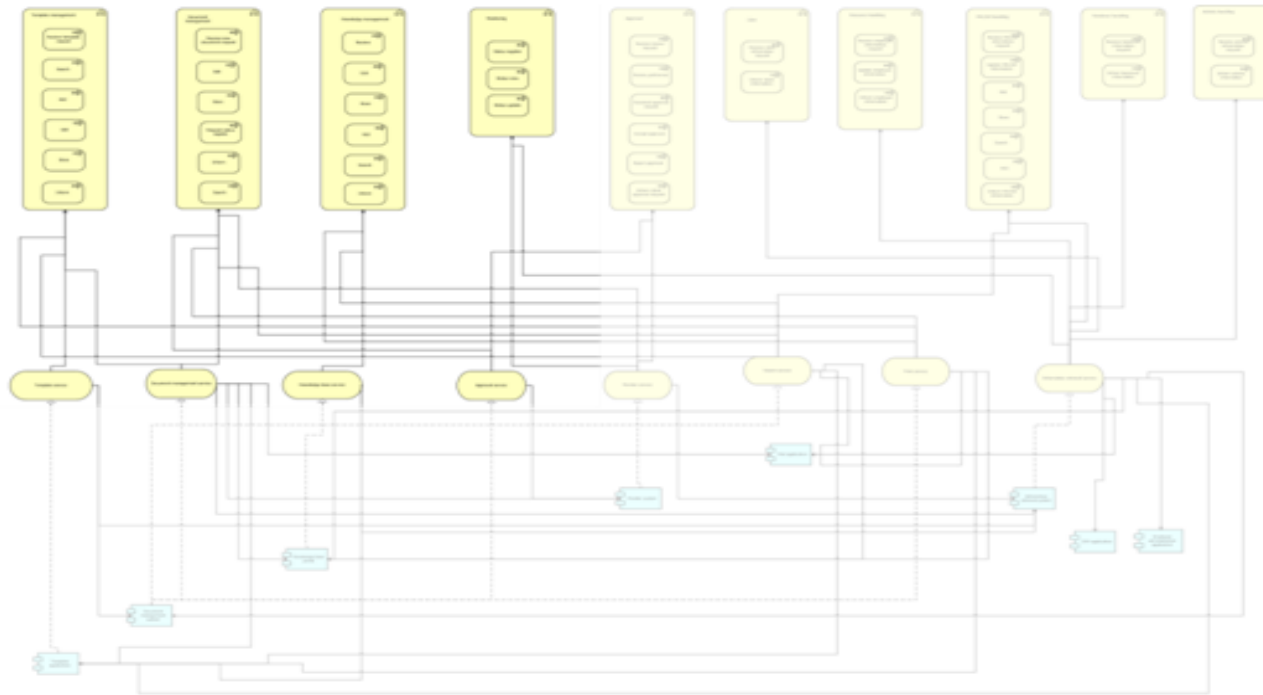
Appendix A6



Appendix figure 65: Application usage viewpoint (Overall).

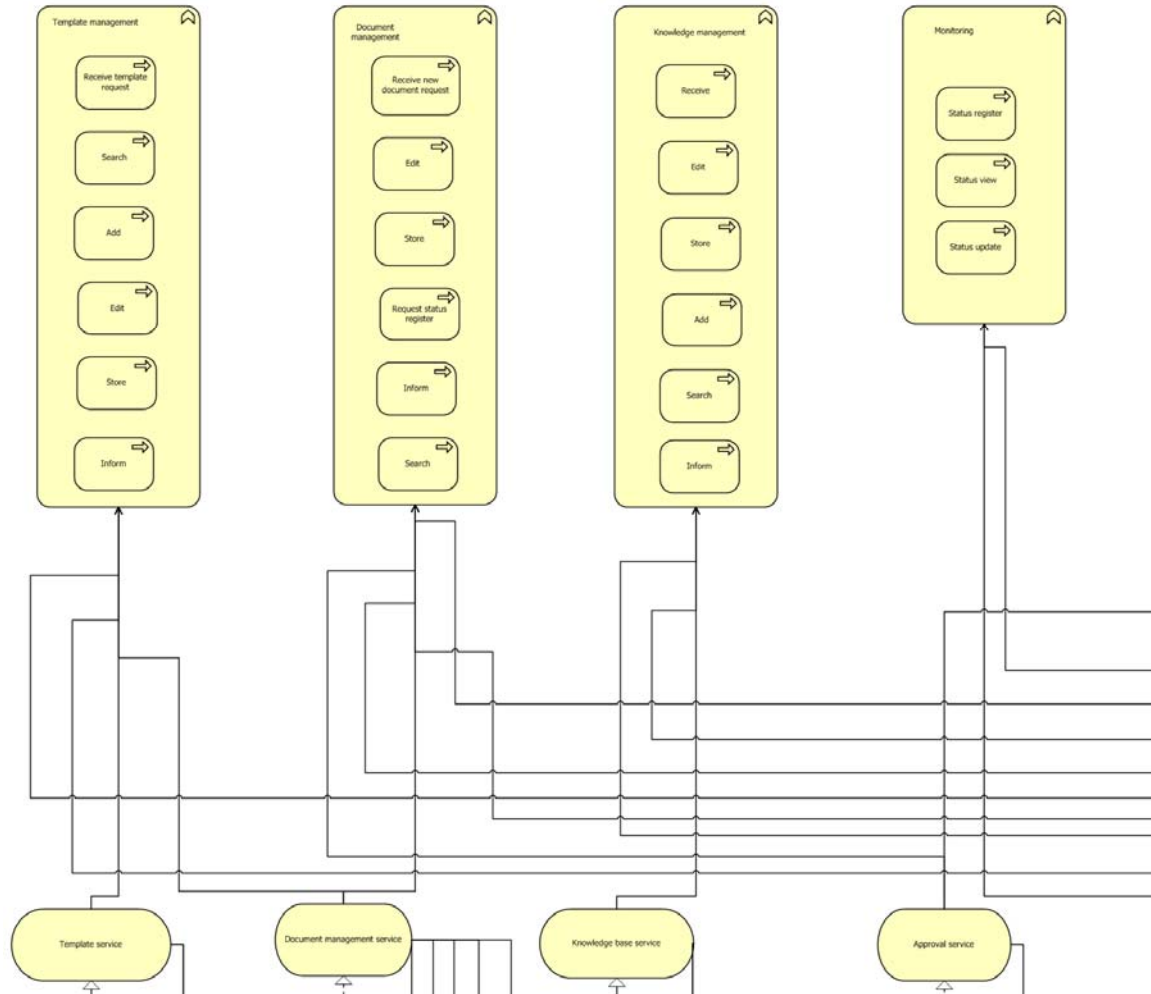


Appendix A6.1



Appendix figure 66: Application usage viewpoint (Highlight Upper left).

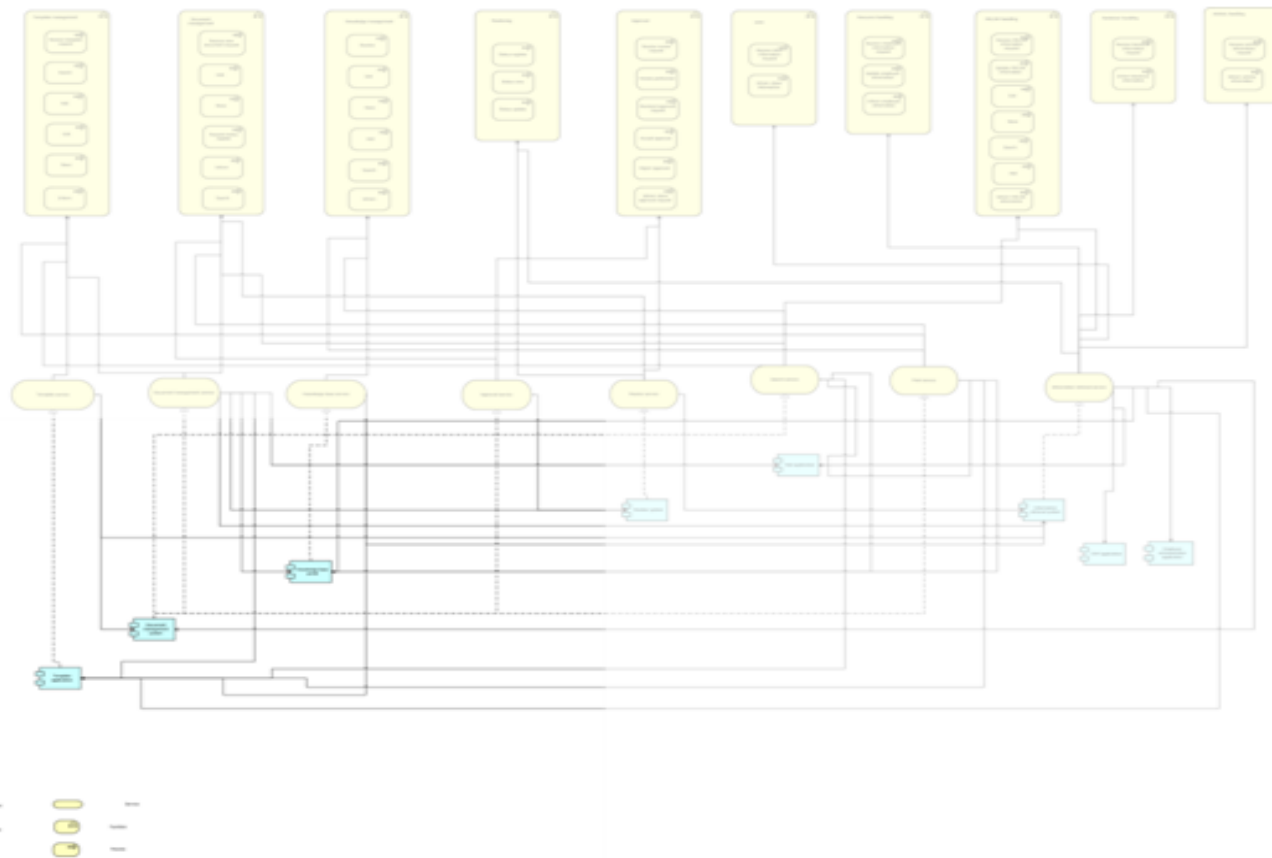
Appendix A6.1.1



Appendix figure 67: Application usage viewpoint (Upper left).

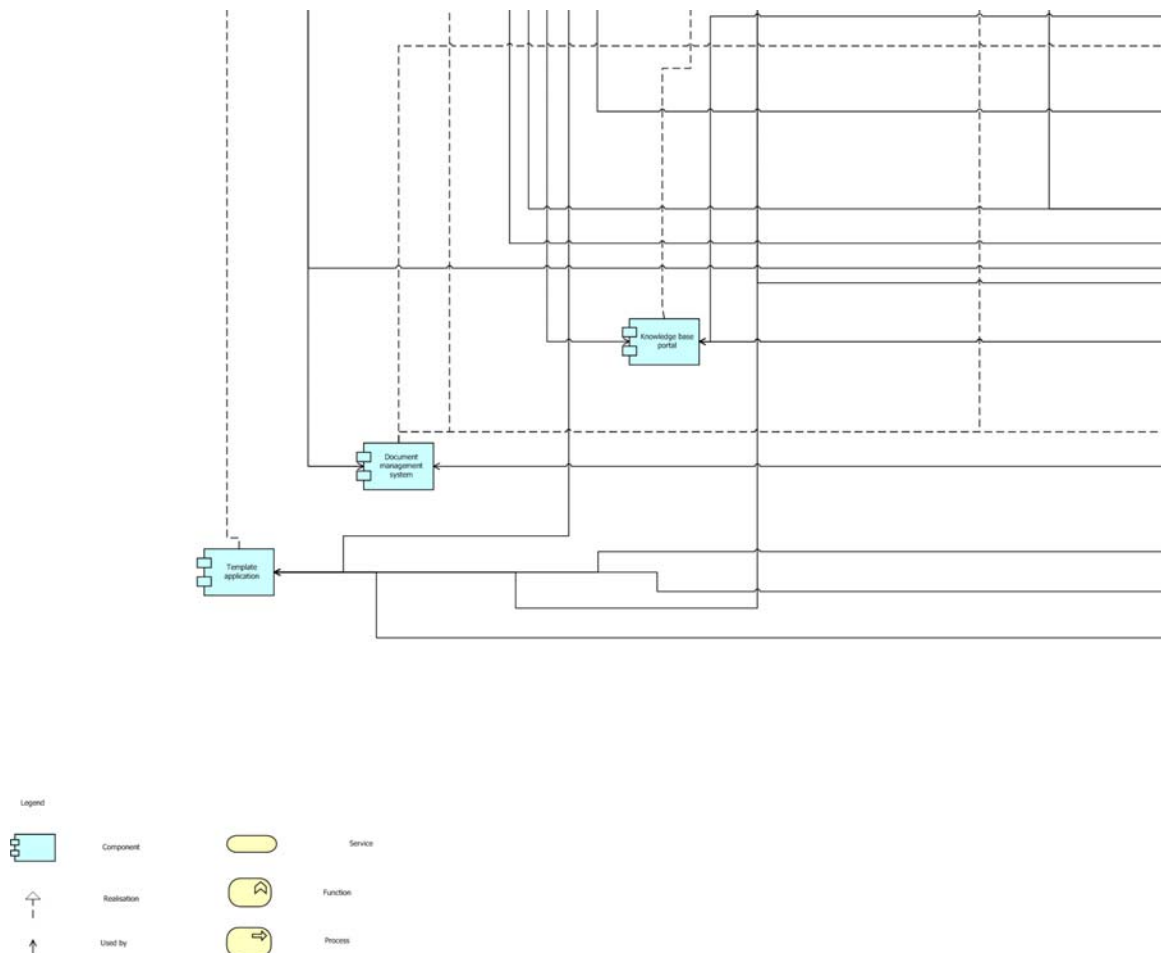


Appendix A6.2



Appendix figure 68: Application usage viewpoint (Highlight Lower left).

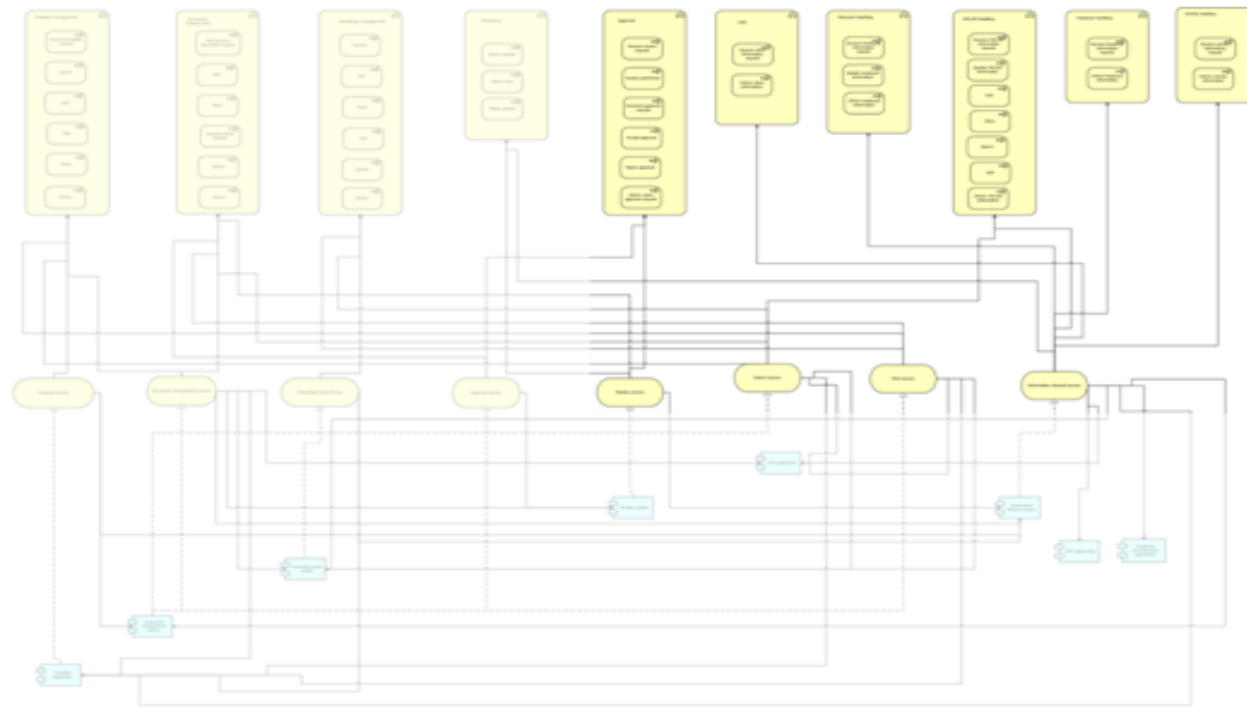
Appendix A6.2.1



Appendix figure 69: Application usage viewpoint (Lower left).



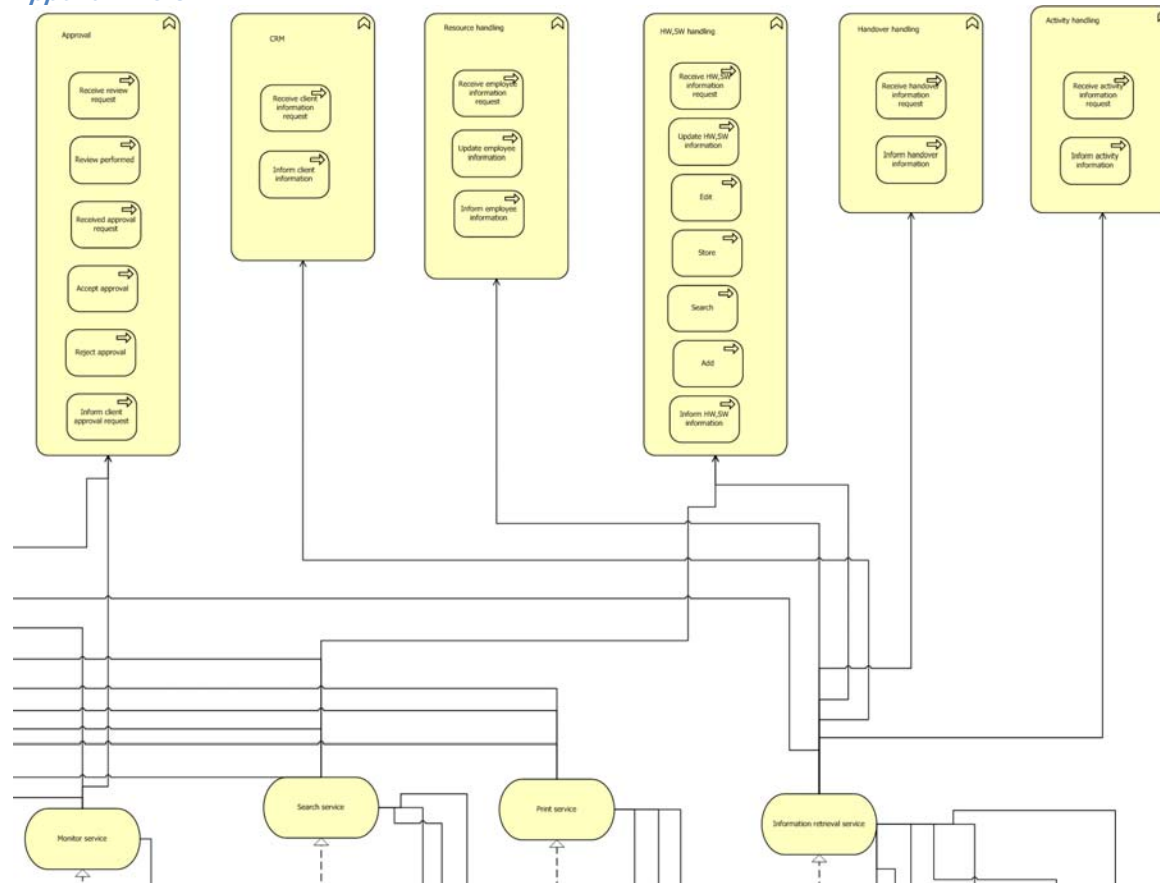
Appendix A6.3



Appendix figure 70: Application usage viewpoint (Highlight Upper right).



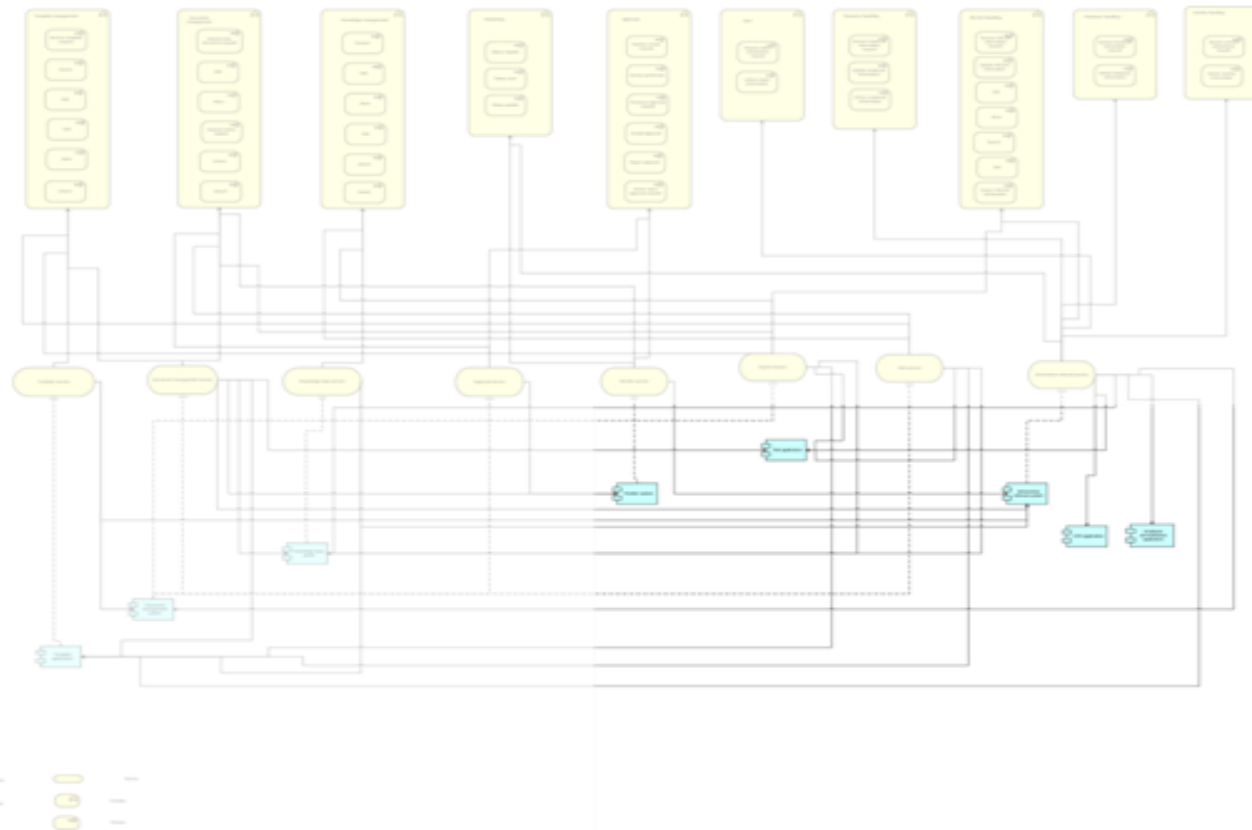
Appendix A6.3.1



Appendix figure 71: Application usage viewpoint (Upper right).



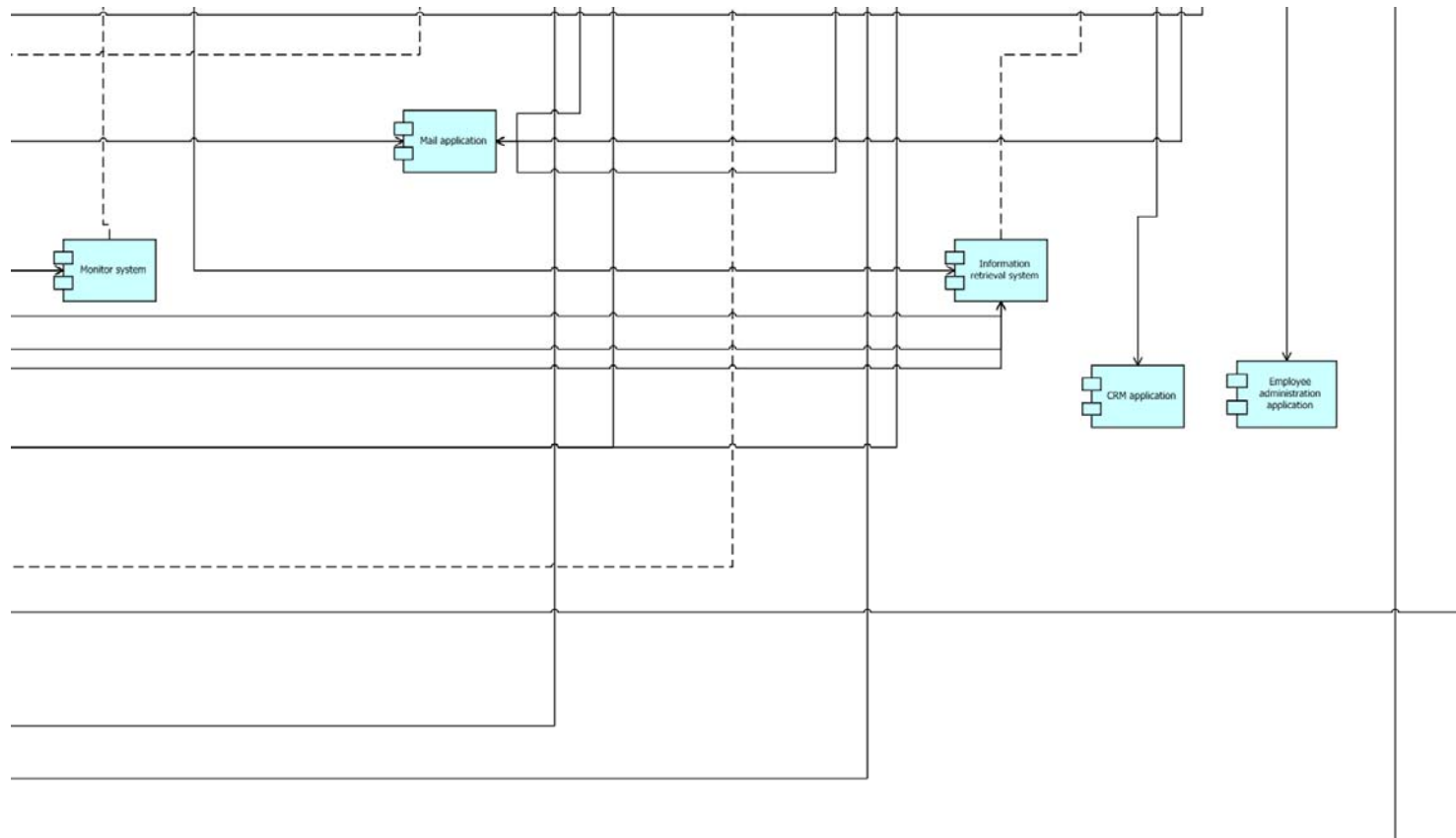
Appendix A6.4



Appendix figure 72: Application usage viewpoint (Highlight Lower right).



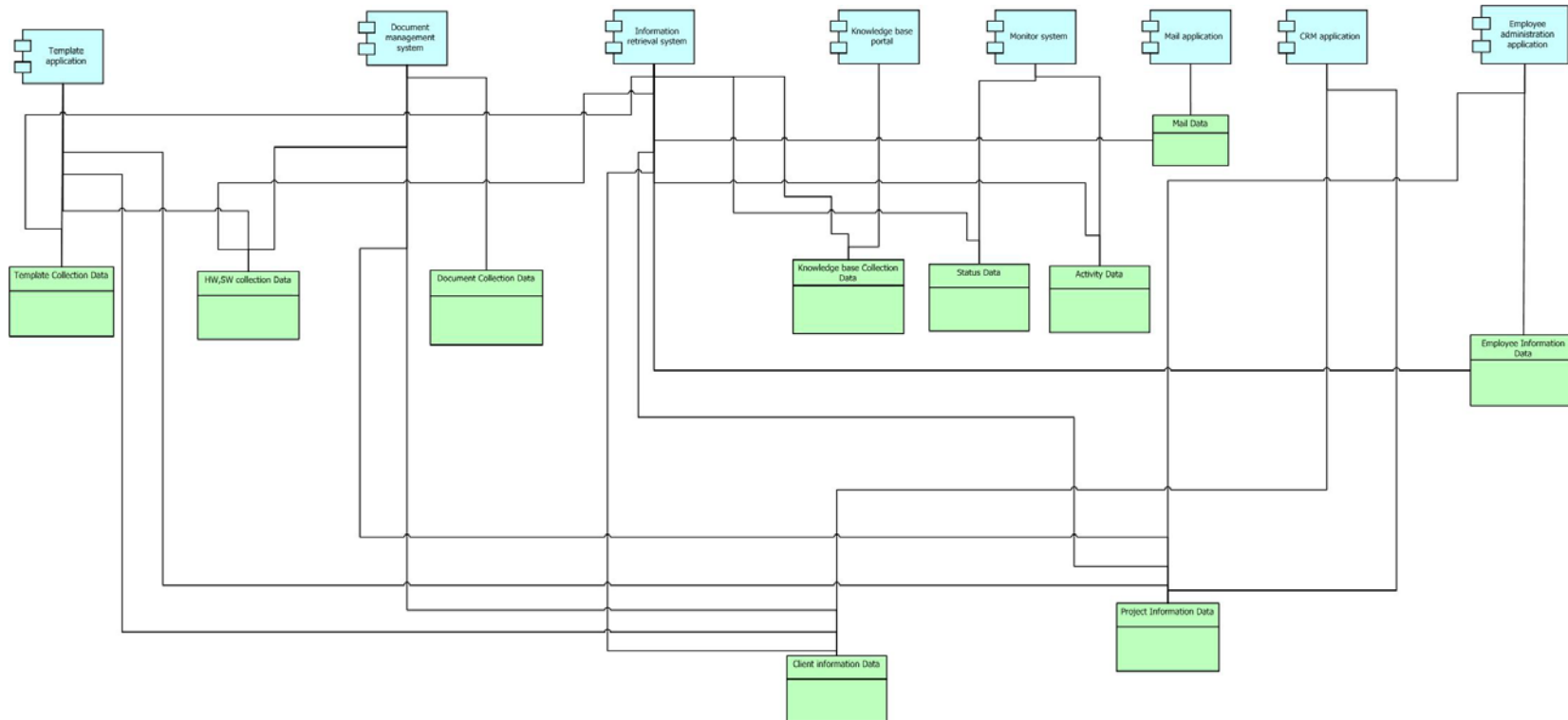
Appendix A6.4.1



Appendix figure 73: Application usage viewpoint (Lower right).



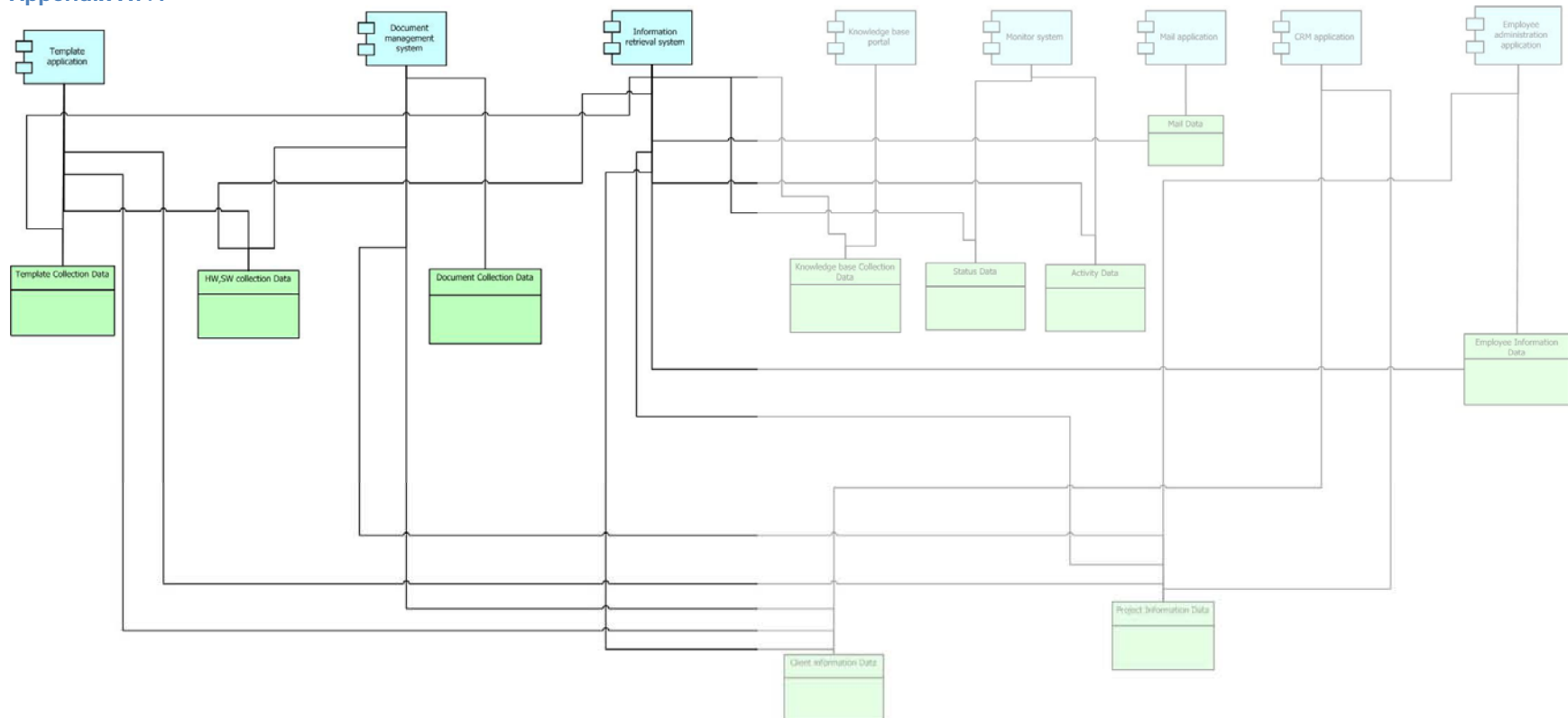
Appendix A7



Appendix figure 74: Application structure viewpoint (Overall).

