Office Management System for smart shirts

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Declaration

I certify that this dissertation does not incorporate, without acknowledgement, any material previously submitted for a degree and to the best of my knowledge and it does not contain any material previously published or written by another person or myself except where due reference is made in text. I also hereby give consent for my dissertation, if accepted, to be made available for photocopying and for interlibrary loans, and for the title and summary to be made available to outside organizations.

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Acknowledgement

The writing of this dissertation has been one of the most significant academic challenges I have ever had to face. Without the support, patience and guidance of the following people, this dissertation would not have been completed. It is to them that I owe my deepest gratitude.

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Abstract

Smart shirts Lanka Limited is a sister company of Smart shirts Hong Kong which is a subsidiary of M/s Younger Group of company limited, an apparel manufacture in People's Republic of china. Smart shirts operate manufacturing facilities in various parts of Asia such as in Srilanka, Philippines, China (Chong Quing, Ningbo and Jilin) and Vietnam. There are over 30,000 personnel employed in these locations to perform different functions, processers and task in different positions.

In smart shirts we believe in quality. Besides having the reputation of being one of the finest shirts makers in the world in terms of workmanship, our concepts of quality extends to the end user, quality of on-time delivery, and the quality of our corporate social responsibility.

Smart shirts Srilanka has scattered around the Srilanka having eight factories and a two Warehouses with over 10,000 employees. Smart shirts produces high fashion garments to a reputed international clientele such as Polo, RalphLauren, LLBean, Jos ABank, Dillard's, JCrew, and Nautica which are sold in for most Departmental Stores throughout the United States and Europe

Smart shirts is a company that always try to identify the limitations, inefficiency , and un procedural process that need procedures to be in place, to improve inefficiencies and to get rid of the limitations. in this process it was identified smart shirts has some issues in few areas that can be improved a well-designed computer system.

Smart shirts has decided to introduce a new Office Management system which is going to consist of document sharing system, meeting management system and IT related help desk system in order to share the documents to relevant nominated staff or staff groups, initiating, managing meetings and sending meeting minutes to staff or staff groups without using the E-mails, since the e-mail system is to going to be outsourced to a company. Current IT related problems reporting are happening through by using telephone, e-mails, and warble communication that doesn't keep records methodically, and the process of completing the issues/problems will not be closely monitored and recorded are major draw backs of the current process.

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1. Introduction

Smart shirts Lanka Limited is a sister company of Smart shirts Hong Kong which is a subsidiary of M/s Younger Group Company limited, an apparel manufacture in People's Republic of china. Smart shirts operate manufacturing facilities in various parts of Asia such as in srilanka, Philippines, China (Chong Quing, Ningbo and Jilin) and Vietnam. There are over 30,000 personnel employed in these locations to perform different functions, processers and task in different positions.

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It is important to have a smooth flow of operation in the production are and the day today activities to maximize the production. Acting promptly and being proactive is one of the key measurements in production to handle all the deliveries on time, with practicing finest quality control concept.

To fulfill that electronic Office management system is vital. So that smart shirts human resource management and Information Technology together decide to develop a system to cater Document sharing, meeting management, and reporting IT issues. It will help to organize, improve some of organization inefficiencies and it will improve the efficiency of the process to achieve the corporate goals set by the Parent company.

1.2 Background and Motivation

The proposed OMS system is going to implement in smart shirts srilanka, is a leading garment manufacturing company. Current Document sharing, Meeting management and IT issue reporting is doing by mails, telephone calls and face to face communication with the staff. This has many issues and effect production and planning process greatly.

Proposed Office management system will be catering the document sharing, meeting management and IT issues reporting. Document sharing for the various purposes will be handled thorough the system. Customer documents, compliance documents, packing and shipping documents, Quality assurance documents will be shared for the employees through the system. Meeting management system will help to initiate meeting, cancel meetings, and share meeting documents to the relevant staff. The IT helpdesk system is to track IT related incidents/Problems, then automatically Reported IT problem will be assigned to the IT user automatically, IT user has a capability to see similarities of the previous same issues reported through the system, and easily find the solution given to the Issue.

If IT user needs help or feel to see the assist of the senior IT staff, escalation can be used to transfer the IT ownership to the supervisor. If an change effecting the production environment an change request should be raised to the head of IT. Upon the head of IT approval change request can be proceed. Head of IT can reject the change request if he feels to reject it.

