Building a documentation structure for NXP Semiconductors to improve business efficiency

# 

**FONTYS UNIVERSITY OF APPLIED SCIENCES**

**Bachelor ICT & Business**

# Author: Loveline Ntube Mbwoge

# Date: 4th July, 2012

**Company:** NXP Semiconductors



GRADUATION REPORT

FONTYS UNIVERSITY OF APPLIED SCIENCES

HBO-ICT: English Stream

|  |  |
| --- | --- |
| **Data student:** | |
| Family name , initials: | **Loveline Ntube Mbwoge** |
| Student number: | **2136841** |
| project period: (from – till) | **April 2012 – August 2012** |
| **Data company:** | |
| Name company/institution: | **NXP Semiconductors** |
| Department: | **Business processes and Applications (IT)** |
| Address: | **High Tech Campus 60, 5656 AG Eindhoven NL** |
| **Company tutor:** | |
| Family name, initials: | **Mr. Hans Cremers** |
| Position: | **Solution Architect** |
| University tutor: | |
| Family name , initials: | **Mr. Paul Lahaije** |
| **Final report:** | |
| Title: | **Building a documentation structure for NXP Semiconductors to improve business efficiency** |
| Date: | **4th July, 2012** |

Approved and signed by the company tutor:

Date:

Signature: Preface

This project is one of the last stages of my programme of study at the Fontys University of Applied Sciences, Eindhoven. I am working at the NXP Semiconductors, Eindhoven the Netherlands. My assignment is on making a documentation structure for the consultants and end users of the SAP supported processes of NXP Semiconductors.

This report is intended for my school teacher who will grade it at the end of the project. And also for my company supervisor who will use it as a guide to make a documentation structure in the manner I have selected and recommended for the company.

I will like to acknowledge all of my teachers at Fontys University. They have been very supportive and helpful throughout my study and especially during this project.

I like to give special thanks to my school teacher Mr. Paul Lahaije and my company supervisor, Mr. Hans Cremers who tirelessly coached me and followed me up with expert advice. Mr. Cremers has been involved in the technical issues of methodologies and quality standards of this project. I am equally indebted to Mr. Marc de Haan and Mr. Peter de Bruijn, the solution managers of BP & A, who have relentlessly given me their full collaboration and shared their expertise and advice with me.

I like to express my gratitude to all stakeholders, especially the team leaders who spent their time doing all the interviews and playing the proof of concept game of this project. Their enthusiasm and desire to get a good documentation structure for the organization gave me a boost to carry out this project. I was so very happy to work with people who know how important documents are in their everyday working life.

Most importantly, I thank God Almighty who gave me strength each day for this project. I am grateful to my classmates and other friends in school; not forgetting my church families who have been helpful. I am grateful to my family members especially Mrs. Naomi Epule, Mrs. Agnes Diffang and Ma Otilea Mejang, who have been a strong backbone to my success in this programme.

Thank you all,

LOVELINE

# Executive summary

Documentation is the bed rock of any organization. It is the place where everyone runs for information and firsthand knowledge of any company. Making and arranging documents in a logical and easy to use manner increases the stability of work and performance of the people. Good documentation structures increase value in an organization as they give a clear starting point to new employees. It cuts time wasting in search for documents as that is just as frustrating as trying to understand the work itself.

The strength of any organization depends on the quality of its people and its current business environment. People depend on each other to achieve the team’s goals and subsequently the organizations. This project was done at the NXP Semiconductors; a company which makes microchips used in phones, radio, television, etc. It has an IT support unit where BP & A solution team belongs. BP & A solution team has two teams SCM and BSP; which support end users (1st line support) who work with SAP applications. The SCM and BSP teams have different working styles and were moving towards a unified work system with its IT and business processes. As the teams were merging the documents were still apart. This led to documentation missing and duplication of efforts as they redid what could not be found. This was a setback as the BP & A solution team lost time and money in the process because projects and documents were recreated.

Embarking on a documentation structure project was a bright idea taken by BP & A solution team to revamp and unify its documentation. A new secure and quick to respond to services documentation structure will give BP & A, a competitive edge in its work domain. Because working with the new documentation structure will improve effectiveness of work to attain the high quality standards and products as it is the tradition of NXP Semiconductors [4]. This will give the managers (users) important and critical information when needed in making strategic decision in the company for competitive advantage. With documentation trust and transparency is built not only among the teams but also with the customers as they will be able to find whatever document they need.

This project assignment is to design a documentation structure that will bridge the way of working between the SCM and BSP teams and the business processes which they support. To get a clear view of the problems they face, a problem analysis was made from meetings, discussions, interviews and questionnaires which were sent to the stakeholders (SCM, BSP and 1st line support). These activities were able to bring out the untapped knowledge from these stakeholders which helped to shape the scope of this project. The structure was built as the stakeholders shared ideas and brain stormed to make sure the documentation structure reflects the standards of NXP Semiconductors’ products.

A new design of the documentation structure is made of a three layered information model which can be used by all stakeholders. The structure will be filled with categorized documents and their attributes. BP & A solution team has already started implementing this modeled structure. This project brought the teams closer as they shared knowledge and information in their working environment.

# Abbreviations, acronyms and definitions

|  |  |
| --- | --- |
| ACCB | Application Change Control Board. BP & A solution team change management board |
| BizAgi | Business process management software (bpm software). It is used to diagram and document processes using the [Business Process Modeling Notation (BPMN)](http://en.wikipedia.org/wiki/Business_Process_Modeling_Notation) standard notation. |
| BP & A | Business processes and applications |
| BSP | Business support processes solution team |
| COF | Commercial order fulfillment team of SCM |
| ENOVIA | Enovia Matrix one is a product life cycle management tool. It is a information management system provides flexibility to organize information according to our projects , product or business model |
| FICO | Finance and controlling team of BSP |
| FIRE | Forms interfaces reports and enhancements |
| IOF | Industrial order and fulfillment team of SCM |
| IT | Information and technology |
| ITIL | The Information Technology Infrastructure Library |
| SAP | Systems Applications and Products |
| SAP CLASS | The CLASS (Competitive Lasting Advantage through Superior Service) SAP |
| SAP SPEED | The SPEED (Superior Production Execution through ERP Deployment) SAP |
| SCM | Supply chain and manufacture solution team |
| S-drive | Local network shared drive |
| Search engines | Search engines are a class of programs that search documents for specified keywords and return a list of the documents where the keywords were found. It is often used to describe systems like Google, Bing and Yahoo which enable users to search for documents on the world wide web |
| Semaphores | Used in programming operating systems, it is a technique for coordinating or synchronizing activities where there are multiple processes competing for the same resources |
| SHAREPOINT | SharePoint is a web-based intranet that can help improve your organization’s effectiveness by streamlining the management of and access to data |
| SNC | Service now.com |
| SOA | Service oriented architecture |
| TCS | TATA Consultancy services |
| WIKI | Wiki is a piece of server software that allows users to freely create and edit Web page content using any Web browser |

# Table of content

|  |
| --- |
| chapter 1 Introduction--------------------------------------------------------------------------9 |
| 1.1 Project Company--------------------------------------------------------------------------9 |
| 1.2 Problem statement------------------------------------------------------------------------9 |
| 1.3 Project assignment-------------------------------------------------------------------------10 |
| 1.4 Project activities ----------------------------------------------------------------------------10 |
| 1.5 Structure of report ------------------------------------------------------------------------11 |
|  |
| Chapter 2 The Company -------------------------------------------------------------------------------12 |
| 2.1 company background ------------------------------------------------------------------------------12 |
| 2.2 The organizational structure ------------------------------------------------------------12 |
| 2.3 Organizational chart --------------------------------------------------------------------------------13 |
| Chapter 3 The assignment (problem statement) ------------------------------------------------15 |
| 3.1 In scope and out of scope ----------------------------------------------------------------15 |
| 3.2 The problem (current situation) --------------------------------------------------------15 |
| 3.3 Goals and objectives -----------------------------------------------------------------------15 |
| 3.4 Expected results ---------------------------------------------------------------------------------------16 |
| Chapter 4 The methodology----------------------------------------------------------------------------16 |
| 4.1 information gathering and networking ----------------------------------------------------------16 |
| 4.2 tools used -----------------------------------------------------------------------------------------------17 |
| 4.3 prioritizing requirements ------------------------------------------------------------------17 |
| 4.4 matching requirements to business process ----------------------------------------------------18 |
| Chapter 5 Research and orientation phases ---------------------------------------------------------18 |
| 5.1 Company Orientation ------------------------------------------------------------------------18 |
| 5.2 Research methods -----------------------------------------------------------------------------19 |
| 5.3 Research analysis -------------------------------------------------------------------------------19 |
| 5.4 Research results ---------------------------------------------------------------------------------19 |
| Chapter 6 The AS-IS (Current) situation phase ---------------------------------------------------------20 |
| 6.1 Document creation ----------------------------------------------------------------------------------------20 |
| 6.2 Types of documents created by various Project teams and their storage locations -------22 |
| 6.3 Problem analysis --------------------------------------------------------------------------------------------22 |
| 6.4 The effect of documentation problems -----------------------------------------25 |
| Chapter 7 The To-Be phase -----------------------------------------------------------------------------------27 |
| 7.1 Initiating the change to make the new structure ------------------------------28 |
| 7.1.1 Categorization ----------------------------------------------------------------------------28 |
| 7.1.2 updating-----------------------------------------------------------------------------------31 |
| 7.1.3 Storing documents----------------------------------------------------------------------31 |
| 7.1.4 team participation-----------------------------------------------------------------------32 |
| 7.2 The proposed design documentation structure-----------------------------------------------33 |
| 7.2.1 Designing the document structure---------------------------------------------------33 |
| 7.2.2 Using the document structure---------------------------------------------------------35 |
| 7.2.3 How document structure aligns with business application---------------------37 |
| Chapter 8 The Implementation phase-------------------------------------------------------------------40 |
| 8.1 Implementation issues------------------------------------------------------------------------40 |
| 8.1.1 Documentation directory or index---------------------------------------------41 |
| 8.1.2 There was a need to check version control of documents----------------41 |
| 8.1.3 Document Security------------------------------------------------------------------41 |
| 8.1.4 Motivate people----------------------------------------------------------------------41 |
| 8.2 Documentation management--------------------------------------------------------41 |
| 8.2.1 The role of a manager----------------------------------------------------------------42 |
| 8.2.2 The process of storing documents-------------------------------------------------42 |
| 8.3 Proof of concept ----------------------------------------------------------------------------------------------43 |
| Chapter 9 Conclusion -------------------------- -----------------------------------------------------------------44 |
| Recommendations -------------------------------------------------------------------------------------------------45 |
| Evaluation ------------------------------------------------------------------------------------------------------------45 |
| future of documentation structure -----------------------------------------------------------------------------47 |
| References ------------------------------------------------------------------------------------------------------------49 |
| Appendix -------------------------------------------------------------------------------------------------------------51 |
| 1. Appendix A - The project plan ------------------------------------------------------------------------ 51 |
| 1. Appendix B- The Project requirements --------------------------------------------------------------73 |
| 1. Appendix C – How IT supports business processes -----------------------------------------------75 |
| 1. Appendix D- Document with many business processes and applications -------------------76 |

# List of figures

Figure 1 Organizational structure of BP & A Solution team ------------------------------- 14

Figure 2 The process of document creation ----------------------------------------------------- 21

Figure 3 Problem analysis (cause and effect) diagram ------------------------------ ----23

Figure 4 Extended problem analysis (cause and effect) diagram -------------------------24

Figure 5 Hierarchical documentation categorization -------------------------------------------30

Figure 6 Storing documents ------------------------------------------------------------------------ --32

Figure 7 The documentation (information) model -------------------------------------------------35

Figure 8 The three layered documentation structure model -------------------------------- 37

Figure 9 Documentation structure uniting ways of working--------------------------------------38

# List of tables

Table 1 - Types of documents produced by various Project teams and their locations ---------22

Table 2 - Compare old document ways to new document structure -----------------------------------39

# Chapter 1

# Introduction

Documentation structures are becoming increasingly more critical to the daily operation of organizations. The purpose of a documentation structure is to empower the knowledge workers with information that allows them to make decisions based on solid foundation of facts and to learn from implementation experiences. And in the light of this modify the strategy and ultimately the policy of a program or organization.

Documentation structures help in creating systematic information which articulates the strategies and develops the flow of a program. It helps an organization in finding out more about the needed field intervention methods such as coordination, management, financial and human resource development policies.

## 1.1 Project Company

The NXP Semiconductors is a leader in High Performance Mixed Signal product solutions which seek to achieve leading market shares in the mainstream markets. Its competences and assets are; deep technical expertise in Analog/Mixed signal, High-voltage and security and manufacturing process technology [5]. Its IT support unit consists of teams including the BP & A solution team. BP & A solution team is made of teams which include SCM and BSP teams which support people using SAP applications. (More information on the company can be found in chapter 2 of this report).

## 1.2 Problem statement

The two teams (SCM and BSP) work with same kind of documents but in different styles. The teams have many share folders and it is difficult for one team to find documents which were created by another team. Documents are scattered in many locations of the organization, because different projects documents are created and the teams do not know about it, they tend to recreate them again. They do not have a common way of bringing these documents together because the teams work in isolation in trying to solve the same problem.

BP & A solution team is trying to merge the work styles of the SCM and BSP teams. This can be viewed as an organizational change which is focused on tasks and considers the clear characteristics such as the organization structure, role definitions and deliverables. It also looks on stakeholders’ interests, power, influence and the history that individuals use to shape perspectives and make judgments.