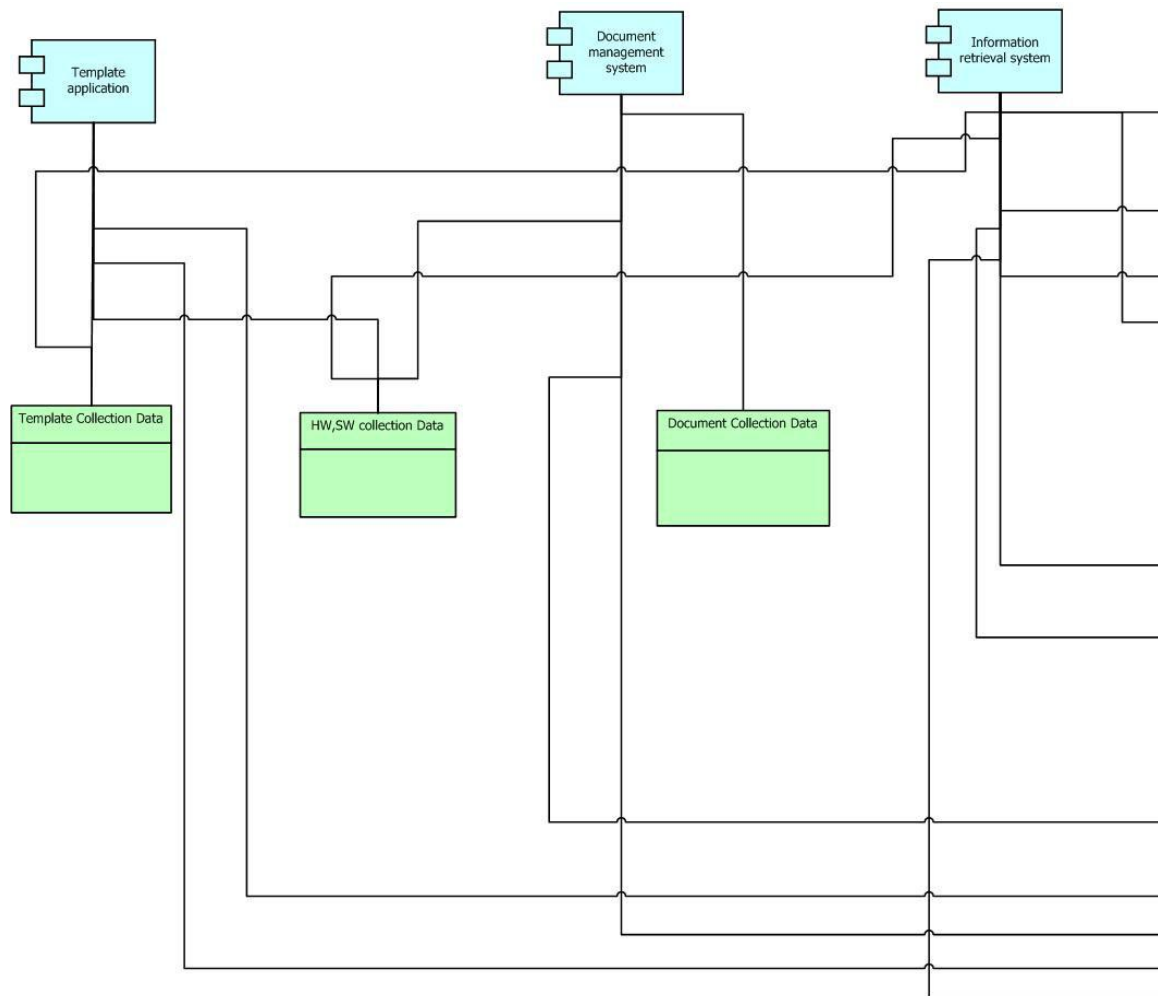


Appendix A7.1



Appendix figure 75: Application structure viewpoint (Highlight Left).

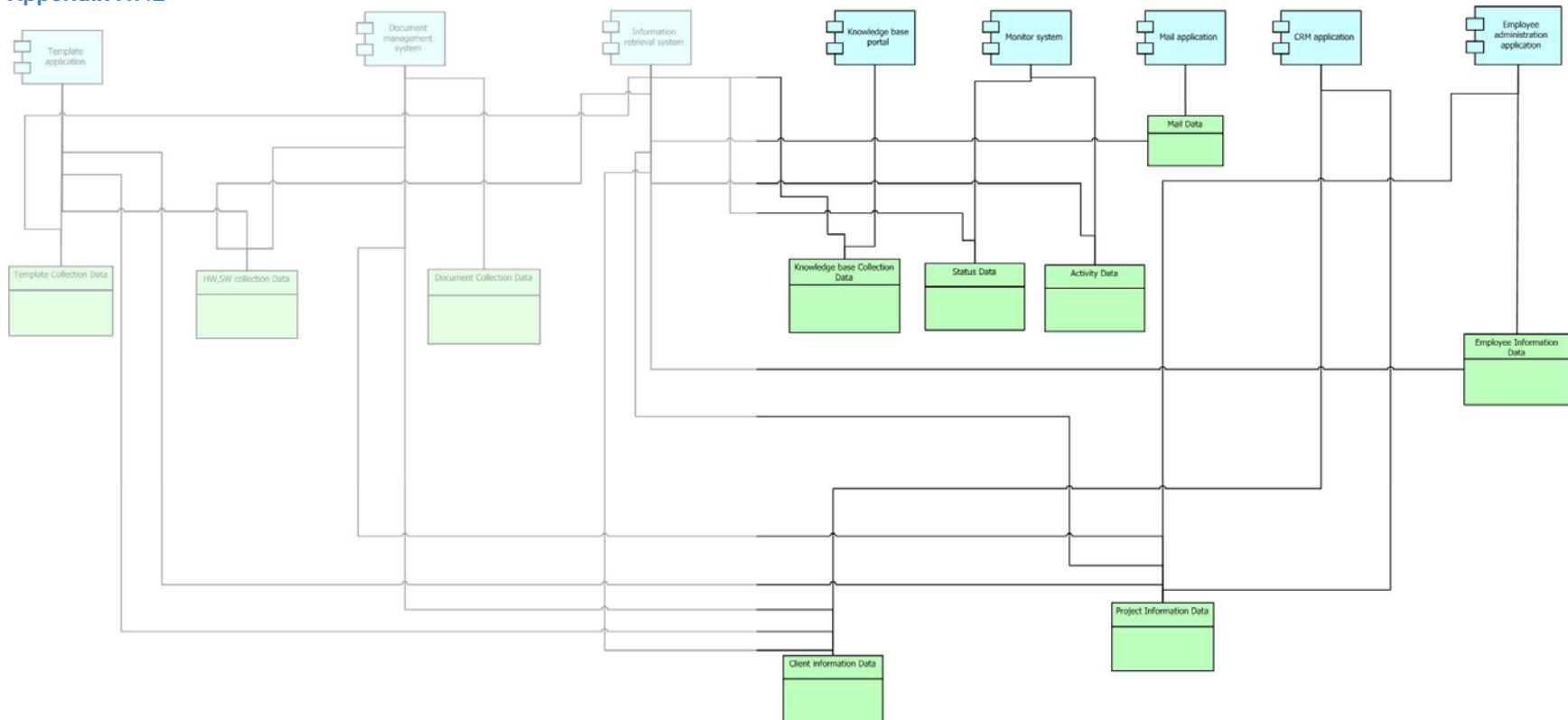
Appendix A7.1.1



Appendix figure 76: Application structure viewpoint (Left).

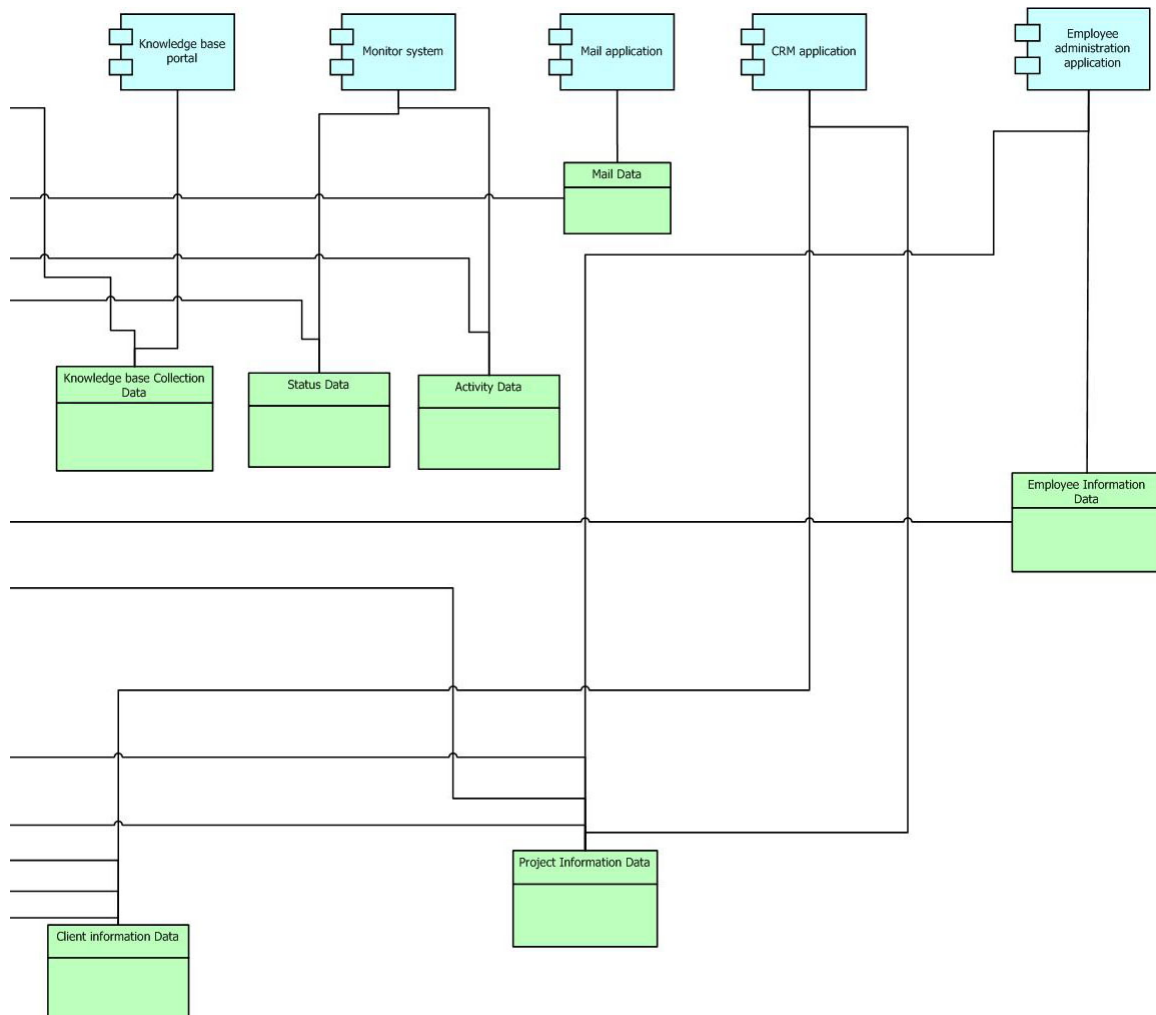


Appendix A7.2



Appendix figure 77: Application structure viewpoint (Highlight Right).

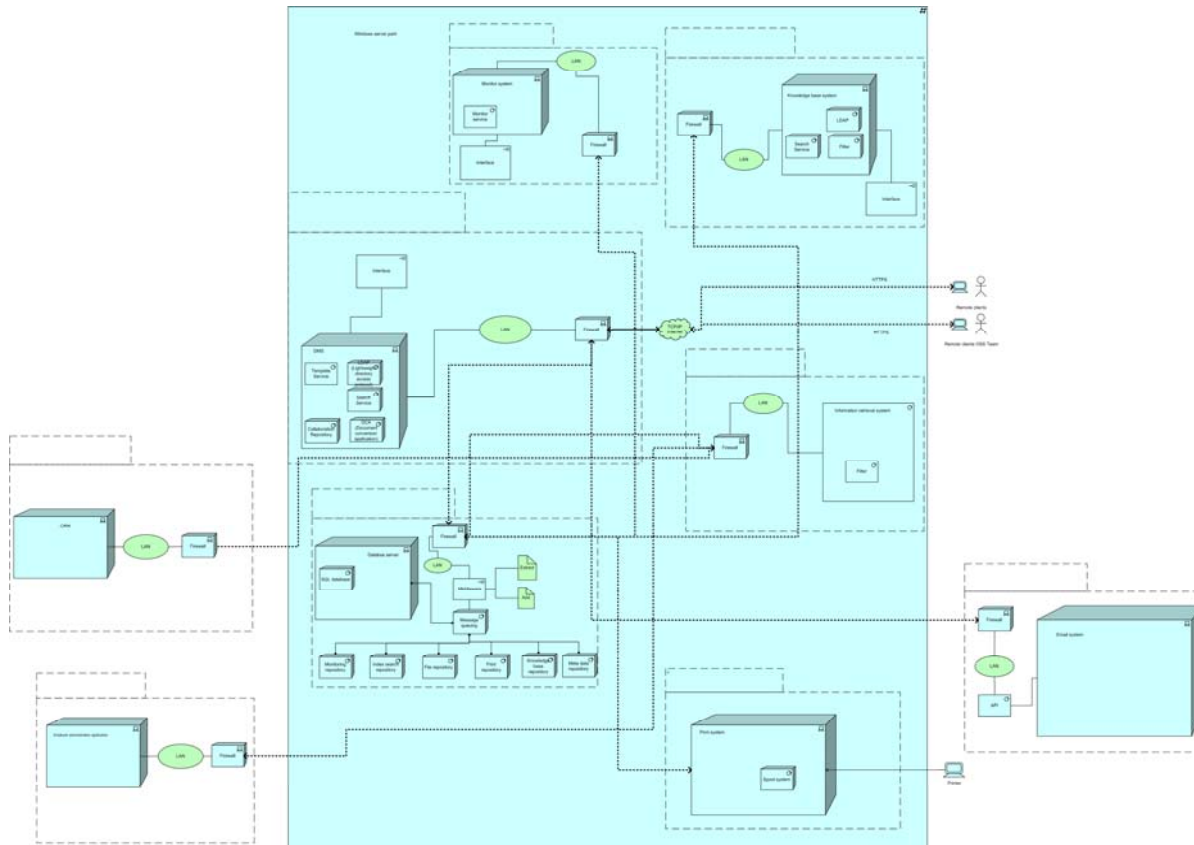
Appendix A7.2.1



Appendix figure 78: Application structure viewpoint (Right).



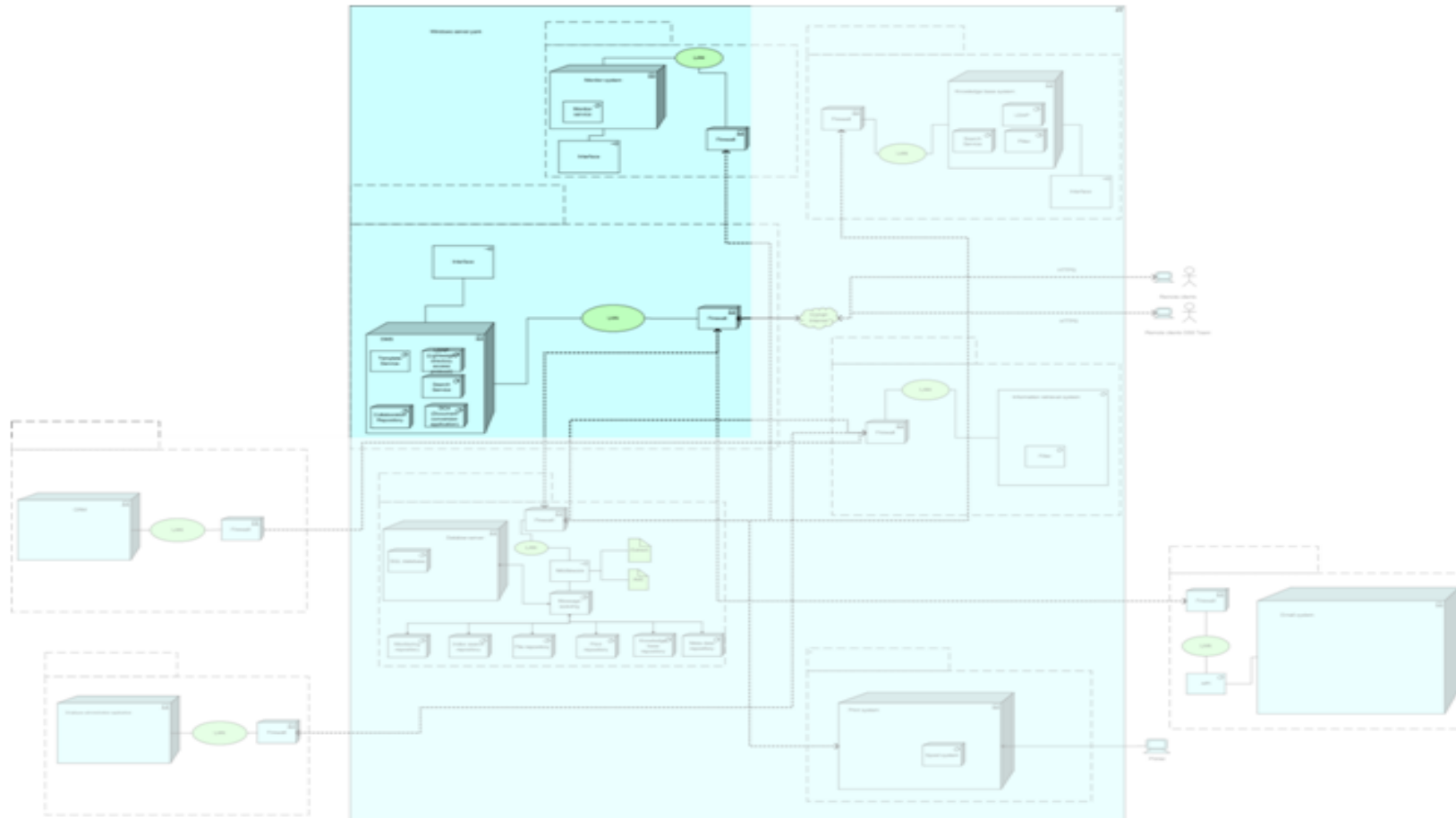
Appendix A8



Appendix figure 79: Infrastructure structure viewpoint (Overall).



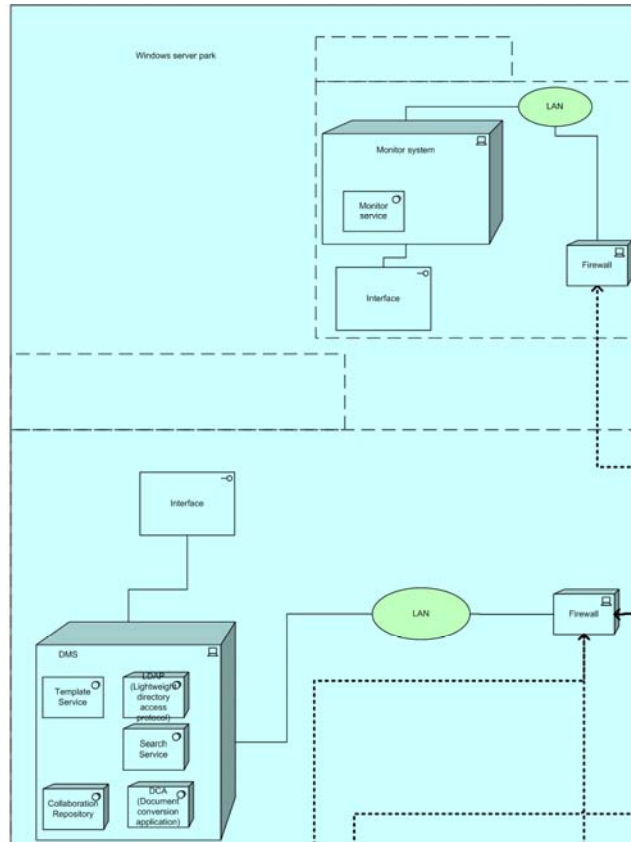
Appendix A8.1



Appendix figure 80: Infrastructure structure viewpoint (Highlight Upper left).



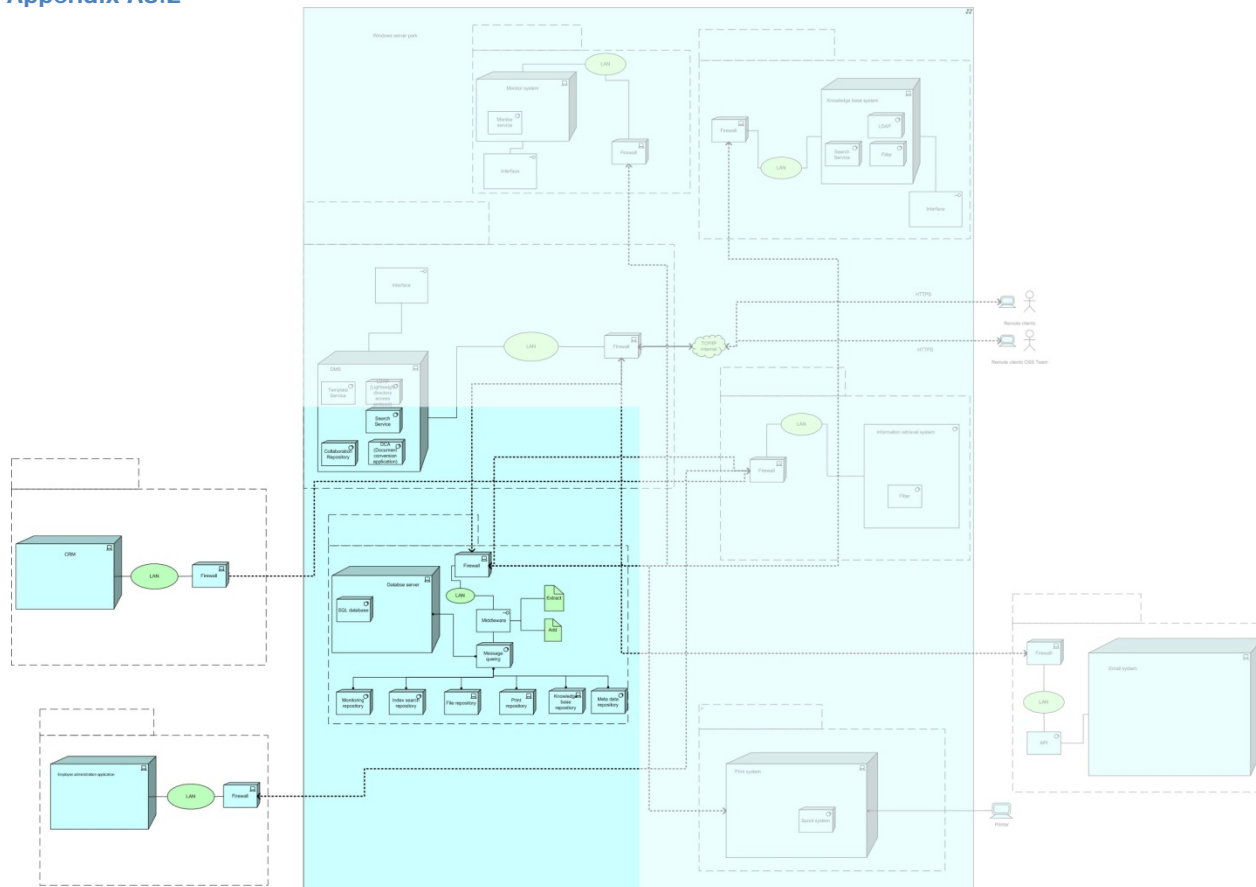
Appendix A8.1.1



Appendix figure 81: Infrastructure structure viewpoint (Upper left).

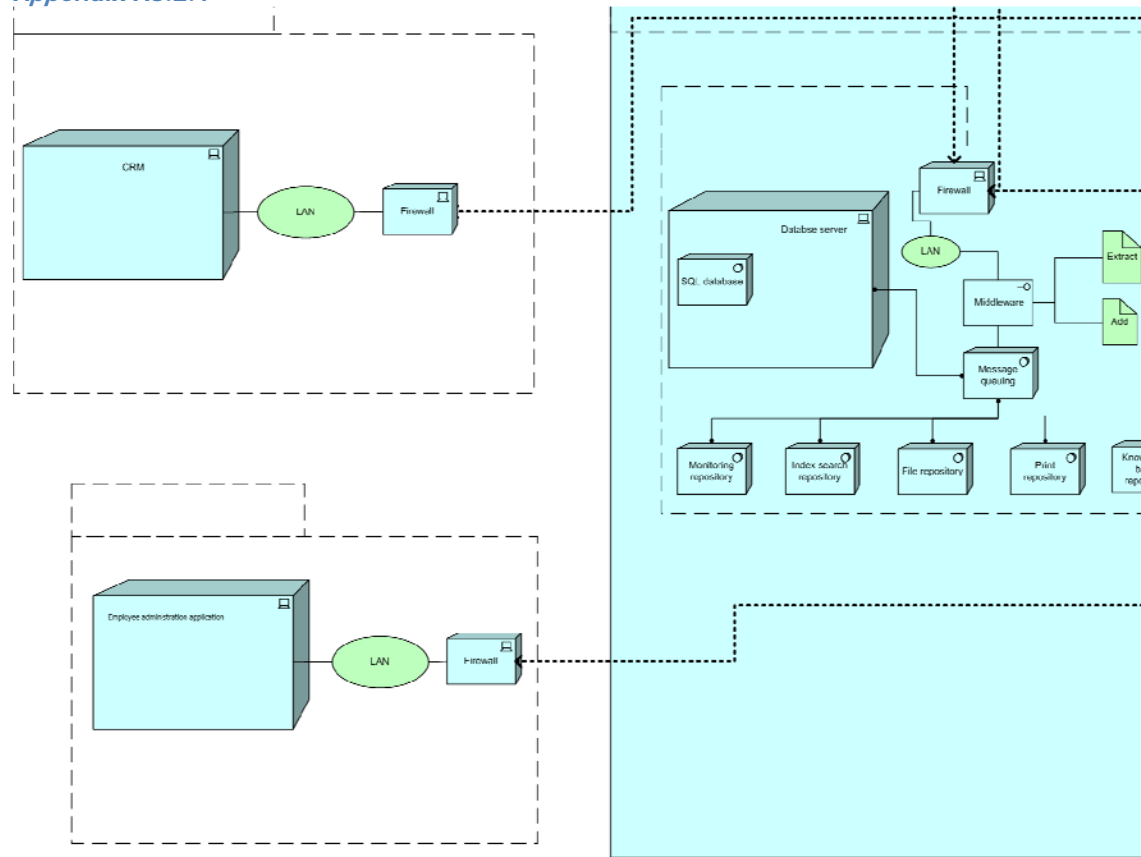


Appendix A8.2



Appendix figure 82: Infrastructure structure viewpoint (Highlight Lower left).

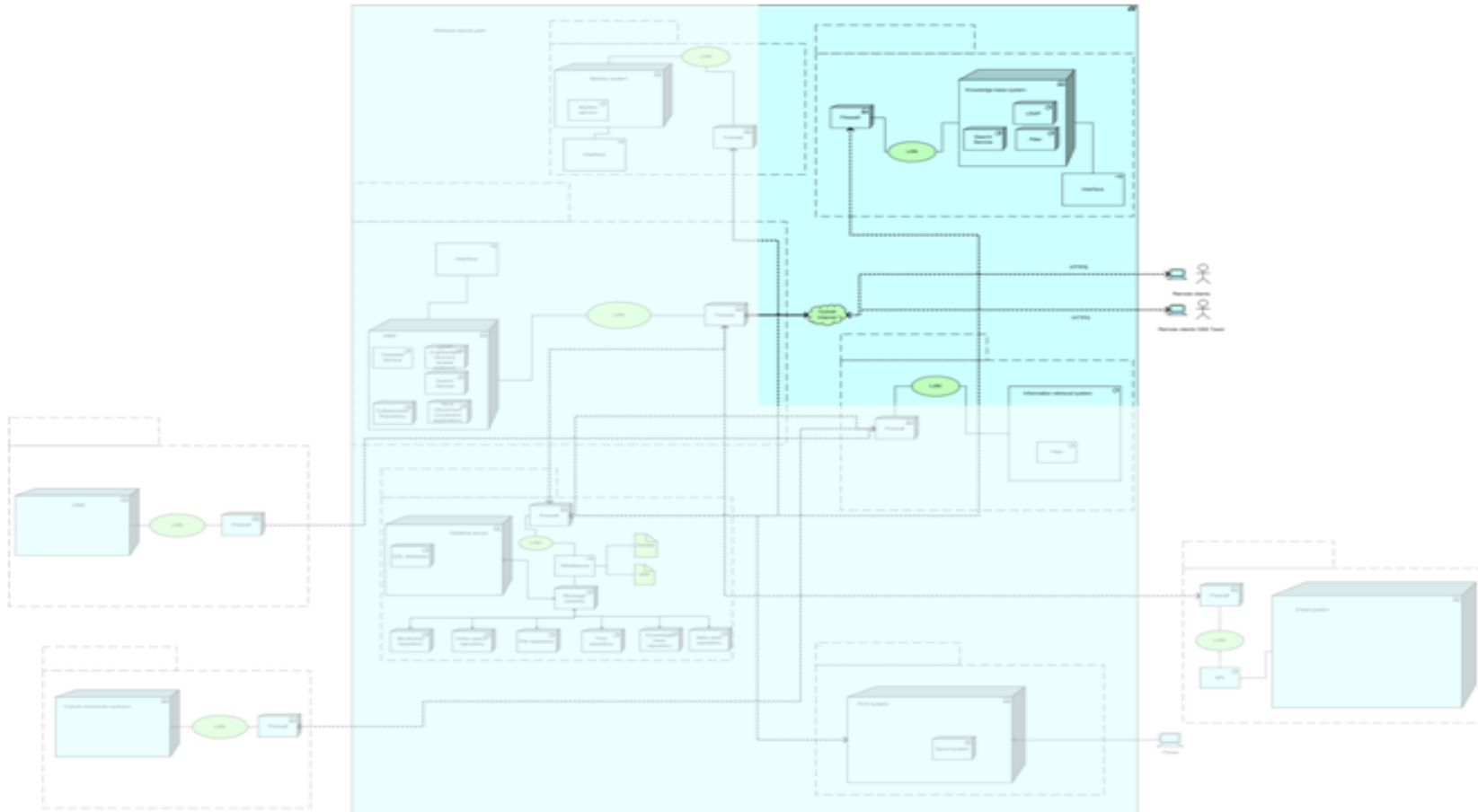
Appendix A8.2.1



Appendix figure 83: Infrastructure structure viewpoint (Lower Left).

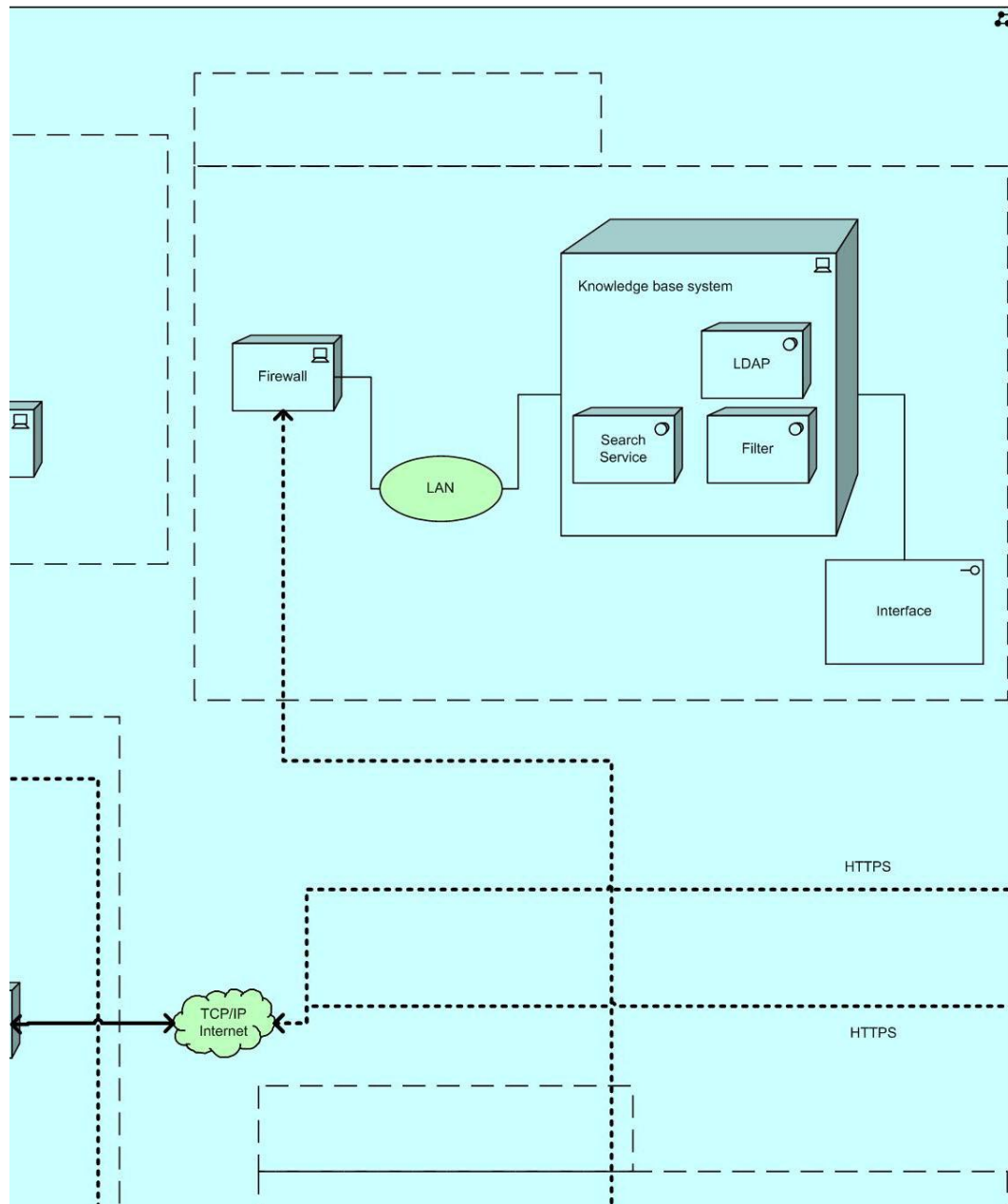


Appendix A8.3



Appendix figure 84: Infrastructure structure viewpoint (Highlight Upper right).

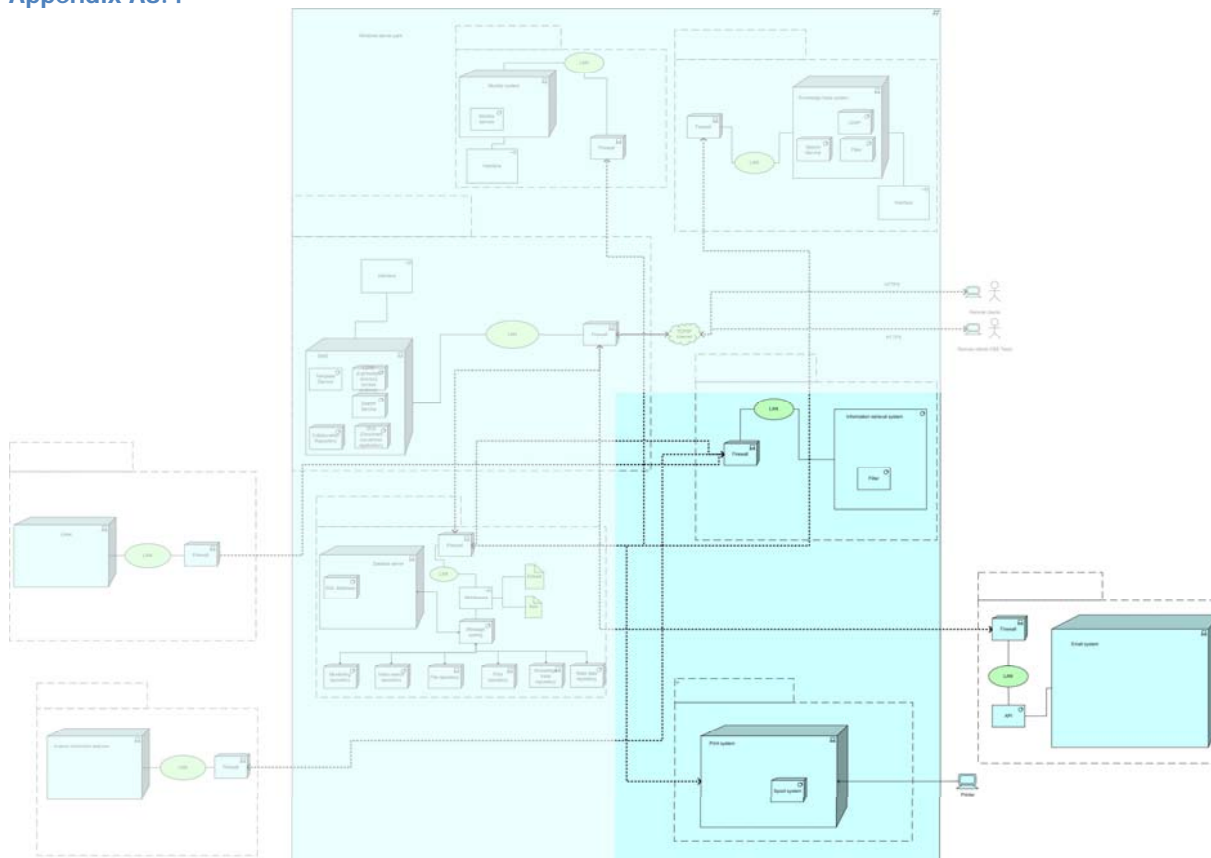
Appendix A8.3.1



Appendix figure 85: Infrastructure structure viewpoint (Upper right).