1.3 Problem in Brief

Existing document sharing, meeting management and IT Issues reporting is done through the E-mails, telephone calls and face to face communication.

Document sharing is done mainly using emails, has many issues. Finding a shared document is not easy task. Who doesn't have individual emails (QC team, marker room, pattern room and warehouse) there is method to send those without a hardcopy. Printing a document around 200 to 300 pages (eg: Buyers tech pack) is wasting company resources.

Meeting management also communicated with the E-mails and the person who doesn't have email will be notified by the telephone call. Many instances the message is not transmitting to the recipient who is valuable source for the meeting. Meeting documents will be shared as hard copies will waste again.

IT issue reporting mainly done by the email and telephone calls. Most of the times emails are have not been read by the IT staff. It leads in responding to an issue thus will hinder the production process that can't be accepted in smart shirts environment. Telephone calls are not effectively helping to sort the IT issues too. There is no mechanism to the Head of IT to See the performance of the IT staff and any given time what is the workload of them

1.4 Aim and Objectives of the project

Aim

To streamline the unstructured, uncontrolled, unmonitored Manual and Partially automated functions in smart shirts fully electronically.

Objectives

1. To minimize the Production disturbance

2. To reduce cost for the storage capacity demand by the third party supplier

3. Maintain discipline in sharing documents and adopt secure sharing of documents to the correct staff.

4. Adopt version controls to the documents going to be shared and each and every document has its owners.

5. Manage all meeting requests, amendments, cancellation electronically.

6. Share meeting documents electronically.

7. All IT related issues should be recorded electronically.

8. All change requests will be handled electronically.

9. IT user efficiency will be measured by the new system thus it will be accurate.

10. Increase speedy response to IT issues, resolve issues in quick time, Status of an issue will transparent to all parties.

11. Notification via SMS, Mails and OMS will alert all parties attached to the PRF (Problem Reporting Form) and the Head of IT for any exceptions

1.5 Proposed solution

Proposed system will consist of three functions.

1. Document sharing system,

   It will be facilitate to team leaders to create their own their groups and share the documents to the team eliminating of sending mails with documents.

2. Meeting management System.

   Function will facilitate team leaders to create his/her own meeting groups and initiate the meeting with the participants. Pre meeting document can be shared among the meeting recipients. Change of meeting or cancellation of meeting can be notified through the system. Current practice of sending emails can be stopped immediately.

3. IT Helpdesk Function

   Function will enables users to log their IT issues through a system stop using the emails and telephone calls. Once the IT issue is logs to the system, system itself allocates the PRF (Problem Reporting Form) automatically to the IT staff. Once It has been allocated to the IT staff he/she can be able to see the similarities of previous PRFs that has the same problem. By looking at those previous solutions given to those IT issue can be seen easily. Thus it will speed up the response time to sort out the IT issues. Once the IT user feels that he/she is not competent enough to sort the issue, he/she can be escalate the issue to the supervisor. Any resolution to a IT issue effecting to the production environment should be seek for the change request from the Head of IT. Head of IT will have the sole authority to reject or approve the Change request.

1.6 Structure of the Report

In this report chapter 2 describes the Literature Review of current document sharing, Meeting management and IT help desk systems. Chapter3 will describes the Technology and Architecture adopted to build the office management system, architecture and the approach of the system. Chapter 4 will describes the Analysis and Design which will discuss the design of the systems using few tools. Chapter5 and chpter6 are describing the Implementation and evaluation respectively. At last chapter7 will describe the Conclusion and Further Work of the system.

1.7 Summary

The chapter has discussed the current problem and the proposed solution. The existing functions of the document sharing, meeting management and IT Issue reporting can be streamlined, improved and control effectively with the implementation the proposed system. The system will be able to act as the repository to track IT related issues, document sharing details and meeting management activities. Specially recording the IT issues and how it has been resolved enhance the capability of IT user to engage the Issue quickly and respond to the same quickly.

Chapter 2
Literature Review

2.1 Introduction

The objective of the proposed Systems **Office Management system** is to perform three key functions. In addition to those key functions users has limited opportunity share social details among the office friends. The key functions are Document sharing function, Meeting management system and IT related helpdesk system.