## 1.3 Project assignment

The project assignment is to make a documentation structure which will merge working styles, the stakeholders needed to be involved from its inception. In order to establish globally effective processes the teams have to share a common understanding of the stated documentation structure. The documentation structure will help them to understand the roles and responsibilities of IT, 1st line support, and the implications it may have on the organization.

The assignment was done by asking stakeholders questions and interviews on what problems they had with documentation especially in the process of retrieving. The stakeholders’ responses, interest, power and influence as well as their stories were used to shape perspective and make judgments. The design documentation model was an effort from the stakeholders’ participation in the discussions, meetings and interviews, and documents which provided best practices for documentation structures [10]. Documentation is good but it has to be implanted in the minds of people. It was therefore imperative to get the teams and 1st line support (stakeholders) interested and invested in the new documentation structure. This was done by involving them in the project from its beginning. Because then they will not be able to resent it since they will be the main contributors to its building or creation.

## 1.4 Project activities

This project is divided into five phases because it is considered as a life cycle of a document. It begins with getting knowledge of the company, making research and understanding the problem; before delving into finding ways to sort the problem. The phases are; the orientation and research phase, the current situation (AS-IS), the TO-BE situation phase, the implementation phase and the final phase.

Most of the activities were done in parallel to one another. Although the project has phases, working in parallel gives the project enough time to plan ahead for next phase and activities. In this project, each phase had to be completed and signed off by its stakeholders before the next phase. A prince 2 methodology was used to draw up the project plan which helped in making mile stones. These mile stones helped in ensuring that deadlines were met and project phases were discussed in retrospect and forward looking in the future on what has to be done. This ensures that the plans are discussed well before the execution is done. Which makes it possible to do things right the first time. It is an interesting way to work as it gives a lot of learning and growing opportunity to the project leader.

The document structure will contain all documents created by BP & A solution team and the business processes which they support. Making such a structure for NXP Semiconductors which believes and produces high quality products is an uphill task because the structure has to reflect not only BP & A solution team but also the NXP Semiconductors high standards. The new documentation structure will not only be for creating, storing, organizing and disseminating information but also the knowledge of the organization. To ensure that this is in effect, there will be a set of rules or principles which will be followed in the different documentation development stages. The final documentation structure; a three layered documentation model was designed and it is already being implemented by the BP & A solution team.

## 1.5 Structure of report

This report is made up of nine chapters including a conclusion and recommendations. Chapter 1 is the introduction of the documentation project. Chapter 2 gives a background of the company. What it does and how its activities affect the business world. Chapter 3 gives an insight of the assignment statement; with a description of the problems which the teams faced in documentation. Chapter 4 will give you the methodology used in making the assignment. It includes a plan and path which was taken to get the desired results.

Continuing with the report structure; Chapter 5 talks about the research and orientation phase with more emphasis on how and what research methods were used to carry out the project. Chapter 6 describes the current situation of documentation and the problems which the BP & A solution team face. Chapter 7 gives a view of the To-Be phase, what the documentation project wants to achieve. Chapter 8 the implementation phase gives a glimpse of how to manage the structure and a test of the structure. Chapter 9 is the conclusion which is a flashback views the results in accordance with the project goals. Finally the recommendations made to the BP & A solution team and evaluation of the project.

At the beginning of this project, the teams SCM and BSP were two separate teams but before the end of the project, the teams were merged to form a single team called supply chain, finance and purchase team. This new team is still a part of the BP & A solution team of IT support unit of NXP Semiconductors. This project discovered that only a fraction of the needed information in documents exists on computers as most of it is in the minds of the people.

# Chapter 2

# The Company

## 2.1 company background

NXP Semiconductors was founded by Philips as a Product division of the overall Philips group. It is a listed company on the NASDAQ Stock Exchange in New York with the symbol NXPI. It is a global semiconductor company and a long-standing supplier in the industry. It has and is a long-standing supplier in the industry. It has about 24500 employees and operations in more than 25 countries around the world. It is a global semiconductor company with posted revenue of 4.2 billion US dollars in 2011.

The company has eleven manufacturing sites worldwide and six test and assembly sites in Bangkok in Thailand, Cabuyao in the Philippines, Guangdong in China, Hong Kong, Kaohsiung in Taiwan and Seremban in Malaysia [5], [7]. It provides leading High Performance Mixed Signal and Standard Product solutions that leverage the deep application insight and of technology and manufacturing expertise in RF, analog, power management, interface, security and digital processing products. Their product solutions which is also its key application areas are used in a wide range of automotive, identification, wireless infrastructure, lighting, industrial, mobile, consumer and computing applications [6].

More than 30,000 customers are served by NXP Semiconductors through their distribution partners. Some of their customers are Apple, Bosch, Continental, Delphi, Giesecke/Devrient, Harman/Becker, Huawei, Nokia, Samsung and ZTE, Ericsson, Siemens, BMW cars, HP, Sony, etc. NXP Semiconductors values its customers and partners and align roadmaps and future plans through its strong key-account relationships [5].

The vision of NXP Semiconductors is to become recognized by its customers for its leadership in High Performance Mixed Signal and its Customer focused passion to win. It also enables its customers, such as design engineers to rapidly and cost-efficiently develop highly competitive products in ever faster changing end applications markets. The Mission of NXP Semiconductors information technology (IT) is to provide cost effective IT solutions that are a key enabler to reach the goals of NXP Semiconductors and to be a flexible and efficient IT organization, and a valued partner of the business [5].

## 2.2 The company organizational structure

NXP Semiconductors has three main units: the business unit, the core processes unit and the support process owners unit.

1. Business unit – which are responsible to achieve business results
2. Core processes – which build the core competencies and leverage the most effective ways of working to achieve their business goals from product creation, demand generation, integral supply chain management to sales realization.
3. Support process owner - which provide leadership in the areas like human resources, finance and accounting, Purchasing, information technology (IT), Quality, Legal, Communications, etc.

Because this organization (NXP Semiconductors) is very large, the company description will be narrowed down to the section where this project was carried out. This project was done in Business Processes & Applications (BP & A) solution team. BP & A solution team is part of the NXP Semiconductors Information Technology organization and is responsible for the initiation, development, operation and maintenance of all NXP Semiconductors company-wide business applications and services.  BP & A solution team’s mission is to deliver high quality IT services based on agreed service levels at competitive cost-levels by means of aligned and standardized processes [7].

The BP & A solution teams are responsible for the delivery of all business application support to the customers. It provides cost effective, business specific IT solutions that are a key enabler to NXP Semiconductors’ business success. Its high quality IT services is reflected in the IT systems supporting in business processes. It has high availability of systems, especially for the systems directly related to production, planning and logistics processes. It is quick to respond to failures and incidents and communicates changes, maintenance windows and resolution of incidents. The BP & A solution team is divided into five solution teams. The Supply chain and manufacture solution team (SCM) and Business support processes solution team (BSP) teams where this work was done are part of the BP & A solution teams. Each of these teams is subdivided into other teams.

The BP&A solution team have a challenge of reducing costs where possible without compromising the quality of service. This is based on aligning and standardizing the operational ITIL processes within BP & A. In order to have more efficient processes in place there is an improved demand management; which fine-tunes the supply of resources with the demand of resources. It achieves this by using the aligned and standardized processes of the operational ITIL (Information Technology Infrastructure Library). The operational ITIL processes are: Incident Management, Problem Management, Change Management, Release Management, and Configuration Management. They are supported by the use of a Service Desk tool called Service-Now [5], [6].

## 2.3 Organizational chart

At the beginning of this project the two teams SCM and BSP were separate teams. Before the end of the project, the teams did not only merge working styles they were also merged to form one team called supply chain, finance and purchasing (SCFP) [4]. The organizational chart in figure 1 shows the new merged team. The organizational chart of the teams SCM and BSP before they were merged is in the project plan, which is in Appendix A of this report.



Figure 1: Organizational structure after the merge [6]

# Chapter 3

# The Assignment Overview

The assignment is to design a documentation structure and describe a way of working within the SCM and BSP domain of BP & A solution team and its users (1st line support).

## 3.1 In scope and out of scope

The scope of the project is to design or make a detailed documentation structure which will describe the current way of working as well as changes to the various business applications within the SCM and BSP domain. The following are out of scope; there will be no tool and no software application will be created from this assignment. There will be no staff training and no deployment.

## 3.2 The problem (current situation)

The SCM and BSP teams support people who work with Systems Applications and Products (SAP) systems; the SAP CLASS and the SAP SPEED systems [6]. Presently it is complex because not only are the documents going through a transition of harmonization but the teams are also merging their work styles. For example people from different teams are working together such as finance and controlling (FICO) team of BSP and the industrial order and fulfillment (IOF) team of SCM; now consists of people who used to support the SAP SPEED as well as people who used to support SAP CLASS systems [6].

The teams SCM and BSP are merging with different ways of working, they do not tend to understand and transmit information in ways that are compatible with one another. The teams need to continually hold the communication of the two working ways together. They work with the same kind of documents but each team cannot access the other’s documents as they approach them from different angles.

## 3.3 Goals and objectives

To create a documentation structure which will integrate the SAP CLASS and SAP SPEED systems into a one united system with a combined set of processes and structure. This new structure will incorporate a way of working in classifying, identifying, appellation, storage and retrieval of documents.

BP & A solution team wants a documentation structure that will help them to work in a unified manner. A documentation structure where they can share ideas, communicate work styles and learn from each other. Documentation structure in which documents can be accessed, shared easily, in order to serve and address their common purpose.

## 3.4 Expected results

The project will work with documents from the SCM and BSP teams to design a documentation structure for BP & A solution team that will help to safe guard IT knowledge of the company. Because the requirements will come from the stakeholders, aspects of the existing documentation will be reused. This will ensure that both teams will use documents and make changes such as updates and new versions which the other teams can easily identify and work with. The documentation structure will be a source of BP & A solution team knowledge and information which will help them in making strategic decisions. The documentation structure will guide BP & A solution team into its new work structure as each team member and end user will have to understand the new systems they are working with. The designed documentation structure will be re-usable, flexible and sustainable.

# Chapter 4

# Methodologies

A project plan was made to describe and define the assignment including its phases. The Prince 2 methodology was used in planning this project. Prince 2 methodology is used by the IT consultants of NXP Semiconductors [6]. It was used to make a project plan as it gives an opportunity to use mile stones. The mile stones ensure that the project progress of the project is monitored and it keeps the project on check with meeting up deadlines. It was interesting to use this methodology as it makes both stakeholders and project leader to be active in making sure that the deliverables are not only on time but also up to standard. It provides a way of stakeholders to check the quality of deliverables and to sign off all phases of the project. Therefore at each mile stone, the progress of the project is reported to the stakeholders and what will be done in the future is discussed (next mile stone). This method created an interaction between the project and the stakeholders.

## 4.1 Information gathering and networking

For such a project which cuts across an organization to succeed, it needs the participation of many people. For this to happen, the stakeholders of this project were involved from its beginning. Diverse ways were used to gather information for this project. There were discussions, interviews, teleconferencing and questionnaires. In the beginning questionnaires were sent out to all stakeholders. The stakeholders responded to the questions and the answers needed more explanations thereby leading to interviews with specific stakeholders who were leaders in their various domains. In the interviews, open questions were asked whose answers opened doors for more questions so that the interview is lively, in perspective and on focus.

When these interviews were done, written notes were made. These notes were then modified in words of the project and sent to stakeholders to receive their feedback if some points from the interview were left out or not well understood. They sent in their comments. From these comments other discussion topics arose which were discussed in large meetings with many stakeholders. There was also teleconferencing with stakeholders outside the location of this project. In each of these activities the topics of discussions plaguing the project phase at the time were discussed. These activities were also used as a way to motivate stakeholders to be interested in the new documentation structure. This is because they will be the ones to use the documentation structure which will be made from this project.

## 4.2 Tools used

BP & A solution team did not request any specific tools to be used. Documentation tools were used for this project. Microsoft Visio was used in making Data Flow Diagrams (DFD), flow charts; Microsoft power point was used to make slides presentations describing the different stages and phases of the project to the stakeholders. Microsoft Excel spread sheets were used to make lists of documents created by the IT consultants and their locations. Gantt charts were made to map time line and mile stones of the project schedule. Telephones, the internet were used for teleconferencing. Library classification tools were also used to make judgements on the various categorizations. And BizAgi was used in drawing business process diagrams such as document life cycle from creation to storage to retrieval. The project gave room for personal judgements and initiatives of the project leader to bring the right documentation structure to BP & A solution team.

## 4.3 Prioritizing requirements

Getting requirements from the stakeholders through the meetings, discussions interviews and teleconferencing was interesting as this project noticed that end users and IT had two different sides of documentation. To bring out requirements that will satisfy the needs of all the stakeholders was a task of personal judgements and shared experience from the stakeholders. The requirements were divided using the MOSCOW prioritization technique [3], [13]. This is usually used in software development to reach a common understanding on the importance that is placed on each requirement. This project thought it beneficial for the stakeholders to know the important features they will see in the new documentation structure.

* **M** - MUST: Describes a high-priority requirement that must be satisfied in the documentation structure for it to be a success.
* **S** - SHOULD: Represents a requirement that should be included in the documentation structure if it is possible. This is often a critical requirement but one which can be satisfied in other ways if strictly necessary.
* **C** - COULD: Describes a requirement which is considered desirable but not very necessary. This will be included if time and resources permit.
* **W** - WOULD: Represents a luxury requirement that stakeholders may have agreed would be implemented in the future.

Making this MoSoCoW analysis gave the project an idea on how to prioritize the design documentation structure with all its desired features. It was difficult to get requirements that were not essential parts of the documentation structure as essential (the MUST) were given top priority. The MoSCoW technique analysis was used to sort out what was very important and what could wait for the future. (There is a list of all the requirements for this project at the Appendix –B of this report).