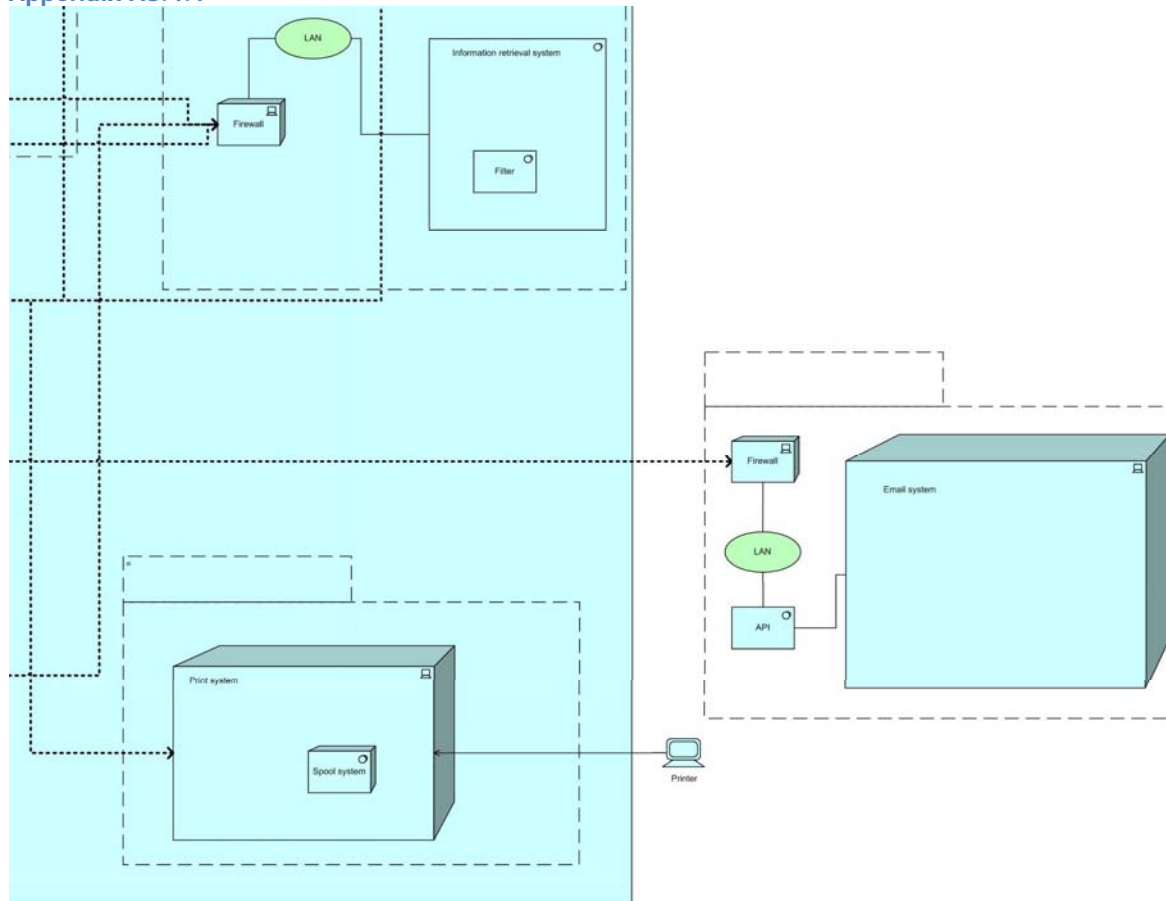
Appendix A8.4



Appendix figure 86: Infrastructure structure viewpoint (Highlight Lower right).

Honeywell

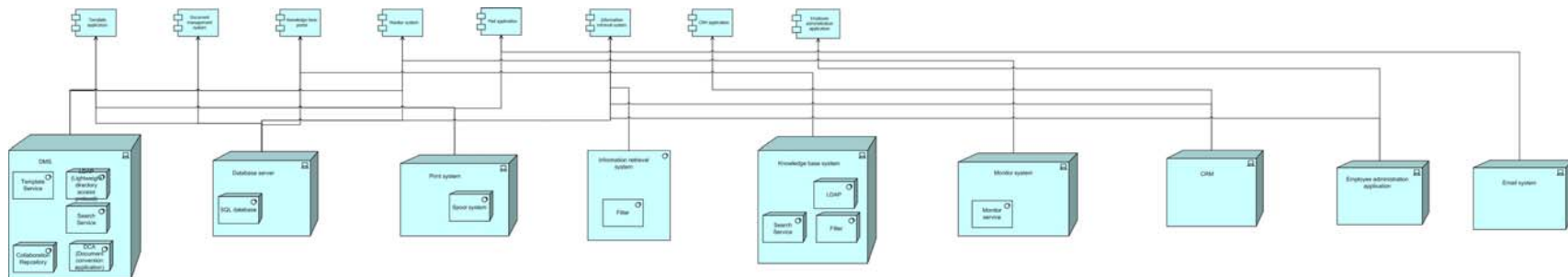
Appendix A8.4.1



Appendix figure 87: Infrastructure structure viewpoint (Low right).



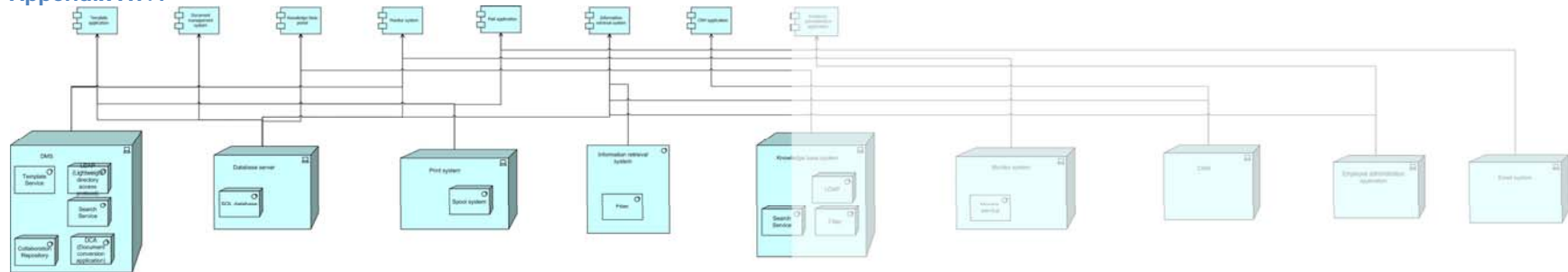
Appendix A9



Appendix figure 88: Infrastructure usage viewpoint (Overall).



Appendix A9.1

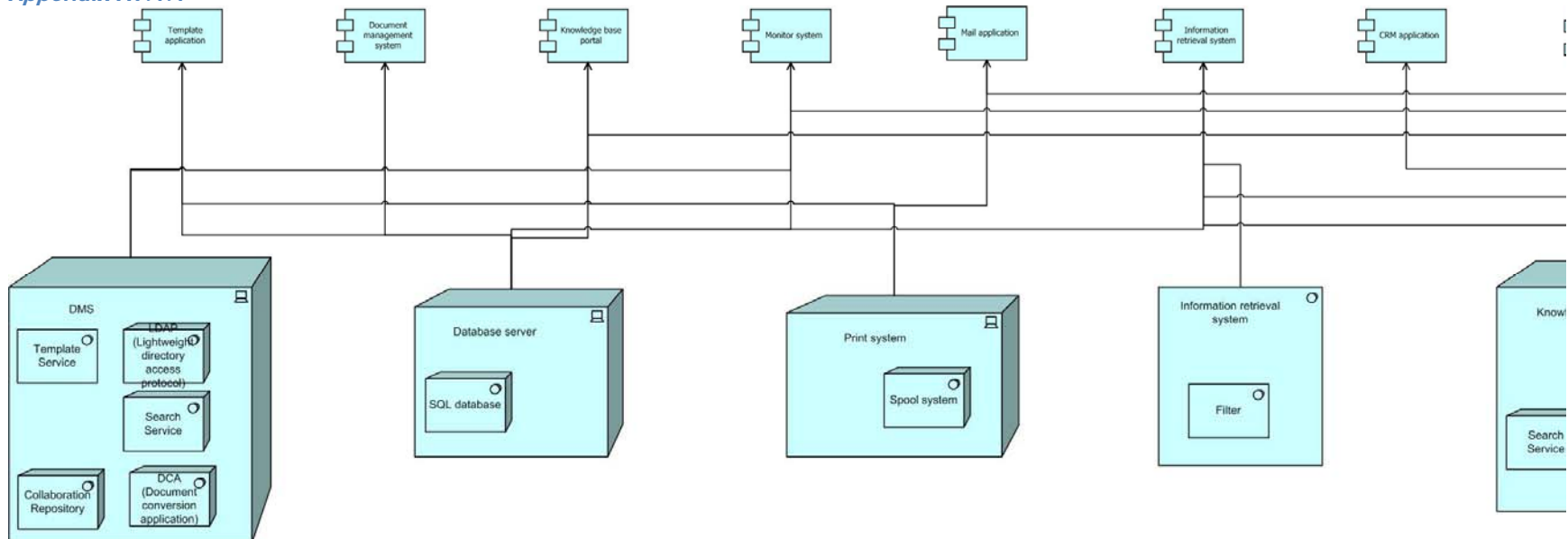


Appendix figure 89: Infrastructure usage viewpoint (Highlight Left).

Honeywell



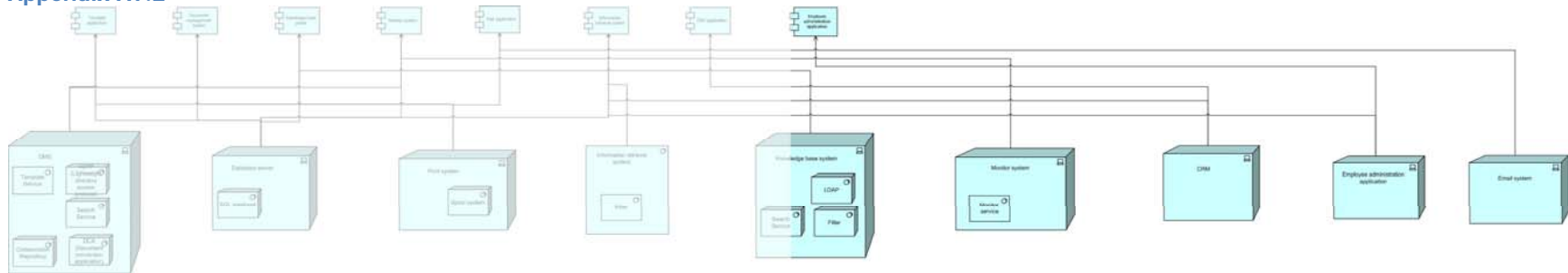
Appendix A9.1.1



Appendix figure 90: Infrastructure usage viewpoint (Left).

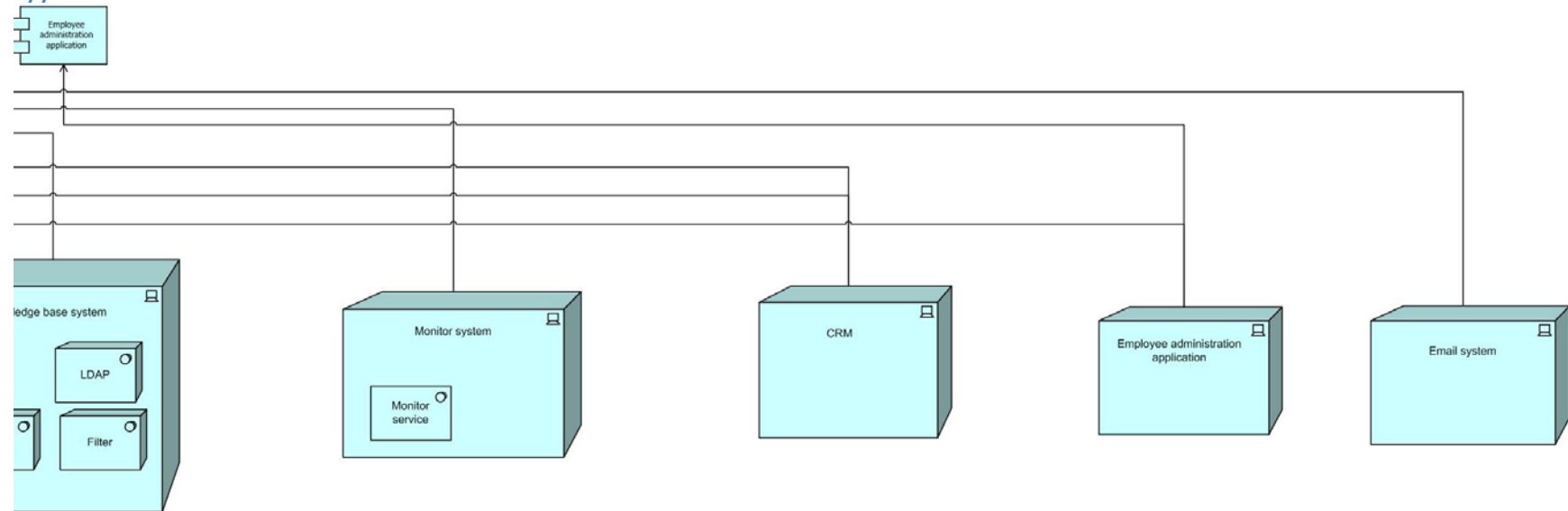


Appendix A9.2



Appendix figure 91: Infrastructure usage viewpoint (Highlight Right).

Appendix A9.2.1



Appendix figure 92: Infrastructure usage viewpoint (Right).



Appendix C

Software choice

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Software choice

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1. Introduction

The choice of software is important for every enterprise and organization. Due to the massive impact of the software usage towards the employers, it is important to make the right choice. The usability and the ease of executing a task at work can be the step to satisfy the satisfaction of the employees or not.

2. Objective

The objective of this report is to suggest or provide an advice for the OSS Team [1] in their daily usage of software. This choice regards the software by which their daily tasks can at least be made comfortable to perform. The objective is to provide an aid in every day's task performance. Alongside in satisfying the daily routines of the OSS Team's software needs, other factors has to be answered as well. Later in this report these factors will be mentioned and explained for the decision of this advice.

3. Software used

The OSS Team already uses various software's in order to perform their daily tasks. Naturally speaking there are lots of software which are used by the employees in everyday's work. However the focus of this report will be on the tasks performed to execute the projects. These software are:

- Microsoft office products [2],
 - Office word 2003 [3],
 - Visio 2003 [4],
 - Excel 2003 [5],
 - Office outlook 2003 [6].
- Adobe,
 - Acrobat [7].
- IBM,
 - Lotus notes [8].

4. Software category

There are various software choices in order for the OSS Team to perform their daily tasks. In order to be able to distinguish a certain level of clarity several distinction has to be made. These distinctions are categorized as follow:

- Off the shelf solutions [9] [10],
(computer products that are ready-made and available for sale, lease, or license to the general public)
- Custom made solutions [9] [10],
(in house developed products, suited for specific needs of the customer),
- Best of breed [9] [10].
(combinations of best products in given category).

These three distinctions between software will provide an aid in sorting the right software for the right task. Considering the categories as a starting point further distinction can be made. The choice of software will depend on several factors. These factors will provide a scaling factor for assessment of the software. All software which has been determined to be an formidable software will be assessed by the following factors see Table 1. These factors were chosen due to their representation of the wide variety of factor by which the software has to oblige to.



Table 68: Factors and ratings.

Factor	Description	OSS Team rating (1-5) (average)	Writers rating (1-5)
Costs	Is the product open source or shareware.	3	1
Functionality	Does the product have lot of functionality which are usable.	4.5	4
Flexibility	Does the product have flexibility in regards with application integration etc.	4.5	3
User friendly	Is the product easy to use.	5	4
Adaptability	Is it possible to adapt the product to your own wishes.	4	3
Support	Is the product supported by a help centre.	3.5	2

A rating will be assigned to each factor in order to determine their importance. There will be two separate rating scale. One is provided by the OSS Team and the other is provided by the writers of this report. The scale of the rating as it can be seen in Table 1, rates from 1 which is not important to 5 which is very important. The average rating of the OSS Team has been determined by collecting the results of the sent questionnaires. In the following chapters each distinctions between various software's is described further in details.

4.1 Software area

There are three distinct area of software which are important towards the OSS Team. These areas ensure the application of the specific software towards its purpose.

4.1.1 Document management system (DMS)

In general a document management system [9] (DMS) is a computerized management for documents or images/drawings, irrespective of these documents are electronically or in paper format. The information is usually kept stored in a database. The document management system (DMS) that is required in the OSS Team is to provide a software portal by which the entire project can be monitored as well as the sharing and the storing of the documents are regulated. These software enable each individual to have his or her own account by all its document can be managed in an overview. An example of these DMS are Microsoft SharePoint [11].



4.1.2 Applications

Applications [9] provide the means by which the daily documentation or other work has to be performed with. By using single or multiple applications the deliverables are made reality. These applications and their integration are the most crucial aspect of the daily work.

4.1.3 Databases

Databases [9] form the basis of the DMS and applications. By using databases the correct functioning of the DMS and the integration of the application is realized. The integration of the application can only be achieved if the application are using databases; otherwise an application which acts as a liaison will take this role.

4.2 Off the shelf solution

The choice of off the shelf solutions [9], regards a software package which is all included. By using an all in one package several major issues are resolved. The usage of off the shelf solution has various advantages and disadvantages. The most important of these aspects can be seen in Table 2.

Table 69: Off the shelf advantage, disadvantages.

Advantages	Disadvantages
All in one.	Dependency of one supplier.
No complications with application integration.	Chance of redundant functionalities.
One supplier, one licence.	High costs.
Good support.	
Quick and good solution.	

4.2.1 Document management system (DMS)

In order to find a suitable match for the DMS in the category off the shelf solution, a comparing must be made between the open source packages and the shareware packages. In the Table 3 an overview of these packages are given.



Table 70: DMS Software and factors.

Factor Software	Costs	Functionality	Flexibility	User friendly	Adaptability	Support
DMS						
SharePoint [11].	Y/N	L	Y	G/A	Y/N	€
OpenDocMan [13].	N	A	Y	G/A	Y	-
LogicalDOC [14].	Y/N	L/A	Y	G	Y/N	€/ -
OpenGoo [15].	Y/N	A	Y	A	Y	€/ -
Feng Office [16].	Y/N	L	Y	G	Y	€/ -
KnowledgeTree [17].	Y/N	L	Y	G	Y	€/ -
Nexus [18]	Y	L	Y	-	Y	€
Documentum [19].	Y	L	Y	G	Y/N	€
M-Files [20].	Y	L	Y	G	N	€/ -
Global OnDemand [21].	Y	A	Y	-	N	-
Lotus Notes [8].	Y	L	Y		Y	€
OpenIMS [22].	Y	L	Y	G	Y	0
VersionOne [23].	Y	L/A	Y	-	-	-
Document Locator [24].	Y	L	Y	Y	Y	-
Laserfishe [25].	Y	L	A	-	Y	€
infoRouter [26].	Y	L	Y	-	-	€



Table 71: Legend.

Abbreviation	Description
Y	Yes
N	No
L	Lot
A	Average
G	Good
€	Costs money
-	Not available / No information
0	Free

As you probably already noticed. Some products are highlighted in bold and cursive. This means that those products are more suitable and better than the rest. We will use this method in illustrating the best product continuing this report.

4.2.2 Applications

As far as the application in the category off the shelf solutions, choice is limited in various software. Due to the specific task of the OSS Team, their use of various software is focused on a specific group of software which can be seen in

Table 72: Off the shelf application.

Factor	Costs	Functionality	Flexibility	User friendly	Adaptability	Support
Software						
Word processor						
<i>Microsoft office word</i> [3].	<i>Y</i>	<i>L</i>	<i>Y</i>	<i>G</i>	<i>A</i>	<i>0</i>
<i>OpenOffice</i> [27].	<i>0</i>	<i>L</i>	<i>Y</i>	<i>G</i>	<i>A</i>	<i>0</i>
Google Docs [28].	Y	L	Y	G	G	0
Modelling tools						
Microsoft office Visio [4].						
<i>SmartDraw</i> [29].	<i>Y</i>	<i>L</i>	<i>Y</i>	<i>G</i>	<i>L</i>	<i>0</i>
Dia [30].	0	A	A	N	L	0
Draw [31].	0	A	A	A	A	0
<i>Edraw Max</i> [32].	<i>Y/N</i>	<i>L</i>	<i>Y</i>	<i>G</i>	<i>L</i>	<i>0</i>
<i>ConceptDraw</i> [33].	<i>Y</i>	<i>L</i>	<i>Y</i>	<i>G</i>	<i>A</i>	<i>0</i>



Table 5: Off the shelf application.

Factor	Costs	Functionality	Flexibility	User friendly	Adaptability	Support
Software						
Spreadsheet application						
<i>Excel</i> [5].	<i>Y</i>	<i>L</i>	<i>Y</i>	<i>G</i>	<i>A</i>	€
OpenOffice Calc [34].	0	L	Y	Y	A	0
Abykus [35].	Y	L	A	A	A	-
Gnumeric [36].	0	A	A	A	A	0
<i>Google Docs</i> [28].	<i>Y</i>	<i>L</i>	<i>Y</i>	<i>G</i>	<i>L</i>	<i>0</i>
Email clients						
Microsoft Office Outlook [6].	Y	L	Y	G	L	€
Zimbra [37].	Y	L	Y	G	L	0
Thunderbird [38].	0	L	A	G	A	0
Evolution [39].	0	A	A	G	A	0
Eudora [40].	0	A	A	A	L	0
Gmail & Google calendar [41].	Y/N	L	Y	G	L	
GroupWise [42].	Y	A	Y	G	A	€
Visualization applications						
FreeMind [43].	0	L	Y	G	L	0
Mind Map [44].	Y	A	A	G	A	0
Mindjet [45].	Y	L	A	G	A	€
View Your Mind [46].	0	A	A	G	A	0
Kdissert [47].	0	A	A	A	A	0
XMind [48].	Y/N	L	Y	G	L	0



Table 5: Off the shelf application.

Factor	Costs	Functionality	Flexibility	User friendly	Adaptability	Support
Software						
Visualization applications						
ThinkGraph [49].	0	A	A	A	A	0
THEBRAIN [50].	Y	L	L	G	L	0
Cayra [51].	0	A	A	G	A	0
MindView [52].	Y	L	L	G	L	0
Visual Mind [53].	Y	A	A	G	A	0
MindGenius [54].	Y	A	A	G	A	0
debategraph [55].	Y/N	L	L	G	L	0
The JavaScript InfoViz Toolkit [56].	N	L	L	G	L	0

4.3 Custom made solution

Custom made solution [9] regards software which is custom made to satisfy the specific desires and the needs of the OSS Team at Honeywell. By making the software from scratch, the OSS Team is assured of getting what they want; nothing less and nothing more. In Table 6 the advantages and the disadvantages of the custom made solution is show.

Table 73: Custom made advantage, disadvantages.

Advantages	Disadvantages
Object oriented applications.	Long develop time.
Independent of suppliers.	High costs.
No redundant functionality.	Dependent of the developer.
Easily extendible.	

4.3.1 Document management system (DMS)

The DMS should provide an environment where document and or images/drawings are managed. For fast and flexible access XML [57] techniques for meta data [57] is advised. History of each document should be recorded, by a version control system.



4.3.2 Applications

Just like in the off the shelf solutions category. The OSS Team uses a standard set of applications. These are Microsoft Office suite [2], Visio [4]. Since these are already the leaders of each domain. It would be wise not to invest resources for in house development.

4.3.3 Databases

Whether the OSS Team will be using a database or not is dependent on their choice. However if the choice has been made to make use of an database two choices can be made between two various database sort namely:

- Relational database [12] [58],
- Non relational database [12] [58].

Below the difference of these two databases is described following by examples of each database in Table 7 and Table 8.

- Relational database [58] is essentially a group of tables, which consists of columns and rows. This groups data by using attributes in a given data set.
- Non relational database [58] is a commonly called key/value database. No relations between domains are given. Items oriented, which means that all related data are stored within that item.

Table 74: Rational databases .

Relational database	Description ¹⁶
Open-source:	
<i>Mysql.</i>	<i>For more details see MYSQL website [59].</i>
PostgreSQL.	For more details see PostgreSQL website [60].
SQLite.	For more details see SQLite website [61].
Commercial products:	
Oracle.	For more details see Oracle website [62].
<i>Microsoft SQL server.</i>	<i>For more details see Microsoft SQL server website [63].</i>
IBM DB2.	For more details see IBM DB2 website [64].

¹⁶ Due to the technological complexity, the description is referred to the owners website.



Table 75: Non rational databases.

Non relational database	Description ¹⁷
Cloud(dynamically scalable [65])	
Amazon: SimpleDB [66].	An attribute-oriented key/value database available on the Amazon Web Services platform. It uses an eventual consistency model. This consistency model is good for concurrency.
<i>Google App Engine Data Store [67].</i>	<i>Build on BigTable, Bigtable is a distributed storage system for managing structured data that is designed to scale to a very large size [68].</i>
<i>Microsoft: SQL Data Services [69].</i>	<i>Actually an application, with underlying a relational data storage. However this layer is not accessible.</i>
Open source [70]	
<i>CouchDB [71].</i>	<i>CouchDB is meant to bridge the gap between document-oriented and relational databases by allowing "views" to be dynamically created using JavaScript [58].</i>
Project Voldemort [72].	A distributed key/value database that is intended to scale horizontally across a large numbers of servers [58].
MongoDB [73].	Document oriented JSON database, fully object database [58].
Drizzle [74] .	Main objective is to create a semi relational database platform tailored to web- and cloud-based applications running on 16 cores system or more.

4.4 Best of breed solution

The best of breed solution regards the usage of software which is the best at its own field. By using the best of its kind in their own field, the employee is ensured of having the best software available to do their task with. However there are various advantages and disadvantages of using the best of breed software.

¹⁷ Due to the technological complexity, the description is referred to the owners website.



Table 76: Best of breed advantage, disadvantages.

Advantages	Disadvantages
Best of the best.	Lots of interfaces.
Lots of functionalities.	Lots of suppliers, licenses.
	Functionalities dependent of suppliers.
	Integration.
	High costs.

4.4.1 Document management system (DMS)

In the category best of breed solutions, the most favourable DMS can be discovered by analysing the results of table 3 in off the shelf solutions.

In this case:

- Feng Office [16],
- Knowledge Tree [17],
- Documentum,
- M-Files [20],
- Document Locator [24]

could be suitable candidates for the purpose of DMS in the OSS Team.

4.4.2 Applications

In paragraph 4.2.2 a list of applications is analysed. However just like paragraph 4.3.2. the OSS Team uses already the best applications available in each domain.

4.4.3 Databases

Whether the OSS Team will be using a database or not is dependent on their choice. However if the choice has been made to make use of an database, two choices can be made between two various database sort namely:

- Relational database,
- Non relational database.

From the custom made solution three databases stands out.

MySQL [59] is a proven concept and is widely used by many companies. MySQL is more in the relational type database sort, on the contrary Google App Engine Data Store [67] which is a non relational database uses integrations. This can be a major advantage, you may think of scalability issues, speed Since hard disk space is cheap nowadays, the non relational database sort can be a good solution. When both sorts of databases are preferred, Microsoft SQL data service [69] can be a great alternative. Because it's basically a non relational database, however the underlying is composed of relations which is not accessible for the users.



5. Software advice

5.1 *Document Management systems*

The document management system is the main environment where the members of the OSS Team has to deal with daily. Therefore this environment should fit the users desires as much as possible. Since every person has its own needs en desires for functionalities, it will be hard to satisfy everyone.

However in the results of the survey we can conclude that some factors remains important for everyone. These factors are:

- Functionality,
- Flexibility,
- and usability.

So far these results are more or less similar to the initial thoughts of the writers. However considering one important note, which is a cost effective solution or even a cost free solution, will make it very hard to select the best suitable solution. With this notes in consideration, Two advices can be given. One advice is a cost free and the other is commercial one.

In the category of free DMS,

- Feng Office [16],
- and Knowledge tree [17],

are recommended.

In the category of commercial DMS,

- Documentum [19],
- M-files [20],
- and Document locator [24]

are recommendable.

The commercial DMS provides a lot of functionalities and better security as well as support issues, however the free or open-source DMS can be extended as well with new functionalities. However this must be done by several developer heroes.

5.2 *Applications*

As mentioned before, the used applications in the OSS Team is already the leaders in its own domain. The formats are widely adopted and therefore many tools/conversion are available. Besides the members are experts in using those applications. Therefore it's better not to change them.

5.3 *Database*

There are various databases available to choose from. For the search of the right database the same argument applies as in paragraph 5.1. The solution has to be cost effective, and ideally even cost free. Database solutions can further be divided into relational and non relational databases.

In the category of relational databases:

- MySQL [59],
- and Microsoft SQL server [63] ,

are very good solution. The reason for this choice is due to the advantages which they possess. Another reason for use of these databases is the proven concept by which they are used worldwide.

If we look in the field of non- relational databases:



- Google App Engine Data Store [67],
- Microsoft SQL Data Services [69].

are a good solutions, due to their scalability capabilities.

However keep in mind only MySQL [59] is open-source and the rest are commercial. Also another remark that has to be noticed, is that most of the document management systems already uses its own database system. Using a separate database alongside the DMS could be troublesome or at least hard to manage.

6. Final words

By not using a Document management system, work can be managed until certain level. By the current projects the scale of the amount of work will soon be out of control. Therefore it is necessary to use a document management system, or at least determine strict rules for managing the daily work.

The ideal solution would be to start using a DMS which is free, however using freeware also means certain risks for a company. These risks has to be assessed and reviewed in order to be able to make a decision regarding commercial or freeware.

Another approach would be to use application which could make the managing of the documents easier. By using an application which can relate the information together work can be made easy, but the problem of managing will surface in the future.



7. Bibliography

- [1] Honeywell. <http://www51.honeywell.com/>.
- [2] crosoft. *Microsoft Office Online*. <http://office.microsoft.com/en-us/FX100647101033.aspx?pid=CL100569831033> (accessed 2009).
- [3] Microsoft. *Word 2003 Help and How-to*. <http://office.microsoft.com/en-us/word/FX100649261033.aspx> (accessed 2009).
- [4] Microsoft. *Visio 2003 Help and How-to*. <http://office.microsoft.com/en-us/visio/FX100649221033.aspx?CTT=96&Origin=CL100636311033> (accessed 2009).
- [5] Microsoft. *Excel 2003 Help and How-to*. <http://office.microsoft.com/en-us/excel/FX100646961033.aspx> (accessed 2009).
- [6] Microsoft. *Outlook 2003 Help and How-to*. <http://office.microsoft.com/en-us/outlook/FX100647201033.aspx> (accessed 2009).
- [7] Adobe. *Help Resource Center*. http://help.adobe.com/nl_NL/Acrobat/8.0/Professional/ (accessed 2009).
- [8] IBM. *IBM collaboration software - Lotus software*. <http://www-01.ibm.com/software/lotus/> (accessed 2009).
- [9] PCMAG.COM. *PCMAG Encyclopedia*. <http://www.pcmag.com/encyclopedia/> (accessed 2009).
- [10] Nijhuis, Ruud. "Application Architecture And Organisation Architecture." Delft: DCE Consultants - Implementing Strategy and Innovation, 23 4 2007.
- [11] Microsoft. *Microsoft Office SharePoint Server 2007*. <http://office.microsoft.com/nl-nl/sharepointserver/FX100492001043.aspx> (accessed 2009).
- [12] Webopedia. *Webopedia: The only online dictionary and search engine you need for computer and Internet technology definitions*. <http://www.webopedia.com/> (accessed 2009).
- [13] Software, Free Document Management. *OpenDocMan Opensource document management for the masses*. 2005. <http://www.opendocman.com/> (accessed 2009).
- [14] Snc, Logical Objects. *LogicalDOC - Document Management*. 2008. <http://www.logicaldoc.com/cmsPublic/-/websitelogicaldoc/en.html> (accessed 2009).
- [15] OpenGoo. *OpenGoo: An Open Source Web Office*. <http://www.opengoo.org/> (accessed 2009).
- [16] fengoffice.com. *Feng Office*. 2009. <http://www.fengoffice.com/web/index.php?lang=en> (accessed 2009).
- [17] Inc, KnowledgeTree. *KnowledgeTree*. 2009. <http://www.knowledgetree.com/> (accessed 2009).
- [18] Ltd, Nexus Internet Solutions. *tlmNEXUS*. 2009. <http://www.nexus-solutions.net/> (accessed 2009).
- [19] Corporation., EMC. *Documentum Family*. 2009. <http://www.emc.com/products/family/documentum-family.htm> (accessed 2009).
- [20] Inc., Motive Systems. *M-Files*. 2009. <http://www.m-files.com/eng/home.asp> (accessed 2009).
- [21] OnDemand, Global. *Global OnDemand*. 2002. <http://www.globalondemand.net/> (accessed 2009).
- [22] B.V., OpenSesame ICT. *OpenIMS*. 2001. <http://www.openims.com/> (accessed 2009).
- [23] imaging, Document management &. *Version One Ltd*. 2009. <http://www.versionone.co.uk/> (accessed 2009).
- [24] Corporation, ColumbiaSoft. *Document Locator*. 2009. <http://www.documentlocator.com/> (accessed 2009).
- [25] Compulink Management Center, Inc. *Liserfishe*. 1996. <http://www.laserfiche.com/> (accessed 2009).
- [26] Active Innovations, Inc. *infoRouter*. 1998. <http://www.inforouter.com/> (accessed 2009).
- [27] OpenOffice.org. *OpenOffice.org*. 2002. <http://nl.openoffice.org/> (accessed 2009).