2.2 Document sharing function

The current practice is in smart shirts for the document sharing is mainly by e-mail. There are many documents need to be circulated in the company. There are many documents are sharing with production and planning departments since they have to closely monitor the production, planning and all manufacturing are adhere to customers specification. Since Smart-shirts srilanka asked to migrate to the Microsoft Outlook cloud smart shirts has to pay for the utilized disk space to the vendor. So that it was decided to develop the document sharing function that can be shared all documents among the smart shirt staff and no extra cost to be paid due to the system is going to be maintained by smart shirts.

Document Sharing can be done by any department, but it will be restricted to nominated individuals. The designated authorized staff member can share the documents among other staff. All other users are the receivers of the documents. Some of the few inputs will be a document such as tech pack of a customer, set of sample photos of the finish good, user manual of new third party software, pattern designs of a customer etc.

2.2.1 Literature review - Document sharing system available in the market

KRYSTAL™

KRYSTAL is one of the famous document sharing systems in the world. it is a easy and powerful system to be used in the organizations. it has features like, Scan, Index, Capture, Retrieve, Manage, Control and Distribute critical business document safely and securely. KRYSTAL document management software systems, replaces paper-

based processes with electronic procedures, eliminating the printing, posting and manual filing of paper documents and thus it will drive significant cost savings across your organization. [1]

Bitrix24 **Bitrix24** ⊙

Bitrix24 comes with free document sharing, online document storage, document management, and online multiuser document editing. It has been specifically created for small teams and organizations and can be used for something as simple as sharing files with a person outside your company or as complex as setting up multistep document approval workflows. Here's what you

[2]

Google Drive

Google Drive is used by millions of people at home and at work. With easy account switching, people can move seamlessly between their work and personal accounts while maintaining all of the controls that keep work data safe. Save work files or folders in Drive, access them from any device and share them instantly with colleagues, customers or partners. You can even share files with people who don't use Google Drive. No more sending attachments or spending time merging different versions of files. [3]

2.3 Meeting management function

The current practice is in smart shirts for the Meeting management system is mainly by e-mails. Meetings will be initiated and distribute through the emails to the attendees. Major departments will participate in meetings are production planning, production, quality assurance, Maintenance, Human resource, compliance and Information technology. According to the current process most of the times meeting invitation send through emails and by telephone. There are many issues in the current process are,

1. If there is a common email for the department the message will not be passed to the individual who need to participate the meeting.
2. Once the meeting request is done by the telephone call, at the time the staff is not available, will note passed the message.

3. Changes of meeting will not be passed to the participants in the current process.

4. Meeting minutes will not be distributed to the all attendees due to the staff doesn't has their own emails address.

5. Cannot identify the initiator or the owner of the meeting.

2.3.1 Literature review - Meeting management system available in the market

Fingertip

Fingertip is not a separate Meeting Management Tool. It has the functionality for meetings built-in to a service where all the other work is also. Therefore the meetings can be simply combined about the things worked on already. The discussions, comments and reasoning are seen beforehand intuitively and you can reduce meeting times. [4]

eSCRIBE™

eSCRIBE™ offers paperless meeting software that allows public and private sector organizations to save time and money on meetings - while reducing their impact on the environment. In addition to providing Participants access to meeting sites via any web browser, eSCRIBE also offers a dedicated iPAD application available by download through the Apple App Store. When used in conjunction with the eSCRIBEiPAD Publishing Module this application provides a rich Participant experience allowing users to securely sync with any of your eSCRIBE meeting portals and access detailed information for all published meetings for which they are participating members. [5]

2.4 IT Help Desk system.

In smart shirts there is no IT help desk system. All It related issues are informing by either an email or telephone. There is no proper mechanism to record, monitor or analyze IT related supporting functions. The close of an issue will be also notified by an email or a telephone call. Completion of an IT issue will not be notified to the user methodically. There is no proper mechanism to see the IT department performance thus improving efficiency, monitoring IT staff utilization, performance will not be

happen effectively. So that it is a urge to have a IT help desk system to address all IT related issues in the Smart shirts.

2.4.1 Literature review - IT help desk system available in the market

SysAid

SysAid is an IT service management (ITSM) and help desk software that integrates all the essential IT tools into one Service Desk. Its rich set of features include a powerful Help Desk, Asset Management, and other easy-to-use tools for analyzing and optimizing help desk performance .[6]

eStreamDesk

eStreamDesk uses a minimalistic approach to web-based helpdesk management. You will not find useless features and cluttered interface. The platform has the features you actually use. eStreamDesk is a flexible helpdesk platform that enables support staff to easily manage many requests from multiple services. The portal empowers customers with self-help functionality that drives down costs and enhances the customer experience. [7]

2.5 Issues and limitations in the document systems, Meeting management system and IT help desk system in the market to implement in smart shirts

- Difficult to integrate with existing smart shirts systems.
- License issues and the high user license cost.
- Vendor or the agent is not available in srilanka.
- Readymade system that will have smaller chance to customize.
- The cost of the customization is huge.
- Limited User licenses in Open sources systems.
- Limited capacity in storing documents in commercial systems.