## 4.4 Matching requirements to business processes

An aspect of the service oriented architecture (SOA) was used to match documentation requirements with IT processes in accordance with the business processes they support. This was to ensure that the new document structure meets the standard expectation of its stakeholders. In building the documentation model knowledge on, the filing systems, library tools such as (categorization) classification, references, document presentations and management systems were also applied [3], [12].

# Chapter 5

# The Research and Orientation Phase

## 5.1 Company Orientation

A quest for knowledge of the company was done including what they represent in the business world. At the same time looking at the cause of the documentation problem. This was done by asking stakeholders what they thought was the problem and how and why they have come to this point. A study of the different document systems of BP & A solution team; the SAP CLASS and SAP SPEED was done [6]. The stakeholders shared their experiences on how the documentation has been a hassle. Most of the meetings enlightened and gave an understanding of their struggles with documentation and their expectations of the new documentation structure.

## 5.2 Research methods

Different methods of research were used to gather information for this assignment. It began with desktop research which included reading documents from the internet and the NXP Semiconductors intranet and books which talk about documentation and filing systems. [3], [4], [7], [10] and [12]. These documents and publications gave an insight on making a documentation structure using best practices in documentation which will meet the users’ expectations.

Interactive methods were used to gather information; discussions, questionnaires, brain storming sessions, teleconferencing and interviews were done with project stakeholders (the various steps taken in this process are explained in chapter 4 - the methodology). The project asked questions that would make the documentation structure more useful for its purpose which is to bring the working styles of the teams and end users together. This was to find problems that have existed and causes of the problems. The stakeholders were also asked to give their opinion on what and how they think the problems can be fixed. It was interesting to see that each stakeholder’s approach was different. They expressed their need for documentation structure from their perspective or area of work. These activities helped to increase networking as various stakeholders shared their experiences. It also increased the communication between stakeholders as they tried to understand what each other was engaged in. And as the project progressed more brain storming sessions, interviews and teleconferencing were done till the end of the project to ensure that the project is in order and the stakeholders are receiving what they want.

## 5.3 Research analysis

It was also important to critically analyze each stakeholder’s idea and put in a way that will match requirements of the project. This was a skill which had to be developed and it increased throughout the project. Bringing divers ideas into perspective of the project was a task which this project had to handle with care. To make sure that the bounds of the project are maintained. It was important to put ideas and thoughts together and carefully consider which ones meet the scope and which do not. Anything which was out of the project’s scope was carefully noted and communicated to the stakeholders. The project tried to stay on focus with ideas which were in relation to business processes supported by BP & A solution team and the documentation structure requirements. This exercise helped to increase writing, communication and presentation skills of the project leader as it was necessary to present findings to stakeholders.

## 5.4 Research results

The research identified project stakeholders and brought together the project requirements. Discussions with stakeholders brought out the conflicting ideas and the various objectives of the project. The objectives and conflicting ideas were spotted and clearly dealt with at the beginning of the project. Because designing a documentation structure is a broad subject, it was important to bring only the important aspects that were useful in its design. The research showed the different business processes which are supported by the teams. It helped SCM and BSP teams to communicate more as they shared their opinions, experiences and ideas with each other in the discussions.

**Documents which were made during this phase are:**

1. Project plan – a copy is at the appendix of this report
2. Questionnaire to stakeholders

# Chapter 6

# As-Is (Current situation) Phase

This chapter will give a description of the current situation of documentation within the BP & A solution team of NXP Semiconductors. It will give the process of creating, storing and retrieving documents, the problems which the teams encounter with the documentation.

## 6.1 Document creation

The process of creating documents begins by either a project or change requests. Most project documents are stored in project folders and distributed to project teams. At moment change requests documents are stored by an IT support operation service called service now.com (SNC). But the changed documents (which become new versions) are stored by IT on the local network shared drive. It might be good for IT to keep the change requests because it will preserve the history of a document. The change requests will enable users to follow up how the changes progressed from the original to the present state. Even when the document has been changed a lot and a new one is to be made in its place, it will be easy to recreate. Figure 2 shows the stages of document creation.



Figure 2: The process of document creation

The created documents were not categorized unanimously because some teams have good names which reflected the subject of the document others do not. Documents were arranged on the local network drive by their numbers. But there was no formal way to know which document deals with what specific business process or subject. To find a document the user needs to know the number of the document. This made the search for document a hurdle because someone will need to go through all the files to get the needed document. This was one of the dilemmas which frustrated the consultants’ and end users quest to search for documents. For example use cases where; the SCM team has a blue print document which can help the BSP team in their work process. The BSP requests for that blue print from the SCM team, the SCM will not be able to find the blue print requested. Why does this happen?

* The document is known by another name in BSP and the SCM calls it a different name.
* At creation the location of the document was not properly kept. To find the particular document they have to search everywhere.
* The currency of the document. Documents created when the local network drive was introduced are stored in the drive but those which have had a longer life cycle are difficult to trace.

## 6.2 Types of documents created by various Project teams and their storage locations

The table 1 shows the different documents produced by the IT and the different areas (locations) where they have been stored. Most of these documents are stored and shared by the teams which produced them. Table 1 illustrates the fact that tracing documents is not easy. Because when documents are created they are stored haphazardly without proper document attributes or policies followed. It becomes difficult after a while to know a document’s specific location.

|  |  |  |  |
| --- | --- | --- | --- |
| project team | document type | kind of document produced | location i.e. storage |
|  |  |  |  |
| architect | feasibility study | slide sets | SharePoint/s-drive |
| project team/ architect | conceptual design | slide sets | share point/ s-drive |
| project team/ architect | blue prints:- |  |  |
|  | business processes | text documents | assorted locations |
|  | IT business processes | text documents | s-drive |
| project/ functional team | business scenarios | text documents/ spread sheets | s- drive / FIRE |
| technical team | functional design & logical units | text document | s-drive/FIRE |
| technical team | technical design | text documents | s-drive/FIRE |
| functional team | test plans | text document | s-drive |
| functional team | test results | text document | s-drive |
| 1st line support | user acceptance test | text document | s-drive / project directory |
| functional team | RAFT document/ regression plans | text document | s-drive/ project directory/ various folders |
| functional team | Basic training materials | text documents/ slide sets | s-drive/ project directory/ various folders |
| 1st line support | procedure documents | text document | s-drive/ project directory/ various folders |

Table 1: Types of documents produced by various Project teams and their locations [1]

## 6.3 Problem analysis

Discussions and interviews with stakeholders showed that documentation problems did not only stem up from one end but where spread throughout the BP & A solution team and end users. For this project to know the root cause of the problem, a problem analysis using a causes and effects (Ishikawa) diagram, figure 3 was made [10]. The Ishikawa diagram gave a picture of the major causes of the documentation problems which BP & A solution team and its users face [9].

The major problem of not being able to retrieve a document was viewed from the policies, the teams, the procedure set by BP & A solution team and organizations using the documents. The Ishikawa diagram questioned each of these areas to see the problems they faced. Apparently, most of the areas had the same causes as shown in figure 3. A guide through the cause and effect diagram (figure 3) shows that documents are not easy to find because from the policies there are no guiding rules, many shared folders, team members cannot access documents from other teams. There were many projects with different styles of handling documentation. This was also true for the procedures. For plant and people there were issues of training, people not being motivated to use documentation, many site locations, misinformation and missing documents due to document migration Discussions and brain storming sessions were held to find out why this occurred.



Figure 3: problem analysis (cause and effect) diagram

Then a further analysis of the diagram was made to narrow down the root causes the problem. This was done so that a Pareto analyses can be used to determine the major causes of the problem. Pareto analyses states that an 80% of problems in document retrieval came from 20% of the possible causes of the problems [10]. This implies that if the 20% possible causes are fixed then most of the problems will be solved. The analysis showed recurrent causes from all the levels of the fishbone structure (figure 4). These were highlighted with different colours; green, red, yellow and blue to show that they have to be addressed with urgency because they are the 20% cause of the documentation problem. The results from the analysis stimulated more discussions and brain storming sessions as thoughts about the problems were brought to limelight.



Figure 4: Extended Problem analysis (cause and effect) diagram

**The major causes of documentation problem from the Ishikawa diagram and Pareto analysis** **are:**

1. IT has many projects and each project has its way of doing documentation. There was no specified way to keep or handle documents after a project.
2. Projects and teams have many shared folders and documents are scattered in different locations.
3. There was no unified documentation management system as each team created and stored its documents.
4. There was no proper way to keep store documents, since the teams did not work together; each had its way of storing and sharing its documents.
5. There were missing documents with no links to trace them; due to documents moving from one location to the other in an attempt to bring them together.

## 6.4 The effects of documentation problems are:

This section deals with the causes or reasons why documentation problem exists and its consequence on the BP & A solution team. This project realized that the stakeholders were focusing on the causes and did not know the effects it has on the business. To get stakeholders motivated to understand the effects of the problems; the results of the cause and effect diagram were discussed. The project aligned the consequences for the teams to see what and how documentation problems affect not only is their work but the business as well. This was a wake up for most people did not know what impact documentation problems had on the business.

1. There are many projects; and each project has its way of doing documentation. There was no specified way to keep or handle documents after a project has been done. During and after a project there is no record of all stored documents in a particular location. After a while documents and file locations become cumbersome and impossible to keep track of documents. This results to a decrease throughput because not being able to find the right documents for work increases effort time. The delay makes work to pile up as work in progress for a longer period of time and causes newer changes to have to wait until this particular one is finished.
2. There are many shared folders and teams cannot access each other’s folders. This was evident because most of the projects are huge and carried out by different teams and a combination of other hired consultants it becomes difficult to search for documents. In some cases the other project is not even known to the members of the new project. This results in an inability to get quality information to make strategic decisions.
3. There was no unified documentation management system as each team handled its documents. The issue of file naming and appellation (naming conventions); since the teams work in different styles they have different names for the same or similar file. Therefore searching a document is not easy because they do not use the right document attributes. Sometimes wrong documents are retrieved because there is no proper check done to ensure the correct document is retrieved every time. This also applies to version control of documents; because during a document search, an old version can be mistaken for the correct document. For example a case where 1st line support requests for documents. They do not receive the correct document requested because they do not know if any version or updates have been made on the documents; they work with what they receive, only to find out later that it was not the right document. This causes a delay (time loss) in the business process, potentially even business damage because of misinformation.
4. No proper way of sharing and storing documents results in increased costs. NXP Semiconductors works on the just in time (JIT) production strategy [5]. This implies if a document is not found at the time it is needed it causes a delay in the process which is costs not only for the business process but also for the company. This may lead to an increase in lead time in the business process and might cause the company fines. If this goes on the company’s image will be tarnished and it might lose its reputation. For example if during distribution of goods an old version of a packing procedure document is used, it might result in delivery packs falling short of the customs control checks. It will cost the company paying fines.
5. There is a problem in document migration. For example this occurred after the separation from the Philips; many documents were lost in the process. It also happened when SPEED was set up, where documents from the other site locations were to be sent to the SPEED storage location. Many of the documents were not received, due to poor internet networks or communication problems or procedure discipline. In the process some documents were missing with no links to trace them as they moved from one location another. This causes Duplication of efforts because many teams had to re-do what has already been done because they did not know that the document has been created before.
6. Whenever BP & A solution team updates a document all the stakeholders should receive notice of the update. BP & A solution team expects that the 1st line support to also update their documents in accordance with the new update. But this is not usually the case because the 1st line support does not receive the updated versions of documents from BP & A solution team. The inability of BP & A solution team to check if 1st line receives updates causes wasted effort of BP & A solution team because the effects of the documents are not felt by the people who need to use it. This result in Inefficiency because work cannot be done with accuracy to produce good quality as agreed. NXP Semiconductors does everything with good quality; therefore the BP & A solution team will not allow its documentation structure to be a hindrance in attaining good quality products.

These problems were matched to the requirements of the project as the requirements were also matched possible business processes they support. This was best practice from the structures oriented architecture [3], [13] which ensures that the project delivers what meets the requirements. This was done so that the new structure will accommodate not only the stakeholders’ requirements but everyone who wants to use the documentation structure. With the problem analysis the project was looking at how to address the BP & A solution team’s problem.

The research showed that the documentation creation process of BP & A solution team is good because there are precise and defined set of rules in document creation, this will be maintained. But the documents have not been categorized satisfactorily; one team uses plain numbers while another uses alphanumeric categorization. This will be revised to get all the documents in the same categorization. When this is done the documents will stand out and the user will be able to identify a needed document.

**The documents which were produced in this phase are:**

1. A defined scope for the assignment
2. Requirements list specification
3. A detailed problem analysis; which was presented to the major stakeholders i.e. the solution managers of business processes and applications (BP& A).
4. A power point presentation which explained the causes and effects of the documentation problem. It was presented to the stakeholders.

# Chapter 7

# The To-Be Phase

The project looked at the major problem plaguing the BP & A solution teams and how they can be handled in the new documentation structure. This is because if a structure is designed without checking if it can handle the problems and create no room for any of such problems in the future; it will not be an effective structure. It looked at the gaps between the As-Is (current situation) phase to the To-Be phase. An analysis of what the stakeholders want to achieve was done. This was by cross checking the problems and their causes in the problem analysis which had been made (see chapter 6) and how these causes can be inverted. Also looking at how documents are created, where they are stored, how they are used across the business processes within BP & A solution team and its end users (1st line support). The most important gaps are;

* Documents are scattered in many locations and there are no links bringing these documents together; these documents will be missing.
* Teams which cannot access other teams shared folders.
* The issue of many projects and shared folders with no reference point.