- [28] Google. *Google Docs*. 2009. <http://docs.google.com/> (accessed 2009).
- [29] —. *SmartDraw*. 1994. <http://www.smartdraw.com/> (accessed 2009).
- [30] Project., The GNOME. *Dia*. 2005. <http://live.gnome.org/Dia> (accessed 2009).
- [31] OpenOffice.org. *Draw*. 2002. <http://www.openoffice.org/product/draw.html> (accessed 2009).
- [32] EdrawSoft. *Edraw Max*. 2004. <http://www.edrawsoft.com/EDrawMax.php> (accessed 2009).
- [33] Corporation., Computer Systems Odessa. *ConceptDraw*. 2009. <http://www.conceptdraw.com/en/products/cd5/main.php> (accessed 2009).
- [34] OpenOffice.org. *Calc*. 2002. <http://www.openoffice.org/product/calc.html> (accessed 2009).
- [35] —. *Abykus*. 2009. <http://www.abykus.com/> (accessed 2009).
- [36] Gnumeric. *Gnumeric*. 2009. <http://projects.gnome.org/gnumeric/> (accessed 2009).
- [37] Inc., Yahoo! *Zimbra*. 2009. <http://www.zimbra.com/> (accessed 2009).
- [38] Mozilla. *Thunderbird*. 2005. <http://www.mozillamessaging.com/en-US/thunderbird/> (accessed 2009).
- [39] Novell, Inc. *Evolution*. 2009. <http://www.novell.com/products/desktop/features/evolution.html> (accessed 2009).
- [40] Incorporated, QUALCOMM. *Eudora*. 1999. <http://www.eudora.com/> (accessed 2009).
- [41] Gmail. *Gmail*. 2009. <http://www.gmail.com> (accessed 2009).
- [42] Novell, Inc. *GroupWise*. 2009. <http://www.novell.com/products/groupwise/> (accessed 2009).
- [43] Foltin, Christian. *FreeMind*. 2008. http://freemind.sourceforge.net/wiki/index.php/Main_Page (accessed 2009).
- [44] SimTech Systems, Inc. *Mind Map*. 2009. <http://www.mindmapper.com/> (accessed 2009).
- [45] Mindjet. *Mindjet*. 2009. <http://www.mindjet.com/> (accessed 2009).
- [46] Drechsel, Uwe. *View Your Mind*. 2007. <http://www.insilmaril.de/vym/> (accessed 2009).
- [47] KDE. *Kdissert*. 2009. <http://www.kde.org.uk/apps/kdissert/> (accessed 2009).
- [48] Ltd., XMind. *XMind*. 2006. <http://www.xmind.net/> (accessed 2009).
- [49] Kern, Michel. *ThinkGraph*. 2007. <http://www.thinkgraph.com/english/index.htm> (accessed 2009).
- [50] LP, TheBrain Technologies. *THEBRAIN*. 2009. <http://www.thebrain.com/#-42> (accessed 2009).
- [51] Cayra. *Cayra*. 2009. <http://cayra.net/> (accessed 2009).
- [52] A/S, MatchWare. *MindView*. 2009. <http://www.matchware.com/en/products/mindview/> (accessed 2009).
- [53] AS., Mind Technologies. *Visual Mind*. 1998. <http://www.visual-mind.com/index.php> (accessed 2009).
- [54] Ltd., MindGenius. *MindGenius*. 2009. <http://www.mindgenius.com/> (accessed 2009).
- [55] Ltd., Thoughtgraph. *Debategraph*. 2009. <http://debategraph.org/> (accessed 2009).
- [56] —. *The JavaScript InfoVis Toolkit*. 2008. <http://thejit.org/> (accessed 2009).
- [57] —. "Metadata and XML Improving the Findability of Information." *InfoDesign: Understanding by Design*. Wiesbaden: www.bogieland.com, 2004. 34.
- [58] Bain, Tony. *Is the Relational Database Doomed?* <http://www.readwriteweb.com/enterprise/2009/02/is-the-relational-database-doomed.php>, 12 February 2009.
- [59] —. *MYSQL*. 1995. <http://www.mysql.com/> (accessed 2009).
- [60] —. *PostgreSQL*. 1996. <http://www.postgresql.org/> (accessed 2009).
- [61] —. *SQLite*. 2009. <http://www.sqlite.org/> (accessed 2009).
- [62] —. *Oracle database 11g*. 2009. <http://www.oracle.com/database/index.html> (accessed 2009).
- [63] Server, Microsoft SQL. *SQL Server* 2008. 2009. <http://www.microsoft.com/sqlserver/2008/en/us/default.aspx> (accessed 2009).



- [64] IBM. *IBM DB2 Software*. 2009. <http://www-01.ibm.com/software/data/db2/> (accessed 2009).
- [65] Eric Knorr, Galen Gruman. "What cloud computing really means." *InfoWorld*, 07 April 2008: 3.
- [66] LLC, Amazon Web Services. *Amazon SimpleDB*. 2009. <http://aws.amazon.com/simplydb/> (accessed 2009).
- [67] Google. *The Python Datastore API*. 2009. <http://code.google.com/appengine/docs/python/datastore/> (accessed 2009).
- [68] Fay Chang, Jeffrey Dean, Sanjay Ghemawat, Wilson C. Hsieh, Deborah A. Wallach, Mike Burrows, Tushar Chandra, Andrew Fikes, and Robert E. Gruber. "Bigtable: A Distributed Storage System for Structured Data." *Seventh Symposium on Operating System Design and Implementation*, November 2009: 14.
- [69] —. *SQL Azure Database*. 2008. <http://www.microsoft.com/azure/data.msp> (accessed 2009).
- [70] SourceForge, Inc. *SourceForge.net*. 2009. <http://sourceforge.net/> (accessed 2009).
- [71] Foundation, The Apache Software. *The CouchDB Project*. 2008. <http://couchdb.apache.org/> (accessed 2009).
- [72] Voldemort, Project. *Project Voldemort A distributed database*. 2009. <http://project-voldemort.com/> (accessed 2009).
- [73] —. *MongoDB*. 2009. <http://www.mongodb.org/display/DOCS/Home> (accessed 2009).
- [74] —. *Drizzle*. 2004. <https://launchpad.net/drizzle> (accessed 2009).
- [75] Munzner, Tamara. *Tamara Munzner: Software*. 2003. <http://www-graphics.stanford.edu/~munzner/software.html> (accessed 2009).
- [76] Digg. *digg labs*. 2009. <http://labs.digg.com/> (accessed 2009).
- [77] Inspiration Software, Inc. *Inspiration*. 2009. <http://www.inspiration.com/> (accessed 2009).
- [78] Ltd., 3D-Scape. *Topic scape*. 2004. <http://www.topicscape.com/> (accessed 2009).
- [79] Insight, Vero. *Vero Insight*. 2007. <http://www.vero-insight.com/products/index.shtml> (accessed 2009).
- [80] Marcos Weskamp, Dan Albritton. *Social Circles*. 06 May 2005. <http://marumushi.com/apps/socialcircles/index.cfm> (accessed 2009).
- [81] Aune, Sean P. *Mashable*. 3 November 2007. <http://mashable.com/2007/11/03/mindmapping/> (accessed 2009).
- [82] Yonghoo, Lee. *Infovis*. 13 October 2008. http://www.infovis-wiki.net/index.php?title=Toolkit_Links (accessed 2009).
- [83] Lex, Alexander. *InfoVis*. 2009. [http://www.infovis-wiki.net/index.php?title=Software_Links_\(InfoVis_Applications\)](http://www.infovis-wiki.net/index.php?title=Software_Links_(InfoVis_Applications)) (accessed 2009).
- [84] Datenräumen, Visualisierung von. *InfoViz*. 2000. <http://fabdp.fh-potsdam.de/infviz/index.html> (accessed 2009).
- [85] dmoz. *Open Directory*. 2009. http://www.dmoz.org/Reference/Knowledge_Management/Knowledge_Discovery/Information_Visualization/Software/ (accessed 2009).
- [86] Harmen van den Berg, Hans Bosma, Gertjan Dijk, Hans van Drunen, Jan van Gijzen, Frank Langeveld, Joost Luijpers, Thé Nguyen, Ger Oosting, Robert Slagter, Egon Willemsz. *ArchiMate in de Praktijk*. 07 11 2007. <https://doc.freeband.nl/dsweb/GetRendition/Document-62664/html> (accessed 2009).
- [87] HowStuffWorks.com. *What are relational databases?* <http://computer.howstuffworks.com/question599.htm>, 23 March 2001.
- [88] Microsoft. *Windows Mail*. 2009. <http://www.microsoft.com/windows/windows-vista/features/mail.aspx> (accessed 2009).



Appendix A

Appendix A1

Appendix Table 1: Free applications.

Visual tool	Description
Cyra [51].	A mind mapping software.
Debategraph [55].	A combination of web-based, argument visualization with collaborative wiki editing to make the best arguments on all sides of complex public debates.
Kdissert [47].	A mind map visualization tool. A tree structure which can be expanded with sub trees.
Mindmap [44].	A mind map visualization tool. Data is represented in 2D.
Tamara Munzner software [75] : <ul style="list-style-type: none">• HypViewer 1.0,• Site Manager 1.1,• Geomview,• Triangle Tiling,• WebOGL,• Caidants.	A group of mind map tools. Representation of the data is in 3d.
ThinkGraph [49].	ThinkGraph is a 2D Drawing application specialized for Concept Maps authoring. A concept map is a diagram meant to represent Ideas (each idea being represented by a shape (i.e. rectangle, ellipse, image, ...).
VYM [46].	A tool to generate and manipulate maps which show your thoughts. This can help you to improve your creativity and effectively.
XMind [48].	Mind map tool for sharing ideas, organize charts for collaborations purposes. It has different map views.



Appendix Table 2: Commercial applications.

Visual Tool	Description
Debategraph [55].	A combination of web-based, argument visualization with collaborative wiki editing to make the best arguments on all sides of complex public debates.
Digg labs [76].	Representation of information in different animation style.
Inspiration [77].	Learning tool for supporting students for planning, scheduling sharing thoughts purposes.
MindGenius [54].	The MindGenius application is based on Mind Mapping. Users can capture large amounts of disparate information and gives them the ability to view content from different viewpoints.
Mindjet [45].	Mind mapping software, with online collaboration functionalities.
MindManager [45].	
MindMapper [44].	Visual mind mapping software tool, for organizing thoughts and ideas visually, decision making, making presentations, planning, brainstorming, outlining ideas, note taking.
MindView [52].	Allow users to brainstorm and visualize ideas quickly and easily. Based on mind mapping concept.
PersonalBrain [50].	Based on mind mapping concept. Mostly used for visualizing ideas for customers to quickly understand. Two versions, one for individual use, the other for enterprise purposes.
The Brain [50].	
Topic scape [78].	2D visualization tool. Instead of using nodes, Topic scape use a landscape method.
VeroInsight [79].	Visual data mining tool. Can import 30 different file formats.
Visual Mind [53].	Mind mapping software. Allow users to visualize, brainstorm organize thoughts.
XMind [48].	Based on mind mapping concept. To let users share, capture, organize ideas. Can export mind maps in MS word, PowerPoint, PDF, MindManager documents.



Appendix A2

Social Circles is a mailing list social visualization software [80].

13 Free mind mapping tools [81]

22 Commercial mind mapping tools [81]

42 Toolkits [82]:

- General,
- Charting,
- Graph/Network,
- 3D,
- Geovisualization,
- Zoomable,
- Other.

68 Applications [83]:

- Free/Open source,
- Tree map related,
- Commercial,
- Web application/ services.

150 Visualization applications [84].

36 Information visualization software [85].



Appendix D

SharePoint Configuration

H. Safari Asl 1063405
Y.F. Tang 1107860
Master thesis project
SharePoint Configuration
Honeywell B.V

&

Department: Information Architecture
Faculty: Electrical Engineering, Mathematics and Computer Science,
Delft University of Technology
Status: 1.Delivered to be approved.
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1. Introduction

Organizing the work itself and work related documentation requires use of standards, policies and application. Therefore each organisation needs a Document Management System (DMS) for managing the daily work accordingly. There are many software [1] available for managing documents and the overall work. The choice of such a DMS depends on the requirement and wishes of the organization that is going to use it. Usage of a DMS has several advantages and disadvantages.

The advantage of a DMS lays in its all in package, which manages the daily work for the most part. Having a central storage for storing and sharing of the documents with the co-workers creates an efficient environment. By having a central location for knowledge, consulting and sharing will become hassle free. The pile of endless emails for announcements, questions and interesting links will seeks to exist, however all of will be organised in an ordinary fashion by the DMS.

The disadvantages of using a DMS do not weigh heavily enough in order to not integrate one within the work environment. Without a proper configuration of the DMS, a DMS can be experienced as slow and time consuming. A simple task could take ages to perform, which could be disastrous for organizations due to the fact that time is money.

In this case the OSS Team [2] has decided to use SharePoint as the DMS for their daily work.

2. Goal

The purpose of this document will be to provide an advise of how, in this case SharePoint, can be configured and used. The goal is to enlighten the most prominent features of the SharePoint and how it can help make daily work more organized and efficient. It shall help define a set of practical tips for setting up the configuration of the SharePoint.

3. SharePoint

Microsoft office SharePoint (server) [3] is a DMS application by which work, documentation, knowledge and news could be stored, shared and consulted. In the following chapter each prominent feature of the SharePoint will be described which will be helpful for SharePoint design. How each feature can be designed for the OSS Team SharePoint site is illustrated in the Appendix.

3.1 *Sites and workspaces*

In this chapter various websites and workspaces will be described which will function as the heart of the OSS Team. The purposes of creation of these sites are to contribute to performing the daily work more easily and efficiently.

3.1.1 Home

3.1.1.1 Description

Home site is the main site of the OSS Team. The purpose of the Home site is to have a universal "begin site" which is equal for everyone. This site contains access to the most vital functionalities and sections of the daily work.

In Figure 1 an example of the home page is provided. Next to the home page, on the top link bar, one can view other sites, which are for other departments or purposes.



[Portal OSS Honeywell] Welcome John Doe [My Site](#) [My Links](#) [Help](#)

All sites [Advanced Search](#)

[Home](#) [Project](#) [Document libraries](#) [Internal courses](#) [Templates](#) [Wiki](#) [Knowledge base](#) [FAQ](#) [Discussion Board](#) [Meeting](#) [Status](#) [Actions](#)

[View All Site Content](#)

Documents

- Reference documents

Projects

Calendar

≤ May 2001 ≥

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Discussion

- General Discussions
- Team Discussions

Sites

- Sub pages

Email

Site Hierarchy

- Search Center
- Sub page
- Shared Documents
- Announcements
- Calendar
- Links
- OSS Wiki page
- Tasks
- Team Discussion

[Recycle Bin](#)

Home > [Current location]

OSS | Honeywell

Announcements

How to put and use documentation. 8/26/2009 8:55 AM
Example of an Visual representation of project folders structure.

☐ Add new announcement

FEEDS

- News FEED1
- News FEED2
- News FEED3

My Documents

Documents Pictures

Meetings

Agenda Number	Subject	Time	Owner
1	Introduction ! new	09:00 - 09:15	Matthias Hupe
2	Feedback from last Weekly Minutes ! new	09:15 - 09:30	Matthias Hupe
3	Component Design ! new	09:30 - 10:00	Franziska Kühn

Project Status

Tasks

Title	Assigned To	Due Date	Priority
Create Presentation Template ! new	Franziska Kühn	7/7/2009	(1) High
Approve last Weekly Minutes ! new	Matthias Hupe	7/7/2009	(2) Normal

Links

- Hyperlink 1
- Hyperlink 2

Team Members

-
-

Wireframe: BG navigation

Figure 69: Example of Home site [4] [5] [6] [7] [8].

3.1.1.2 Practice

The following issues have to be considered before creating a Home site.

- A Home site has to be uniform for each department.
- Home site must contain the most important references or sections for the employees.
- Home site can only be changed in accordance to the owner.
- Preferably a moderator is assigned for maintaining the Home site.
- Before creating a Home site and other sites a site map has to be made.
- Home site must be an addition to the daily work and must set the employments at ease.
- Naming of the sites is crucial for navigation and finding the right sections.

An Example is shown in Appendix figure 1: Home page.



3.1.2 Personal site

3.1.2.1 Description

Personal site is the site of each individual employee. It is a personal adjustment of the home site to employees' wishes and desires. This adjustment is preferable due to the fact that personalisation motivates a person to perform his or her tasks better. Another reason to do this is to avoid unnecessary overflow of information.

3.1.2.2 Practice

Personal site refers to the site, which is for the user alone. This site can be edited and changed to meet his or hers demand. The personal site looks like the Home site, however the difference is that the employer sees his alerts, tasks, status of his own documentation.

The following issues has to be considered for configuring the site are:

- Adjusting the site must be performed in such a way that it will not affect the work productivity of the employee.
- The employee must have several standard web parts (adjustable sections of a site), such as tasks, project status, alerts, and announcements. The purpose is to be able to inform the employee when a sudden changes occurs.

3.1.3 Project

3.1.3.1 Project site

3.1.3.1.1 Description

Project site contains information regarding each project; containing the project names, links, status and all other relevant information. This site acts as a portal for each project. The purpose is to have one central site where all projects are gathered. Organising the information creates a swift overview of the projects and offers order within chaos.

3.1.3.1.2 Practice

By having one site for projects and entering all other projects as a child of this site, an simple overview of all the projects will be created. All projects will be categorized under one page.

However the following issues has to be paid attention to:

- Project site must contain the following:
 - Links to all projects,
 - Status overview of the projects,
 - Most important announcements regarding projects,
 - Links to relevant documentation & best practices,
 - Must contain a time management of the projects.
- A moderator is preferably assigned for maintaining the site.
- The site is accessible for all employees.
- Only moderator is allowed to change the site.

An Example is shown in Appendix figure 2 : Project site (general).

3.1.3.2 Time management

3.1.3.2.1 Description

The time management section displays the overview of the time line, milestones, project tasks and whom it is assigned to. By having such a detailed Gantt chart [4], an overview of the projects is available at hand.



3.1.3.2.2 Practice

Such a Gantt chart and its detailed information can be added to part of the project site by using web parts.

- Gantt chart can be added by the project manager.
- Only project manager is able to change the grant chart.
- Assigning of tasks will become visible to the employee.
- Employees have access to view the grant chart.

An Example is shown in Appendix figure 3 : Project site.

3.1.4 Template

3.1.4.1 Description

A separate template site must be made with Home site as parent site. This site will act as a portal for every document template, which is used by the OSS Team for any part of the projects.

3.1.4.2 Practice

By categorising these templates per project phase, the employer can quickly access the particular template for his need.

The following issues has to be taken in consideration:

- Templates should have an owner assigned to.
- No changes can be done directly to change the template itself.
- Changes or suggestions must be reported to the owner of the template.
- Reporting changes or issues can be performed through the discussion board or sending an email to the automated SharePoint section for templates issues.
- Templates are accessible for every employee.
- Preferably a moderator is assigned to template site for maintaining purposes.

A remark is at its place. SharePoint itself distinguishes two sorts of templates namely: site template and document template.

- The site template is the layout of the sites and the standard functionalities of a new site, which can be created.
- The document template in SharePoint regards the format of new documents, which can be created within document libraries or shared documentations.

An Example is shown in Appendix figure 8 : Templates (general).and Appendix figure 9 : Templates.

3.1.5 Internal course

3.1.5.1 Description

The internal courses [2] site, will offer a site to overview all information and documentation regarding courses which are given by Honeywell. By centralizing content consulting and finding information regarding a particular course will be made easy and more efficient.

3.1.5.2 Practice

This site is also a child of the Home site. The following issues must be taken into consideration:

- Only employees with the right access must be allowed to enter the course.
- Internal courses must be divided into chronologic categories.
- Status must indicate whether an employee is or has taken an internal course.
- Invites can be send through the SharePoint to the employees.
- A moderator is assigned for maintain the internal courses site.
- Employees only have the right to view the documentations.



An Example is shown in Appendix figure 6 : Internal courses (general). and Appendix figure 7 : Internal courses.

3.1.6 Best practice

3.1.6.1 Description

The site for best Practices offers an overview of all documentation and information regarding best practices. This site will enable the employees to consult the site for finding relevant information regarding best practices. The possibility also exists to provide an external access for the client to satisfy the curious mind.

3.1.6.2 Practice

The site for best practice must contain various sections.

- Announcements, where latest developments are provided by short messages.
- Preferably a moderator is assigned for maintaining.
- Documentation must be categorised.
- New information can only be added through the employees with the right clearance level or the moderator.
- Every employee must have access to view the various sections.
- Remarks must be posted under its proper section.

3.1.7 Knowledge base

3.1.7.1 Description

This site is the main website for knowledge storage and sharing. It contains all relevant information regarding various topics and categories. The knowledge gathered here is only work related. Current knowledge is being shared through email messages. This is not the optimal way to share knowledge due to the lack of overview. For creating an overview, there is a need for centralizing all the knowledge within one location. Email messages or announcement still could be used to inform the employees of the newly acquired knowledge.

3.1.7.2 Practice

The knowledge base site contains various part to serve at is best for the employees.

- Announcements for the recent added or edited knowledge.
- A moderator is assigned for maintaining the knowledge base.
- Links to most important related sites.
- Document section where all categories of information resides.
- New information can only be added through the moderator.
- Information must be accessible for all employees to view.
- RSS feed enables to subscribe to new added knowledge.
- Suggestions can be posted on the message board.

An Example is shown in Appendix figure 12 : Knowledge base (general).and Appendix figure 13 : Knowledge base.

3.1.8 Wiki

3.1.8.1 Description

A wiki site contains information regarding all sorts of areas. It is possible for those with the right clearance level to adjust the information on the site. Those who have subscribed to the information update alerts will receive updates through their media of choosing. Also the history of changes made in a wiki site is kept.

3.1.8.2 Practice

To create a wiki, which can be fully usable a certain structure is required.



- The best way to achieve this is to categorise the wiki in various sections.
- Also an administrator or a moderator must be assigned to manage the wiki site.
- Access must be given to those who have the knowledge or at least poses valuable information to add to the wiki.
- Wiki must be accessible for all employees.
- Announcements or RSS feed must relay the new added information or edited information to all subscribed.

An Example is shown in Appendix figure 10 : Wiki (general).and Appendix figure 11 : Wiki.

3.1.9 FAQ

3.1.9.1 Description

Frequently Asked Questions, for short FAQ, enable the employee to consult answers of questions in various areas. The purpose is to offer a support site for those questions that are often raised during work.

3.1.9.2 Practice

The following criteria's must be maintained.

- A moderator must be assigned to the FAQ site, in order to keep the FAQ organized.
- Categories must be made before opening the FAQ to questions.
- FAQ contains questions for issue, which occur often.
- Employees have access to view these questions and answer them.
- Emailing questions to FAQ must be enabled to let the employee ask their questions by simply sending an email.

An Example is shown in Appendix figure 14 : FAQ (general).and Appendix figure 15 : FAQ.

3.1.10 Glossary

3.1.10.1 Description

Glossary site contains a description of all the used abbreviations. The purpose is to have clear overview of abbreviation.

3.1.10.2 Practice

- This site has its own moderator,
- Announcements display the latest added abbreviation.
- The abbreviations are categorised per document, and all the necessary categories.
- Abbreviation must be accessible to view by all employees.
- New to be added abbreviations can be added by all employees, however they will be added to the site for viewing only after approval.

3.1.11 Discussion board

3.1.11.1 Description

The discussion board site offers a location where all discussion can take place. Employees will no longer have to discuss issues over the email which makes following of the discussion very hard to do. Creating an overview will motivate more employees to take an active role in discussions.

3.1.11.2 Practice

- The discussion board consists of several categories.
- An moderator is preferably assigned to this section.
- Employees have access to discussion board and can add their thoughts and ideas to it.
- Announcements contain the latest discussions.



- The owner can decide whether who has the right to be involved within a particular discussion.
- Links contain valuable links to other sites. This could be external or internal.
- Document section can contain documents, which could be part of a discussion.

An Example is shown in Appendix figure 16 : Discussion board (general).and Appendix figure 17 : Discussion board.

3.1.12 Shared documents

3.1.12.1 Description

The site for document libraries contains referral to various document spaces of the OSS Team. This means that reference is made to the various workspaces and latest updates of the documentation status and tasks are provided. All documentations can be easily found which contributes to a more efficient way of working. There is no need for looking for documents of a particular project, status updates and tasks overview show where or what is happening to a document.

3.1.12.2 Practice

- Apart from the owner of each document there should be a moderator present or at least some sort of organiser who manages the order.
- Documents should be categorised.
- Documentation should be accessible for all employees.
- For clients a separate secured section could be available.
- Documentation should have a proper name, according to policies, before uploading to the server.
- Documents must be placed under its proper section.
- Depending of the document sort approval is required before publishing.
- Announcements of recent updated or published document must be available.
- Notifications could be sent to view an important document.

An Example is shown in Appendix figure 4 : Document libraries (general).and Appendix figure 5 : Document libraries.

3.1.13 Client

3.1.13.1 Description

The client site is created in case the client has access right to view documentations internally within Honeywell. The purpose of this access could be for those documents, which have a very high level of sensitivity issues.

3.1.13.2 Practice

- The client has limited access to the particular section of SharePoint.
- The client can view and edit his documentations.
- The client must be able to post notes.
- Relevant links to other sites is preferable.
- A moderator is assigned to manage the client site.
- Notifications are send to answer or review documents.

3.1.14 Team meeting

3.1.14.1 Description

This site acts as a get to gather location for the weekly team meetings. It has a purpose of being an information portal and being a preview of the future meetings.



3.1.14.2 Practice

- The documentations of the future meeting is shared here.
- A moderator is assigned for maintaining.
- The notes and discussed items of the meetings are also posted here.
- Discussion points are posted for employees to view.
- The status of meeting is updated through here.
- For rescheduling announcements, email or RSS feed can be used.

An Example is shown in Appendix figure 18 : Meeting (general).and Appendix figure 19 : Meeting.

3.1.15 Status

3.1.15.1 Description

The status site acts as a central location where all status can be viewed. By having such a location a quick update is possible for those who need to be up to date for times to times without having go through the entire project backgrounds.

3.1.15.2 Practice

- Announcements, alerts, RSS and email is used for updating urgent or important status.
- Project status is provided.
- Documentation status is provided.
- Status of the FAQ.
- Status of discussion board.
- Status of the project tasks.
- Status of the tasks.

An Example is shown in Appendix figure 20 : Status (general).and Appendix figure 21 : Status.

3.2 Versioning and history

3.2.1 Document versioning

3.2.1.1 Description

Microsoft SharePoint gives the abilities to keep versions of documents. Document versioning makes it possible to store multiple versions of a document. This will come handy if one wants to undo new changes and revert to an old document. Users can open the version history, which views a list of previous versions, old version can then be restored by replacing the current version or delete an old version.

SharePoint uses minor and major versioning for keeping track of changes made to documents. Minor versioning means that each time a update is saved the version number behind the dot is increased. For example a document starts with 0.1, after updating it becomes 0.2. These are usually called drafts of documents. Whenever a final version is made. The number before the dot increases. In our example document 0.1 becomes 1.0.

3.2.1.2 Practice

- The owner of the document should consider if a version should be reverted to an old one or not.
- Employees should consider submitting a document to prevent too much versions of a single document.



3.2.2 Check in and check out

3.2.2.1 Description

Versions of documents are created each time when a user updates a document in the document library. These updates are for example: Opening a file, do some changing, and then save the file.

The check in and checkout mechanism is to grant access rights to users. It ensures that only one person can edit a document at the same time. Only users who have checked a document out are able to save changes in a document. Others are only allowed to access the read-only version and read it.

3.2.2.2 Practice

By default the check in and checkout mechanism is disabled in the SharePoint libraries. This can easily be enabled by going to the Document Library Settings. Under the Document Library Versioning Settings page select Yes for check in and check out before they can be edited.

Users besides the one who has received savings rights for a document cannot see the updates being made. Also they cannot update the document because it is check out by someone else. In this respect, a consensus has to be created to check the document back in. However administrators of the site can have authorities to cancel check outs.

3.2.3 History

3.2.3.1 Description

SharePoint keeps hold of a history for each of the documents that are worked on. It provides a history and a document profile for every version of every document. Things to see are when a document is modified, who modified the document and some comments left by the author.

3.3 Workflow

3.3.1 Workflows

3.3.1.1 Description

It's possible to design workflows in SharePoint to automate certain business processes. The SharePoint workflow focuses on human based processes, instead of automating procedural steps. Therefore creating tasks is an important feature within the SharePoint workflow. These business processes can be reviewing and approval of documents.

With these SharePoint workflows, the responsible approver or reviewer is alerted by email. A specified amount of time can be given for each task. The status of the workflow is kept by the system. Instead of managing the workflow, the efficiency and productivity of the team can rise due to this automated workflow.

3.3.2 Review

3.3.2.1 Description

The review process for documents can be mimicked the SharePoint Collect Feedback workflow. This workflow supports business processes that engage sending a document or item to a group of people to gather review feedback. As mentioned above, the Collect Feedback will improve efficiency because it keeps track of the people who are involved in this process.

3.3.2.2 Practice

- Determine who and which persons are qualified for reviewing the concerning document.
- Set the amount of review time to a reasonable period.
- People who are related with the Collect Feedback workflow will receive an email alert. This is however not in real time. It can take some minutes before the workflow is reaching the concerning people.



- The workflow owner will receive email alert when the task is completed.

3.3.3 Approval

3.3.3.1 Description

The Approval workflow supports business processes that involve sending a document or item to colleagues, client or managers for approval. Just like the Collect Feedback workflow, the related people of approving a document will be alerted by an email. The participants of this workflow can see the status of the process.

3.3.3.2 Practice

- Determine who and which persons are qualified for approving the concerning document.
- Set the amount of approval time to a reasonable period.
- People who are related with the approval workflow will receive an email alert. This is however not in real time. It can take some minutes before the workflow is reaching the concerning people.
- The workflow owner will receive email alert when the task is completed.

3.3.4 Project tasks

3.3.4.1 Description

With the Microsoft workflow designer [8], it is also possible to create custom made workflows. The basic ideas of the build in approval and Collect Feedback workflow remains. The additional features are that you can assign conditions to the steps within a workflow. By the outcome of these conditions a action can be initiated. The alert process again goes by sending and receiving email to the participants.

3.4 Email

3.4.1 Description

Email is another functionality of SharePoint. This functionality can be divided into two categories. First the email itself and second is the email alerts and receiving.

- The email application, for example Microsoft outlook [5], can be integrated into SharePoint. The value of this integration is an all in one package. Switching between various applications belongs to the past.
- Email alerts can be send through mail to bring employees up to date. The purpose of this is to inform the employees of an important change or updates without having to distract them from their present tasks.
- SharePoint has the ability to receive emails from the employees. This functionality enable the employees to send their questions or remarks or documentations to the SharePoint without having physically have to log into the system itself.

3.4.2 Practice

- Email client can be integrated into SharePoint for comfort purposes.
- Alerts must be enabled to the appropriate sections of the SharePoint to receive emails regarding updates, workflow requests, tasks, status, important issues, FAQ etc.
- The employee receives an internal link within his email message by which the issue at hand can be directly viewed within SharePoint.
- Email addresses must be setup within SharePoint to enable the receiving of emails send by the employees. This in order to automate the making or asking of questions, documents, wiki, issues and so on.



3.5 Calendar

3.5.1 Description

The calendar of the SharePoint is a little bit different from Microsoft outlook calendar. It is a separate calendar, which can be integrated with the Microsoft outlook calendar. The synchronisation enables the importing or exporting of outlook calendar into SharePoint and vice versa. Also overlap functionality enable to view the SharePoint and outlook calendar at the same time to see which appointments is when.

3.5.2 Practice

- Enabling calendar is required for it's functioning.
- Using calendar team meetings site can also be configured.
- Calendar could be shared with other employees of choosing.

3.6 Notification

3.6.1 Alerts

3.6.1.1 Description

There are several ways to be aware of newly created documents or updates on documents. The most common way is by using email alerts. Alerts are notifications, which tell you when something has changed. It is possible to set alerts in a specific interval for specific changes in the library, folder, file or list item. By doing so one can for example receive email alerts each time when someone uploads a new document to the library. When working with multiple projects, this will make life easier. Because one doesn't need to follow every different discussion or collaboration. All the important alert will be send through email.

3.6.1.2 Practice

- First the administrator of the SharePoint page has to enable outgoing email option for sending emails to users.
- It's required for users to enable the "alert me" feature within the SharePoint page in order to receive the alerts.
- Minimise the amount of alerts that one like to receive to prevent overloaded mail boxes.

3.6.2 RSS

3.6.2.1 Description

RSS (Really Simple Syndication) [10] is a convenient way to include news headlines for a web site. These headlines can be security bulletins, advisories, and other security related alerts. This can provide quick overview of important news of interests. An advantage is that the content is summarized and gathered by a RSS feeder from different news location. On the contrary of alerts, feeds are about keep in the know of new content, while alerts are making you aware that there is something changed.

3.6.2.2 Practice

- Navigate to the page of one's preference. Then go to the action tab and select View RSS Feed.
- Sometimes on the page that appears next, one must follow instructions for subscribing feeds.



3.7 Announcements

3.7.1 Description

Announcements are messages, which can be displayed on the sites. These announcements deliver short but effective messages, which can be viewed.

3.7.2 Practice

- Enabling announcements provides a short view of the situation without having to search for it.
- Setup email notification for those who need to receive important announcements.
- Announcements are accessible for all employees.
- Only authorised employees have the permission to make an announcement.

3.8 Lists

3.8.1 Description

The list in SharePoint enables the possibility to start various lists regarding various subjects, for example FAQ. By configuring and enabling a list, lot of information which is send through email could be gathered in a central location for viewing and consulting purposes.

3.8.2 Practice

- For FAQ the list of categories must be determined before opening FAQ to employees.
- A moderator will be responsible for the structure of the FAQ.
- Create an email address within SharePoint to receive incomings FAQ questions.
- Every employee has access to view questions.
- For sensitive issues access can be given to a select group.
- Employees must have access to be able to answer questions.
- RSS feed enables to see the top 10 or recent answers and questions.
- New category can be setup in order to meet the needs of the employees.

3.9 Links

3.9.1 Description

Links are hyper links which provide quick access to a particular website which is frequently used or handy. Direct access to a particular link is provided through SharePoint.

3.9.2 Practice

- Creating important links which are valuable for the employees.
- Every employee has the right to create edit and view links.
- Security must be considered when a link is created.

3.10 Navigation and Views

There are a few options in SharePoint that allows a SharePoint website to be more easily navigated. Some of these navigation options also provide a clearer view of where (which part of the site) the user is at the moment.



3.10.1 Top link bar

3.10.1.1 Description

The top link bar gives overview of how many sub sites the SharePoint main sites contains. Users can easily browse to the section he or she likes to be.

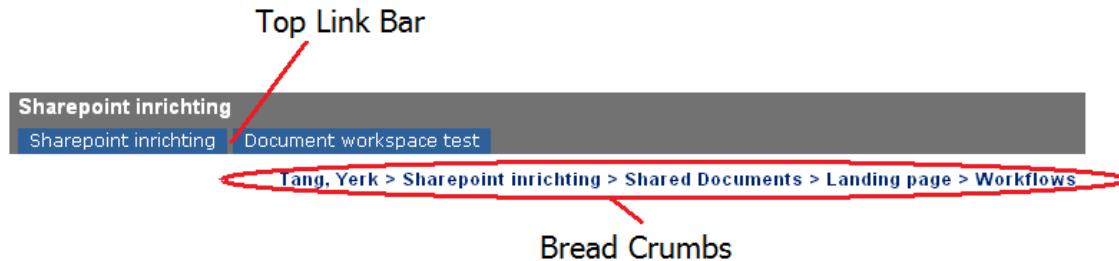


Figure 70: Example of Top link bar [2].