2.6 Summary

The Chapter has been critically analyzed the Open source and other software with the proposed OMS system. It was identified there are many extra features in the commercial document sharing and meeting management systems that will not cater the smart requirements. It was identified the some of the software has its own

limitation that will not full fill the smart shirts requirements. For the help desk the cost of the commercial system are high. Main purpose is the OMS will bundle the three functions in to once and runs as a one system. This flexibly will not be available in the commercial systems, since those are developed to cater a specific function rather than many others. Evaluating this aspect it was revealed to develop in house office management system rather than acquire three different systems to do the three functions. Office management system will run on a single platform equipped with three functions.

3.1. Introduction

The proposed Office management system development will be handled using the Spiral model. The Spiral model would be useful as the existing process is very complex and understanding the same cannot be done in a single study. As the spiral model allows for iterative design as the project progress, it is expected that continuous feedback from users can be accommodated. Furthermore, risks management too could be swiftly handled with the use of spiral model.

The spiral model is a software development process combining of both design and prototyping-in-stages, in an effort to combine advantages of top-down and bottom-up concepts. Also known as the spiral lifecycle model (or spiral development), it is a systems development method (SDM) used in information technology (IT). This model of development combines the features of the prototyping and the waterfall model. The spiral model is intended for large, expensive and complicated projects.
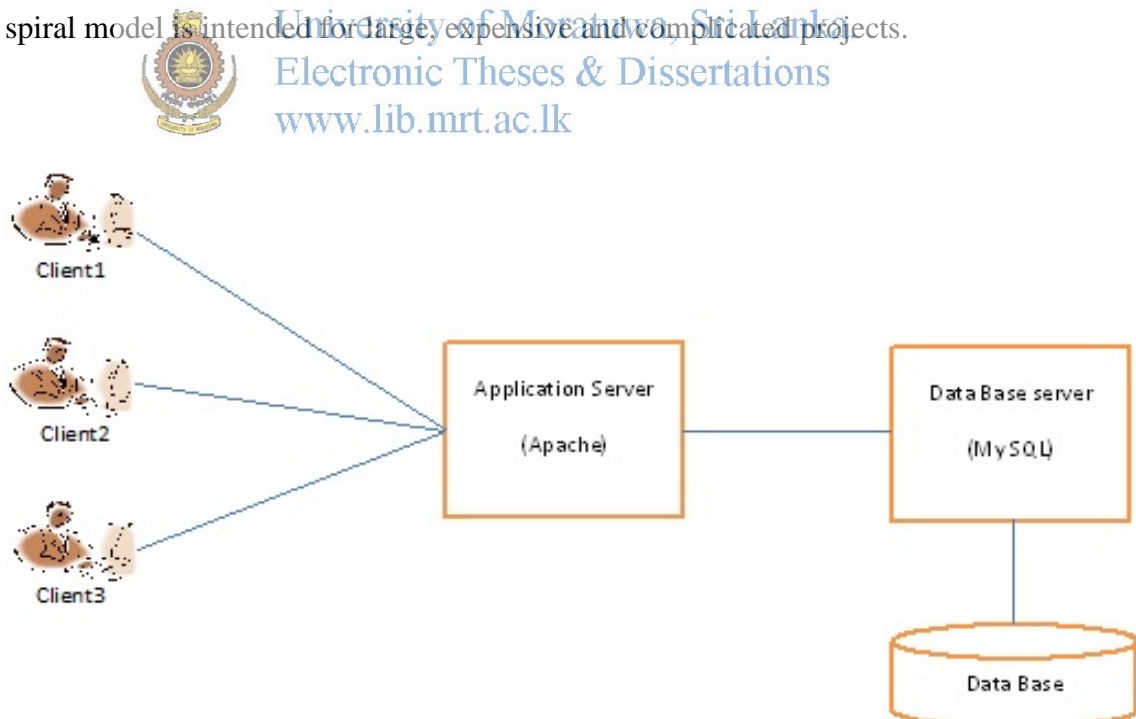
Figure 3.1- Client server architecture