From finding gaps, the next step was to define what needed to be changed to get the desired results. The changes have to make sure these gaps are dealt with. Then initiate the changes and make a documentation structure that will fit the changes. In this process the things which need to be changed to make a good documentation structure are;

* To bring documents together by categorizing them
* To improve communication between the teams and their end users so they can share documents and work styles.
* Create links to related documents;

The tools used in this phase were Microsoft Visio to make data flow diagrams, BizAgi to make process diagrams and power point slides for the presentations. It was important to bring the thoughts and ideas gathered from the discussions, brain storms and interviews and make sure that these work together to produce a common result. In order to create a structure that will be sustainable, expandable and reusable in the future.

## 7.1 Initiating the change to make the new structure

Storing and retrieving documents was the top priority of the requirements, this project had to make sure that the structure will not only store documents but will also be fast in responding when a document is searched. It therefore focused to produce a structure which will make storing documents and searching documents easy for the stakeholders. The project did not only design a documentation structure but it also showed ways in which documents will be filled the structure. This section will describe the changes which will be made. A little change (detailed categories) will be introduced which will make a big difference in giving the desired results needed. The stakeholders will be involved in making the change as they will work on the functionalities and apply the categories to the documents which they create. For this to happen the teams, users and the documents need to have a common base. The aspects of document categorization, storing and how they will be updated will be looked into. The document content will not be changed but the categories will be made explicit and easy for anyone to see.

### 7.1.1 Categorization

Categorization (arranging likes together) is library best practice and logical way of putting things in the right order, even in human daily life [3]. With this arrangement, anyone who wants to use the documents for their first time will not be utterly lost; because everything is in perspective. And the user will be confident because he will not spend a lot of time going through the whole structure. Categorization is used in the documentation processes in schools, companies and government organizations. Other documentation best practices; effectiveness, relevance, sustainability, reusability and efficiency will be incorporated in the new documentation structure [3], [8], [11] and [13]. This way the new documentation structure will be standardized, simple and easy to understand by anyone.

There were different types of categorization which were considered suitable for the BP & A solution team. These different types of categorizations were compared using their advantages and disadvantages and the best which will meet the requirements of BP & A solution team will be selected. The categorizations are: alphabetical, numerical, alphanumerical and subject area categorization [16].

In an alphabetical categorization; a document is open for each person, institution, place, etc. The documents are not numbered but they are arranged chronologically in an alphabetical sequence. This is suitable categorization where only individual bodies with constant names are concerned. But it cannot be used for diverse subject documents because it becomes unmanageable when many documents are involved.

Numerical categorization arranges documents in numerical sequence and does not leave room for expansion as the numbers are fixed. When documents increase the breadth of numbers becomes very long and confusing for the user. It is good for small collection of documents.

Alphanumeric categorization is good as it can also be used in indexing documents. It is used in many institutions. It leaves a little room for document expansion.

Subject area categorization divides functions, activities or subjects into a number of main subjects. Each subject will be further divided into a number of subjects until it can no longer be divided. It leaves room for document expansion as subjects might increase and new documents added according to new subjects.

The alphabetical and numerical categorizations were not chosen because of their limitation to expand. Therefore they cannot meet the requirements of BP & A solution team. The subject area categorization was selected because it gives room for expansion as it is open to diverse subject areas; proving that SCM and BSP teams can be easily integrated in it.

**Integrating the subject area categorization**

BP & A solution team has existing documents which are already using the alphanumeric categorization which was done by the SAP-NXP project. This will be maintained and revised because putting documents together using the alphanumeric categorization keeps the numeration intact and ensures that primary key is kept if it is entered into a database, the documents properties cannot be mistaken. The letters indicate the function or business process which created the file. The folder names will be used as the first layer of the categories.

Because BP & A solution team is a complex mixture of many diverse functions and business processes a combination of subject area categorization and alphanumeric categorization will be used to give the most satisfactory results. This categorization will be unique to fit the BP & A solution team situation. The documents will be put in the structure according to subject area and numbered using the alphanumeric nomenclature. This will make the structure adaptable and expandable as need arises. The subject categorization will be done such that the functions or activities of a team will be divided into a number of main subjects. Each main subject will be further divided subdivisions until the subdivision can justify a document for that particular aspect. The main subjects will form the guides, under which the actual document subjects will be found [11], [14]. Categorization will offer people the opportunity to acquire more knowledge as the teams interact with each other; and continue learning about how to improve and adapt strategies and activities through feedback to implement sustained and effective documentation.

The main categories in the present documentation will be maintained; that is feasibility study, functional designs, technical designs, blue prints, etc. But there will be additions of detailed sub categories of the documents according to the subject area of the business processes which the IT supports. Figure 5 is a document categorization which can be used as it breaks down the subjects into subdivisions. This categorization will give a better view of the documents. It will be easy for the documents to be linked because the related documents from different IT business processes can easily be identified. Whenever a linked document is updated, the latest version will be retrieved anytime the document is requested. This will ensure that all the documents retrieved are the latest versions and not obsoletes.



Figure 5: hierarchical documentation categorization

As you can see from the diagram in figure 5; subject categorization is like a book, when you open it then you meet chapters, and when you go to the chapters you see topics and from the topics to sub topics where you get the details of the information you need. In the same way the main directory houses the other folders which have the subject headings of the document these subject areas are further divided into sub subjects and the sub subjects to the document tiles which users need.

### 7. 1. 2 Updating documents

Looking at the updating process of a document, this project decided to make all the users to have readers access to documents. This is because with semaphores in a critical section it is possible for many readers to be in the critical section but only one writer at a time. The possibility of teams trying to make changes to documents at the same time was likened to threads in semaphores scrambling for the same space in a process [8]. Setting boundaries of many readers and one writer as it is in semaphores will reduce the risk of having many people making changes to the same document at the same time. Thereby ensuring that only one update of a document will exist at any given time. If many people make changes at same time, the users will not know which version of the updated document is the appropriate one for them to use. Few users will have writer (update) access rights. The teams will have to make sure they select suitable persons who can make valuable changes to documents. As it is the custom of BP & A solution team all document updates have to go through the process of approval by the approval board (ACCB) for any updates or new creations to take place. This process will be maintained.

### 7. 1. 3 Storing documents

The way documents are stored will be changed to suit the new documentation structure. It will not be like a search engine, where documents are dumped and when a search is made there are many choices to select from. But it will give the user what he needs at the time he needs it.

When a document is to be stored, the first step is to ascertain under which main heading the subject in the document falls. When the correct main heading has been found, the subject under that main heading is determined until the correct order in which the document should be placed has been found. For example, when a document is created it will be sent to storage. When it gets to storage its attributes such as author, title, subject area, version number, etc. will be noted and filed. Then it will be categorized depending on which subject area it fits. It will be checked if it is related to other documents; if yes, links will be created to its related documents and registered. This method of categorizing and storing documents will enable a document to have references from all entry points. This will make it unique as it will give the right document no matter the search method. For example the finance will look for the price documents according to their financial terminology and still get to the same document which is also in the sales. The same will be true for the other processes. And documents can be shared and used without any conflicts of interest. Figure 6 shows a document storage process.



Figure 6: storing documents

This was done so that the best of all documentation structures will be applied to the BP & A solution team; as it will meet up with the NXP Semiconductors slogan of “Doing things right the first time and with little or no waste”[5]. To create space for new documents and avoid overcrowding, old and obsolete documents will be sent to archives or deleted. This will provide more visibility and easy accessibility of documents. It will make the structure more alive and able to deliver with good speed and accurately what the user needs.

### 7.1. 4 Team participation

During this project, the SCM and BSP teams were working with each other in the brain storms, interviews and discussions. These discussions brought them closer as they tried to understand each other’s point of view. They had close contact with each other and communicated more, expressing their concerns and saw that they had a common problem. These project activities have helped them to develop a culture where the team leads meet every month to discuss issues, challenges and work strategies which they have. As this project is being implemented by the BAP & A solution team; the SCM and BSP teams will be categorizing their documents so that when the structure is ready, their documents will be available for everyone to use. This project has reached its goal of bringing the working styles together.

## 7.2 The proposed design documentation structure

In designing the documentation structure, the project looked at what BP & A solution team has done to see if it can be fixed and if it will be sustainable in the future. It also looked at standard documentation options from books [2], [4] and [8]. The project had a choice of:

1. Maintaining the way teams have done their documentation (there is no documentation structure to copy from). Trying to bring scattered documents in the same location will not solve the problem for BP & A because documents would still not be easily retrieved.
2. Asking the teams to enable others to access their documents with readable rights. This would be no problem for the teams but the issue is that each team only understands its work style and not that of another. This method would not have served the purpose of helping the teams communicate and work with a common work style.
3. Using only standard documentation. There were options to select from; the single-layer structure, the two-layer structure and the three layer structure. In the single-layer structure all documents are entered in the same folder, with definite names. This is easy to support and understand but it is limited when the number of documents increases or when there is more than one user. A user may find it difficult to remember the names of all the documents when they increase. Keeping track of so many documents is a scary task [3], [13]. Though it will meet some of the requirements it will not solve the documentation problems of BP & A solution team.
4. There is the two-layer structure which isolates one user from the other. Isolation can be good if the users do not want to be connected, but not good for the BP & A solution team which wants to cooperate on tasks and to access one another's documents [8], [14].
5. There is the three layer structure (acyclic) which begins from the general to the specific. It has the possibility to share documents between users. This is what the BP & A solution team wants to achieve because they work with different projects and teams which share common documents. With a shared file in the three layer structure, only oneactual document exists, so any changes made by one person are immediately visible to the other. This means that a new document created by one person will automatically appear in all the shared documents. This method of documentation suits the BP & A solution team peculiar situation therefore it was used as the model for its documentation structure. This is also best practice used by educational institutions, libraries, companies and some governmental organizations [3], [4], [8], [11] and [15].

### 7.2.1 Designing the documentation structure

The documentation structure that was designed for the BP & A solution team is a hierarchical three layered documentation structure model (acyclical) or information model [8]. The three layered documentation model was chosen because it meets all the requirements of the stakeholders. They like to see their documents as they are used to. This structure will be flexible as it can be viewed from any part and arrives at the same document. In order to represent these requirements in the structure, it will contain documents categorized by subject area and alphanumeric categorization. That is maintaining a part of what they have already done. They are already familiar with the alphanumeric categorization in SAP–NXP, therefore adding the aspect of categorizing documents into subject areas will not be a problem.

The design of the documentation structure was done with the requirements according to MoSCoW technique were the very essential parts of the requirements were to be fulfilled first. The documentation structure design is a combination of the standard three layered structure and the alphanumeric categorization. The structure will deliver the latest version of a document; it can link documents to related parts. It can accommodate all kind of documents paper, DVDs, films, mp3, microfiches, etc. The documentation structure can be viewed from many perspectives because of its multifaceted nature like the BP & A solution team. As it makes open all documents and it can be used in any form and each team can view their documents using any of the routes to get to a document [14]. Therefore document searches will be flexible depending on the user.

The tools used in making the documentation structure include Microsoft Visio, interviews and brain storming, filing systems, spread sheets and telephones. It was not an easy task to put all the ideas together and come up with a good structure for the multi faceted BP & A solution team. Because users want the right documents to be retrieved anytime they search for a document. For the structure to ensure that these requirements are met it had to work with order and high standards in categorization and storing using good document attributes.

The three layered documentation structure is good for the BP & A solution team because they have a variety of documents such as, functional designs, test plans, etc. When these are categorized using the subject area and alphanumeric categorization it will be easy to retrieve any functional designs, test plans, etc. in different subject areas. An example of how the documentation structure would behave is like; when someone opens the first layer, he will find all the different categories of available documents. A click on one of the categories reveals other set of sub-category of the subject. A final selection will show a specific documents which document needed. This three layer increases effectivity as it enables the user to get to the right document which they need without scrolling for long.

The three layered documentation model structure will be simple to use, sustainable, reusable and expandable. There will be no time wasting when searching for a document as the user will go directly to the needed document. This structure can handle IT projects, applications and business processes of the stakeholders. Documents in this structure can be viewed in parallel as they are created and stored. The structure will bring together the different ways of working of the teams as it gives room for documents to be shared even when they are stored in different places. This is because the documents will be linked to each related document and the teams which create a document will link its location for others to get and use. The documentation structure is best practice and can be used in isolation [3], [9], [13]. It meets the needs of the stakeholders as they can still have control of their documents. Both end users and IT will share their documents, monitor changes and contribute in expanding the structure to meet organizational objectives.

### 7.2.2 Presenting the document structure

The documentation structure is a three layered hierarchy of documents which begin from general to specific. The documentation structure looks simple but complex because it addresses the different aspects which make up the BP & A solution team. The teams, the 1st line support, the different site locations with projects and the systems which are used in BP & A solution team. These are all put together as the documents which are created by the IT are used by all these diverse set of people. This transparent hierarchy opens up the teams to see where their impact is felt as they support the business processes. When a document is requested from the 2nd layer, it gets a semi general response but when it is from the 3rd layer it gets the specific document. Figure 7 shows how documents from each aspect of BP & A solution team can be categorized and fitted in the model. Documents from these parts interact like the people working with them.



Figure 7: the documentation (information) model

In making this structure the big picture of BP & A solution team was looked at, in relation to its activities with the other parts of the organization. Not only for documents from the IT but also for the systems and the sites. The structure had to meet the requirements of the stakeholders by covering every aspect of the BP & A and its end users. It was a complex exercise with a lot of brain storming, personal judgment and discussions from the stakeholders and reading on best practices in SOA which gave such directives on how to come out with this structure [3], [13]. In the end a documentation structure which spelt out the BP & A solution team and its users in a clear manner was designed. The project started showing ways in which the structure can be analyzed into smaller structure to meet the desires of teams or sites.