3.10.2 Bread crumbs

3.10.2.1 Description

The bread crumbs located directly under the top link bars provide a view of hierarchical paths of pages. By having this bread crumb enabled, navigating a SharePoint site is more simple. Because unlike a menu structure, the bread crumb shows immediately where you are in the site. The links in the path are clickable to make navigation even easier.

3.10.3 Quick launch

3.10.3.1 Description

Quick launch is at the left hand site menu structure of a SharePoint site. Quick launch is composed of:

- Documents,
For creating libraries that contain files, documents, slides or forms.
- Lists,
Store shared information, such as events on a calendar or project tasks.
- Discussions,
For participating in a group discussion and using discussion boards.
- Sites,
Team sites collaboration environments. Think of workspaces, blog sites, wiki sites.
- People and groups,
People and groups with permission to view or work with the sites appear there.
- Surveys,
For creating surveys, or responding to surveys and for seeing the results of it.

3.10.4 Explorer view

3.10.4.1 Description

Explorer view lets the user see and use his SharePoint site as his own desktop explorer. This comes in handy especially when dealing with sharing documents.

To ease up users usability, explorer view can be enabled. Users can now drag and drop their documents in the predefined SharePoint area.

There are two options using explorer view. First option is to open an extra pop up window (explorer), with the well-known drag and drop, browse functionalities. This window is connected to the SharePoint shared documents location, see Figure 3. Second option is to enable this explorer view option within the SharePoint page itself, which means that it's embedded within the page see Figure 4. Due to the flexibility of



SharePoint, it is possible to import external web sites. For this the embedded explorer can take some degree of visualization aspects. A very handy document visualizing tool is FreeMind [6]. FreeMind can export its mind map files into HTML pages or even JavaScript pages. We can exploit this functionality into the SharePoint page see Figure 5 and Figure 6.

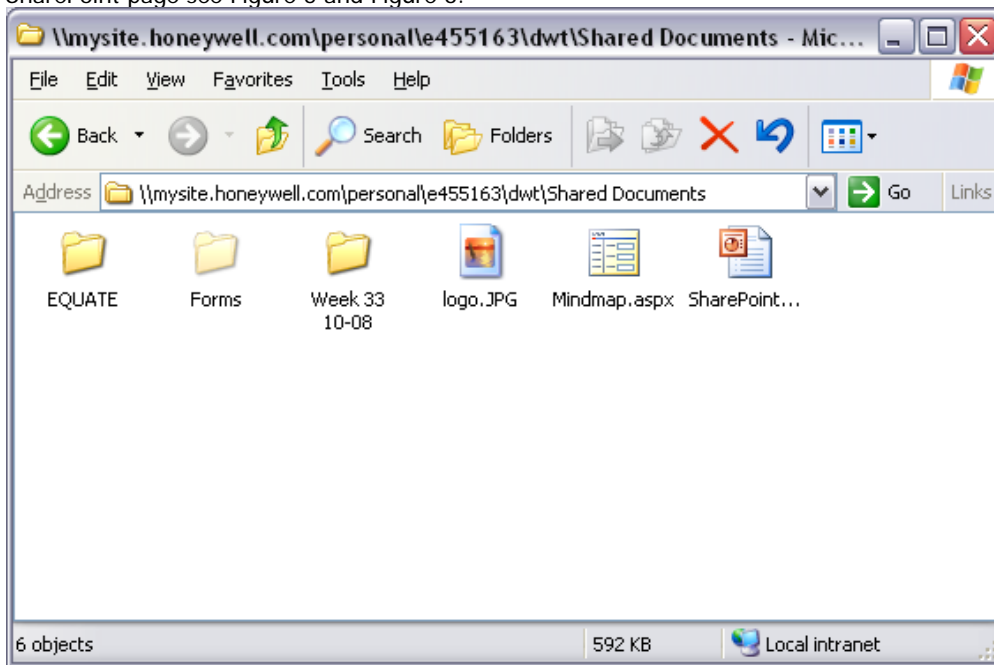


Figure 71: Explorer Window [2].

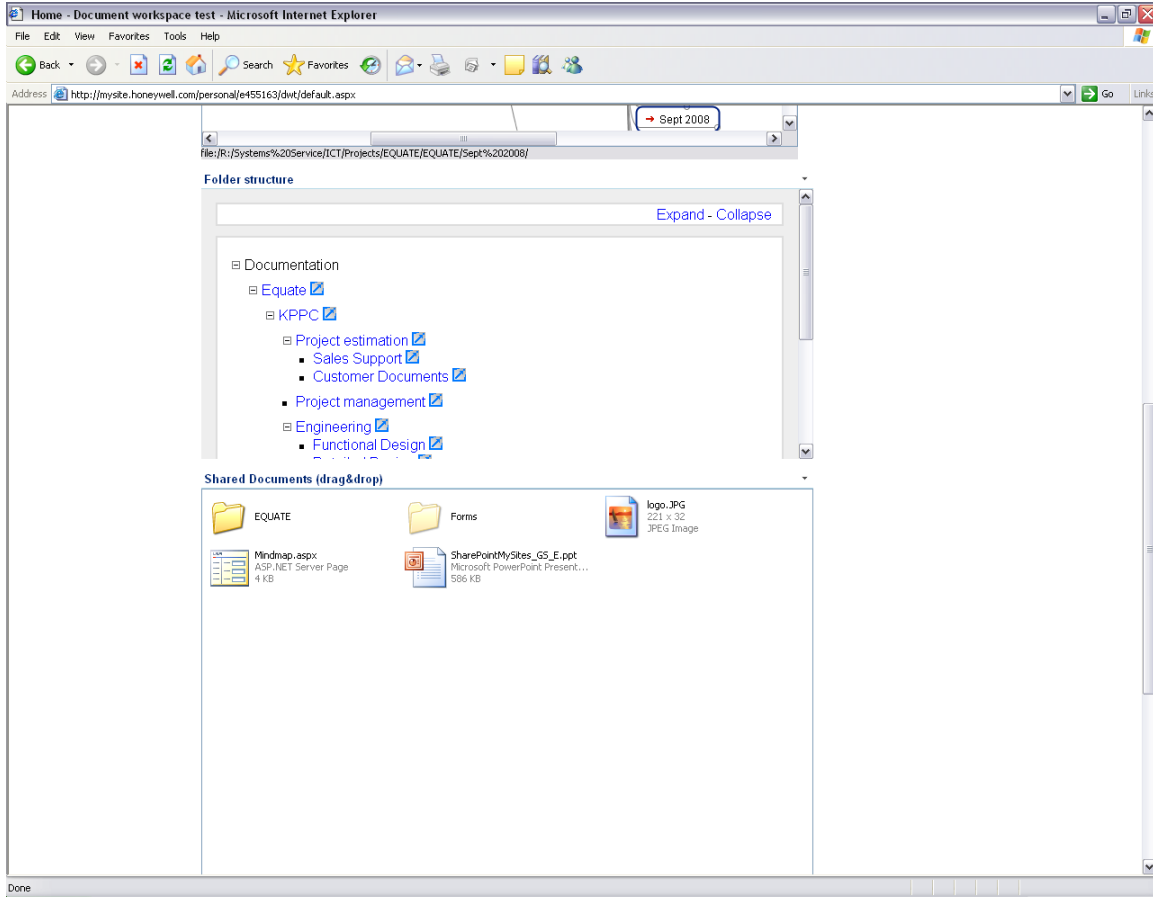


Figure 72: Embedded explorer view in page [2].

File
Edit
View
Favorites
Tools
Help

Back
Forward
Home
Search
Favorites

Address
http://mysite.honeywell.com/personal/e455163/dwt/default.aspx
Go
Links

Welcome Tang, Yerk
My Site
My Links
Help
This Site: Document workspace

Inside Honeywell

HOME
COMPENSATION, BENEFITS & CAREER DEVELOPMENT
BUSINESS TOOLS & RESOURCES
FUNCTIONS & ENABLERS
BUSINESS & REGIONAL SITES
Site Map

Document workspace test
Collaboration Websites

Sharepoint inrichting
Document workspace test
Site Actions

View All Site Content
Documents
Lists
Discussions
Sites
People and Groups
Site Hierarchy

Tang, Yerk > Document workspace test

OSS Honeywell

System service test environment

Announcements

How to put and use documentation.
by Tang, Yerk
8/26/2009 8:55 AM
Example of an Visual representation of project folders structure. The nodes are clickable. Only the project Equate is taken to be highlighted. Besides visual, a textual representation of the directory structure is presented here as well.

The "Shared..."

☐ Add new announcement

Visual folder structure map

Members

Online
None of the users are online.

Not Online
Safari Asl, Hamid
Tang, Yerk

Groups
NT AUTHORITY\authenticated users

☐ Add new user

Links

There are currently no favorite links to display.

☐ Add new link

Figure 73: FreeMind in SharePoint site [2].

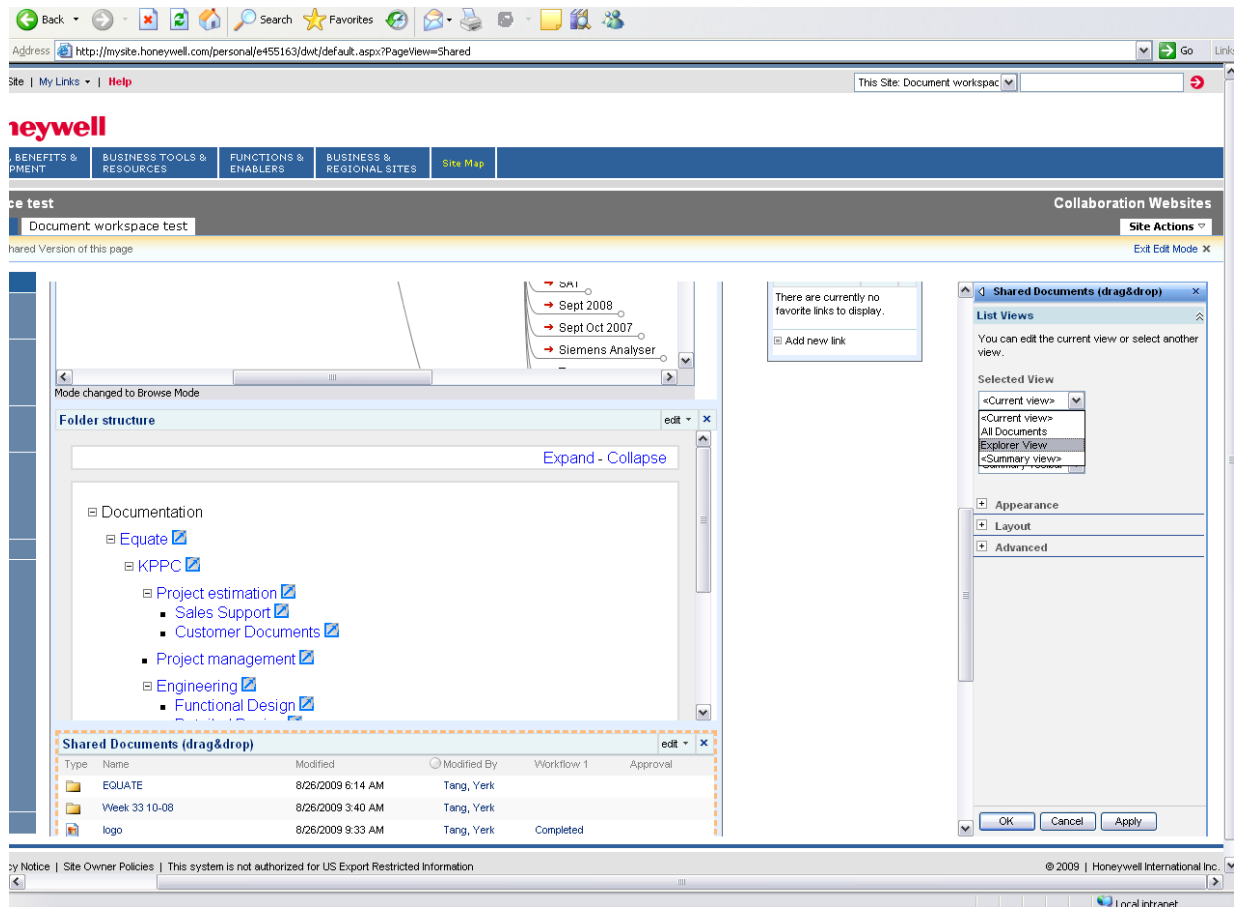


Figure 74: FreeMind in SharePoint site [2].

Tree View

To have an overview of the site contents in a physical manner, tree view can be enabled. To give better overview and structure of the site content Figure 7. Tree view Provide the possibility to click and go directly to the part one requires.

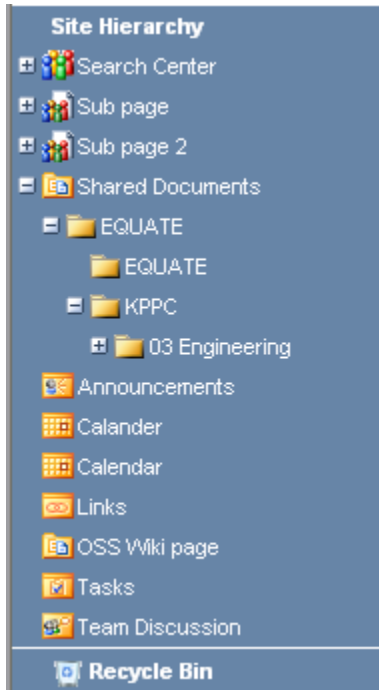


Figure 75: Tree View [2].

3.11 Search

3.11.1 Description

The search functionality build into SharePoint enables the employees to search through sites and documentations. The benefits of this functionality are that seeking information has become efficient and simple. Above all, in the latest SharePoint 2007 it is even possible to provide properties (containing meta data) to items and documents. This makes it possible to use search in two ways. The first one is a full text search, which searches texts across documents. The second is property search, which searches document or items properties. For example department information, project number, author, etc.

3.11.2 Practice

- The search function must be enabled for the sites and documentations.
- Everyone had access to perform a search option.
- Sensitive documents, which are shared, do not need to be indexed for search purposes.

3.12 Permissions and security

3.12.1 Site permission

3.12.1.1 Description

SharePoint includes 33 separate user rights divided into three categories:

- List permissions

- Site permissions
- Personal permissions.

Figure below illustrates these categorised permissions.

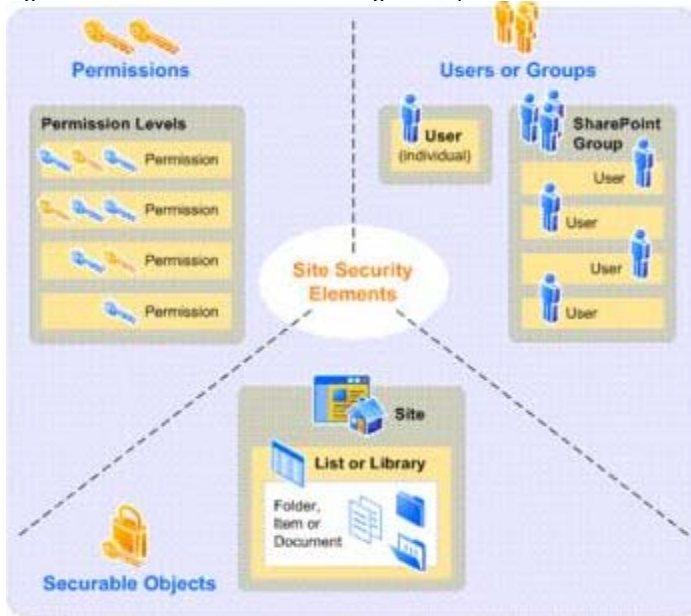


Figure 76: Permissions.

Site permissions apply rules to particular sites. Some of these rules you may think of, who is allowed to alter or customize the site, who is allowed to create groups, who is allowed to enter the site, who is allowed to browse through the site [3].

3.12.1.2 Practices

- Determine who is allowed to make modifications to sites.
- Sometimes certain parts of sites are unwanted for some people.

3.12.2 User permission

3.12.2.1 Description

Microsoft SharePoint Services includes five levels of permissions for users. These permissions levels are listed here from most user rights to least user rights:

- Full control, users have all permissions to do everything.
- Design, users can add edit existing items or documents, and can change to lay out of the pages.
- Contribute, users can add or edit existing items or documents.
- Read, users can only read items or documents.
- Limited Access, users can only have access to certain libraries, files, items or documents.
- These levels can be appointed to individuals or to groups.

3.12.2.2 Practices

- Determine which user receives which permission level.
- Be aware that most of the users only requires Contribute permission level to do their work.



- Limited Access permission level can provide a good method for involving clients to the SharePoint site.

3.12.3 List permission

3.12.3.1 Description

List permissions apply only to lists and libraries. Some of these permissions can be for adding, deleting viewing approving items. Also permissions for overriding check-outs can be granted. This comes in handy if lists or libraries contain sensitive information that one does not want to expose to every member.

3.12.3.2 Practices

- Determine which user receives permissions for the lists and libraries.
- Be aware that the list and libraries contains sensitive information.

3.13 Information

3.13.1 Employee

3.13.1.1 Description

Employee information is stored within SharePoint. This information is used for assigning tasks and workflows. This information can also be used for documentations.

3.13.1.2 Practice

- Employee name, contact information, email, and job description must be in the system.
- Employee has access to edit this information.
- The information is accessible for all employees.

3.13.2 Client

3.13.2.1 Description

Client information is stored within the SharePoint. The purpose is to use this information for projects and documentations.

3.13.2.2 Practice

- Client name, contact information, email , job description, projects involved.
- Client information is accessible for everyone to view.



4. Advise

SharePoint has basically all the required functionalities, which is necessary to perform ones daily work at Honeywell. The functionalities within SharePoint enable to cope with the general arisen problems. However most of these functionalities are based on textual representations, the visual part of SharePoint is limited. This limitation has to do with the basic functionalities of SharePoint. Luckily SharePoint provides methods for creating web parts. This makes it possible to incorporate visual navigations and explorations to meet the demands of the OSS Team. To achieve this visualization it is required to put more effort in adapting SharePoint. Microsoft provides free tools for designing SharePoint sites. It is recommend to carry through this for the simple reason that the current way of working brings more problems than solving them. Integration with third party application has positive effects on adapting SharePoint to meet the needs. In this case FreeMind is used however there are other tools available, which have a superior visualization. But to incorporate those will acquire time and strong will. As far as budget concerns there are open source tools available that can contribute to adaptation of SharePoint.

In general the following can be concluded even though SharePoint maybe hard to work with in the beginning, the overall advantages are far more superior to its disadvantages. In its turn this has a positive effect on the daily work. In the Appendix section, an example of how such SharePoint site can look like is given.

5. Bibliography

- [1] H. Safari Asl, Y.F. Tang. „Software Choice.“ Internal Document, Amsterdam, 2009.
- [2] Honeywell. 2009. <http://www51.honeywell.com/> (accessed 2009).
- [3] Microsoft. *Microsoft Office SharePoint Server 2007*. <http://office.microsoft.com/nl-nl/sharepointserver/FX100492001043.aspx> (accessed 2009).
- [4] Corp., Microsoft. *SharePoint Tutorials*. 2009. http://www.sharepointhosting.com/video_tutorials.html (accessed 2009).
- [5] Company, Amp Technology. *SharePoint Video Tutorials*. 2009. <http://www.sharepointhostingprovider.com/sharepoint-tutorials/> (accessed 2009).
- [6] Aptix, Inc. *Aptix SharePoint 2007 Training site*. 2008. <http://sptraining.sharepointsite.net/default.aspx> (accessed 2009).
- [7] SharePointHosting.com's. *SharePoint-Tutorials*. 2009. <http://blog.sharepointhosting.com/Downloads/SharePoint-Tutorials.aspx> (accessed 2009).
- [8] AppDev Products, LLC. *Microsoft SharePoint Training*. 2009. <http://www.appdev.com/sps.asp> (accessed 2009).
- [9] Gantt, Henry Laurence. *Gantt chart*. <http://www.ganttchart.com/> (accessed 2009).
- [10] Corporation., Microsoft. *Microsoft Office SharePoint Designer*. 2009. <http://office.microsoft.com/en-us/sharepointdesigner/HA101005911033.aspx> (accessed 2009).
- [11] —. *Outlook 2003 Help and How-to*. <http://office.microsoft.com/en-us/outlook/FX100647201033.aspx> (accessed 2009).
- [12] Webopedia. *Webopedia: The only online dictionary and search engine you need for computer and Internet technology definitions*. <http://www.webopedia.com/> (accessed 2009).
- [13] Foltin, Christian. *FreeMind*. 2008. http://freemind.sourceforge.net/wiki/index.php/Main_Page (accessed 2009).



Appendix

[Portal OSS Honeywell]

Welcome John Doe ▾ My Site My Links ▾ Help

All sites ▾ Search [Advanced Search](#)

[Home](#) [Project](#) [Document libraries](#) [Internal courses](#) [Templates](#) [Wiki](#) [Knowledge base](#) [FAQ](#) [Discussion Board](#) [Meeting](#) [Status](#) [Actions ▾](#)

[View All Site Content](#)

[Documents](#)

- [Reference documents](#)

[Projects](#)

[Calendar](#)

≤ May 2001 ≥

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

[Discussion](#)

- [General Discussions](#)
- [Team Discussions](#)

[Sites](#)

- [Sub pages](#)

[Email](#)

[Site Hierarchy](#)

- [Search Center](#)
- [Sub page](#)
- [Shared Documents](#)
- [Announcements](#)
- [Calendar](#)
- [Links](#)
- [OSS Wiki page](#)
- [Tasks](#)
- [Team Discussion](#)

[Recycle Bin](#)

[Home](#) > [Current location]

OSS | Honeywell

Announcements

How to put and use documentation. 8/26/2009 8:55 AM
Example of an Visual representation of project folders structure.

☐ Add new announcement

FEEDS

- News FEED1
- News FEED2
- News FEED3

My Documents

- Documents
- Pictures

Meetings

Agenda Number	Subject	Time	Owner
1	Introduction View	09:00 - 09:15	Matthias Hupe
2	Feedback from last Weekly Minutes View	09:15 - 09:30	Matthias Hupe
3	Component Design View	09:30 - 10:00	Franziska Kühn

Project Status

Tasks

Title	Assigned To	Due Date	Priority
Create Presentation Template View	Franziska Kühn	7/7/2009	(1) High
Approve last Weekly Minutes View	Matthias Hupe	7/7/2009	(2) Normal

Links

- [Hyperlink 1](#)
- [Hyperlink 2](#)

Team Members

-
-

Wireframe: BG navigation

Appendix figure 93: Home page.



[Portal Name]

Welcome John Doe ▾ My Site My Links ▾ Help

All sites ▾ Search Advanced Search

Home Projects Document libraries Internal courses Templates Wiki Knowledge base FAQ Discussion board Meeting Status Actions ▾

View All Site Content

Home > Projects

Project

• Project 1

• Project 2

Documents

Discussion

• General Discussions

• Team Discussions

Sites

• Sub pages

Email

Site Hierarchy

Search Center

Sub page

Shared Documents

Announcements

Calendar

Links

OSS Wiki page

Tasks

Team Discussion

Recycle Bin

OSS | Honeywell

Announcements

• Announcement 1

• Announcement 2

• Announcement 3

Project status

Name	Responsible	Status	Progress %
Project 1	Person 1	Finished	100
Project 2	Person 2	On schedule	20
Project 3	Person 3	Behind	50
Project 4	Person 1	On schedule	33

Project Tasks

Name	Task	Responsible	Status
Project 1	Send documents	Person 4	Finished
Project 2	Meet manger on location.	Person 6	Open
	Configure router	Person 11	Delayed
Project 3	Send invoice	Person 4	Open

Latest document

Type	Name	Modified By	Project
	Folder 1	Jane Doyle	Name 1
	Document 1	Jane Doyle	
	Document 2	Jane Doyle	
	Document 3	Jane Doyle	Name 2

Links

• [Hyperlink 1](#)

• [Hyperlink 2](#)

Calendar

10-11-2005 [Presentation](#)

Description of this event.

24-11-2005 [Meeting](#)

Description of this event.

14-12-2005 [Event](#)

Description of this event.

Team members

• Person 1

• Person 2

• Person 3

• ..

Wireframe: Default

Appendix figure 94 : Project site (general).



[Portal Name]

Welcome John Doe ▾ My Site My Links ▾ Help

All sites ▾ Search Advanced Search

Home Projects Document libraries Internal courses Templates Wiki Knowledge base FAQ Discussion board Meeting Status Actions ▾

View All Site Content

Home > Projects > Project 1

Project

• Project 1

• Project 2

Documents

Discussion

• General Discussions

• Team Discussions

Sites

• Sub pages

Email

Site Hierarchy

Search Center

Sub page

Shared Documents

Announcements

Calendar

Links

OSS Wiki page

Tasks

Team Discussion

Recycle Bin

OSS | **Honeywell**

Announcements

• Announcement 1

• Announcement 2

• Announcement 3

Links

Hyperlink 1

Hyperlink 2

Calendar

10-11-2005 Presentation

Description of this event.

24-11-2005 Meeting

Description of this event.

14-12-2005 Event

Description of this event.

Team members involved

Name Role

Person 1 Team member

Person 2 Manager

Person 3 Team leader

Person 4 Team member

Discussion

Name Modified By

Item 1 Description 1

Item 2 Description 2

Item 3 Description 3

Item 4 Description 4

Gantt Chart

Project 1 Tasks

Project phase	Task	Description	Status
Design	DDS	Desc 1	Finished
Implementation	Configurations	Desc 1	Open
After sales	Handing over	Desc 1	scheduled

Member tasks

Name	Task	Description	Status
Person 1	Design X	Desc 1	Open
Person 2	Meeting with Y	Desc 1	Scheduled
Person 3	Design Y	Desc 1	Delayed
Person 4	Setup up X	Desc 1	Cancelled

Document Library

Type	Name	Modified By
Folder	Folder 1	Jane Doyle
Document	Document 1	Jane Doyle
Document	Document 2	Jane Doyle
Document	Document 3	Jane Doyle

Wireframe: Default

Appendix figure 95 : Project site.



[Document libraries]

Welcome John Doe My Site My Links Help

All sites Search Advanced Search

Home Project Document libraries Internal courses Templates Wiki Knowledge base FAQ Discussion Board Meeting Status Actions

View All Site Content

Documents

- Reference documents
- Course documents
- Templates

Projects

Discussion

- General Discussions
- Team Discussions

Sub pages

Email

Site Hierarchy

- Search Center
- Sub page
- Shared Documents
- Announcements
- Calendar
- Links
- OSS Wiki page
- Tasks
- Team Discussion

Recycle Bin

Home > Documents

OSS | Honeywell

Announcements

How to put and use documentation. 8/26/2009 8:55 AM
Example of an Visual representation of project folders structure.

Grouped List from different sites (Course, templates,...)

Column1	Column2	Column3	Column4
[-] Column5: Value1 (1)			
Item 1	Desc 1	Desc 1	Desc 1
[-] Column5: Value2 (2)			
Item 1	Desc 1	Desc 1	Desc 1
Item 1	Desc 1	Desc 1	Desc 1
[-] Column5: Value3 (1)			
Item 1	Desc 1	Desc 1	Desc 1

Document Library

Type	Name	Modified By
Folder	Folder 1	Jane Doyle
Document	Document 1	Jane Doyle
Document	Document 2	Jane Doyle
Document	Document 3	Jane Doyle

List

Name	Modified By
Item 1	Description 1
Item 2	Description 2
Item 3	Description 3
Item 4	Description 4

Explorer View

Documents

Pictures

Links

- Hyperlink 1
- Hyperlink 2

Calendar

10-11-2005 [Presentation](#)
Description of this event.

24-11-2005 [Meeting](#)
Description of this event.

14-12-2005 [Event](#)
Description of this event.

Team Members

Appendix figure 96 : Document libraries (general).



[Document libraries]

Welcome John Doe | My Site | My Links | Help

All sites | Search | Advanced Search

Home | Project | Document libraries | Internal courses | Templates | Wiki | Knowledge base | FAQ | Discussion Board | Meeting | Status | Actions

View All Site Content

Documents

- Reference documents
- Course documents
- Templates

Projects

Discussion

- General Discussions
- Team Discussions

Sites

- Sub pages

Email

Site Hierarchy

- Search Center
- Sub page
- Shared Documents
- Announcements
- Calendar
- Links
- OSS Wiki page
- Tasks
- Team Discussion

Recycle Bin

Home > Documents > Reference documents

OSS | Honeywell

Announcements

How to put and use documentation. 8/26/2009 8:55 AM
Example of an Visual representation of project folders structure.

Reference Documents

```
graph LR; Network --> Documentation; Indorama --> Documentation; Documentation --> Equate; Documentation --> HPPC; Equate --> PE[Project estimation]; Equate --> PM[Project management]; Equate --> Eng[Engineering]; Equate --> DDs[DDs]; Equate --> Def[Deficiencies]; Equate --> Lic[Licences]; Equate --> SAT[SAT]; Equate --> Visio[Visio]; HPPC --> SS[Sales Support]; HPPC --> CD[Customer Documents]; PM --> FD[Functional Design]; PM --> DD[Detailed Design];
```

Reference Documents (Explorer view)

Documents

Pictures

Links

- Hyperlink 1
- Hyperlink 2

Calendar

10-11-2005

Presentation

Description of this event.

24-11-2005

Meeting

Description of this event.

14-12-2005

Event

Description of this event.

Team Members

Appendix figure 97 : Document libraries.



[Portal Name]

Welcome John Doe ▾ My Site My Links ▾ Help

All sites ▾ Search Advanced Search

Home Projects Document libraries Internal courses Templates Wiki Knowledge base FAQ Discussion board Meeting Status Actions ▾

View All Site Content

Home > Internal courses

Courses

• Course 1

• Course 2

• Course 3

• Course 4

Course materials

Discussions

Courses enrolled

• Course 1

Email

Site Hierarchy

Search Center

Sub page

Shared Documents

Announcements

Calendar

Links

OSS Wiki page

Tasks

Team Discussion

Recycle Bin

OSS | Honeywell

Announcements

Announcement 1

Announcement 2

Announcement 3

Course categories

Name	Modified By
Item 1	Description 1
Item 2	Description 2
Item 3	Description 3
Item 4	Description 4

Courses

Course name	Description	Number of attendees	Status
Item 1	Desc 1	X	Desc 1
Item 1	Desc 1	X	Desc 1
Item 1	Desc 1	X	Desc 1
Item 1	Desc 1	X	Desc 1

Attendees

Name	Course
Attendee 1	Description 1
Attendee 2	Description 2
Attendee 3	Description 3
Attendee 4	Description 4

Links

Hyperlink 1

Hyperlink 2

Latest Courses material

Type	Name
	Folder 1
	Document 1
	Document 2
	Document 3

Calendar

10-11-2005

[Presentation](#)

Description of this event.

24-11-2005

[Meeting](#)

Description of this event.

14-12-2005

[Event](#)

Description of this event.

Discussions

Name	Modified By
Item 1	Description 1
Item 2	Description 2
Item 3	Description 3
Item 4	Description 4

Wireframe: Default

Appendix figure 98 : Internal courses (general).



[Portal Name]

Welcome John Doe ▾ My Site My Links ▾ Help

All sites ▾

Search Advanced Search

Home Projects Document libraries Internal courses Templates Wiki Knowledge base FAQ Discussion board Meeting Status Actions ▾

View All Site Content

Courses

• Course 1

• Course 2

• Course 3

• Course 4

Course materials

Discussions

Courses enrolled

• Course 1

Email

Site Hierarchy

Search Center

Sub page

Shared Documents

Announcements

Calendar

Links

OSS Wiki page

Tasks

Team Discussion

Recycle Bin

Home > Internal courses > Course 1

OSS | Honeywell

Announcements ▾

• Announcement 1

• Announcement 2

• Announcement 3

Course information ▾

Course content schedule ▾

10-11-2005 [Presentation](#)

Description of this event.

24-11-2005 [Meeting](#)

Description of this event.

14-12-2005 [Event](#)

Description of this event.

Course categories ▾

Name	Modified By
Item 1	Description 1
Item 2	Description 2
Item 3	Description 3
Item 4	Description 4

Course material ▾

Type	Name	Modified By
	Folder 1	Jane Doyle
	Document 1	Jane Doyle
	Document 2	Jane Doyle
	Document 3	Jane Doyle

≤ May 2001 ≥

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Discussions ▾

Name	Modified By
Item 1	Description 1
Item 2	Description 2
Item 3	Description 3
Item 4	Description 4

Attendees ▾

Name	Progress %
Attendee 1	20
Attendee 2	90
Attendee 3	0
Attendee 4	50

Links ▾

[Hyperlink 1](#)

[Hyperlink 2](#)

Wireframe: Default

Appendix figure 99 : Internal courses.



[Portal Name]

Welcome John Doe ▾ My Site My Links ▾ Help

All sites ▾ Search Advanced Search

Home Project Document libraries Internal courses Templates Wiki Knowledge base FAQ Discussion Board Meeting Status Actions ▾

View All Site Content

Documents

- FDS templates
- DDS templates
- Other templates

Projects

Discussion

- General Discussions
- Team Discussions

Sites

- Sub pages

Email

Site Hierarchy

- Search Center
- Sub page
- Shared Documents
- Announcements
- Calendar
- Links
- OSS Wiki page
- Tasks
- Team Discussion

Recycle Bin

Home > Documents > Templates

OSS | **Honeywell**

Announcements ▾

How to put and use documentation. 8/26/2009 8:55 AM
Example of an Visual representation of project folders structure.

FDS Templates ▾

Type	Name	Modified By
Folder	Folder 1	Jane Doyle
Document	Document 1	Jane Doyle
Document	Document 2	Jane Doyle
Document	Document 3	Jane Doyle

DDS Templates ▾

Type	Name	Modified By
Folder	Folder 1	Jane Doyle
Document	Document 1	Jane Doyle
Document	Document 2	Jane Doyle
Document	Document 3	Jane Doyle

Other Templates ▾

Type	Name	Modified By
Folder	Folder 1	Jane Doyle
Document	Document 1	Jane Doyle
Document	Document 2	Jane Doyle
Document	Document 3	Jane Doyle

Links ▾

- Hyperlink 1
- Hyperlink 2

Calendar ▾

10-11-2005	Presentation Description of this event.
24-11-2005	Meeting Description of this event.
14-12-2005	Event Description of this event.

Team Members ▾

Appendix figure 100 : Templates (general).



[Portal Name]

Welcome John Doe ▾ My Site My Links ▾ Help

All sites ▾ Search Advanced Search

Home Project Document libraries Internal courses Templates Wiki Knowledge base FAQ Discussion Board Meeting Status Actions ▾

View All Site Content

Documents

- FDS templates
- DDS templates
- Other templates

Projects

Discussion

- General Discussions
- Team Discussions

Sub pages

Email

Site Hierarchy

- Search Center
- Sub page
- Shared Documents
- Announcements
- Calendar
- Links
- OSS Wiki page
- Tasks
- Team Discussion

Recycle Bin

Home > Documents > Templates > DDS Templates

OSS | **Honeywell**

Announcements ▾

How to put and use documentation. 8/26/2009 8:55 AM

Example of an Visual representation of project folders structure.