3.2 Technology

There are many technologies available in the current market. out of those most common three combination, PHP, Apache and MySQL has been selected due to the fact that all are open source technologies freely available in the market. In addition to that these three combination works so well. "CodeIgniter is used to develop the system as the application development framework. CodeIgniter is an Application Development Framework, a toolkit for people who build web sites using PHP. Its goal is to enable you to develop projects much faster than you could if you were writing code from scratch, by providing a rich set of libraries for commonly needed tasks, as well as a simple interface and logical structure to access these libraries. CodeIgniter lets you creatively focus on your project by minimizing the amount of code needed for a given task." [8]

In addition to that XAMP, Java scripts, HTML also has been used in the development of the OMS.

3.2.1 XAMPP

XAPMM has been used for the server environment simulation during the development of Office management System. XAMPP is a free and open source cross-platform web server solution stack package, consisting mainly of the Apache HTTP Server, MySQL database, and interpreters for scripts written in the PHP programming languages.

Key components of the XAMPP 1.8.2 for Windows includes Apache 2.4.4, MySQL 5.5.32, PHP 5.4.16, phpMyAdmin 4.0.4, FileZilla FTP Server 0.9.41, Tomcat 7.0.41, Strawberry Perl 5.16.3.1 Portable, and XAMPP Control Panel 3.2.1.

3.2.2 PHP

Development of the Office management system has been carried using PHP for server-side scripting requirements. PHP is a server-side scripting language designed for web development purposes. PHP code is interpreted by a web server with a PHP processor module which generates the resulting web page: PHP commands can be embedded directly into an HTML source document rather than calling an external file to process data. It has also evolved to include a command-line interface capability and can be used in standalone graphical applications.

PHP includes free and open source libraries with the core build. PHP is a fundamentally Internet-aware system with modules built in for accessing File Transfer Protocol (FTP) servers, many database servers, embedded SQL libraries such as MySQL, Microsoft SQL Server and others.

3.2.3 MySQL

The database of the Office management system running on MySQL, which is an open source relational database management system that runs as a server providing multi-user access to a number of databases.

MySQL is a popular choice of database for use in web applications, and is a central component of the widely used LAMP and XAMPP open source web application software stack.

3.2.5 APACHE

The Office management system runs on APACHE server for windows. The Apache HTTP Server is a web server software program which has the ability run on multiple operating systems.

Apache supports a variety of features, many implemented as compiled modules which extend the core functionality. These can range from server-side programming language support to authentication schemes. Some common language interfaces support Perl, Python, Tcl, and PHP. Virtual hosting allows one Apache installation to serve many different websites. For example, one machine with one Apache installation could simultaneously serve www.example.com, www.example.org, test47.test-server.example.edu, etc.

Apache features configurable error messages, DBMS-based authentication databases, and content negotiation. It is also supported by several graphical user interfaces (GUIs).

3.2.6 Java Scripts

JavaScript (JS) is an interpreted computer programming language. It was originally implemented as part of web browsers so that client-side scripts could interact with the

user, control the browser, communicate asynchronously, and alter the document content that was displayed.

3.2.7 HTML

HTML version 5 has been used HTML5 is a markup language for structuring and presenting content for the World Wide Web and a core technology of the Internet

3.2.8 Windows Operating System

The Help Desk system at present has been tested on Windows 7 and Windows XP desktop environment with the use of XAMPP simulation software kit.

3.3 Architecture

As the architecture the MVC Model View Controller has been used to develop the project. Mainly the MVC architecture can be used by many programming language like C##, Java, PHP etc. The main idea of the MVC it to separate the application development in to three main parts. The three main parts are the Controller, the View and the Model.