Figure 8 shows the three layered documentation structure model and an instance of a document related to many business processes. It also shows how the structure can be applied to all sections of the organization. It also shows the different site locations and end users of documents reaching the same document from diverse ends. It is a dynamic structure which can be used by anyone irrespective of their knowledge in document structure. It can cover a broad scope of different processes and sites of the organization.



Fig. 8: The three layered documentation structure model [1]

### 7.2.3 How document structure aligns with business application

This three layer documentation structure is flexible and it makes BP & A solution team less complex and more intuitive. It can be viewed from diverse perspectives either top-bottom or bottom-up. Figure 8 A; shows the relations relation between the different parts of the organization. Although not shown in the Figure 8 because it would have been difficult to understand, all the areas are related. There are people working in the sites who also work with the systems and the system modules. There are persons in the organizational part who also work with systems and systems modules and vice versa. The system is part of the enterprise which brings the business applications and the system modules together.

Figure 8 B, shows an instance of a document which is related to more than two business processes and other NXP Semiconductor applications. It shows how easy it is to identify documents and their relations and how the document can be linked to others. In BP & A solution team, they support the business processes, they have functions named after these business processes, therefore documents from each team will be easy for the business side to see and identify with. It also facilitates search by any method, as same document can be retrieved using any of the entrance points depending on the user. This is possible when it is categorized and its attributes entered according to the storing rules. Figure 8 demonstrates a common ground where functional teams, projects and business processes meet in documentation. It is a sharing and discussion point for all the people of BP & A as they work in uniformity to realize their common goals.



Figure 9: documentation structure uniting ways of working

Figure 8 is a demonstration of the structure in simple terms. It shows how the structure can be viewed and used by diverse set of people working with the same documentation using the SAP-NXP system. The business processes might like a change to a document and they request for the teams to make the change. The sites use documents which are created by the teams. The Projects approach the structure as they initiate changes on documents made by the teams, Business processes use documents after creation. All these interact through the same SAP-NXP systems of BP & A solution team. This structure was presented to stakeholders to see how they are related and that their documents can be viewed by others. Especially when they store them as the documentation structure demands.

**Benefits of documentation structure**

1. Minimize document creation efforts: presently creation of documents is good, but it will be improved with better documentation structure.
2. Minimize document search efforts: location of documents will be known as all stored documents will be noted and their attributes, therefore searching will not be a problem
3. Maximize search effectivity: documents will be retrieved quickly and with little effort as each person can go directly to the needed documents
4. Reduce costs and improve work efficiency: fast document retrieval, means there will be more timely information available for strategic decisions to be taken. Work will be fast as there will be no documents queue waiting to be processed.
5. Increased accessibility and visibility of documents: both end users and IT will view and use the same documents without any hindrances.

**Comparison between the old documentation way and the new documentation structure**

|  |  |  |
| --- | --- | --- |
| **Properties** | **Old documentation way** | **New documentation structure** |
| Ease to create documents | Easy | Easy |
| Easy to store documents | Easy | Easy |
| Access to stored documents | Not easy | Easy |
| Ease to retrieve documents | Not easy | Easy |
| Different ways to retrieve document | Less | More |
| Search time of document | Long | Short |
| Work efficiency | Less | More |
| Visibility of documents | Less | More |
| Teams working together | Less | More |
| Interaction of different functions ( business processes, teams, projects and sites) | Less | more |
| Easy to maintain as more documents will be added to it. | No | Yes |
| There will be document transparency | No | Yes |

Table 2: compare old document ways to new document structure

Looking at the analysis in table 2, it is apparent the new documentation structure is better and will serve the BP & A solution team more than their former ways of documentation.

**Documents from this phase are:**

1. Categories of documentation
2. Three layered documentation structure model

# Chapter 8

# The Implementation Phase

This project did not implement the designed documentation structure. The new documentation model structure is already being implemented by the BP & A solution team. The project looked into how the documentation structure will be maintained and managed to ensure its sustainability in the future. It also looked at issues which the stakeholders have to consider as they implement the structure. This is because for a structure to be fully used it has to be filled by documents and the users need to follow a set of principles. These guidelines will give the user a concise knowledge of how and where to find what kind of document. And also give them a description of the IT and the business processes and how they interact. A new user will find it easy to delve into the documentation without being led by another person. It will be a simple independent and multifaceted document structure.

## 8.1 Implementation issues

Here major parts of implementation will be addressed to help the BP & A come out with the best of documentation structure as they are implementing it. There are areas in the present documentation situation such as; the creation of documents, alphanumeric categorization, document security and script list, which will be maintained and modified.

8.1.1 Documentation directory or index: Presently, there is a kind of index called the script list. It is an Excel spread sheet of files. It can be maintained, improved and extended to accommodate all the features of the new documentation structure. There will be additional features such as location, links to other documents, categorizing by subject areas; will be added. The script list can be like a point of reference for all existing documents in the structure.

8.1.2 There was a need to check version control of documents; though the BP & A solution team have a strict version control procedure to be followed by all users. But because most of the work is done manually, the versions of a particular document can be duplicated. Now with the new documentation structure, no document will be stored without version check. And only the most recent version is retrieved whenever a document is requested, unless the user specifies otherwise in the search.

8.1.3 In document security it is necessary to look at the policy regarding confidential and private documents. How they should be handled and treated. This issue has already been catered for by the SAP-NXP. Every user has access to this file document and knows exactly how to care for private and confidential documents. This project did not go into depth in this area because most of the documents are not in any of these categories (private, policies, confidential or legal documents). In order to prevent disasters on documents all the files have backups, such that power failures and fires cannot be a threat to the documents. Users will have reader access to most documents.

8.1.4 To motivate people: To make sure that the teams work together and in unity all other documentation management systems which are in use will be abolished. Make the new documentation structure mandatory for all the teams and end users to use. Users will be trained to use the documentation structure. They will be informed that it is not just a document but a working instruction for using documentation. They will be required to read the content of the document and put it in practice. Because it is when they practice what the documentation structure describes that they will enjoy the beauty of documentation; and realize that they have much less documentation concerns. People always like when they are a part of a solution instead of being informed when a problem is solved. Placing stakeholders and users at the center of the documentation structure is a great step to get them motivated. This gives them a feeling of time for they better understand that their work is part of a bigger process and they become more responsible.

## 8.2 Documentation management

For a documentation structure model to be reusable, expandable and sustainable it needs proper management. The project looked in the future of the documentation model structure by providing BP & A solution team guidelines on how to manage the documentation structure so that it can live up to the expected standards. Because documents will not be created and stored without proper documentation handling and follow up to see how they are used; the project came out with pointers on how the documentation model structure will be managed.

### 8.2.1 The role of a manager

Managing documents will not be left for one person but it will be a functional role. The role of a manager will be to make sure that all staff is responsible for the accuracy and completeness of the documents which they create. To make sure that documentation process is followed through, the manager needs to:

1. Define specific roles and responsibilities in document management.
2. It should be clear who is responsible for which area in the life cycle of a document. The different stages in a documents life cycle from creation, storage, retrieval, archived, destroyed or deleted; has to be monitored.
3. Ensure document management is reliable, usable and easy to maintain.
4. All document owners are responsible for updating or answering to changes on their documents. When a document owner is moving to another division of the company, he can still be owner if he desires. But when an owner is to leave the company, he has to transfer his ownership to the BP & A solution team manager. The BP & A solution team manager will be responsible to look for a new owner of the document or look for a new owner.

### 8. 2. 2 The process of storing documents

Creating documents is an exciting process; a more exciting one is searching for them. In order for searching to be exciting, there has to be a good storing process. The process of storing is not just keeping the documents but also maintaining the right order of keeping them and updating the store all the time. When documents are stored well it is easy to retrieve them. Documents will be stored using their attributes as some users might search documents using a combination, any and (or) all of the attributes. This will ensure that there is document accountability, quality improvement and meeting standards of NXP Semiconductors documentation best practices [7], [14], [15] and [16].

Some attributes of a document which will be used in storing are:

* Category (by functional teams or subject area)
* document number (from SAP-NXP nomenclature)- unique/ primary key
* title (name)
* author ( owner)
* version number
* status (draft, final version, etc)
* Location- ( with links to files in other locations)
* links to other documents – (when the link is clicked, it should bring the exact document needed not a website or blog (unless that is the other document))
* kind of document – (word, power point, excel, web page, etc)
* document type ( test scripts, functional designs, blue prints, etc)
* Protection (read/write access) - most documents will be read only access

(This will be handled by the security and authorization team)

* Date (created & stored)
* Team (which created document)

## 8.3 Proof of concept

This was a test for the documentation structure model because this project did not implement it. The project made a proof of concept to showcase to the stakeholders that the structure is good and working well. To do that a game was played using Lego.

The Lego have different colours, shapes and sizes. For the players (stakeholders), not to be confused, many colours were not used at once. The colours represented the functional business processes. The shapes represented the subject areas and the sizes represented sub categories of subject areas.

For example: all blue coloured Lego were functional designs, green were business scenarios, etc. The square shaped Lego represented sales; the triangles represented manufacture, the rectangular represented finance, etc. The size of two blocks of any shape colour represented a sub class of sales; three blocks represented a sub class of manufacture, etc.

The stakeholders were divided into two groups; those creating documents and those storing documents. They used the Lego as if they were creating document which they sent to storage and storage stored the documents after categorizing them. They made a combination of different documents using the Lego. They had to note which documents they had made; because in the search, they will not search for their document but for the document made by another person.

The storage categorized all the documents and kept them in a safe area. After a while the persons who created the documents came to retrieve them. Each one retrieving a document he did not create. In the search some were using document naming conventions such as functional designs (FDs), while others used other search methods such as colour of Lego and number of blocks; in attempt to retrieve the required document.

The storage gave them exactly what they needed. Unless in the case where someone requested a document which was not created. This was noticed because the document storage took note of all the documents it received and made notes with descriptions like an index. It was a serious learning and fun exercise for all the stakeholders. The stakeholders appraised this phase and approved it to move into the next phase.

**Documents in this phase are:**

1. Managing documentation structure
2. Examples on how to use the documentation model structure

# Chapter 9

# The Conclusion

The AS-IS phase was very interesting because it birth the requirements for the new documentation structure. There were many debates and discussions which shaped the scope of the documentation structure. Documentation problems of, many shared folders, no team able to access other teams documents, no policies to guide the way documents are handled; were identified.

The TO-BE phase was special as it looked into the future of what was expected and how it had to be carried out. That was the visioning of the project as the different blocks of the structure such as bringing teams to work in collaboration, categorizing, different search methods, making links to documents were carefully built together. In the end a three layered documentation structure was designed.

The testing (the proof of concept) proved that the new structure delivers fast results. The search does not take time and this enhances the workflow of the user who makes better quality products. This was necessary as the structure was not implemented by the project but had to show stakeholders what they should expect to see when they begin using the structure.

By the end of the project the three layered documentation model structure was implemented by the BP & A solution team. This shows the urgency for which they needed a design of the documentation structure which will cater for the needs of both IT and the business processes which they support.

All project objectives and requirements were met as the final documentation model structure was made. The teams have come together and there is a common ground for easy flow of communication. There will be no duplication of efforts as they will be working with the same documents. Transparency has increased as everything in each team is freely discussed among the team leads.

This documentation project confirmed the fact that most information lies in the minds and brains of the organization. The stakeholders of this project shared their experiences which were used to shape the scope of the documentation project. Little changes can sometimes make a big difference. This is what happened in this project, as it reconciled different views and clarified concepts in ensuring that a suitable documentation structure was made. In the end, the stakeholders did not only change their way of working but they also changed their view of documentation structures.

# Recommendations

1. With the advent of a new documentation structure, everyone in the team should use the structure. There should be one document structure and one way of sharing documents. Stop or abolish old ways or systems of documentation and make the new documentation structure with its categorization of documents mandatory. This will eliminate the problem which caused the documentation ambiguity. The teams will share the same space, communicate more and work in unity.
2. IT should reconsider to remodel its way of working to include ‘after sales services’ to its 1st line support. That is they should follow up the 1st line support whenever a document or business process is updated to make sure that 1st line support also gives the right training to their end users. This will limit the number of incidents and wasting of time from the 1st line support. This will create better interaction and communication with 1st line support. A new document which will describe best practices for both teams and 1st line support will be created. In the document IT will explain how to use their systems and why it is good for 1st line to use them at full capacity. The 1st line will also discuss on the work instructions and maybe the kind of training and procedures which they need. This document will enable IT to know what 1st line support is doing and IT will be of more assistance to 1st line support.
3. Train and motivate end users to follow uniform and consistent procedures in the documentation structure. Training is necessary to ensure a thorough understanding of, and compliance with the new procedures. Give them some time to become familiar with the new way of working with documentation structure. Always maintain and revise documentation structure.

An online interactive training will be good for the 1st line support; because all sites can participate at the same time or when they like. It will be less costly because there will be no travel costs involved. The training will be ongoing as the materials will be updated and users will get it on time. Users will not need to wait till the end of a project to receive training.

# Evaluation

This project is very rich and enlightening. NXP Semiconductors is a place to learn and it is welcoming to everyone. I felt at home with the other employees. Starting up discussions on documentation structure was not an issue. My company supervisor, stakeholders and other employees were always keen to give advice all through this project. People in this company take their work very serious as each person does their job with care and love for the job. The people are dedicated and loyal to their job. Making it interesting all the way; the friendly atmosphere gives one a sense of purpose to wake up and go to work each day. The project had freedom of choice in the methodologies, tools and the overall design of the documentation structure. This gave me the opportunity to make personal judgements and take initiatives to come up with the best possible structure which will meet its requirements.