☐ Add new announcement

DDS Templates ▾

```
graph LR; Network --> DDS; DDS --> Equipe; Equipe --> Project_estimation[Project estimation]; Equipe --> Project_management[Project management]; Equipe --> Engineering; Engineering --> Functional_Design[Functional Design]; Engineering --> Detailed_Design[Detailed Design]; Equipe --> DDS; Equipe --> Deficiencies; Equipe --> Licences; Equipe --> SAT; Equipe --> Visio;
```

DDS Templates ▾

Documents

Links ▾

Hyperlink 1

Hyperlink 2

Calendar ▾

10-11-2005 [Presentation](#)
Description of this event.

24-11-2005 [Meeting](#)
Description of this event.

14-12-2005 [Event](#)
Description of this event.

Team Members ▾

Appendix figure 101 : Templates.



[Portal Name]

Welcome John Doe ▾My SiteMy Links ▾Help

All sites ▾

SearchAdvanced Search

HomeProjectsDocument librariesInternal coursesTemplatesWikiKnowledge baseFAQDiscussion boardMeetingStatusActions ▾

View All Site Content

Home > Wiki

Wiki

• Story 1

• Story 2

• Story 3

• Story 4

Discussion

Documents

Sites

• Sub pages

Email

Site Hierarchy

Search Center

Sub page

Shared Documents

Announcements

Calendar

Links

OSS Wiki page

Tasks

Team Discussion

Recycle Bin

OSS | **Honeywell**

Announcements ▾

- Announcement 1
- Announcement 2
- Announcement 3

New Wiki's ▾

Name	Modified By
Item 1	Description 1
Item 2	Description 2
Item 3	Description 3
Item 4	Description 4

Edited Wiki's ▾

Name	Modified By
Item 1	Description 1
Item 2	Description 2
Item 3	Description 3
Item 4	Description 4

Links ▾

- Hyperlink 1
- Hyperlink 2

Calendar ▾

10-11-2005	Presentation Description of this event.
24-11-2005	Meeting Description of this event.
14-12-2005	Event Description of this event.

Active Team members ▾

- Person 1
- Person 2
- Person 3

Wireframe: Default

Appendix figure 102 : Wiki (general).



[Portal Name]

Welcome John Doe ▾ My Site My Links ▾ Help

All sites ▾ Search Advanced Search

Home Projects Document libraries Internal courses Templates Wiki Knowledge base FAQ Discussion board Meeting Status Actions ▾

View All Site Content

Home > Wiki > Story 1

Wiki

• Story 1

• Story 2

• Story 3

• Story 4

Discussion

Documents

Sites

• Sub pages

Email

Site Hierarchy

Search Center

Sub page

Shared Documents

Announcements

Calendar

Links

OSS Wiki page

Tasks

Team Discussion

Recycle Bin

OSS | **Honeywell**

Announcements ▾

- Announcement 1
- Announcement 2
- Announcement 3

Story 1 ▾

Related Documents ▾

Type	Name	Modified By
Folder	Folder 1	Jane Doyle
Document	Document 1	Jane Doyle
Document	Document 2	Jane Doyle
Document	Document 3	Jane Doyle

Links ▾

- Hyperlink 1
- Hyperlink 2

Calendar ▾

10-11-2005	Presentation	Description of this event.
24-11-2005	Meeting	Description of this event.
14-12-2005	Event	Description of this event.

Related Wiki's ▾

Name	Modified By
Item 1	Description 1
Item 2	Description 2
Item 3	Description 3
Item 4	Description 4

Wiki's you are participating in: ▾

Name	Modified By
Item 1	Description 1
Item 2	Description 2
Item 3	Description 3
Item 4	Description 4

Active Team members ▾

- Person 1
- Person 2
- Person 3

Wireframe: Default

Appendix figure 103 : Wiki.



[Knowledge base]

Welcome John Doe My Site My Links Help

All sites Search Advanced Search

Home Project Document libraries Internal courses Templates Wiki Knowledge base FAQ Discussion Board Meeting Status Actions

View All Site Content

Documents

- Articles
- White papers
- Manuals

Projects

Discussion

- General Discussions
- Team Discussions

Sites

- Sub pages

Email

Site Hierarchy

- Search Center
- Sub page
- Shared Documents
- Announcements
- Calendar
- Links
- OSS Wiki page
- Tasks
- Team Discussion

Recycle Bin

Home > Documents > Knowledge base

OSS Honeywell

Announcements

How to put and use documentation.8/26/2009 8:55 AM

Example of an Visual representation of project folders structure.

Articles

Type	Name	Modified By
Folder	Folder 1	Jane Doyle
Document	Document 1	Jane Doyle
Document	Document 2	Jane Doyle
Document	Document 3	Jane Doyle

White papers

Type	Name	Modified By
Folder	Folder 1	Jane Doyle
Document	Document 1	Jane Doyle
Document	Document 2	Jane Doyle
Document	Document 3	Jane Doyle

Manuals

Type	Name	Modified By
Folder	Folder 1	Jane Doyle
Document	Document 1	Jane Doyle
Document	Document 2	Jane Doyle
Document	Document 3	Jane Doyle

Links

- Hyperlink 1
- Hyperlink 2

Calendar

- 10-11-2005 PresentationDescription of this event.
- 24-11-2005 MeetingDescription of this event.
- 14-12-2005 EventDescription of this event.

Team Members

-
-

Appendix figure 104 : Knowledge base (general).



[Knowledge base]

Welcome John Doe ▾ My Site ▾ My Links ▾ Help

All sites ▾ Search Advanced Search

Home Project Document libraries Internal courses Templates Wiki Knowledge base FAQ Discussion Board Meeting Status Actions ▾

View All Site Content

- Documents
 - Articles
 - White papers
 - Manuals
- Projects
- Discussion
 - General Discussions
 - Team Discussions
- Sub pages
- Email
- Site Hierarchy
 - Search Center
 - Sub page
 - Shared Documents
 - Announcements
 - Calendar
 - Links
 - OSS Wiki page
 - Tasks
 - Team Discussion
- Recycle Bin

OSS | Honeywell

Announcements ▾

How to put and use documentation. 8/26/2009 8:55 AM

Example of an Visual representation of project folders structure.

Manuals ▾

In Geschäftsumgebungen stellt eine Wiki-Website eine wartungsarme Möglichkeit bereit, um Wissen aufzuzeichnen. Informationen, die in der Regel in E-Mail-Nachrichten weitergegeben, in Unterhaltungen auf dem Gang ausgetauscht oder auf Papier festgehalten werden, können stattdessen mit ähnlichen Informationen auf einer Wiki-Website erfasst werden.

Add Manuals ▾

Titel * Storing Internet

Hoofdttekst

Vanwege problemen bij de provider is er momenteel geen internetverbinding.

Verloopt 27-2-2008 OK Annuleren

Links ▾

- Hyperlink 1
- Hyperlink 2

Calendar ▾

10-11-2005	Presentation	Description of this event.
24-11-2005	Meeting	Description of this event.
14-12-2005	Event	Description of this event.

Team Members ▾

-
-

Appendix figure 105 : Knowledge base.



[FAQ]

Welcome John Doe ▾ My Site My Links ▾ Help

All sites ▾ Search [Advanced Search](#)

[Home](#) [Project](#) [Document libraries](#) [Internal courses](#) [Templates](#) [Wiki](#) [Knowledge base](#) [FAQ](#) [Discussion Board](#) [Meeting](#) [Status](#) [Actions ▾](#)

[View All Site Content](#)

[Documents](#)

[Projects](#)

[Discussion](#)

- [General Discussions](#)
- [Team Discussions](#)

[Sites](#)

- [Sub pages](#)

[Email](#)

[Site Hierarchy](#)

- [Search Center](#)
- [Sub page](#)
- [Shared Documents](#)
- [Announcements](#)
- [Calendar](#)
- [Links](#)
- [OSS Wiki page](#)
- [Tasks](#)
- [Team Discussion](#)

[Recycle Bin](#)

[Home](#) > [FAQ](#)

OSS | Honeywell

Announcements ▾

How to put and use documentation. 8/26/2009 8:55 AM

Example of an Visual representation of project folders structure.

Search FAQ ▾

Search

FAQ ▾

How can I update the software (firmware) of my Nokia phone?

What is the default security code in my Nokia phone?

Why does my battery drain fast?

How do I pair a device with my Nokia device using Bluetooth?

Where can I get settings for browsing (WAP, GPRS) and MMS?

Links ▾

- [Hyperlink 1](#)
- [Hyperlink 2](#)

Calendar ▾

10-11-2005 [Presentation](#)
Description of this event.

24-11-2005 [Meeting](#)
Description of this event.

14-12-2005 [Event](#)
Description of this event.

Team Members ▾

Appendix figure 106 : FAQ (general).



[FAQ]

Welcome John Doe ▾ My Site My Links ▾ Help

All sites ▾ Search Advanced Search

Home Project Document libraries Internal courses Templates Wiki Knowledge base FAQ Discussion Board Meeting Status Actions ▾

View All Site Content

Documents

Projects

Discussion

- General Discussions
- Team Discussions

Sites

- Sub pages

Email

Site Hierarchy

- Search Center
- Sub page
- Shared Documents
- Announcements
- Calendar
- Links
- OSS Wiki page
- Tasks
- Team Discussion

Recycle Bin

Home > FAQ

OSS | Honeywell

Announcements ▾

How to put and use documentation. 8/26/2009 8:55 AM

Example of an Visual representation of project folders structure.

Search FAQ ▾

Search

FAQ ▾

3. Is de Europese beperkte garantie internationaal geldig?

De garantie is op dezelfde manier van toepassing in alle landen die gedekt worden door de voorwaarden van de garantie. De garantie is evenwel niet van toepassing in andere landen of regio's.

Informatie over de internationale toepassing van andere Nokia garanties verschilt van land tot land. Voor meer informatie breng je een bezoek aan je lokale [Nokia website](#) of een Nokia Service Center. Je vindt de adressen van de Service Centers via het keuzemenu onderaan in [herstellingen](#).

[Naar boven](#)

Links ▾

- Hyperlink 1
- Hyperlink 2

Calendar ▾

10-11-2005	Presentation
Description of this event.	
24-11-2005	Meeting
Description of this event.	
14-12-2005	Event
Description of this event.	

Team Members ▾

Appendix figure 107 : FAQ.



[Portal Name]

Welcome John Doe ▾ My Site My Links ▾ Help

All sites ▾ Search Advanced Search

Home Projects Document libraries Internal courses Templates Wiki Knowledge base FAQ Discussion board Meeting Status Actions ▾

View All Site Content

Discussion

• General Discussions

• Team Discussions

• Thread 3

• Thread 4

Documents

Sites

• Sub pages

Email

Site Hierarchy

Search Center

Sub page

Shared Documents

Announcements

Calendar

Links

OSS Wiki page

Tasks

Team Discussion

Recycle Bin

Home > Discussions

OSS | Honeywell

Announcements ▾

• Announcement 1

• Announcement 2

• Announcement 3

Discussions ▾

Starter	Subject	Description	Status
Person 1	What?		Closed
Person 1	Why?		Open
Person 5	Other way?	integration	Open
Person 4	None	Be nice	Open

New comments ▾

Name	Comment
Person 1	Description 1
Person 2	Description 2
Person 3	Description 3
Person 14	Description 4

Links ▾

❖ [Hyperlink 1](#)

❖ [Hyperlink 2](#)

Calendar ▾

10-11-2005 [Presentation](#)

Description of this event.

24-11-2005 [Meeting](#)

Description of this event.

14-12-2005 [Event](#)

Description of this event.

Team members ▾

Name	Role
Person 1	Team member
Person 2	Manager
Person 3	Team leader
Person 4	Team member

Wireframe: Default

Appendix figure 108 : Discussion board (general).



[Portal Name]

Welcome John Doe ▾ My Site My Links ▾ Help

All sites ▾ Search Advanced Search

Home Projects Document libraries Internal courses Templates Wiki Knowledge base FAQ Discussion board Meeting Status Actions ▾

View All Site Content

Discussion

• General Discussions

• Team Discussions

• Thread 3

• Thread 4

Documents

Sites

• Sub pages

Email

Site Hierarchy

Search Center

Sub page

Shared Documents

Announcements

Calendar

Links

OSS Wiki page

Tasks

Team Discussion

Recycle Bin

Home > Discussions > General Discussions

OSS | Honeywell

Announcements

• Announcement 1

• Announcement 2

• Announcement 3

General Discussions

• Blaba

• Blabla?

•

New comments

Name	Comment
Person 1	Description 1
Person 2	Description 2
Person 3	Description 3
Person 14	Description 4

Post comment

Document Library

Type	Name	Modified By
	Folder 1	Jane Doyle
	Document 1	Jane Doyle
	Document 2	Jane Doyle
	Document 3	Jane Doyle

Links

• [Hyperlink 1](#)

• [Hyperlink 2](#)

Calendar

10-11-2005 [Presentation](#)
Description of this event.

24-11-2005 [Meeting](#)
Description of this event.

14-12-2005 [Event](#)
Description of this event.

Team members

Name	Role
Person 1	Team member
Person 2	Manager
Person 3	Team leader
Person 4	Team member

Wireframe: Default

Appendix figure 109 : Discussion board.



[Portal Name]

Welcome John Doe ▾ My Site My Links ▾ Help

All sites ▾ Search Advanced Search

Home Projects Document libraries Internal courses Templates Wiki Knowledge base FAQ Discussion board Meeting Status Actions ▾

View All Site Content

Home > Meeting

Meeting

• Meeting 1

• Meeting 2

• Meeting 3

• Meeting 4

Documents

Discussions

Sites

• Sub pages

Email

Site Hierarchy

Search Center

Sub page

Shared Documents

Announcements

Calendar

Links

OSS Wiki page

Tasks

Team Discussion

Recycle Bin

OSS | Honeywell

Announcements ▾

- Announcement 1
- Announcement 2
- Announcement 3

Meetings ▾

Meeting	Objective	Date	Attendees	Status	Description
[+] Item 1		09-09-09	Everyone	Planned	Remember to read documents.
[+] Item 1		16-09-09	Managers	Cancelled	-
[+] Item 1		23-09-09	Everyone	Planned	Don't forget chips & drinks.

Links ▾

- [Hyperlink 1](#)
- [Hyperlink 2](#)

Team members ▾

- Person 1
- Person 2
- Person 3

≤ May 2001 ≥

S M T W T F S

		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Wireframe: Default

Appendix figure 110 : Meeting (general).



[Portal Name]

Welcome John Doe ▾ My Site My Links ▾ Help

All sites ▾ Search Advanced Search

Home Projects Document libraries Internal courses Templates Wiki Knowledge base FAQ Discussion board Meeting Status Actions ▾

View All Site Content

Home > Meeting > Meeting 1

Meeting

• Meeting 1

• Meeting 2

• Meeting 3

• Meeting 4

Documents

Discussions

Sites

• Sub pages

Email

Site Hierarchy

Search Center

Sub page

Shared Documents

Announcements

Calendar

Links

OSS Wiki page

Tasks

Team Discussion

Recycle Bin

OSS | **Honeywell**

Announcements

• Announcement 1

• Announcement 2

• Announcement 3

Calendar

10-11-2005 [Presentation](#)

Description of this event.

24-11-2005 [Meeting](#)

Description of this event.

14-12-2005 [Event](#)

Description of this event.

Objectives

Name	Modified By
Item 1	Description 1
Item 2	Description 2
Item 3	Description 3
Item 4	Description 4

Agenda items

Name	Modified By
Item 1	Description 1
Item 2	Description 2
Item 3	Description 3
Item 4	Description 4

Links

• [Hyperlink 1](#)

• [Hyperlink 2](#)

Meeting 1 documents

Type	Name
Folder	Folder 1
Document	Document 1
Document	Document 2
Document	Document 3

Attendees

• Person 1

• Person 2

• Person 3

Wireframe: Default

Appendix figure 111 : Meeting.



[Status]

Welcome John Doe ▾ My Site My Links ▾ Help

All sites ▾ Search Advanced Search

Home Project Document libraries Internal courses Templates Wiki Knowledge base FAQ Discussion Board Meeting Status Actions ▾

View All Site Content

Documents

Projects

Discussion

• General Discussions

• Team Discussions

Sites

• Sub pages

Email

Site Hierarchy

Search Center

Sub page

Shared Documents

Announcements

Calendar

Links

OSS Wiki page

Tasks

Team Discussion

Recycle Bin

Home > Status

OSS | Honeywell

Announcements ▾

How to put and use documentation. 8/26/2009 8:55 AM
Example of an Visual representation of project folders structure.

Status Project ▾

Status Document Libraries ▾

Status Internal Courses ▾

Status Templates ▾

Status Wiki ▾

Status Knowledge base ▾

Status Discussion Board ▾

Status FAQ ▾

Status Meeting ▾

Links ▾

Hyperlink 1

Hyperlink 2

Calendar ▾

10-11-2005 Presentation
Description of this event.

24-11-2005 Meeting
Description of this event.

14-12-2005 Event
Description of this event.

Team Members ▾

Appendix figure 112 : Status (general).



[Status]

Welcome John Doe ▾ My Site My Links ▾ Help

All sites ▾ Search Advanced Search

Home Project Document libraries Internal courses Templates Wiki Knowledge base FAQ Discussion Board Meeting Status Actions ▾

View All Site Content

Documents

Projects

Discussion

• General Discussions

• Team Discussions

Sites

• Sub pages

Email

Site Hierarchy

Search Center

Sub page

Shared Documents

Announcements

Calendar

Links

OSS Wiki page

Tasks

Team Discussion

Recycle Bin

Home > Status

OSS | **Honeywell**

Announcements ▾

How to put and use documentation. 8/26/2009 8:55 AM
Example of an Visual representation of project folders structure.

Status Project ▾

Project 1

80% completed

Links ▾

Hyperlink 1

Hyperlink 2

Calendar ▾

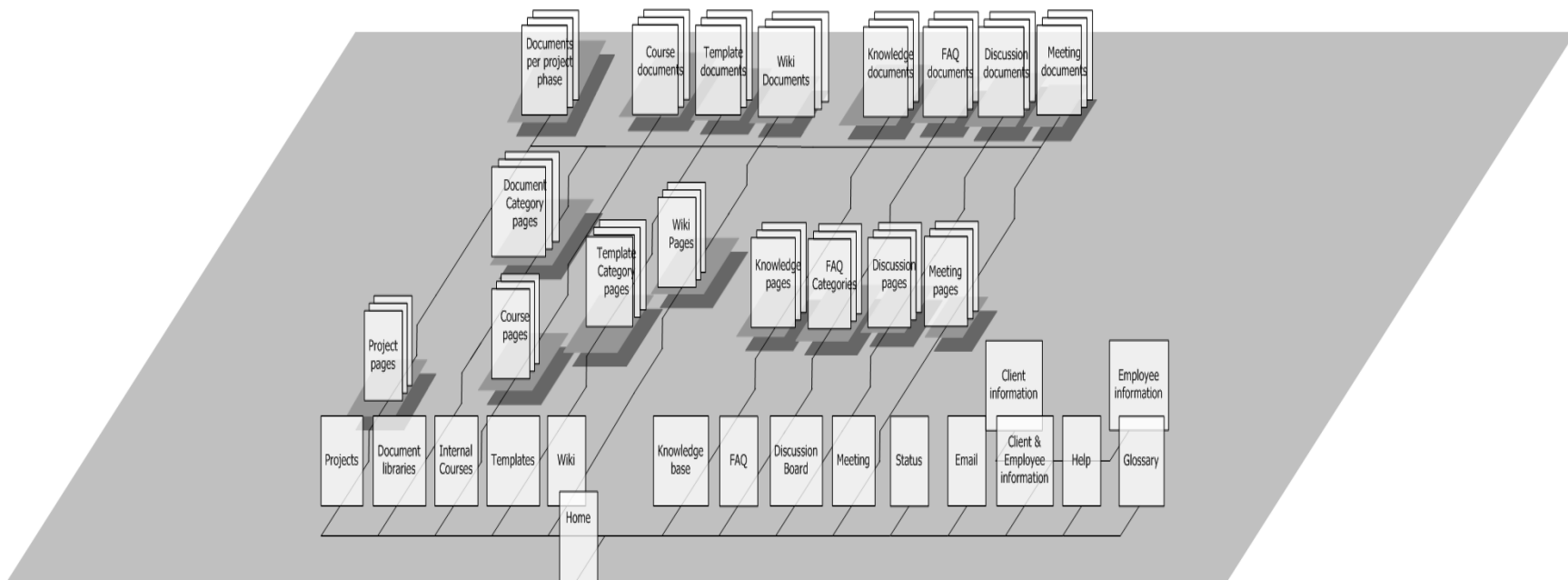
10-11-2005 [Presentation](#)
Description of this event.

24-11-2005 [Meeting](#)
Description of this event.

14-12-2005 [Event](#)
Description of this event.

Team Members ▾

Appendix figure 113 : Status.

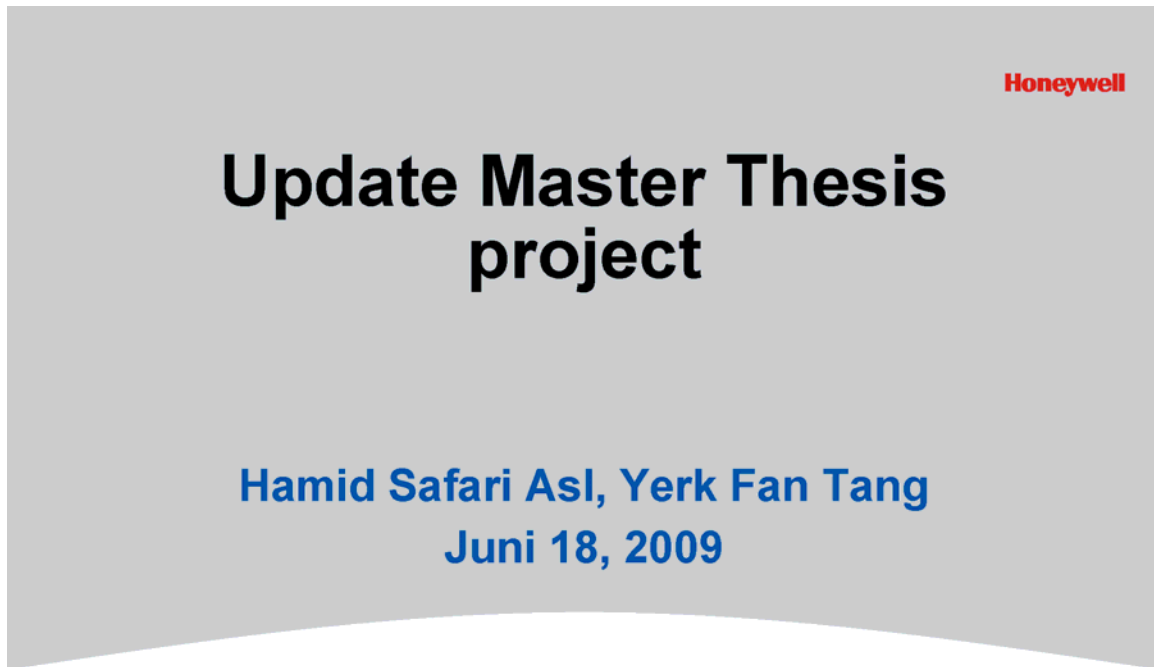


Appendix figure 114 : Sitemap.



Appendix E

Update Master thesis project presentation





Inhoud van de presentatie

Honeywell

- **Introductie**
- **Doel**
- **Huidige voortgang**
 - ArchiMate
 - Business functions
 - Integrated architecture
 - Business phases
 - High level requirements
- **Resterend werk**
 - Detailed requirements
 - Software keuze
 - Design templates
 - Approval process
 - Blue print
 - Discussie punten
- **Opmerkingen of vragen**



Wie zijn wij?

Honeywell

- **Technische Universiteit van Delft**
 - Faculteit: Elektrotechniek, Wiskunde, Informatica.
 - Afdeling: Information Architecture.

An optimal balance means that an enterprise should always exploit the possibilities of ICT optimally, such that its organization operates efficiently while achieving constant innovation in its business (the enabling role of ICT).

(Geert-Jan Houben)



Doel

Honeywell

Standaardisatie van:

- Opslaan en delen van documenten
- Documenten templates
- Documenten formaat
- Manier van werken
- Voorstel / advies



Inhoud van de presentatie

Honeywell

- **Introductie**
- **Doel**
- **Huidige voortgang**
 - Theorie
 - ArchiMate
 - Business functions
 - Integrated architecture
 - Business phases
 - High level requirements
- **Resterend werk**
 - Detailed requirements
 - Software keuze
 - Design templates
 - Approval process
 - Blue print
 - Discussie punten
- **Opmerkingen of vragen**



Huidige voortgang

Honeywell

- **Theorie**
 - **Onderzoek frameworks.**
 - **Onderzoek design modelleer techniek.**
 - ◆ Business functions.
 - ◆ Business laag.
 - ◆ Application laag.
 - ◆ Technology laag.
 - ◆ Document flow.
 - ◆ Process flow.
 - **Bezig onderzoek bruikbare software.**
 - **Bezig met Detailed requirements.**

ArchiMate

- **Introductie**

- **Architecture framework:**

- ♦ Onafhankelijk modelleertaal voor enterprise architecture.
 - ♦ Business en IT operations op één lijn brengen met organisatie doelen.

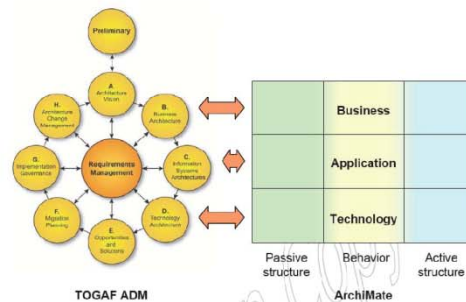
Relaties met:

- **Togaf**

- High level strategic issues.
 - Low level engineering aspecten.

- **UML 2.0**

- Detailrijk op beperkte gebieden.





ArchiMate

Honeywell

- **Waarom Enterprise Architecture?**
 - Snel aanpasbaar aan de omgeving.
 - Optimaal gebruik van de technologie.
 - Efficiency.
 - Kosten reductie.
 - Flexibiliteit.
 - Uniforme manier voor modelleren.



ArchiMate

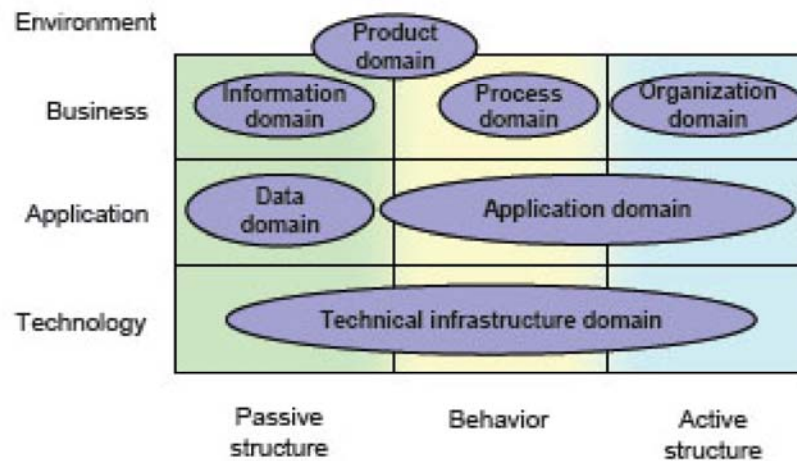
Honeywell

- **Voordelen:**
 - Hoofdpijnen en samenhang op verschillende gebieden.
 - International onafhankelijk standaard.
 - Bekende modelleer methodieken gebruikt.
 - Versimpelen van de complexiteit.
 - Proven concept.
 - Descriptive approach.
- **Nadelen:**
 - Kan te globaal zijn.
 - Ad hoc aanpak.
 - Analyse vraag moeilijk te valideren.

ArchiMate

Honeywell

- Architectural framework





ArchiMate

Honeywell

3 Lagen architectuur

- **Business laag**
 - **Bevat de business processen van een organisatie.**
 - ♦ Business functions.
 - ♦ Roles and actors.
 - ♦ Business service.
 - ♦ Business phases.
- **Application laag**
 - **Ondersteunt de business laag doormiddel van applicatie services.**
 - ♦ Application services.
 - ♦ Application components.



ArchiMate

Honeywell

3 Lagen architectuur

- **Technology laag**
 - Biedt de infrastructuur aan de applicatie laag om de applicaties uit te kunnen voeren.
 - ♦ Infrastructure.



Business functions

Honeywell

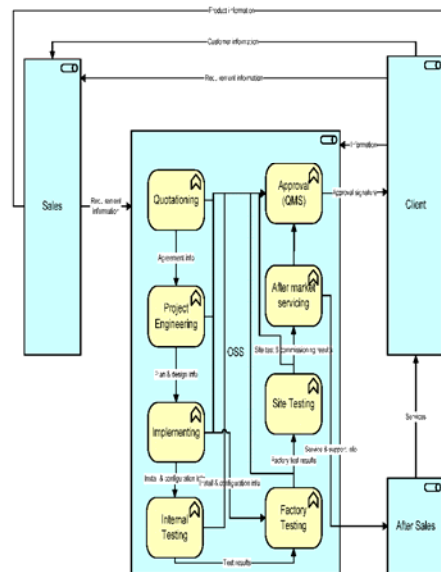
• Business function

- Primaire operaties:

- ◆ Quotationing.
- ◆ Project engineering.
- ◆ Implementing.
- ◆ Internal testing.
- ◆ Factory testing.
- ◆ Site testing.
- ◆ After market servicing.
- ◆ Approval (QMS).

- Rollen:

- ◆ Sales.
- ◆ OSS Team.
- ◆ Client.
- ◆ After sales.



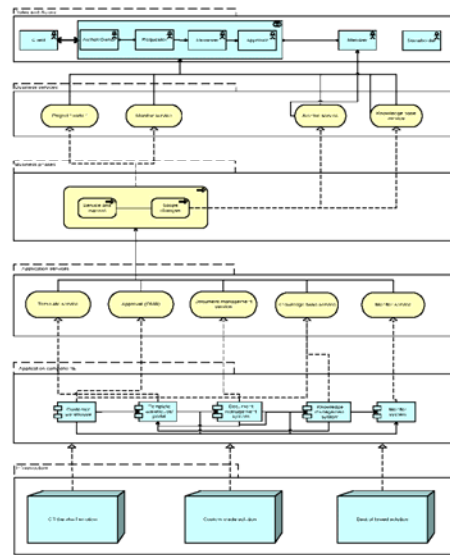
Integrated architecture

Honeywell

- **Integrated architecture of quotationing**

- **Volledige overzicht van de relaties tussen architectuur lagen:**

- ♦ Roles and actors.
 - ♦ Business services.
 - ♦ Business phases.
 - ♦ Application services.
 - ♦ Application components
 - ♦ Infrastructure.

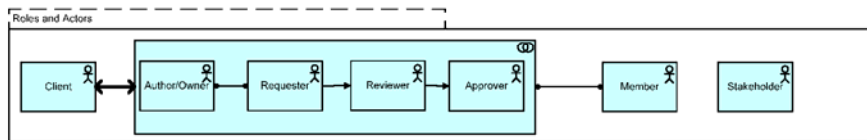


Business phases (Quotationing)

Honeywell

- **Roles and actors**

- Client.
- Author/owner.
- Requester.
- Reviewer.
- Approver.
- Member.
- Stakeholder.

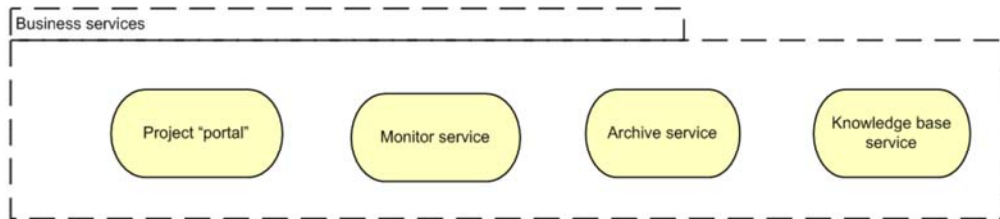




Business phases (Quotationing)

Honeywell

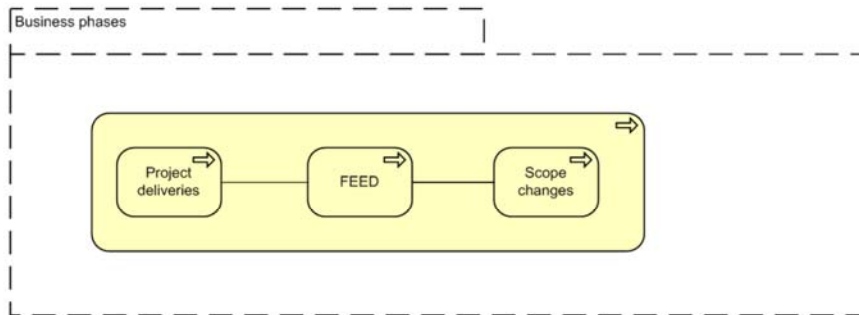
- **Business services**
 - **Project portal.**
 - **Monitor service.**
 - **Archive service.**
 - **Knowledge base service.**



Business phases (Quotationing)

Honeywell

- **Business phases**
 - Project deliveries.
 - FEED.
 - Scope changes.

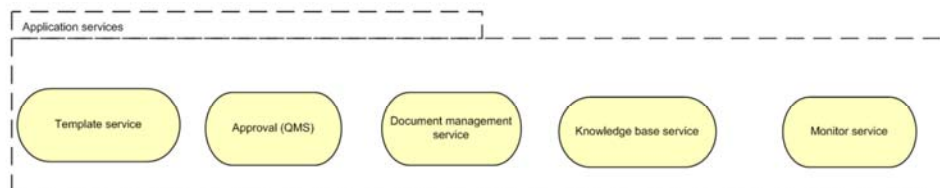




Business phases (Quotationing)

Honeywell

- **Application services**
 - **Template service.**
 - **Approval (QMS).**
 - **Document management service.**
 - **Knowledge base service.**
 - **Monitor service.**

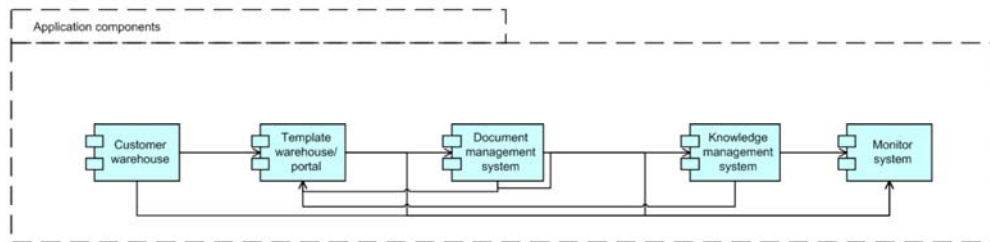




Business phases (Quotationing)

Honeywell

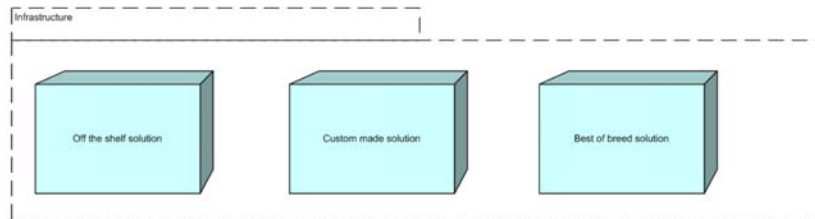
- **Application components**
 - Customer warehouse.
 - Template warehouse/portal.
 - Document management system.
 - Knowledge management system.
 - Monitor system.