Relationship between the MVC
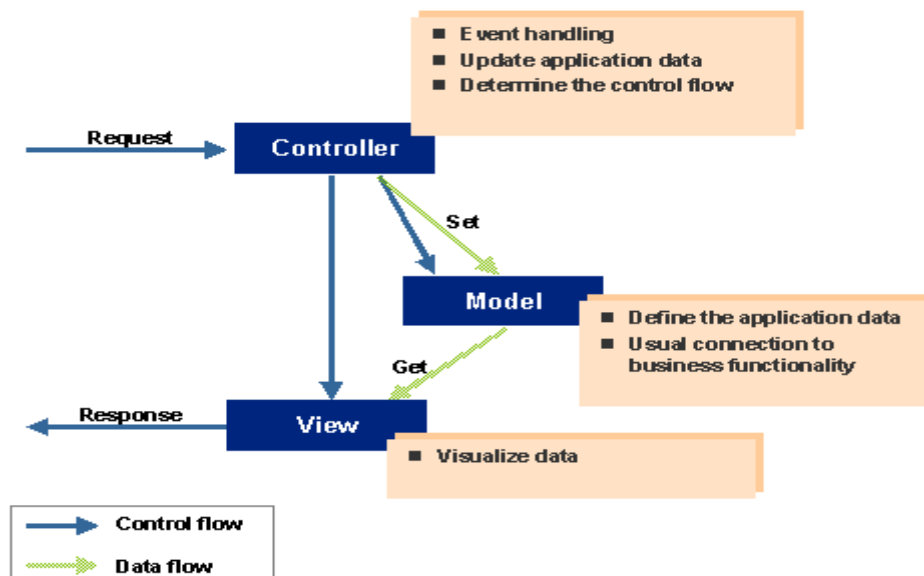
Figure 3.2: Model View Controller

The Controller:

The Controller is essentially the traffic cop of the application, directing traffic to where it needs to go, figuring out which view it needs to load up, and interacting with the appropriate models. For example, when you go to login to your Office management system on an intranet, the controller is going to tell the application that it needs to load the login form view. Upon attempting to login, the controller will load the model that handles logins, which will check if the username and password match what exists within the system. If successful, the controller will then pass you off to the first page to you enter when logging in, such as Dash board page where all users will have.

The View:

In a web-based application, the view is exactly what it sounds like: the visible interface that the user interacts with, displaying buttons, dash boards, forms, and information. Generally speaking, the controller calls up the view after interacting with the model, which is what gathers the information to display in the particular view.

The Model:

The Model is where data from the controller and sometimes the view is actually passed into, out of, and manipulated. Keeping in mind our example of logging into the Office management system, the model will take the username and password given to it from the controller, check that data against the stored information in the database, and then render the view accordingly. For example, if you enter in an incorrect password, the model will tell the controller that it was incorrect, and the controller will tell the view to display an error message saying something to the effect of "Your username or password is incorrect."

Advantages in MVC

Allows for the programmer to isolate these very separate pieces of code into their own domain, which makes code maintenance and debugging much simpler than if all of these items were chunked into one massive piece. If I have a problem with an application not displaying an error message when it should, I have a very specific set of locations to look to see why this is not happening. First I would look at the "Login

Controller" to see if it is telling the view to display the error. If that's fine, I would look at the "Login Model" to see if it is passing the data back to the controller to tell it that it needs to show an error. Then if that's correct, the last place it could be happening would be in the "Login View."

Using this development pattern allows for very easy maintenance, as well as independent development of pieces of the same system by different programmers, which makes for quick turnover of applications all while still maintaining a very high standard of quality for the application.

3.4 System approach

The approach of the system is going to use the spiral model. Spiral model has been selected due to the fact that user's interaction is one of the key elements of the success of the project. Using the prototypes of screen and the flow of the information will give users a better understanding of the system they are going to see in future. It will motivate them and creative ideas will be born from their side will make the project success percentage to high.