The most challenging part of this project was in aligning all different ideas of the stakeholders from the interviews, discussions, brain storming sessions, teleconferencing together with what I read in books, online and intranet to meet the requirements from stakeholders. Combining this diverse information and making sure that it suits the BP & A solution teams’ complex functional structure (diverse teams, projects, business processes and sites) was not easy. I had to use a lot of personal judgment as I tried to please all stakeholders so they see that their ideas are represented in the new documentation structure. In doing that I had to make sure that what goes into the structure is what will be right for the BP & A solution team. As I maintained or reused what has been successful and create an environment which shares ideas and information. Therefore I had to make decisions (such as categorization, storing documents) which I had to stand up for when the stakeholders asked questions. I had to show how the documentation structure is best practice used by other institutions. How categorization will help the documentation structure to stand the test of time. It felt good whenever I was applauded, as they noticed I paid attention to their comments and suggestions.

I have learnt many valuable lessons which I will not forget in a hurry. I have improved in communication as I can conduct interviews either with one person or with a group of people. My knowledge of IT and how it functions to a large extent in a company like NXP Semiconductors has increased. I have gained a lot of experience and wisdom in areas of applied research and data analysis which will stay on forever as I grow into my future career in IT.

IT is useful in all domains of a company irrespective of the business sector. Working with people who support various business processes in NXP Semiconductors has shown me that IT is very essential not only for IT persons but for the rest of the world as NXP deals with almost all kinds of business processes and products around the world. It was humbling to learn how to solve a problem by taking small steps instead of jumping right in the middle of a solution without knowing what else to do when another problem arises. This project taught me how to study a problem; then find its cause and equate it to its expected outcome and solve the problem so it does not recur. I will like to use this approach in the future so that I can make better contributions in any project.

I have gained experience in working with a project where all the stakeholders are not in the same project site. This was a project which involved diverse disciplines in IT applications and business processes; including many site locations around the world. Firstly, I thought there will be communication difficulties but I was amazed at that I was able interact with persons from far away as there was good communications all the time. Therefore working from a distance was not a setback instead it made the project more exciting as issues from discussions were dealt with as if everyone was in the same room. It was nice to learn how work in the real world is done even with many different site locations.

I have also learnt a lot of leadership and managerial skills, as I was interacting with the team leaders of the SCM and BSP teams. I have seen that leadership is by example and the ability to communicate and be expressive in a professional manner. All in all, I did enjoy my stay in this company. I would like to recommend anyone in Fontys Hogescholen to come and get the same kind of experience I have had here.

# The future with the documentation structure

**How will the documentation structure be used?**

1. The newly created documents will be incorporated in the documentation model structure as soon as they are created using the new guidelines of the structure.
2. The documents which were created before the documentation structure need to be selected and placed in three categories:
3. The documents to be deleted
4. The documents to send to archive
5. The active documents

Each set of documents will be treated differently.

1. Documents to be deleted are very old documents which are no longer essential or not in use. They will be deleted to create space.
2. Documents to be archived are old documents which can be used for future reference. They will be categorized using the new documentation structure standards and stored separately in an archive.
3. Active documents are those which are still in use. They will be maintained, categorized using new document structure procedures and stored together with newly created documents

This is to ensure that the new document structure will not be overcrowded with unused documents. Only useful and needed documents will be kept in the structure so it will be fast and responsive whenever documents are needed.

In the future the documentation structure users can add tags, favourites, attributes to documents of their choice and other user objects to the structure.

In the future the designed documentation structure will not be limited to a BP & A solution team only but can be used by the global NXP Semiconductors Company. This is possible because of its flexible, reusable and expandable nature.

**What tool is suitable for the documentation structure?**

This project has made a common documentation design which everyone will use, but the BP & A solution team needs to ensure that the tool they select is properly configured to meet the documentation design. The three tools which have been looked at support the three layered documentation structure. The selected tool needs to be configured, consolidated and the stakeholders trained on how to use the new tool. Then stakeholders will begin migration of old documents.

Taking a look at what documentation tool will be good for the BP & A solution team. The project reviewed three kinds of document management tools already used by the NXP semiconductors. These are Enovia, Wiki and Sharepoint [6]. An analysis comparing the strengths and disadvantages these three showed that they were all good for documentation purposes.

**Their common advantages are:**  They are all online space for collaborations and fast communication between business projects or communities. They are cloud-based documentation management tools which can be customized as the user desires. They can store document properties and content thereby allowing an effective storage, organization and retrieval of many documents. They can be used in projects to monitor (approve or reject) progress of the project [6]. They all have online web discussions for their users.

**The disadvantages of each tool are:** The problem with Enovia is that it is expensive and the more the users the more expensive it becomes. At a time when every company is cutting its costs such a tool cannot be used to sustain huge documentation with many users. It is not widely accessible; this means many locations of the company will not be able to use it (share or read documents).

Wiki has very simple format for its documents which limits some aspects of a document’s complexity; that is documents created in word and transferred to wiki might lose their format. Though documents are not destroyed in a wiki, it is time consuming to recreate any deleted document. It may be difficult to determine what changes other team members have made to a document unless it is highlighted with another colour.

After careful consideration of the three tools; Sharepoint was selected as the one for BP & A solution team to use. This is because it is more efficient and contains a wiki (sharepoint-wiki). It is less costly than Enovia. It is a Microsoft product which is used by many companies. It will be widely and easily accessible by all BP & A solution team and their end users.

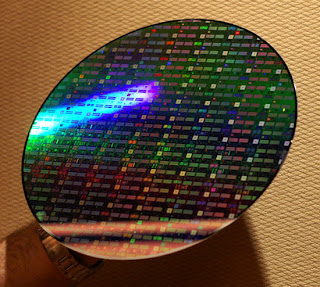
# References

1. Diagrams (all diagrams and tables in this report have been drawn by this project, except the organizational charts which are copied from the NXP Semiconductors intranet [5]).
2. Enterprise Architecture: The selection process of an enterprise architecture tool set to support understanding and governing the enterprise by P. Dragstra. Technische Universiteit Eindhoven; Department of Mathematics and Computing Science (MASTER’S THESIS). April 2005. Available on: <http://alexandria.tue.nl/extra2/afstversl/wsk-i/dragstra2005.pdf>
3. Governance and community service business plan 2010-2011. Library and information service, East Sussex, 2010. Available on: <http://www.eastsussex.gov.uk/libraries/default.htm> (downloaded in May, 2012)
4. Managing electronic records in governmental bodies: policy, principles and requirements national archives and records service of South Africa, Second Edition, April 2006 Pretoria South Africa. ISBN 1-919965-02-05 Available on: <http://www.national.archives.gov.za/rms/NARS_DMLIB-4878-v1-Managing_electronic_records_Policy__principles_and_Requirements_April_2006.PDF> (Downloaded in April 2012)
5. NXP Semiconductors company manual by Innes, R. and Whittard, A. 2011 (confidential document – For internal use only - Cannot provide URL)
6. NXP Semiconductors intranet / IO (internal site for company use only – cannot provide URL)
7. NXP Semiconductors news portal (intranet for internal company use only – Cannot provide URL)
8. Operating system concepts by Abraham Silberschartz, Peter B. Galvin and Greg Gagne. 8th ed. John Wiley and sons, Asia 2012.
9. Problem Analysis Techniques by Derrick Brown and Jan Kusiak. Melbourne, Australia 2002 - 2007. Available on: <http://www.scribd.com/doc/18122632/Problem-Analysis-Techniques>
10. Reader Total Quality Management / Six Sigma Yellow Belt Lecture 4. Available on: <https://portal.fontys.nl/instituten/marketingmanagement/ENG/semester2-2012S/DC%201%20%20Strategic%20and%20Entrepreneurial%20Management/Reader%20Lecture%204%20Analyse%20and%20Improve%20Phase.PDF>
11. Records Management. Available on: <http://www.national.archives.gov.za/rms/best_practice.htm> (Downloaded on 24th of April, 2012)
12. The Document Life Cycle. Available on: <http://technet.microsoft.com/en-us/library/dd163515.aspx> (Downloaded on 16th June 2012)
13. Understanding enterprise SOA by Eric Pulier and Hugh Taylor. Manning Publications Co, 2009. ISBN: 1932394591
14. University of Michigan library- available on : <http://bentley.umich.edu/dchome/about.php> (downloaded in April 2012)
15. University of Washington: Records management; Developing or Improving a Filing System. Available on: <http://f2.washington.edu/fm/recmgt/filesmanagement/plan> (Downloaded on 26th April 2012)
16. Yet another role for team building and work motivation - enabler of knowledge creation and knowledge sharing by Irena M Ali, Celina Pascoe and Leoni Warne. Available on: <http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA467706> (Downloaded on 28th June, 2012)

# Appendix - A

# Project plan

Project plan



Loveline N. Mbwoge

Student Number: 2136841

# Preface

This project is about making a documentation structure for easy storage and retrieval for the Supply Chain Manufacturing solution (SCM) and Business support processes solution (BSP) teams of the information and technology (IT) sector of NXP Semiconductors Company. A summary of the company is given below in the introduction.

The Supply Chain Manufacturing solution (SCM) and Business support processes solution (BSP) teams of NXP work on many diverse kinds of projects. These teams carry out a lot of projects which create different kinds of documents used in the company. Some of the documents are related to more than one project. When these documents are created they are stored in the different company site locations on local disks drives. With this scattered nature of documentation there is no proper order in retrieving a document when needed. Therefore the birth of this project “Design a documentation structure and approach with regard to documenting business applications (e.g. SAP)”.

Miss Loveline Ntube Mbwoge, a final year student at the Fontys Hogeschool, Eindhoven has been given this assignment as a graduation internship. She is studying Information and Communications Technology (ICT) and Business. She is from Cameroon, a country located in the heart in Africa. Cameroon is commonly referred to as Africa in miniature because of its diverse people, culture, flora and fauna.

This project plan is made for the appraisal of both my company teacher and my school teacher who will give me guidance to achieve the goals of the project. At the end of the project, I will make a project final report which I will present to the company and also to a panel of jury in my school as a final graduation project.

# Table of content

|  |
| --- |
| 1. Preface ---------------------------------------------------------------------------------------------------------2 |
| 1. Table of contents--------------------------------------------------------------------------------------------3 |
| 1. Introduction--------------------------------------------------------4 |
| 1. Project assignment statement---------------------------------5 |
| 1. Organizational chart---------------------------------------------5 |
| 1. Project organizational chart------------------------------------7 |
| 1. The current situation --------------------------------------------8 |
| 1. The problem--------------------------------------------------------9 |
| 1. Problem definition-------------------------------------------------10 |
| 1. Project justification------------------------------------------------10 |
| 1. The challenge-------------------------------------------------------11 |
| 1. Objectives -----------------------------------------------------------11 |
| 1. Issues & Risks-------------------------------------------------------12 |
| 1. Methodology--------------------------------------------------------13 |
| 1. Project phasing------------------------------------------------------13 |
| 1. Management plan--------------------------------------------------19 |
| 1. Communication------------------------------------------------------19 |
| 1. Performance evaluation--------------------------------------------20 |
| 1. Benefits ----------------------------------------------------------------20 |
|  |

# Introduction

NXP is a worldwide company with offices scattered all across the world in Europe, Asia, Africa, Middle East, Australia and the United States of America. It is a business to business company focused on doing business with a passion to win through raising the bar, engaging curiosity, taking initiative, working together and developing core competences. Its mission is to be the leading provider of semiconductor-based solutions for connected consumer applications.

NXP’s strength is to create the opportunity to be a leader in their target markets and applications. The key strengths include Market-leading products. In 2009, approximately 68% of its High Performance Mixed Signal sales were generated by products which held the number one or number two market share position. These products are the integrated circuit (ICs) in radio frequency (RF), Data Converter, Power & Lighting Solutions, Logic, ARM based 32-bit Flash Microcontrollers, Interface Products. NXP is an innovation leader in specific niche segments of the larger microcontroller, power analog and interface markets.

The NXP Semiconductors Company is divided into four (4) Business units (BU’s), three (3) core processes and five (5) support functions.

* The Business Units are; High Performance Mixed Signal, Standard Products, Automotive and Identification.
* The core processes comprise of; Central Research and Development, Operations and Global Sales and Marketing (GSM).
* The support functions include; Finance and Information Technology (IT), Human Resource Management, Legal/intellectual property and licensing, Quality and Strategy and Business Development.

The Information Technology (IT) is made of twelve (12) teams which consist of;

Technology Advancement and Operations Solution Team, Supply Chain & Manufacturing Solution Team, Sales and Planning Solution Team, Product Creation Solution Team, Business Support Processes Solution Team, Research and development IT and Connectivity Competence Center, Collaboration and Knowledge Sharing, Global CAD Support, Global IT Operations, Personal IT, research and development and manufacturing IT.

This project is designed for the Supply Chain and Manufacturing (SCM) and Business Support Processes (BSP) solution teams of the IT sector of NXP which work with projects which mainly support Systems Applications and Products in Data Processing (SAP) processes. They want a documentation structure which can be used by anyone in the team; and also their end users the 1st line support; for storing, searching and retrieving documents.

In this project plan I will present the project assignment statement, the SCM and BSP organizational charts, Project organizational chart, the current situation, the problem, Problem definition, Project justification, The challenge, Objectives, Risks, Methodology, Project phasing, Management plan, Communication, Performance evaluation and benefits.