Business phases (Quotationing)

Honeywell

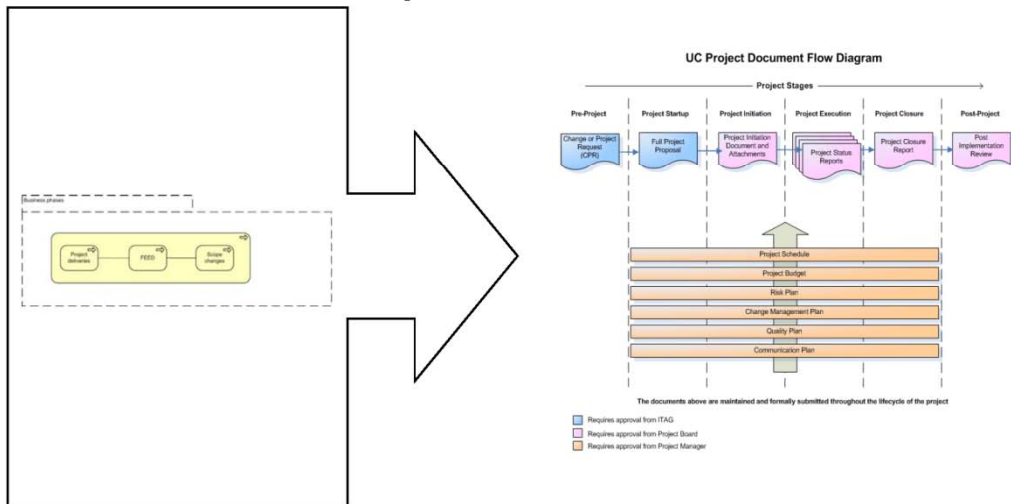
- **Infrastructure**
 - Off the shelf solution.
 - Custom made solution.
 - Best of breed solution.



High level requirements

Honeywell

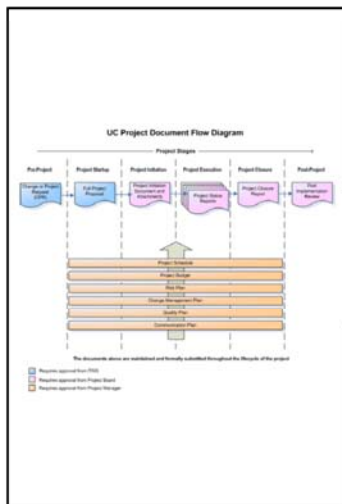
- Focus on business phase
- Canberra document flow



High level requirements

Honeywell

- **Canberra document flow**



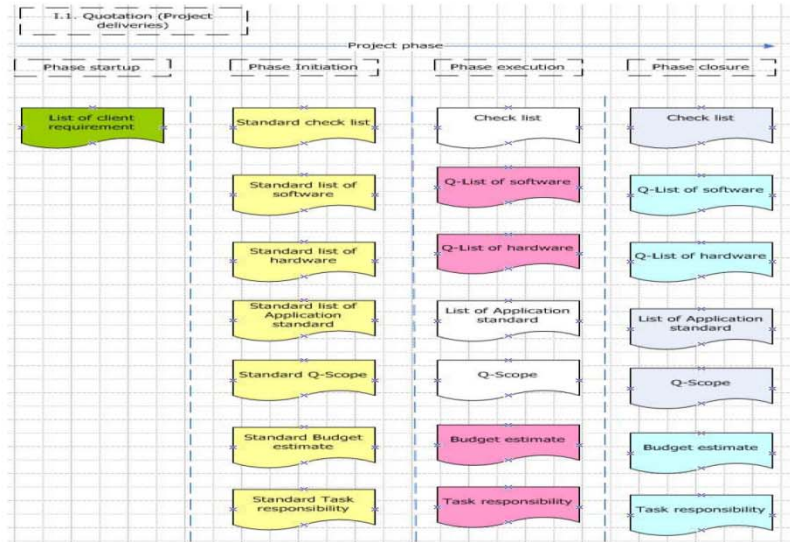
- **Phase startup**
- **Phase initiation**
- **Phase execution**
- **Phase closure**



High level requirements

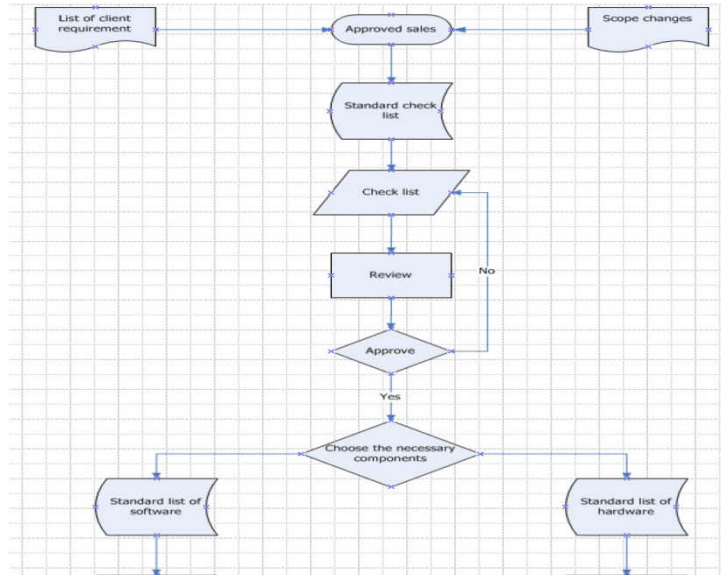
Honeywell

- Document flow project deliveries (quotation)



High level requirements

- **Process flow project deliveries (quotation)**





Inhoud van de presentatie

Honeywell

- **Introductie**
- **Doel**
- **Huidige voortgang**
 - **ArchiMate**
 - **Business functions**
 - **Integrated architecture**
 - **Business phases**
 - **High level requirements**
- **Resterend werk**
 - **Detailed requirements**
 - **Software keuze**
 - **Design templates**
 - **Approval process**
 - **Blue print**
 - **Discussie punten**
- **Opmerkingen of vragen**



Restereind werk

Honeywell

- Detailed level requirements
- Software keuzes
- Design templates
- Approval process
- Blue print



Detailed level requirements

Honeywell

- Alle lagen ArchiMate uitwerken
- Document flow van business phases in detail
- Process flow van business phases in detail
- Verfijning van de requirements



Software keuze

Honeywell

- Off the shelf solution
- Custom build solution
- Best of breed solution



Software keuze

Honeywell

- **Off the shelf solution**
 - **Voordelen:**
 - ♦ Alles in één.
 - ♦ Geen complicaties met applicaties integraties.
 - ♦ Één leverancier, één soort licentie.
 - ♦ Redelijk goede product ondersteuning.
 - ♦ Kant en klare oplossing.
 - **Nadelen:**
 - ♦ Afhankelijk van één leverancier.
 - ♦ Kans op overvloedige functionaliteiten.
 - ♦ Kosten.



Software keuze

Honeywell

- **Custom build solution**
 - **Voordelen:**
 - ♦ Doelgericht applicaties.
 - ♦ Onafhankelijk van leveranciers.
 - ♦ Geen overbodige functionaliteiten.
 - ♦ Makkelijk uitbreidbaar.
 - **Nadelen:**
 - ♦ Lange ontwikkeltijd.
 - ♦ Kosten.
 - ♦ Afhankelijk van "ontwikkelaar".



Software keuze

Honeywell

- **Best of breed solution**
 - **Voordelen:**
 - ♦ Beste applicatie bij elk proces.
 - ♦ Overvloed aan functionaliteiten.
 - **Nadelen:**
 - ♦ Veel interfaces.
 - ♦ Veel leveranciers en meerdere licenties.
 - ♦ Functionaliteiten afhankelijk van de leverancier.
 - ♦ Integratie problemen.
 - ♦ Kosten.



Software keuze

Honeywell

- Off the shelf solution
- Custom build solution
- Best of breed solution

Element	Gewicht(OSS Team)
Kosten	?
Functionaliteit	?
Flexibiliteit	?
Gebruikersgemak	?
Aanpasbaarheid	?
Support	?
?	?



Software keuze

Honeywell

- Off the shelf solution

Product Element	<u>Share point</u>	<u>OpenDoc Man</u>	<u>Logical DOC</u>	<u>Open Goo</u>	<u>feng OFFICE</u>	<u>Knowled ge Tree</u>	<u>Nexus</u>	<u>Documen tum</u>	<u>M-Files</u>	<u>Globalon demand</u>
Kosten	Ja	Nee	Ja/Nee	Ja/Nee	Ja/Nee	Ja/Nee	Ja	Ja	Ja	Ja
Function aliteit	Veel	Matig	Matig/ Veel	Matig	Veel	Veel	Veel	Veel	Veel	Matig
Flexibilite it	Ja	Ja	Ja	Ja	Ja	Ja	Ja	Ja	Ja	Ja
Gebruike rsgemak	Matig/ Goed	Matig/ Goed	Goed	Matig	Goed	Goed	?	Goed	Goed	-
Aanpasb aarheid	Ja/ Nee	Ja	Ja/nee	Ja	Ja	Ja	Ja	Ja/Nee	Nee	Nee
Support	€	-	€/ -	€/ -	€/ -	€/ -	€	€	€/ -	?



Software keuze

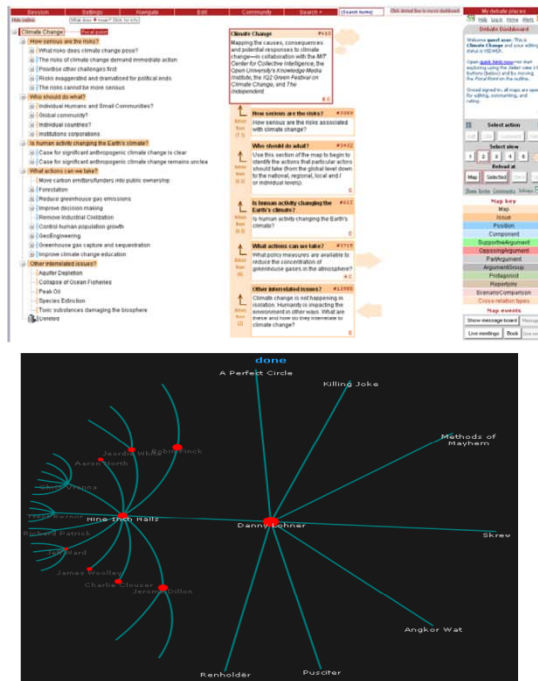
Honeywell

- **Custom build solution**
 - **Portal.**
 - ♦ DMS.
 - **Applicaties.**
 - ♦ Visualisaties.
 - ♦ Services.
 - **Databases.**
 - ♦ Relationale database.
 - ♦ non-relationale database.
 - Amazon: SimpleDB.
 - Google AppEngine Data Store.
 - Microsoft: SQL Data Services.
 - CouchDB (open source).
 - Project Voldemort (open source).
 - Mongo (open source).
 - Drizzle (open source).

Software keuze

Honeywell

- **Best of breed solution**
 - **Portal.**
 - ♦ DMS.
 - **Applicaties (visualisaties).**
 - ♦ Debategraph.
 - ♦ The JavaScript InfoVis Toolkit.
 - ♦ Services.
 - **Databases.**
 - ♦ Relationele database.
 - ♦ non-relationele database.
 - Amazon: SimpleDB.
 - Google AppEngine Data Store.
 - Microsoft: SQL Data Services.
 - CouchDB (open source).
 - Project Voldemort (open source).
 - Mongo (open source).
 - Drizzle (open source).

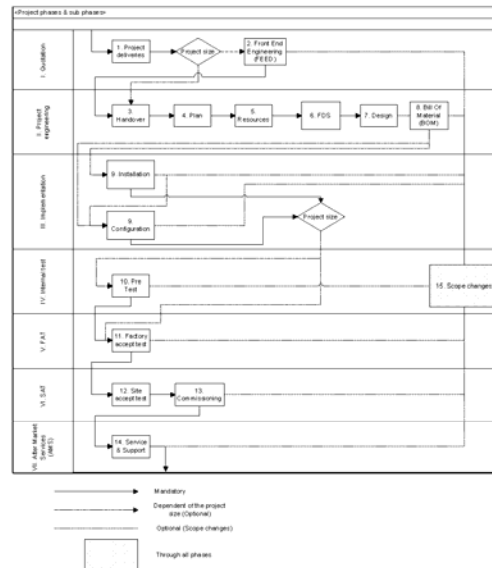




Design templates

Honeywell

- **Templates:**
 - **Frontpage.**
 - ♦ Actor informatie.
 - ♦ Project informatie.
 - ♦ Document informatie.
 - **Content structure.**
 - **Layout.**
 - **Uniform.**
 - **Overzichtelijk.**
 - **Flexibel.**





Approval process

Honeywell

- **Twee keuzes:**
 - Approval (QMS).
 - Approval (Internal).

- **Afhankelijk van:**
 - Voordelen.
 - Nadelen.



Approval process

Honeywell

- **Voordelen:**

Approval (QMS)	Approval (Internal)
1 standaard binnen OSS Team.	Geen extra documentatie processen.
Intern geen dubbel handelingen.	Geen onnodige stappen voor approval.
Duidelijkheid richting de klant.	Flexibel.
Helder en duidelijk voor iedereen.	Helder en duidelijk voor iedereen.



Approval process

Honeywell

- **Nadelen:**

Approval (QMS)	Approval (Internal)
Extra administratie processen.	Betekent extra stap indien QMS word ingevoerd.
Te veel stappen.	Moeilijk om iedereen buiten OSS Team, aanzetten tot gebruik.
Minder flexibiliteit.	Eigen applicatie en procedure vereist.
Documentatie gegevens moet aangepast worden aan QMS.	Ontwikkeling kost meer tijd.



Blue print

Honeywell

- **Business services**
- **Application structure**
 - Afhankelijk van software keuze.
- **Technology infrastructure**
 - Afhankelijk van platform en software keuze.



Discussie punten

Honeywell

- **Keuze soort software**
 - Off the shelf solution.
 - Custom build solution.
 - Best of breed solution.
- **Approval process**
 - Approval QMS.
 - Approval Internal.
- **Design templates**
- **Document flow**
- **Process flow**
- **Huidige problemen**
 - Security issues
 - Wensen



Opmerkingen of vragen

Honeywell





Business phases

Honeywell

- Integrated architecture
 - Quotationing.
 - Project engineering.
 - Implementing.
 - Internal testing.
 - Factory testing.
 - Site testing.
 - After market servicing.



High level requirements

Honeywell

- **Document flow**
 - **Quotation.**
 - ♦ Project deliveries.
 - ♦ FEED.
 - **Project engineering.**
 - ♦ Handover.
 - ♦ Plan.
 - ♦ Resources.
 - ♦ FDS.
 - ♦ Design.
 - ♦ BOM.
 - **Implementation.**
 - ♦ Install & configuration.
 - **Internal test.**
 - ♦ Pre test.
 - **FAT.**
 - ♦ Factory Accept test.
 - **SAT.**
 - ♦ Sat Accept test.
 - ♦ Commissioning.
 - **After market service.**
 - ♦ AMS.
 - **Scope changes.**



High level requirements

Honeywell

- **Process flow**
 - **Quotation.**
 - ♦ Project deliveries.
 - ♦ FEED.
 - **Project engineering.**
 - ♦ Handover.
 - ♦ Plan.
 - ♦ Resources.
 - ♦ FDS.
 - ♦ Design.
 - ♦ BOM.
 - **Implementation.**
 - ♦ Install & configuration.
 - **Internal test.**
 - ♦ Pre test.
 - **FAT.**
 - ♦ Factory Accept test.
 - **SAT.**
 - ♦ Sat Accept test.
 - ♦ Commissioning.
 - **After market service.**
 - ♦ AMS.
 - **Scope changes.**



Software keuze

Honeywell

- Off the shelf solution.
- Custom build solution.
- Best of breed solution.

Element	Gewicht	Gewicht(OSS Team)
Kosten	3	?
Functionaliteit	8	?
Flexibiliteit	7	?
Gebruikersgemak	8	?
Aanpasbaarheid	7	?
Support	6	?



Appendix F

SharePoint presentation





Inhoud van de presentatie

Honeywell

- **Introductie**
- **Doel**
- **Sites and workspaces**
 - Home.
 - Project.
 - Document library.
 - Internal courses.
 - Templates.
 - ♦ Document templates.
 - Wiki.
 - Knowledge base.
 - FAQ.
 - Discussion board.
 - Meeting.
 - Status.
- **Web parts**
 - Integration .



Inhoud van de presentatie

Honeywell

- **Functionality**
 - Email.
 - Calendar.
 - Notification.
 - ♦ Announcements.
 - ♦ RSS.
 - ♦ Alerts.
 - Navigation.
 - ♦ Explorer view.
 - ♦ Tree view.
 - ♦ Bread crumbs.
 - ♦ Quick launch.
 - Workflow.
 - ♦ Review.
 - ♦ Approval.



Inhoud van de presentatie

Honeywell

- **Functionality**
 - **Tasks.**
 - ♦ Project tasks.
 - ♦ Work tasks.
 - **Document versioning.**
 - ♦ Check in & out.
 - ♦ History.
 - **Permission (security).**
 - ♦ User permission.
 - ♦ Site permission.
 - ♦ List library permission.
 - **List.**
 - **Links.**
 - **Search.**
- **Afronding.**
- **Opmerking & vragen.**



Introductie

Honeywell

- **Reden voor SharePoint configuratie:**
 - **Design van DMS.**
 - ♦ ArchiMate modellen.
 - **Toetsen in praktijk.**



Introductie

Honeywell

- **SharePoint**
 - DMS.
 - Alles in een.
 - Wereldwijd gebruikt en erkend.
- **Voordelen:**
 - Geen extra investering kosten.
 - Is al geïnstalleerd, alleen inrichten.
 - Add-ons beschikbaar.
- **Nadelen:**
 - Snelheid.
 - Wennen.
 - Richtlijn.



Doel

Honeywell

- Voorbeeld inrichting.
- Afronding van de opdracht.
- Feed back verkrijgen.



Sites & workspaces > Home

Honeywell

- **Home**
 - 1 standaard site voor iedereen.
 - Eerste aanspreek punt.
 - Bevat hoogte punten.
 - Referentie naar alle andere sites.



Sites & workspaces > Home

Honeywell

[Portal OSS Honeywell]

Welcome John Doe | My Site | My Links | Help

All sites | Search | Advanced Search

Home | Project | Document libraries | Internal courses | Templates | Wiki | Knowledge base | FAQ | Discussion Board | Meeting | Status | Actions

View All Site Content

Documents

- Reference documents

Projects

Calendar

< May 2001 >

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Discussion

- General Discussions
- Team Discussions

Sites

- Sub pages

Email

Site Hierarchy

- Search Center
- Sub pages
- Shared Documents
- Announcements
- Calendar
- Links
- OSS Info page
- Tasks
- Team Discussion

Recycle Bin

OSS | Honeywell

Announcements

How to put and use documentation. 8/26/2009 8:55 AM
Example of an Visual representation of project folders structure.

☐ Add new announcement

FEEDS

- News FEED1
- News FEED2
- News FEED3

My Documents

- Documents
- Pictures

Meetings

Project/Meeting	Subject	Date	Owner
1	Introduction Entry	09-09 - 09-15	Matthias Hage
2	Feedback from last Weekly Minutes Entry	09-15 - 09-30	Matthias Hage
3	Component Design Entry	09-30 - 10-05	Frankiska Kijhn

Project Status

Tasks

Title	Assigned To	Due Date	Priority
Create Presentation Template new	Frankiska Kijhn	7/7/2009	(1) High
Approve last Weekly Minutes new	Matthias Hage	7/7/2009	(2) Normal

Links

- Hyperlink 1
- Hyperlink 2

Team Members

-
-
-



Home > Projects

Honeywell

- **Project site**
 - Overzicht van de recente projecten.
 - Bevat de belangrijkste informatie.
 - Referentie naar alle projecten.
 - Bevat de laatste updates.



Home > Projects

Honeywell

[Portal Name] Welcome John Doe My Site My Links Help

All sites [Search] Advanced Search

Home Projects Document libraries Internal courses Templates Wiki Knowledge base FAQ Discussion board Meeting Status Actions

View All Site Content [Home] Projects

Project

- Project 1
- Project 2

Documents

- General Discussions
- Team Discussions

Sites

- Sub pages

Email

Site Hierarchy

- Search Center
- Sub site
- Shared Documents
- Announcements
- Calendar
- Links
- Help page
- Team
- Team Document

Recycle Bin

OSS Honeywell

Announcements

- Announcement 1
- Announcement 2
- Announcement 3

Links

- Hyperlink 1
- Hyperlink 2

Calendar

10-11-2005 [Presentation](#)
Description of this event.

24-11-2005 [Meeting](#)
Description of this event.

14-12-2005 [Event](#)
Description of this event.

Team members

- Person 1
- Person 2
- Person 3
- ...

Project status

Name	Responsible	Status	Progress %
Project 1	Person 1	Finished	100
Project 2	Person 2	On schedule	20
Project 3	Person 3	Behind	50
Project 4	Person 1	On schedule	33

Project Tasks

Name	Task	Responsible	Status
Project 1	Send documents	Person 4	Finished
Project 2	Meet manager on location	Person 6	Open
Project 3	Configure router	Person 11	Delayed
Project 4	Send invoice	Person 4	Open

Latest document

Type	Name	Modified By	Project
	Folder 1	Jane Doyle	Name 1
	Document 1	Jane Doyle	
	Document 2	Jane Doyle	
	Document 3	Jane Doyle	Name 2



Home > Projects > Project 1

Honeywell

- **Project 1**
 - Overzicht van een project.
 - Bevat de belangrijkste informatie.
 - Overzicht van betreffende documenten.
 - Betrokken mensen.



Home > Projects > Project 1

Honeywell

[Portal Name] Welcome John Doe [My Site](#) [My Links](#) [Help](#)

All sites [Search](#) [Advanced Search](#)

[Home](#) [Projects](#) [Document libraries](#) [Internal courses](#) [Templates](#) [Wiki](#) [Knowledge base](#) [FAQ](#) [Discussion board](#) [Meeting](#) [Status](#) [Actions](#)

[View All Site Content](#) [Home > Projects > Project 1](#)

Project

- Project 1
- Project 2

Documents

- General Discussions
- Team Discussions

Sites

- Sub pages

Email

Site Hierarchy

- Search Center
- Sub page
- Shared Documents
- Calendar
- Links
- DOS Web page
- Tools
- Team Discussion

[Recycle Bin](#)

Announcements

- Announcement 1
- Announcement 2
- Announcement 3

Links

- Hyperlink 1
- Hyperlink 2

Calendar

- 10-11-2005 [Presentation](#)
Description of this event.
- 24-11-2005 [Meeting](#)
Description of this event.
- 14-12-2005 [Event](#)
Description of this event.

Project 1 Tasks

Project phase	Task	Description	Status
Design	DDS	Desc 1	Finished
Implementation	Configurations	Desc 1	Open
After sales	Handing over	Desc 1	scheduled

Team members involved

Name	Role
Person 1	Team member
Person 2	Manager
Person 3	Team leader
Person 4	Team member

Member tasks

Name	Task	Description	Status
Person 1	Design X	Desc 1	Open
Person 2	Meeting with Y	Desc 1	Scheduled
Person 3	Design Y	Desc 1	Delayed
Person 4	Setup up X	Desc 1	Cancelled

Document Library

Type	Name	Modified By
Folder	Folder 1	Jane Doyle
Document	Document 1	Jane Doyle
Document	Document 2	Jane Doyle
Document	Document 3	Jane Doyle

Discussion

Name	Modified By
Item 1	Description 1
Item 2	Description 2
Item 3	Description 3
Item 4	Description 4

13

Wireframe Default

File Number



Home > Document library

Honeywell

- **Document library**
 - Bevat alle documenten.
 - Overzicht van de laatste documenten.
 - Geeft overzicht van de belangrijkste informatie en updates.
 - Documenten gegroepeerd in categorieën.



Home > Document library

Honeywell

[Document libraries] [Welcome John Doe](#) [My Site](#) [My Links](#) [Help](#)

All sites [Search](#) [Advanced Search](#)

[Home](#) [Project](#) [Document libraries](#) [Internal courses](#) [Templates](#) [Wiki](#) [Knowledge base](#) [FAQ](#) [Discussion Board](#) [Meeting](#) [Status](#) [Actions](#)

[View All Site Content](#)

Documents

- [Reference documents](#)
- [Course documents](#)
- [Templates](#)

Projects

Discussion

- [General Discussions](#)
- [Team Discussions](#)

• [Sub pages](#)

Email

Site Hierarchy

- [Search Center](#)
- [Sub pages](#)
- [Shared documents](#)
- [Announcements](#)
- [Calendar](#)
- [Links](#)
- [Team Members](#)
- [Team Discussion](#)

[Recycle Bin](#)

OSS | Honeywell

Announcements

How to put and use documentation. 8/26/2009 8:55 AM
Example of an Visual representation of project folders structure.

Grouped List from different sites (Course, templates,...)

Column1	Column2	Column3	Column4
{1} Column1: Value1 (1)	Desc 1	Desc 1	Desc 1
{1} Column1: Value2 (2)	Desc 1	Desc 1	Desc 1
{1} Column1: Value3 (1)	Desc 1	Desc 1	Desc 1

Document Library

Type	Name	Modified By
Folder	Folder 1	Jane Doyle
Document	Document 1	Jane Doyle
Document	Document 2	Jane Doyle
Document	Document 3	Jane Doyle

List

Name	Modified By
Item 1	Description 1
Item 2	Description 2
Item 3	Description 3
Item 4	Description 4

Explorer View

[Documents](#) [Pictures](#)

Links

- [Hyperlink 1](#)
- [Hyperlink 2](#)

Calendar

10-11-2005 [Presentation](#)
Description of this event.

24-11-2005 [Meeting](#)
Description of this event.

14-12-2005 [Event](#)
Description of this event.

Team Members

- [User 1](#)
- [User 2](#)



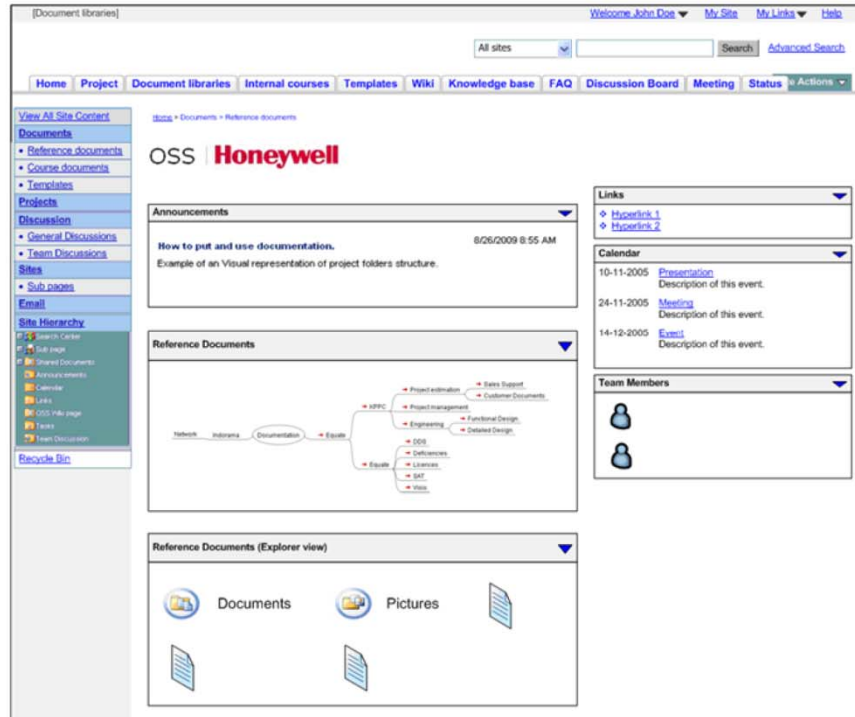
Home > Document library > Reference documents

Honeywell

- **Reference documents**
 - Document overzicht van een categorie.
 - Bevat de laatste documenten updates.
 - Geeft een overzicht van de documenten.



Home > Document library > Reference documents





Home > Internal courses

Honeywell

- Overzicht van alle beschikbaar cursussen.
- Overzicht van nieuws en informatie.
- Overzicht van de deelnemers.



Home > Internal courses

Honeywell

[Portal Name] Welcome John Doe [My Site](#) [My Links](#) [Help](#)

All sites [Search](#) [Advanced Search](#)

[Home](#) [Projects](#) [Document libraries](#) [Internal courses](#) [Templates](#) [Wiki](#) [Knowledge base](#) [FAQ](#) [Discussion board](#) [Meeting](#) [Status](#) [Actions](#)

[View All Site Content](#) [Internal courses](#)

Courses

- Course 1
- Course 2
- Course 3
- Course 4

Course materials

Discussions

Courses enrolled

- Course 1

Email

Site Hierarchy

- Search Center
- Sub pages
- Shared Documents
- Announcements
- Calendar
- Links
- OSS Wiki page
- Tasks
- Team Discussion

[Recycle Bin](#)

Announcements

- Announcement 1
- Announcement 2
- Announcement 3

Links

- Hyperlink 1
- Hyperlink 2

Latest Courses material

Type	Name
Folder	Folder 1
Document	Document 1
Document	Document 2
Document	Document 3

Calendar

10-11-2005	Presentation	Description of this event.
24-11-2005	Meeting	Description of this event.
14-12-2005	Event	Description of this event.

Discussions

Name	Modified By
Item 1	Description 1
Item 2	Description 2
Item 3	Description 3
Item 4	Description 4

Course categories

Name	Modified By
Item 1	Description 1
Item 2	Description 2
Item 3	Description 3
Item 4	Description 4

Courses

Course name	Description	Number of attendees	Status
Item 1	Desc 1	X	Desc 1
Item 1	Desc 1	X	Desc 1
Item 1	Desc 1	X	Desc 1
Item 1	Desc 1	X	Desc 1

Attendees

Name	Course
Attendee 1	Description 1
Attendee 2	Description 2
Attendee 3	Description 3
Attendee 4	Description 4



Home > Internal courses > Course 1

Honeywell

- Bevat de informatie en rooster van een cursus.
- Geeft documenten weer.
- Overzicht van de cursus.



Home > Internal courses > Course 1

Honeywell

[Portal Name] [Welcome John Doe](#) [My Site](#) [My Links](#) [Help](#)

All sites [Search](#) [Advanced Search](#)

[Home](#) [Projects](#) [Document libraries](#) [Internal courses](#) [Templates](#) [Wiki](#) [Knowledge base](#) [FAQ](#) [Discussion board](#) [Meeting](#) [Status](#) [Actions](#)

[View All Site Content](#) [Home](#) [Internal courses](#) [Course 1](#)

Courses

- [Course 1](#)
- [Course 2](#)
- [Course 3](#)
- [Course 4](#)

Course materials

Discussions

Courses enrolled

- [Course 1](#)

Email

Site Hierarchy

- [Search engine](#)
- [Sub page](#)
- [Shared documents](#)
- [Announcements](#)
- [Calendar](#)
- [Links](#)
- [FAQ page](#)
- [Tests](#)
- [Team discussions](#)

[Recycle Bin](#)

OSS Honeywell

Announcements

- [Announcement 1](#)
- [Announcement 2](#)
- [Announcement 3](#)

Course information

Course content schedule

10-11-2005	Presentation
Description of this event.	
24-11-2005	Meeting
Description of this event.	
14-12-2005	Event
Description of this event.	

Course categories

Name	Modified By
Item 1	Description 1
Item 2	Description 2
Item 3	Description 3
Item 4	Description 4

Course material

Type	Name	Modified By
Folder	Folder 1	Jane Doyle
Document	Document 1	Jane Doyle
Document	Document 2	Jane Doyle
Document	Document 3	Jane Doyle

Discussions

Name	Modified By
Item 1	Description 1
Item 2	Description 2
Item 3	Description 3
Item 4	Description 4

Attendees

Name	Progress %
Attendee 1	20
Attendee 2	90
Attendee 3	0
Attendee 4	50

Links

- [Hyperlink 1](#)
- [Hyperlink 2](#)



Home > Templates

Honeywell

- Bevat de laatste informatie en updates .
- Template overzicht per categorie.

The screenshot shows the Honeywell OSS website interface. At the top, there's a navigation bar with links like Home, Project, Document libraries, Internal courses, Templates, Wiki, Knowledge base, FAQ, Discussion Board, Meeting, Status, and Actions. Below this, a sidebar on the left contains links for View All Site Content, Documents (FDS templates, DDS templates, Other templates), Projects, Discussion (General Discussions, Team Discussions), Sites, Sub pages, Email, Site Hierarchy, and Recycle Bin. The main content area is titled 'OSS Honeywell' and features several sections: Announcements (with a message about documentation), FDS Templates, DDS Templates, and Other Templates. Each template section lists items with columns for Type, Name, and Modified By. On the right side, there are additional widgets for Links, Calendar, and Team Members.

Type	Name	Modified By
Folder	Folder 1	Jane Doyle
Document	Document 1	Jane Doyle
Document	Document 2	Jane Doyle
Document	Document 3	Jane Doyle

Type	Name	Modified By
Folder	Folder 1	Jane Doyle
Document	Document 1	Jane Doyle
Document	Document 2	Jane Doyle
Document	Document 3	Jane Doyle

Type	Name	Modified By
Folder	Folder 1	Jane Doyle
Document	Document 1	Jane Doyle
Document	Document 2	Jane Doyle
Document	Document 3	Jane Doyle

Home > Templates > DDS template

Honeywell

- Bevat specifieke informatie over een template.
- Overzicht van de templates.

The screenshot displays the Honeywell OSS (Open Source Software) website interface. The top navigation bar includes links for Home, Project, Document libraries, Internal courses, Templates, Wiki, Knowledge base, FAQ, Discussion Board, Meeting, Status, and Actions. The main content area is titled 'OSS Honeywell' and features an announcement about documentation usage. Below the announcement, there is a section for 'DDS Templates' which includes a hierarchical diagram showing the relationship between 'Network', 'DDS', and 'Equip'. The diagram shows 'Network' leading to 'DDS', which then branches into 'Equip' and 'Functional Design'. 'Equip' further branches into 'Project estimation', 'Project management', 'Engineering', 'Functional Design', 'DDS', 'Experiences', 'Comments', 'GAT', and 'Views'. Below the diagram, there is a section for 'Documents' with several document icons. The right sidebar contains sections for Links, Calendar, and Team Members.



Home > Wiki

Honeywell

- Overzicht van de nieuwste wiki's.
- Bevat updates van de gewijzigde wiki's.
- Referentie naar alle wiki pagina's.



Home > Wiki

Honeywell

[Portal Name] Welcome John Doe My Site My Links Help

All sites [Advanced Search](#)

[Home](#) [Projects](#) [Document libraries](#) [Internal courses](#) [Templates](#) [Wiki](#) [Knowledge base](#) [FAQ](#) [Discussion board](#) [Meeting](#) [Status](#) [Actions](#)

[View All Site Content](#) [Wiki](#)

[Story 1](#)
[Story 2](#)
[Story 3](#)
[Story 4](#)

[Discussion](#)

[Documents](#)

[Sites](#)

[Sub pages](#)

[Email](#)

[Site Hierarchy](#)

[Search Center](#)
[Sub page](#)
[Shared Documents](#)
[Announcements](#)
[Calendar](#)
[Links](#)
[Wiki page](#)
[Tasks](#)
[Team Discussion](#)

[Recycle Bin](#)

OSS Honeywell

Announcements

- Announcement 1
- Announcement 2
- Announcement 3

Links

- [Hyperlink 1](#)
- [Hyperlink 2](#)

Calendar

10-11-2005	Presentation Description of this event.
24-11-2005	Meeting Description of this event.
14-12-2005	Event Description of this event.