3.4.1 The spiral model

The spiral model consists of iterative development known as prototyping with the structured controlled element of the waterfall model. The major benefit is it allows to release incremental cycles of the product, or incremental refinement through each time around the spiral. In addition to that the spiral model also explicitly includes risk management process within software development. It enables to Identify possible risks, and determining how to mitigate the risk. it will greatly help to keep the project development process under control.
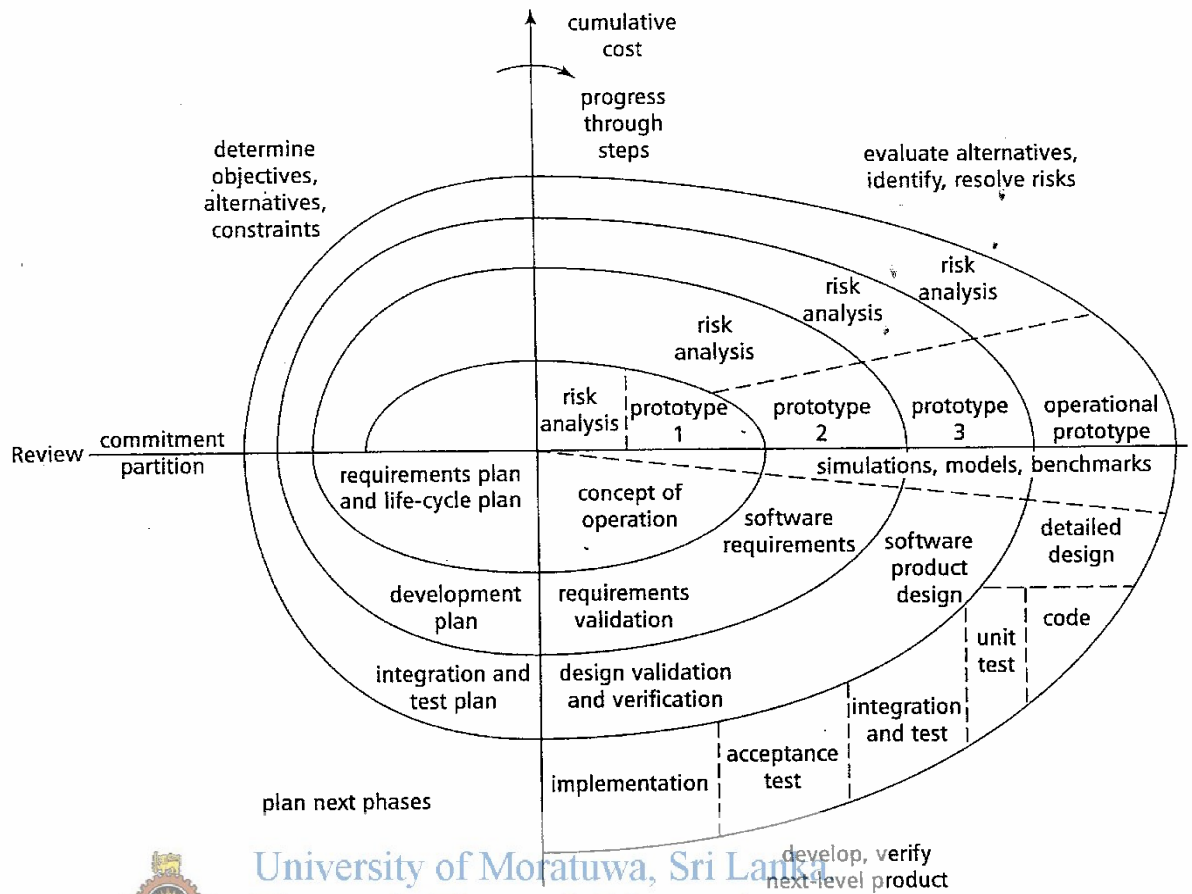
Figure 3.3: Generic Spiral Model

Each iteration of spiral model is an always extension of an earlier product you have developed. in other words once the iteration are carrying out in the spiral model it will give a new phase or a product in each iteration. There will be a change in system analysis and design, risk assessment and implementation. This model uses many of the same phases as the waterfall model, in essentially the same order, separated by planning, risk assessment, and the building of prototypes and simulations.

The spiral lifecycle model allows for elements of the product to be added in when they become available or known. This assures that there is no conflict with previous requirements and design. This method is consistent with approaches that have multiple software builds and releases and allows for making an orderly transition to a maintenance activity. Another positive aspect is that the spiral model forces early user involvement in the system development effort. For projects with heavy user interfacing, such as user application programs or instrument interface applications, such involvement is helpful.

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3.4.2 Step by Step Approach

The Spiral model could be transformed to the office management system functions to deal with in a step by step approach. All the three functions can't be implemented at once. should decide the least complex function and implement first using the using the spiral model. three different spiral model will be used to develop the three functions. The main reason to be used the spiral model is that the prototyping can be effectively used to get the users feedback and the risk will be analyze and mitigate in the spiral cycle.

3.5 Summary

A client server based application has been developed with the aim of facilitating a multiuser environment for the proposed solution. The entire application has been developed using free and open source software facilitating the initial step to be more affordable. However, in the event the organization wishes to move for proprietary platform the same model could be adopted. The proposed platform also would work as a prototype for a more complex solution that could be implemented for a large organization. Using the MVC technology it made easy development and the organizing the code, views and data base are specific.