# The project assignment statement:

"Design a documentation structure and approach with regard to documenting business applications (e.g. SAP).   
Design a structure and approach for documenting business applications (e.g. SAP) for internal (application consultants) as well as external use (end users), aligned with IT maintenance processes. This assignment delivers a detailed structure and way of working to describe the current situation, as well as changes to the various business applications within the SCM domain. This assignment does not deliver software."

## The SCM and BSP Organizational chart

Because NXP is a very large organization, I will limit my organizational chart to the two departments which are directly concerned with this project (figure 1 and 2). That is the Supply Chain Manufacturing solution team and Business Support Processes solution team. These are departments in the finance and IT support functions of NXP.

I work in the supply chain and manufacturing solution team which is part of the business processes and applications. Below are the organizational charts of these teams.

Figure 1: the supply chain manufacturing solution team

Figure 2: the Business support processes solution team

Security &

Authorization

Henk Bulsink

Service manager

Leo van der Drift

Project management

Olena Klimova

Competence Team   
Warehousing &

Distribution

Ernst van der Zee

Competence Team   
Manufacturing Planning

& Execution

Peter Stassen  
Jo van Aubel - BKK  
Larry Hoofs  
Diane Tai

Ramani Venkataramani

Ronald van Heeswijk

Competence Team Sales & Distribution

Pieter van Erp  
Arnold van den Broek  
Wim Coopmans  
Vicky Wei – TPE

Raymond Knippels

Solution Architect

Hans Cremers

Internship student

Loveline N. Mbwoge

Enterprise architect

Supply chain and manufacturing solution manager

Marc de Haan

Business Support Processes

Solution Manager  
 Peter G. de Bruijn

Program & Change Manager  
 Business Support Processes  
Hans Dresen

Jo Limpens

Service Delivery Manager  
Jo van Dinther

**Architect**Antoon van den Heuvel

Peter Tonies

Competence Team   
 Business Intelligence  
Jo Limpens

Jo van Dinther

Andre Grootscholten

Johan Huiberts

Peter Tonies

Competence Team   
Purchasing, HRM & Other   
Hans Dresen

Eric ter Poorten  
Mieke Thomas

Competence Team   
 Finance & Accounting  
Peter Robben

Arjen de Jong   
Mark van Lieshout  
Oscar Riphagen  
Jan van Dijk

Pieter de Meijer

Enterprise  
Architect

The organization chart is copied from the intranet (I attached my name for the purpose of this document)

As you can see form the chart, I work directly under my company supervisor; Mr. Hans Cremers, the solution architect of the supply chain manufacturing team. He has arranged many meetings for me to talk with all the team leaders who are stakeholders of this project. I have already spoken with some of them and still have to meet others. They will give me their views on their expectations of the project. I will analyze their requirements and make a requirement list which I will present to them for approval. These requirements will be mapped to the business processes and be turned to requirements and scope of the project.

# The Project organization chart and roles

Project management

Project leader

Loveline N. Mbwoge

User community

Programme management

Project board

Senior supplier

Mr. Paul Lahaije

Senior user

Mr. Peter Stassen

Formal client

Mr. Marc de Haan

Project assurance consultant

Mr. Hans Cremers

Project sponsor

Mr. Peter de Bruijn

Figure 3: Project organizational chart

The programme management oversees the smooth running of the project.

The board will run the project b checking on the time line of the project leader and also making sure that the deliverables are on time and in accordance with the requirements.

The formal client: Mr. Marc de Haan who has given this assignment will check if the project delivers on time and if the requirements are met.

The project sponsor: Mr. Peter de Bruijn is responsible to monitor the progress of the project.

The senior supply who is also the school teacher: Mr. Paul Lahaije is responsible to guide the project leader to go through the project management phases in a correct way.

The senior user: Mr. Peter Stassen will be the company client, he is responsible to check the quality of deliverables and integrate them in the NXP system. He is the linking pin between the project and the various team leads.

The Project assurance consultant who is also the company supervisor: Mr. Hans Cremers is responsible to guide the project leader through the project path. He will coordinate between the formal client and project leader.

The user community: a set of stakeholders who will use the deliverables in their work.

Project leader: the project leader is Loveline N. Mbwoge is responsible for the realization of this project. She communicates with all stakeholders of this project.

1. The current situation

**The Supply Chain and Manufacturing solution team (SCM) and business support process solution team (BSP) use the global business application portals. This mainly is SAP. I will give a brief background of the SAP systems, but both are being merged into one SAP system: SAP-NXP.**

1. The CLASS (Competitive Lasting Advantage through Superior Service) SAP system has been in production in NXP Semiconductors since 2001. It fulfills the commercial order needs of the company as well as the global supply chain control. The sales, logistics and customer support applications are used by CLASS. Its mission is continuous improvement throughout their business processes by improving customer satisfaction and loyalty to increase their business shares.
2. The SPEED (Superior Production Execution through ERP Deployment) SAP program has been set up in NXP Semiconductors as part of its growth and cost reduction strategy in order to regain a solid position in the top 10 of the industry. It supports harmonization and standardization within the manufacturing environment. SAP SPEED as the single application platform which harmonies the way of working in different departments like Finance and Accounting and Purchasing. Its goal is to achieve cost reduction and business excellence.

At the moment, there is a restructuring in SCM and BSP teams which support processes that use SAP systems. The two teams are merging and integrating their different work styles because they want to work as a unit. To make sure that the teams quickly adjust to same working styles, people who used to support different SAP systems and had different ways of working, are now working in the same teams. For example the industrial order fulfillment (IOF) team of the SCM; now consists of people who previously supported the CLASS systems as well as those who supported the SPEED systems. The same is true for the commercial order fulfillment (COF) and finance and controlling (FICO) teams of BSP. With the advent of a new documentation structure this process will be sealed as the structure will help the teams to assimilate work processes, retain policies, communicate, update and report progress on a regular basis.

1. The problem

The Supply Chain Manufacturing solution (SCM) team and Business support processes solution (BSP) team supports people who use Systems Applications and Products (SAP) in Data Processing documentation systems. The SCM supports users of SAP CLASS which is commercial and the BSP supports users of SAP SPEED which is industrial. These teams do not use the SAP systems in their work. They provide support to the business units and processes which use the SAP system. These teams work in different circumstances and have different ways of working. They create a lot of document when they work, but have a problem of multiple document storage. Because the documents they create are used by the business units (1st line support), they try to make the documents available to the end user. It becomes complex and complicated as the users are diverse and situated in different site locations.

The SAP CLASS systems use SharePoint as its way of working with projects, and it stores its regular documents such as functional, technical designs and blue prints documents on a network drive (the sDrive). The SAP SPEED system keeps a kind of structure which collects a record of all the documents in a list called Script list. But other individual documents are stored in various company site locations in local disk drives without any harmonized structure.

Because SCM and BSP have different activities and approach to work, they also have different ways of identifying their files or documents. In using the systems separately works for each team at the moment. But because they all work in the supply chain and carry out related projects; there comes a time when some documents from one section need to be used by the other. This is where they encounter a problem because they cannot find a particular document. Not because the document is not there but because there is no unified documentation structure in storing and retrieving of documents in both systems.

Problem summary: Loss of business efficiency due to lack of alignment of documentation management between the SCM and BSP teams.

1. Problem definition

The main reason why documents are not easily found is because they are stored as soon as they are created without passing through a classification or categorizing process. They are stored in a LAN or local disks drives of the different company sites. Because there are many files and different locations it becomes impossible to keep track of where each file has been stored. This becomes evident when a file is needed because it cannot be easily retrieved. This causes a delay in the business process.

Getting the right information on time is very important in the decision making process of the teams. These teams work on the basis of doing it right the first time, a lean production and six sigma principle; a delay can have some devastating consequences. For example in a situation where a project has been carried out before and documents not kept for everyone’s knowledge. Then after a while the same kind of project is initiated again and a new process begins all over. Then towards the end of the project someone happens on a document such as a functional design which had been made in the past with the same functionalities as in this new project. This will cost the company a lot of money in this duplication of efforts. It does not bring out efficiency of the IT. There is also a situation where an old version of a procedure in a business process is used by a 1st line support because he did not know that a new version has been made. And when the process is finished the goods cannot be delivered to the client because the quality is not up to standard. This error did not only cost the company throughput and lead time but also money for they had to pay a fine for not meeting standards.

1. Project justification

NXP Semiconductors is placing priority on documentation structure because it wants to continually stay successful and at the top with its products. The end users of the product; whether internal or external need to have a comfortable and acceptable documentation structure. A good documentation structure will not only guarantee quality assurance, quality control and quality improvement but also the process to achieve consistent quality. This will be evident with tools such as; Six Sigma, ISO 9001, total quality management and packing list border forms; which are used by the NXP Semiconductors. Six Sigma improves the operational business performance by eliminating waste (time, material, etc) and defects to attain the desired target quality. The parking list border form is a control which checks that the right products in their right quantities are delivered to the right client at the right time. These tools give good results which can be improved and maintained with a good documentation structure. This project is therefore to make a documentation structure which will be flexible, easy to use and understand by all its users, the business units as well as the IT consultants.

1. The challenge

To work with documents from the SCM and BSP teams; which supported two different SAP systems will not be an easy task. Because the SCM and BSP teams are merging, it will not be like transferring documents from one location and dumping in another where they will not be used again. But the challenge is in overhauling of the whole documentation from both teams. These documents are not only scattered around all the local sites of the company but they do not have the same attributes and naming conventions.

To make sure that documents are uniformly named and stored in a coherent way that they will be easy to find and access from any location globally. People have to be involved in the process because they will use these documents. They need to be able to make a search using different search methods such as predefined access paths, keywords, title or document content which will take them to the same needed document. In order to meet this standard, documents will be classified immediately they are created using the same nomenclature and stored.

To ensure that documents can easily be retrieved, some measures have to be taken such as:

1. Make a document which will define the ways of storing and retrieving documents.
2. Make sure the documents are updated and the updates in all their versions are stored.

1. Objectives

By the end of the project a working documentation structure (not a tool) has to be created which will integrate the SAP CLASS and SAP SPEED systems into a one united system with a combined set of processes and structure. This new structure will incorporate a way of working in classifying, identifying, appellation, storage and retrieval of documents. Because the requirements will come from the stakeholders, some parts of the existing structure which will be reused. This will ensure that both teams will use documents and make changes such as updates and new versions which the other teams can easily identify and work with. This new structure will be sustainable, replicable, reusable and effective in document storage and retrieval.

My personal objectives are to improve my communication and networking skills during and after this project. Develop and learn how to sell a strong relationship between business processes and document sharing. To build analytical skills in business research by making good business cases and selling ideas in a way that is working and persuasive. Most importantly, I like to get a good mark at the end of this project as part of my graduation.

1. Risks

The risk is employee resistance to change. This can happen when people are already familiar and used to the old way of working. To embrace a new way of working will be odd for them and therefore they will not like to change.

In order to combat such a situation it is important to get the people involved in the project from the beginning. This will help shape their mentality and make them feel important; in the end that their input has been considered.

|  |  |  |  |
| --- | --- | --- | --- |
| **Risks** | **Impact**  **L=low, M=Medium, H=High)** | **Probability**  **(1-5)** | **Strategies to mitigate risks** |
| Availability of tools and resources | H: people are always present to offer their help | 5 | Communicate more with all stakeholders. Because of time constraints I will need to plan resources ahead of time. |
| Changes in project requirement | H: most stakeholders know what they want | 5 | Communicate all the time with stakeholders. Feedback the individual requirements to the combined group and have them “sign off” on a combined, coherent set of requirements.  I will make my project scope clear to all the stakeholders so that they will know what to expect from the project. |
| Achieving stakeholder acceptance and deliverables | H: this risk can affect the whole project | 4 | Discuss with the stakeholders at the end of every phase of the project. Before starting the next phase. |
| Schedule and budget | H: this can affect the whole project | 5 | Discuss and agree the project scope with stakeholders and have them “sign off”.  Because every delay will affect my work;  I have to make sure I finish each phase on time. I will not do things which are not in scope of the project. |

Table 1: Risks analysis

# Methodology

The different ways which I will use to collect data for this project are: interviews, surveys and literature reviews.

1. Information gathering: I have done interviews and held meetings with my company teacher and other team leaders who are active participants (stakeholders) of the project. They have shared their views and perspectives of the system. They have also told me the difficulties they face in retrieving documents from the system. I still have to meet more project team leaders who will also share their experiences. From all these discussions I will get a requirement list which will help me in sorting and arranging the requirements of the project.
2. Study the systems: apart from reading documents which my company supervisor sent to me, I also ask a lot of questions to the different teams. I have also searched for materials from the NXP intranet site which have also enlightened me on the problem. These documents will help me to investigate and analyze the problem of documentation in NXP. I also make use of the libraries where I read books, journals and articles which will help me in this process of making a good documentation structure.
3. I will do desk research to find out different ways of tackling this situation. I will use the internet, Books, Magazines, Newspapers, Special resource materials on CD/DVD. And I will also apply my knowledge in documentation and filing processes. With the information from all these sources, I will create some rules on handling and storing documents created in the system.

Since the emphasis is on storing and retrieving documents from the system; I will make step by step process document which will clearly define how each document has to be stored and retrieved.

# Project phasing:

This will include all activities which will enable this project get to the end. The activities are listed and planned at specific times. At the end of each phase the completed activities and their deliverables will be made known to all the participants of the project. The stakeholders, company supervisor, school teacher. In this way each party will have a clear view on the state of the project. I will phase out the project so it will be easy to identify which activities lead to what deliverable.

Because this project uses the Prince2 methodology, I will do some of the activities in parallel. Also some activities will be done sequentially. For example an activity such as research and planning is never ending until the project is finished. I will still be thinking and finding out ways of making a documentation structure which will be used globally for the organization. Below is a matrix on the project phases, activities and deliverable.