Active Team members

- Person 1
- Person 2
- Person 3

New Wiki's

Name	Modified By
Item 1	Description 1
Item 2	Description 2
Item 3	Description 3
Item 4	Description 4

Edited Wiki's

Name	Modified By
Item 1	Description 1
Item 2	Description 2
Item 3	Description 3
Item 4	Description 4



Home > Wiki > Page 1

Honeywell

- Geeft een detail overzicht van een wiki pagina.
- Gerelateerde informatie.



Home > Wiki > Page 1

Honeywell

[Portal Name] Welcome John Doe [My Site](#) [My Links](#) [Help](#)

All sites [Search](#) [Advanced Search](#)

[Home](#) [Projects](#) [Document libraries](#) [Internal courses](#) [Templates](#) [Wiki](#) [Knowledge base](#) [FAQ](#) [Discussion board](#) [Meeting](#) [Status](#) [Actions](#)

[View All Site Content](#) [RSS](#) [RSS](#) [Story 1](#)

Wiki

- [Story 1](#)
- [Story 2](#)
- [Story 3](#)
- [Story 4](#)

Discussion

Documents

Sites

- [Sub pages](#)

Email

Site Hierarchy

- [Search Center](#)
- [Wiki page](#)
- [Wiki Documents](#)
- [Wiki events](#)
- [Wiki](#)
- [Wiki page](#)
- [Wiki](#)
- [Wiki](#)

[Recycle Bin](#)

Announcements

- [Announcement 1](#)
- [Announcement 2](#)
- [Announcement 3](#)

Links

- [Hyperlink 1](#)
- [Hyperlink 2](#)

Calendar

10-11-2005	Presentation	Description of this event.
24-11-2005	Meeting	Description of this event.
14-12-2005	Event	Description of this event.

Related Wiki's

Name	Modified By
Item 1	Description 1
Item 2	Description 2
Item 3	Description 3
Item 4	Description 4

Wiki's you are participating in:

Name	Modified By
Item 1	Description 1
Item 2	Description 2
Item 3	Description 3
Item 4	Description 4

Active Team members

- [Person 1](#)
- [Person 2](#)
- [Person 3](#)

Story 1

Related Documents

Type	Name	Modified By
	Folder 1	Jane Doyle
	Document 1	Jane Doyle
	Document 2	Jane Doyle
	Document 3	Jane Doyle



Home > Knowledge base

Honeywell

- Overzicht van alle kennis artikelen.
- Belangrijkste updates.
- Referentie naar artikelen per categorie.



Home > Knowledge base

Honeywell

[Knowledge base] [Welcome John Doe](#) [My Site](#) [My Links](#) [Help](#)

All sites [Search](#) [Advanced Search](#)

[Home](#) [Project](#) [Document libraries](#) [Internal courses](#) [Templates](#) [Wiki](#) [Knowledge base](#) [FAQ](#) [Discussion Board](#) [Meeting](#) [Status](#) [Actions](#)

[View All Site Content](#)

Documents

- Articles
- White papers
- Manuals

Projects

Discussion

- General Discussions
- Team Discussions

Sites

- Sub pages

Email

Site Hierarchy

- Search Center
- Sub page
- Shared Documents
- Announcements
- Calendar
- Links
- Wiki
- FAQ
- Team Discussion

[Recycle Bin](#)

[Home](#) > [Documents](#) > Knowledge base

OSS **Honeywell**

Announcements

How to put and use documentation. 8/26/2009 8:55 AM
Example of an Visual representation of project folders structure.

Articles

Type	Name	Modified By
Folder	Folder 1	Jane Doyle
Document	Document 1	Jane Doyle
Document	Document 2	Jane Doyle
Document	Document 3	Jane Doyle

White papers

Type	Name	Modified By
Folder	Folder 1	Jane Doyle
Document	Document 1	Jane Doyle
Document	Document 2	Jane Doyle
Document	Document 3	Jane Doyle

Manuals

Type	Name	Modified By
Folder	Folder 1	Jane Doyle
Document	Document 1	Jane Doyle
Document	Document 2	Jane Doyle
Document	Document 3	Jane Doyle

Links

- Hyperlink 1
- Hyperlink 2

Calendar

10-11-2005 [Presentation](#)
Description of this event.

24-11-2005 [Meeting](#)
Description of this event.

14-12-2005 [Event](#)
Description of this event.

Team Members

-
-



Home > Knowledge base > Manuals

Honeywell

- Detail informatie over kennis artikelen.
- Mogelijkheid om artikelen toe te voegen of te veranderen.
- Gerelateerde documenten over kennis artikelen.



Home > Knowledge base > Manuals

Honeywell

[Knowledge base]

Welcome John Doe ▾ My Site My Links ▾ ▾

All sites ▾ Search Advanced Search

Home Project Document libraries Internal courses Templates Wiki Knowledge base FAQ Discussion Board Meeting Status Actions ▾

View All Site Content

Documents

- Articles
- White papers
- Manuals

Projects

- Discussion
- General Discussions
- Team Discussions

Sub pages

Email

Site Hierarchy

- Search Center
- Sub page
- General Discussions
- Announcements
- Calendar
- Links
- Recent Web page
- Teams
- Team Discussion

Recycle Bin

Home » Documents » Knowledge base » Manuals

OSS | Honeywell

Announcements ▾

How to put and use documentation.

Example of an Visual representation of project folders structure.

8/26/2009 8:55 AM



Links ▾

- Hyperlink 1
- Hyperlink 2

Calendar ▾

- 10-11-2005 [Presentation](#)
Description of this event.
- 24-11-2005 [Meeting](#)
Description of this event.
- 14-12-2005 [Event](#)
Description of this event.

Team Members ▾

- 
- 

Manuals ▾

In Geschäftsräumen stellt eine Wiki-Website eine wertvolle Möglichkeit bereit, um Wissen aufzuarbeiten. Informationen, die in der Regel in E-Mail-Nachrichten weitergegeben, in Unterhaltungen auf dem Gang ausgetauscht oder auf Papier festgehalten werden, können stattdessen mit ähnlichen Informationen auf einer Wiki-Website erfasst werden.

Add Manuals ▾

Titel *

Handreikt

Storing Internet

Vanwege problemen bij de provider is er momenteel geen internetverbinding.

Voorloopt 27-2-2008

OK Annuleren



Home > FAQ

Honeywell

- Overzicht van de FAQ's.
- Zoek mogelijkheden.
- Vragen toevoegen.
- Antwoorden verkrijgen.



Home > FAQ

Honeywell

[FAQ]

Welcome John Doe ▾ My Site My Links ▾ Help

All sites Search Advanced Search

Home Project Document libraries Internal courses Templates Wiki Knowledge base **FAQ** Discussion Board Meeting Status Actions ▾

View All Site Content

Documents

Projects

Discussion

• General Discussions

• Team Discussions

Sites

• Sub pages

Email

Site Hierarchy

Search Center

Sub page

Shared Documents

Announcements

Calendar

Links

OSS Wiki page

Tools

Team Discussions

Recycle Bin

Home > FAQ

OSS | Honeywell

Announcements

How to put and use documentation. 8/26/2009 8:55 AM

Example of an Visual representation of project folders structure.

Search FAQ

Search

FAQ

How can I update the software (firmware) of my Nokia phone?

What is the default security code in my Nokia phone?

Why does my battery drain fast?

How do I pair a device with my Nokia device using Bluetooth?

Where can I get settings for browsing (WAP, GPRS) and MMS?

Links

Hyperlink 1

Hyperlink 2


Calendar


10-11-2005 [Presentation](#)
Description of this event.

24-11-2005 [Meeting](#)
Description of this event.

14-12-2005 [Event](#)
Description of this event.

Team Members







Home > FAQ > Topic

Honeywell

- Detail overzicht van een vraag.
- Antwoord op de vraag.

The screenshot displays the Honeywell OSS website's FAQ section. The page layout includes a top navigation bar with links like Home, Project, Document libraries, Internal courses, Templates, Wiki, Knowledge base, FAQ, Discussion Board, Meeting, Status, and Actions. A search bar is located at the top right. The left sidebar contains a 'View All Site Content' link and a tree view of site categories including Documents, Projects, Discussion, Sites, Email, Site Hierarchy, and Recycle Bin. The main content area features the 'OSS Honeywell' logo, an 'Announcements' section with a message about documentation, a 'Search FAQ' box, and a list of FAQs. The right sidebar contains a 'Links' section with hyperlinks, a 'Calendar' section with event listings, and a 'Team Members' section with user avatars.



Home > Discussion board

Honeywell

- Overzicht van de discussies.
- Overzicht van de opmerkingen.

The screenshot displays the Honeywell Discussion board interface. The main content area is titled "OSS Honeywell" and contains three sections:

- Announcements:** A list of three announcements, each with a title and a description.
- Discussions:** A table listing discussion threads with columns for Starter, Subject, Description, and Status.
- New comments:** A list of four new comments, each with a name and a description.

The right sidebar contains three sections:

- Links:** A list of two links, "Hyperlink 1" and "Hyperlink 2".
- Calendar:** A list of three events, each with a date, title, and description.
- Team members:** A table listing team members with columns for Name and Role.



Home > Discussion board > General discussions

Honeywell

- **Discussies opstarten.**
- **Issues aankaarten.**
- **Detail overzicht van alle discussies.**
- **Gerelateerde documenten.**
- **Mogelijkheid om te reageren.**



Home > Discussion board > General discussions



[Portal Name]

Welcome John Doe ▾ My Site My Links ▾ Help

All sites ▾ Search Advanced Search

Home Projects Document libraries Internal courses Templates Wiki Knowledge base FAQ Discussion board Meeting Status Actions ▾

[View All Site Content](#)

Discussion

- General Discussions
- Team Discussions
- Thread 3
- Thread 4

Documents

Sites

- Sub pages

Email

Site Hierarchy

- Search Center
- Sub page
- Shared documents
- Announcements
- Calendar
- Links
- Wiki's info page
- Tutorials
- Feedback

[Recycle Bin](#)

OSS Honeywell

Announcements ▾

- Announcement 1
- Announcement 2
- Announcement 3

General Discussions ▾

- Status
- Status?
- ...

New comments ▾

Name	Description	Comment
Person 1	Description 1	
Person 2	Description 2	
Person 3	Description 3	
Person 4	Description 4	

Post comment ▾

Document Library ▾

Type	Name	Modified By
Folder	Folder 1	Jane Doyle
Document	Document 1	Jane Doyle
Document	Document 2	Jane Doyle
Document	Document 3	Jane Doyle

Links ▾

- [Hyperlink 1](#)
- [Hyperlink 2](#)

Calendar ▾

10-11-2005 [Presentation](#)
Description of this event.

24-11-2005 [Meeting](#)
Description of this event.

14-12-2005 [Event](#)
Description of this event.

Team members ▾

Name	Role
Person 1	Team member
Person 2	Manager
Person 3	Team leader
Person 4	Team member



Home > Meeting

Honeywell

- Overzicht van de bijeenkomsten.
- Agenda overzicht.

The screenshot shows a web portal interface for a meeting overview. The page has a sidebar on the left with navigation links like 'View All Site Content', 'Meeting', 'Documents', 'Discussions', 'Sites', 'Email', and 'Site Hierarchy'. The main content area displays the 'OSS Honeywell' logo and a table of meetings. The table has columns for Meeting, Objective, Date, Attendees, Status, and Description. The right sidebar contains sections for 'Links' and 'Team members'.

Meeting	Objective	Date	Attendees	Status	Description
[Item 1]	[Item 1]	09-09-09	Everyone	Planned	Remember to read documents.
[Item 1]	[Item 1]	16-09-09	Managers	Cancelled	-
[Item 1]	[Item 1]	23-09-09	Everyone	Planned	Don't forget chips & drinks.

Calendar view for May 2001:

S	M	T	W	T	F	S
	1	2	3	4	5	
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		



Home > Meeting > Meeting 1

Honeywell

- Detail informatie van een bijeenkomst.
- Gerelateerde documenten.
- Agenda punten en onderwerpen.
- Belangrijke wijzigingen.



Home > Meeting > Meeting 1

Honeywell

[Portal Name] Welcome John Doe My Site My Links Help

All sites [Advanced Search](#)

[Home](#) [Projects](#) [Document libraries](#) [Internal courses](#) [Templates](#) [Wiki](#) [Knowledge base](#) [FAQ](#) [Discussion board](#) [Meeting](#) [Status](#) [Actions](#)

[View All Site Content](#) [Home](#) > [Meeting](#) > Meeting 1

Meeting

- Meeting 1
- Meeting 2
- Meeting 3
- Meeting 4

Documents

Discussions

Sites

- Sub pages

Email

Site Hierarchy

- Search Center
- Sub page
- Shared Documents
- Announcements
- Calendar
- Links
- OSS Wiki page
- Items
- Team Discussion

[Recycle Bin](#)

Announcements

- Announcement 1
- Announcement 2
- Announcement 3

Calendar

10-11-2005	Presentation	Description of this event.
24-11-2005	Meeting	Description of this event.
14-12-2005	Event	Description of this event.

Objectives

Name	Modified By
Item 1	Description 1
Item 2	Description 2
Item 3	Description 3
Item 4	Description 4

Agenda items

Name	Modified By
Item 1	Description 1
Item 2	Description 2
Item 3	Description 3
Item 4	Description 4

Links

- [Hyperlink 1](#)
- [Hyperlink 2](#)

Meeting 1 documents

Type	Name
	Folder 1
	Document 1
	Document 2
	Document 3

Attendees

- Person 1
- Person 2
- Person 3



Home > Status

Honeywell

- Overzicht van de status van de sites.



Home > Status > Status project

Honeywell

- Detail overzicht van de status.

[Status] Welcome John Doe My Site My Links Help

All sites Search Advanced Search

Home Project Document libraries Internal courses Templates Wiki Knowledge base FAQ Discussion Board Meeting Status Actions

View All Site Content
Documents
Projects
Discussion
• General Discussions
• Team Discussions
Sites
• Sub pages
Email
Site Hierarchy
Search Center
Sub pages
Shared Documents
Announcements
Calendar
Links
OSS Wiki page
Tasks
Team Discussion
Recycle Bin

OSS **Honeywell**

Announcements

How to put and use documentation. 8/26/2009 8:55 AM
Example of an Visual representation of project folders structure.

Status Project

Project 1
80% completed

Links

Hyperlink 1
Hyperlink 2

Calendar

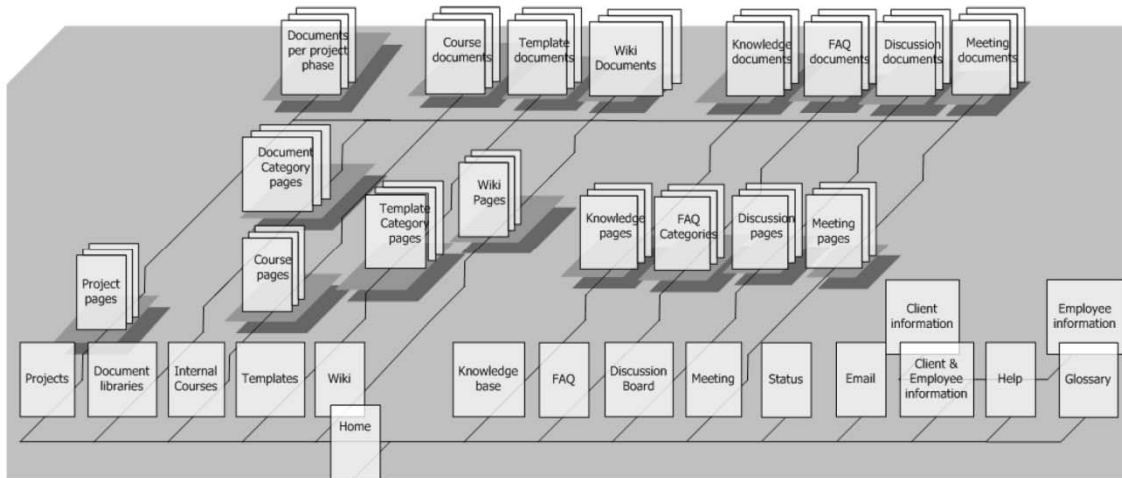
10-11-2005 Presentation
Description of this event.
24-11-2005 Meeting
Description of this event.
14-12-2005 Event
Description of this event.

Team Members



Site & workspaces > Site map

Honeywell





Web parts

Honeywell

- Onderdeel van een pagina.
- Kern van elk pagina.
- Beschikbaarheid functionaliteit.
- Aanpasbaar: Java script, HTML, ASP, etc.
- Makkelijk verplaatsbaar.
- Te wijzigen door de administrator.



Integration

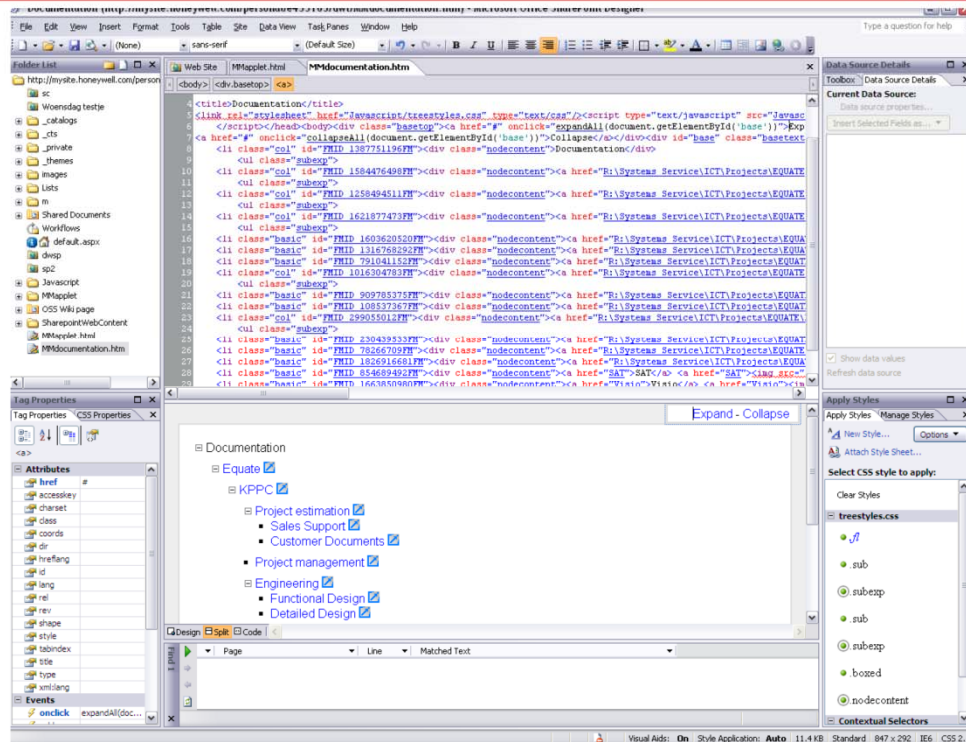
Honeywell

- **Integratie mogelijkheid met andere applicaties**
- **Visualisatie**
- **Visio, word integratie, outlook, info path, etc**
- **Add-ons**
 - **Vb: permission boost (permissie beheer).**
 - **Cross site lookup (Zoeken tussen de sites).**



Microsoft SharePoint Designer tool

Honeywell



46

HONEYWELL - CONFIDENTIAL

File Number



Functionality

Honeywell

- **Email**
 - Koppellen met outlook.
 - Ontvangen van:
 - ♦ Alerts.
 - ♦ Announcements.
 - ♦ Taken.
 - ♦ Workflow.
 - ♦ Aanvragen.
 - Opsturen van:
 - ♦ Vragen.
 - ♦ Discussie.
 - ♦ Knowledge.
 - ♦ Bevestiging.
 - ♦ Requests:
 - Management.
 - Employee.



Functionality

Honeywell

- **Calendar**
 - **Aparte kalender i.v.t outlook.**
 - **Koppelen aan:**
 - Taken.
 - Workflow.
 - Approval.
 - Review.
 - Meetings.
 - **Synchronisatie mogelijkheden.**
 - **Mogelijkheid om te overlappen met outlook.**



Functionality

Honeywell

Document workspace test

Sharepoint intriching Document workspace test

Collaboration Websites

Site Actions

2009

Jan Feb Mar
Apr May Jun
Jul Aug Sep
Oct Nov Dec

Today is Monday, August 31, 2009

View All Site Content

Documents

- OSS Wiki page

Lists

- Calendar
- Calendar

Discussions

- Team Discussion

Sites

- Search Center
- Sub page
- Sub page 2

People and Groups

Site Hierarchy

- Search Center
- Sub page
- Sub page 2
- Shared Documents
- Announcements
- Calendar
- Calendar
- Links
- OSS Wiki page
- Tests
- Team Discussion

Recycle Bin

Tang, Yerk > Document workspace test > Calendar

Calendar

Use the Calendar list to keep informed of upcoming meetings, deadlines, and other important events.

New Actions Settings

View: Calendar

Expand All Collapse All 1 Day 7 Week 31 Month

26 28 29 30 31 1

4:00 AM
Woensdag testje

2 4 5 6 7 8

9 10 11 12 13 14 15

16 17 18 19 20 21 22

23 24 25 26 27 28 29

4:00 AM
Woensdag testje

30 31 1 2 3 4 5

Local intranet



Functionality

Honeywell

- **Notifications**
 - Alerts.
 - Announcements.
 - RSS.
 - Mogelijk om te abonneren op een notificatie.



Functionality

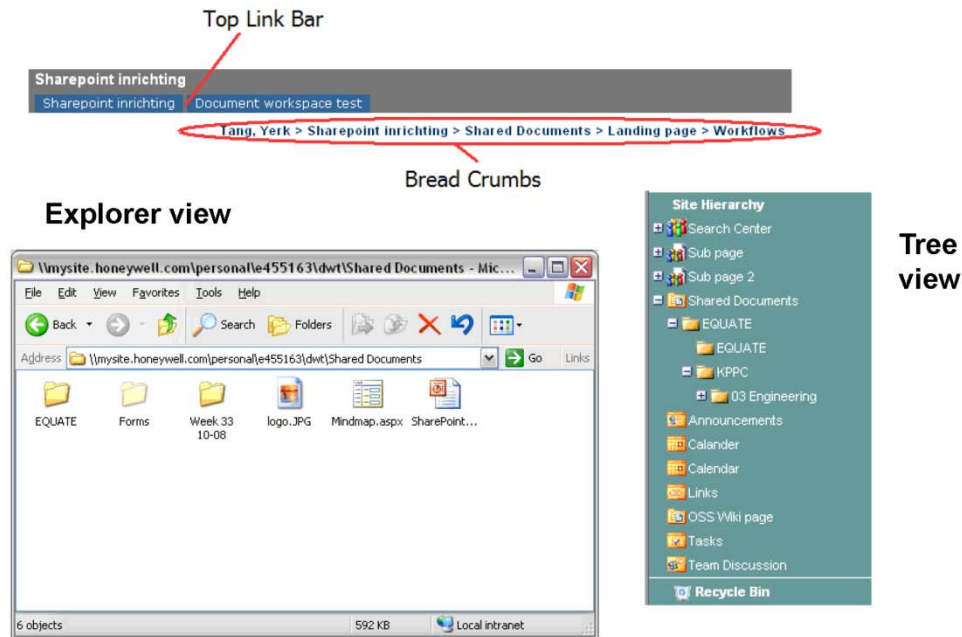
Honeywell

- **Navigation**
 - Top bar links.
 - Quick launch.
 - Tree view.
 - Bread crumbs.
 - Explorer view.
 - Visual navigation.



Functionality

Honeywell





Functionality

Honeywell

Inside Honeywell

The screenshot displays the 'Document workspace test' SharePoint site. The top navigation bar includes links for HOME, COMPENSATION, BENEFITS & CAREER DEVELOPMENT, BUSINESS TOOLS & RESOURCES, FUNCTIONS & ENABLERS, BUSINESS & REGIONAL SITES, and Site Map. The left sidebar contains navigation links for View All Site Content, Documents (Wiki page), Lists (Calendar), Discussions (Team Discussion), Sites (Search Center, Sub page, Sub page 2), and People and Groups (Site Hierarchy, Search Center, Sub page, Sub page 2, Shared Documents, Announcements, Calendar, Links, OSS Wiki page, Tasks, Team Discussion, Recycle Bin). The main content area shows the title 'Tang, Yerk > Document workspace test' and the 'OSS Honeywell' logo. Below the logo, there is an announcement titled 'How to put and use documentation.' by Tang, Yerk, dated 8/26/2009 8:55 AM. The announcement describes a visual representation of project folders structure. A 'Visual folder structure map' is shown, illustrating a hierarchy: KPPC -> Project Document -> EQUATE. To the right of the map is a list of folders: Documentation, Equate Script Storage, Eserver, IDS, IOS, Jan 2008, Licences, November 2007, Purchase, SAT, Sept 2008, Sept Oct 2007, and Siemens Analyser. The right sidebar contains 'Collaboration Websites' (Create, Edit Page, Site Settings) and 'Members' (Online, Hot Online, Groups, Links).



Functionality

Honeywell

- **Workflow**
 - Review.
 - Approval.
 - Custom made.



Functionality

Honeywell

- **Tasks**
 - **Project tasks.**
 - ♦ Behoort tot een project.
 - **Work tasks.**
 - ♦ Behoort tot een project lid.
 - **Tasks updates via emails of site.**
 - **Weergave van de uitgevoerde taken in %.**
 - **Aanpassing mogelijkheden voor taken.**



Functionality

Honeywell

Inside **Honeywell**

HOME COMPENSATION, BENEFITS & CAREER DEVELOPMENT BUSINESS TOOLS & RESOURCES FUNCTIONS & ENABLERS BUSINESS & REGIONAL SITES Site Map

Sharepoint inrichting Collaboration Websites
Sharepoint inrichting Document workspace test Site Actions

View All Site Content

Documents

- Shared Documents
- Wiki bish

Lists

- Calendar
- Tasks

Discussions

- Team Discussion

Sites

People and Groups

Site Hierarchy

- Shared Documents
- Announcements
- Calendar
- Links
- Tasks
- Wiki bish
- Team Discussion
- Using templates a must?
- Recycle Bin

Tang, Yerk > Sharepoint inrichting > Shared Documents

Shared Documents

Share a document with the team by adding it to this document library.

New Upload Actions Settings View: All Documents

Type	Name	Modified	Modified By
Landing page		8/19/2009 8:44 AM	Tang, Yerk
Web parts test		8/20/2009 6:26 AM	Tang, Yerk

View Properties
Edit Properties
Manage Permissions
Edit in Microsoft Office SharePoint Designer
Delete
Send To
Check Out
Workflows
Alert Me

te Owner: Tang, Yerk | Privacy Notice | Site Owner Policies | This system is not authorized for US Export Restricted Information

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Done Local intranet



Functionality

Honeywell

- **Document versioning**

- Check in.
- Check out.
- Minor versions #.
- Major versions #.
- History.

[Edit Item](#) | [Delete Item](#) | [Manage Permissions](#) | [Check Out](#) | [Version History](#) | [Alert Me](#)

This page does not show changes in Web Parts, images, or HTML formatting.

Modified at 8/26/2009 9:16 AM by Tang, Yerk

Deleted Added

Wiki Content

Welcome to your **OSS Team** wiki library! You can get started

Place your ideas and add content to this page by clicking: [knowledge here.....](#)

Edit: at the top of this page, or you can learn more about wiki libraries by clicking: [How To Use This Wiki Library](#). What is a wiki library? Wikinili means quick in Hawaiian. A wiki library is a document library in which users can easily edit any page. The library grows organically by linking existing pages together or by creating links to new pages. If a user finds a link to an uncreated page, he or she can follow the link and create the page. In business environments, a wiki library provides a low-maintenance way to record knowledge information that is usually traded in e-mail messages, gleaned from hallway conversations, or written on paper can instead be recorded in a wiki library, in context with similar knowledge. Other example uses of wiki libraries include brainstorming ideas, collaborating on designs, creating an instruction guide, gathering data from the field, tracking call-center knowledge, and building an encyclopedia of knowledge.



Functionality

Honeywell

- **Permissions**
 - User permission.
 - Site permission.
 - List library permission.
- **List**
 - Creëren van FAQ.
 - Weergeven van items.
- **Links**
 - Weergeven van hyperlinks
 - Intern
 - Extern
 - Security issues!



Functionality

Honeywell

- **Search**
 - **Apart per site**
 - ♦ Zoeken naar wiki
 - ♦ Zoeken in knowledge base
 - ♦ Zoeken naar een templates
 - ♦ Discussie punten.
 - ♦ FAQ.
 - ♦ Documenten.
 - ♦ Projecten.
 - **Mogelijk d.m.v indexering.**



Afronding

Honeywell

- **Gedurende het project:**
 - **SharePoint configuratie.**
 - **Standards,**
 - **Policies,**
 - **Requirements,**
 - **Processes flow,**
 - **Document flow,**
 - **Extensive software comparison,**
 - **ArchiMate modellen,**



Opmerkingen of vragen

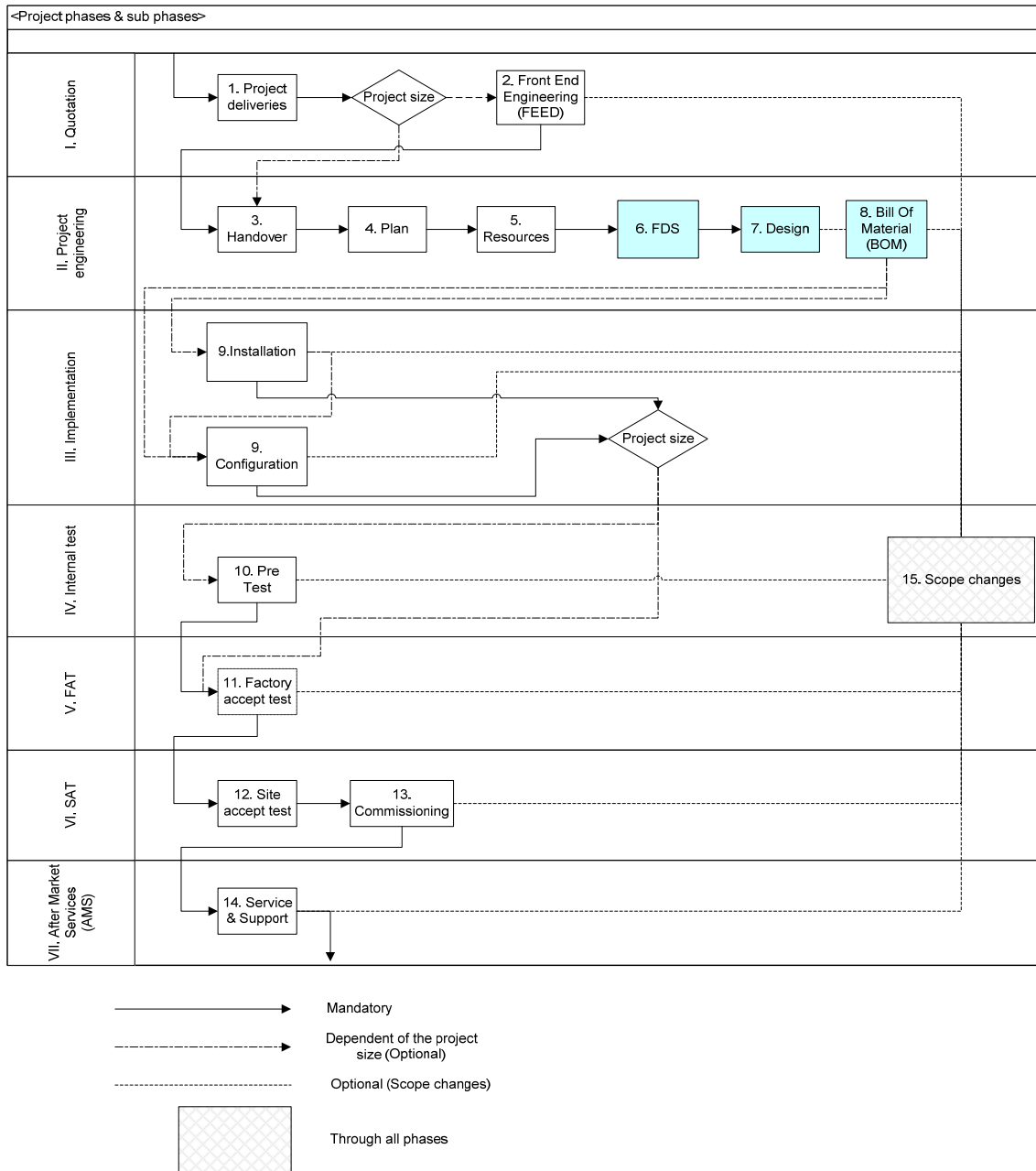
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Appendix G

First round questions.





1. Bent u visueel of tekstueel ingericht?

2. Wat zijn volgens u in het kort de problemen van de fases waaraan u werkt?

- a. Verloopt de overgang van fase naar fase soepel?
- b. Zo nee waarom niet?

3. Wat zijn de meest voorkomende problemen van de taken die u uitvoert?

4. Welke tools gebruikt u voor het uitvoeren van uw taken?



5. Heeft u een voorkeur aan bepaalde tools?

6. Zijn de werktaken en de overdracht duidelijk in elke fase? Voor de fase overgangen zie bijlage. Zo nee waarom niet?

7. Zijn fases II.6, II.7 en II.8 op een logische volgorde?

8. Welke fases en welke mensen zijn afhankelijk van u?



9. Welke gewichten zou u aan de onderstaande elementen willen geven wat voor u belangrijk is bij gebruik van een software? Zijn er andere belangrijke elementen voor u?

Element	Gewicht(OSS Team)*
Kosten	
Functionaliteit	
Flexibiliteit	
Gebruikersgemak	
Aanpasbaarheid	
Support	

* Schaal 1 – 5: (1: onbelangrijk – 5: zeer belangrijk)

10. Wat zou u willen zien veranderen?



11. Heeft u verdere suggesties of mening over een andere onderwerp dat niet aan bod is geweest?



Second round questions

Vragen over de SharePoint presentatie

1. Voldoet de bedachte functionaliteiten van het SharePoint design aan uw eisen?(Schaal1-10)
2. Voldoet het Archimate ontwerp aan de requirements? (Schaal1-10)
3. In hoeverre voldoet de inrichting van SharePoint aan uw verwachtingen. Kunt u dat aangeven doormiddel van een cijfer met als schaal 1-10 (met 1 als slechtste en 10 als beste)?
4. Heeft het bedachte design een toegevoegde waarde op uw dagelijkse werk? (Schaal1-10)
5. Wat verwacht u van SharePoint?
6. Wat is de drempel om tot SharePoint over te gaan?
7. Zou u graag de functionaliteiten willen zien van het online samenwerken in 1 design pagina?
8. Wat ontbreekt er aan ons ontwerp?
9. Zou u SharePoint gebruiken voor alleen als documentatie beheer of als samenwerking platform voor bij een project?
10. Wat vindt u ervan om nu kennis te kunnen delen met behulp van SharePoint ipv emails?
11. Wat vindt u ervan om per pagina een eigenaar toe te delen?
12. Zou u meer vrijheid willen in SharePoint of juist heel strikt voor minder chaos?
13. Is de bedachte SharePoint inrichting bruikbaar? (Schaal1-10)
14. Wat zou een redelijke snelheid (in de zin van gebruikers performance) zijn om SharePoint te blijven gebruiken?