The project will be done in five (5) phases; the orientation and research phase, the current situation phase, the To-be situation phase, the Implementation phase and the Final phase.

1. The orientation and research phase I will get familiar with the company and understand what the assignment entails. In this phase I will also prepare a project plan which will act as a guideline in carrying out this assignment. From the orientation I will move on to the current situation phase.
2. In the current situation phase I will hold talks or interviews with the stakeholders affected by the document and so are responsible for providing comments during the review of documents during the comments and approvals phase (stakeholders) of the new document structure which I have to make. I will get an overview of what they expect and to know what problems they face in the area of storing and retrieving documents as fast as they would like it. I will take note of all their requirements and make a requirement list and description of the project scope; which they will approve. Because my stakeholders are team leaders in various capacities, they are very busy. This phase will be long because I have to plan separate meetings with each stakeholder. They have shown a lot of interest and are willing to share all their ideas and thoughts with me.
3. In the To-be situation; I will analyze the requirement list and brain storm with the stakeholders to find out which requirements are in the high priority in accordance with their work and business process. I will use these requirements as the top 10 most important ones for the new system. From the requirements I will begin to make some change decisions such as; what in the old structure has to be changed, why it has to be changed and how the change will affect the work flow of stakeholders. Then I will define the processes which I will use in making the change. Since the changes will be geared towards the documentation structure, I will start building its framework by looking at what content it will contain and how the content can be filled with the documents. I will present this framework with the changes as to the stakeholders and ask for approval.
4. Then I will move on to the implementation phase. In this phase I will make rules for storing, classifying and searching for documents in accordance with the requirements and framework which would be approved by my stakeholders. This model will be tested by a way of playing a game of storing and searching document; to see if it is faster and better than the old system. These are all processes and activities which will be time consuming and very interactive and educative.
5. In the final phase I will make a final document on the documentation structure which will be handed to the company at the end of the project. I will write a project report for my school which is a prerequisite for my graduation. I will make a presentation of my results to the company, and also to my school in the presence of a graduation jury.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No.** | **Project phases** | **Business process** | **Activity** | **Deliverables** | **Date** |
| 1 | Orientation and research phase | * Research * Discussions * Making project plan | * Research * Familiarization of company | Project plan | April 26th |
| 2 | Current situation phase (AS-IS) | * Interviews with stakeholders * Information gathering | * Identify scope & content * Identify all stakeholders * Identify content and scope * discussions with stakeholders in relation to business processes * building the concept * collect stakeholders requirements list * present requirements list to stakeholders * report project progress to project board | * initial requirements specifications * Presentation to stakeholders | May 25th |
| 3 | TO-BE situation phase | Analyze requirement list in accordance with business processes  Design model documentation structure | * Send draft of requirement specification to stakeholders * brain storm on Requirements specifications * Compile requirements list * initiate & define changes to be made * plan model documentation framework * start draft project report * report project progress to project board | Approved Requirements specification document  A sketch of the model of documentation structure | June 20th |
| 4 | Implementation phase | Modeling | * identify what to change * Making rules, classification ( categorization) * planning the model structure * adding content to model | Model structure document (kind of blue print which anyone can use) | July 17th |
|  |  | Validate model | * Present model to stakeholders * Test structure – proof of concept (make a kind of simulation or game) * report project progress to project board | acceptance model document | July 24th |
| 5 | Final phase | * Report writing and * Presentations | * Prepare final documentation and slides * Prepare presentations * Ensure that all deliverables have been sent to the formal client and will be used as directed * Hand over documentation structure document to company | * Report (company and school) * Presentation (company and school) | August 23th |

Table 2: phases, activities and deliveries

I have made a Gantt chart where time and phases are processed in detail.

Figure 4: A Gantt chart with project phases

Project phases and deadlines tabulated

|  |  |
| --- | --- |
| **Project phases** | **Deadline** |
| Orientation and research phase | 10/04/2012 - 26/04/2012 |
| Current situation phase (AS-IS) | 20/04/2012 - 25/05/2012 |
| TO-BE situation phase | 25/05/2012 - 20/06/2012 |
| Implementation phase | 21/06/2012 - 24/07/2012 |
| Final phase | 25/07/2012 - 24/08/2012 |

Table3: Project phases

# Management plan

## Money: because this is an internal project, we are using time instead of money to quantify costs in this project. The client needs 20 weeks of work; with a 40 hours of work a week; this makes a total of 800 hours to complete the project. The project leader is putting in all of these hours in order to realize the project.

## Skills: this project requires someone who has a background in information technology (IT) with knowledge in filing and documentation. It also wants someone who understands and supports Systems Applications and Products (SAP) functionalities in business processes.

Skills I have: I acted in the role of a human resource person to look for skills which were needed to complete this complex assignment. I wanted someone who has skills in information modeling, information analysis, interview skills, negotiation skills, project management skills, requirement analysis skills and skills to manage office tools.

Ms. Loveline was hired for this job because she is dynamic and vibrant. She does not only have all of the needed skills for this assignment, but she is also an information and communications technology (ICT) person. Who has knowledge in filing systems and understands the Systems Applications and Products (SAP) functionalities. She is a library and information scientist with good knowledge in documentation such as classification; cataloging, etc. she showed that she can work freely with others in a way that the documentation structure will be easy and comprehensive to all. She is open to learn and improve her knowledge by reading some materials online to empower and boost the execution of this project.

Skills to develop: I like to learn how to improve my communication skills with other people by increasing my scope of networking. I would also like to be more enterprising and to build good analytical skills in business processing.

* + Quality: the quality of the work will be good because each phase and delivery in the process will be checked by both my company supervisor; Mr. Hans Cremers and school tutor; Mr. Paul Lahaije.

To make sure that the quality is up to the standard of the NXP; each delivery will be reported to Mr. Peter Stassen who is the project client will test the quality and incorporate it in the NXP system.

**The table below shows the role of project team vis-à-vis the project deliverables**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Deliverables**  **Who is responsible** | **Project plan** | **Requirements document** | **Codes** | **phase products** | **Final report** |
| Project leader | Dr, Di, S, Ar | Dr, Di, S, Ar | Dr, Di, S, Ar | Dr, Di, S, Ar | Dr, Di, S, Ar |
| Project consultant or Company supervisor | R,A | R,A, Di | - | R, A, Di | R, A, Di |
| Senior supplier or School tutor | R, Di | R,D | R, Di | R, Di | R, Di |
| Formal (company) client | - | - | - | R,A, Di | R,A |
| Senior user | R, A | R, A | - | R, A, Di | R, A |

Where Di=discuss, Dr-draw, R=receive, A=Approve, S= Send, Ar=Archive

Table 4: deliverable information matrix

* + Scope: The project covers two departments which are supporting SAP functionalities; the SCM and BSP. The project will deliver a document on the structure of storage and retrieval of documents; which will be handed over to the project team.

Out of scope: There will be no staff training involved because they know how to search and retrieve needed documents. There will be no deployment in this project because another team member is responsible to put all the deliverables into the system.

* + Time: this project will last for 20 weeks that is from the 10th of April till the 28th of August 2012.
  + Resources: Tools needed for the project: I will make use of the prince2 methodology used in the company to measure their activities and plan projects. I will also use Gantt charts (to draw my time schedule), Microsoft visio (to draw flow diagrams), excel spread sheets (to make lists of documents and their categories), bizAgi (show interaction of business processes), and word documents (write all reports). All these are available in the company.

1. Communications

The communication with my Company Supervisor (Mr. Hans Cremers) is good. He is a nice and easy going person. Who gives me his full attention and makes sure that I am comfortable. We have regular meetings and I am free to ask him whatever question I have at anytime. And he answers all of them to my satisfaction.

It is expected that my School Teacher (Mr. Paul Lahaije) visits the graduate intern (Loveline Mbwoge) on the project site. He will discuss with the Company Supervisor (Mr. Cremers) and the intern (Loveline). Then they will come up with a final conclusion of what is expected and the intern will know what kind of things to add or subtract from the work.

The communication between the intern student and school teacher will be both by email and scheduled visits. I will also update my school teacher with a weekly progress report of the project. In the subsequent meetings the teachers we will verify if the student is on schedule by checking the planning including deliverables and deadlines.

**The table shows the communication structure during the project**

|  |  |  |
| --- | --- | --- |
| **Communication** | **Responsible** | **Time plan** |
| Process of the project | School teacher | End of each phase |
| Progress of the project | -Project consultant or Company supervisor  -Project board members | All the time (regular meetings)  Meetings with the board |
| Project delivery | Formal client  Senior user | End of each phase |
| Documentation and realization of project | Project leader | End of each phase |

Table 5: Communication structure

# Performance Measurement

The evaluation of this work will be done by both my Company supervisor and School Teacher; who will use the report produced at the end of this project as a requirement in fulfillment of my graduation.

# Benefits Realization

* Efficiency: There will be a fast and easy document retrieval system which will improve the working conditions of the staff.
* Information supply: There will be improved record keeping efficiency and data analysis opportunities.
* Time to market new lines: It will serve as a base for new consultants to look in first and study the workflow of the IT sector. This will enable them to speed up their understanding of the supported SAP processes and work efficiently.
* Communication: There will be a solid base to channel documents fast to the end user community (the first (1st) line support).
* Accuracy: It will create a structure where people will systematically corporate and communicate to conduct business; since all documents will be accessible to everyone.

There will be a flexible, sustainable and reusable system which will increase employee productivity with a better quality of the final product.

Personally, I will benefit in expanding my knowledge on working with documents especially in sharing, merging and easy communications. I will have a better understanding of working with different groups of people in a business process. And I will gain working experience which will help to foster my career in the information communications and technology field.

## Appendix - B

## Project requirements

REQUIREMENTS FOR STORING AND SEARCHING DOCUMENTS

The MOSCOW system which is the MUST have, SHOULD have, COULD have and WOULD have will be used to emphasize the importance of each requirement. This gives an idea of what is essential and what the system can do without.

Below are the requirements of the project; more can be added the future as the documentation structure expands into different parts of the organization. These requirements will help to create a documentation structure that will provide an ability to capture, describe and categorize, store and retrieve, share and reuse documents regardless of its specific format. The list will begin with storing and then searching.

**Requirements in storing documents:**

Before a document is stored all its attributes such as; document number, title (name), author ( owner), version number, status, Location, links to other documents, type, Protection, Date (created & stored), Category, Team (which created document), will be entered in the structure and stored. This will help to get the document easily when it is searched or retrieved.

Must have

1. The Structure must allow documents to be stored
2. Documents must be classified or categorized (using chosen path by BP & A, such as; business processes, projects, IT processes, etc.)
3. Document must have the necessary attributes (number, title, owner, category, version no., type, links, team created, date created, location, etc.)
4. Structure must know location of document (directories, files or site locations)
5. The Structure must treat all documents as unique (names, versions, dates and other attributes)
6. Structure must comprise different kind of documents (such as paper, books, magazines, audio visuals like pictures, films, plates, slides, microfilms, DVD, videos, mp3, etc)
7. The Structure must have a rule for storing all documents
8. The Structure must prioritize documents (create document links with others in the system)
9. The Structure must have document control and security (such as it must allow only one user to make updates (changes) per time on document )
10. Structure must create links to other process related documents and also to SAP support documents from sub contractors
11. The Structure must allow automatic updates of versions
12. The Structure must ensure updates (new version) are stored along with the old versions

Should have

1. The Structure should allow many users to work on same document at same time – using link of original document (many readers but one writer at a time)
2. Structure should keep document version dates and numbers
3. All documents should be listed in a directory or index
4. Alerts should be made when document has been stored

Could have

1. Document could be in different site location of the company

Would have

None for now

**Requirement searching documents:**

Must have

1. User must have access to document - (access rights for security sensitivity or secrecy – basic readable rights to everyone)
2. Structure must have a list of all documents and their locations
3. Structure must be flexible to different search methods of users such as; Document name, keyword, project, or date document was created
4. Structure must be able to generate all documents with similar attributes
5. Structure must locate user request (query) -When user selects what he/she wants (specific)
6. Structure must return latest version of document whenever it is required unless stated otherwise in a search query
7. Structure must know the status of file or document (such as, draft, approved, final version, available, loaned, missing, etc.)

Should have

1. Structure should be able to search document content (read through all documents)
2. Structure should have clear guidelines on how to retrieve documents

Could have

None for now

Would have

None for now

**Reference**

1. Functional Requirements for Bibliographic Records; IFLA Study Group on the Functional Requirements for Bibliographic Records Approved by the Standing Committee of the IFLA Section on Cataloguing K. G. Saur München 1998. Available on : <http://www.ifla.org/files/cataloguing/frbr/frbr.pdf>

# Appendix – C

# How IT supports business processes



Figure 10: How IT supports a typical business process

The figure 10 shows an example of a business process - fulfilling sales order. The customer makes an order and the sales department is making sure the order is delivered. For this order to be fulfilled there are many processes which have to be done. Each step of the way has to be right and the customer has to get his order as expected at the right time in the right quantity. If at any stage of this process the system does not respond as expected; or if the business realizes that there are some processes which need to improved or changed to meet up with the needs of the customers, they inform the IT.

The IT in turn checks if the change is necessary taking in to consideration the costs, the value the change will add to the company the capacity and time to make such a change. If all these conditions are fine, the IT begins the process of change. IT does not stop until a new document or an updated version of a document is created, and the change is made. If the conditions set by the IT cannot be met the change is dismissed and IT informs the business department with reasons why the change cannot be done.

# Appendix - D

Diagram was made by this project to show relations of documents and applications

Figure 11: instance of document related to many business processes and applications