4.1 Introduction

The entire project was subject to spiral model where several iterations were done during the process in order to assess the success of the project. The following table outlines the entire workflow which has been conducted in a iterative manner subject to spiral model.

Item	Description	Repetitive processes	Output
Requirements gathering:	Interview all key stakeholders including project owners, sponsors, users, department heads, IT staff, Head of IT, and Top Management.	1.Determine high-level objectives, alternatives, constraints, and concept. 2.Determine high-level costs, require requirements, & constraints, stakeholder buy-in. 3.Conduct risk analysis 4.Build prototypes 5.Discuss with all stakeholders and evaluate the outcome of prototypes, simulations, and models.	Repeat this process until Concept of the product is finalized. The main output would be the system requirement specifications, set objectives, design specifications, validated requirements..
Development Plan	A comprehensive project plan must be drawn in order to develop the proposed	1.Gather software requirements 2.Work on product design	Validated Design and the product

		3. Work on functional and operational prototypes 4. Conduct risk management 5. Keep all stakeholders informs.	
system.			
Integration and testing	Components that are developed in isolation must be integrated and to be tested to ensure the functionality as per the requirement specification.	1. Perform unit testing, 2. Perform integrate testing 3. Perform acceptance testing 4. Validate against requirements. 5. Obtain Sign off 6. Conduct risk analysis.	A functional system.
Implementation	A system which has fully tested would be implemented in the production environment.	The implementation must not affect the existing operational environment. If required decide whether the existing manual system should run parallel for period of three months.	A working system

Post implementation Review	Conduct post implementation review in order to evaluate whether the desired expectations have met.	Obtain feedback from relevant stakeholders.	Documentations, Incident Tickets, Change request.

Table 4.1: Phases of Systems Development Life Cycle

In project Analysis and design phase, it has been used many tools to carry out the project. in the system analysis process it has been identified the key stake holders of the system. The key stake holders were, User, Team Leader/Manager, IT staff and the Admin.

4.2. Context diagram in brief.

The Context Diagram shows the system under consideration as a single high-level process and then shows the relationship that the system has with other external entities (systems, organizational groups, external data stores, etc.). Another name for a Context Diagram is a Context-Level Data-Flow Diagram or a Level-0 Data Flow Diagram. Since a Context Diagram is a specialized version of Data-Flow Diagram. A Context Diagram (and a DFD for that matter) provides no information about the timing, sequencing, or synchronization of processes such as which processes occur in sequence or in parallel. Therefore it should not be confused with a flowchart or process flow which can show these things. Context diagrams can be developed with the use of two types of building blocks:

- Entities (Actors): labeled boxes; one in the center representing the system, and around it multiple boxes for each external actor
- Relationships: labeled lines between the entities and system

4.2.1 Benefits of a Context Diagram are:

1. Shows the scope and boundaries of a system at a glance including the other systems that interface with it
2. No technical knowledge is assumed or required to understand the diagram
3. Easy to draw and amend due to its limited notation
4. Easy to expand by adding different levels of DFDs
5. Can benefit a wide audience including stakeholders, business analyst, data analysts, and developers.

4.2.2 Context Diagram of the Office management system

The context diagram of the OMS will show the high level entities of the system. The major three functions, Document sharing, Meeting management and IT helpdesk functions will be used by five major entities.

Meeting Owner:

The person creates the Meeting. Meeting owner is responsible for the select date, time and the location, which has authority to amend and cancel the meeting. Lastly meeting owner should distribute the meeting minutes to the attendees of the meeting. Meeting owner has the functions to create/amend and delete Meeting groups

Document Owner:

The person shares the Documents to Staff. Capable of sharing a document, Create document sharing groups.

User:

The Staff, who uses the system to initiate the PRF, Receiving Shared Documents, Receiving Meeting Request, Meeting Amendments and meeting cancelations,. User can view the PRF status of his/her has log to resolve by the IT department. User can acknowledge the PRF to be close.

IT Staff:

Duty of the IT staff is to perform the IT issues relates to a PRF assigned to him. once he finishes the PRF need to complete the PRF. then it will send a notification to the

users that the PRF has completed. If an IT staff cannot resolve the issue he/she can escalate the PRF to his/her supervisor. If any PRF needs a Change request to be made to resolve a PRF, change request has to be initiated and should get approval from Head of IT.

OMS Administrator:

Person authorized to maintains the OMS system. Create and manage users, revoke grant user privileges. Data base administration, are few functionalities of the OMS administrator.

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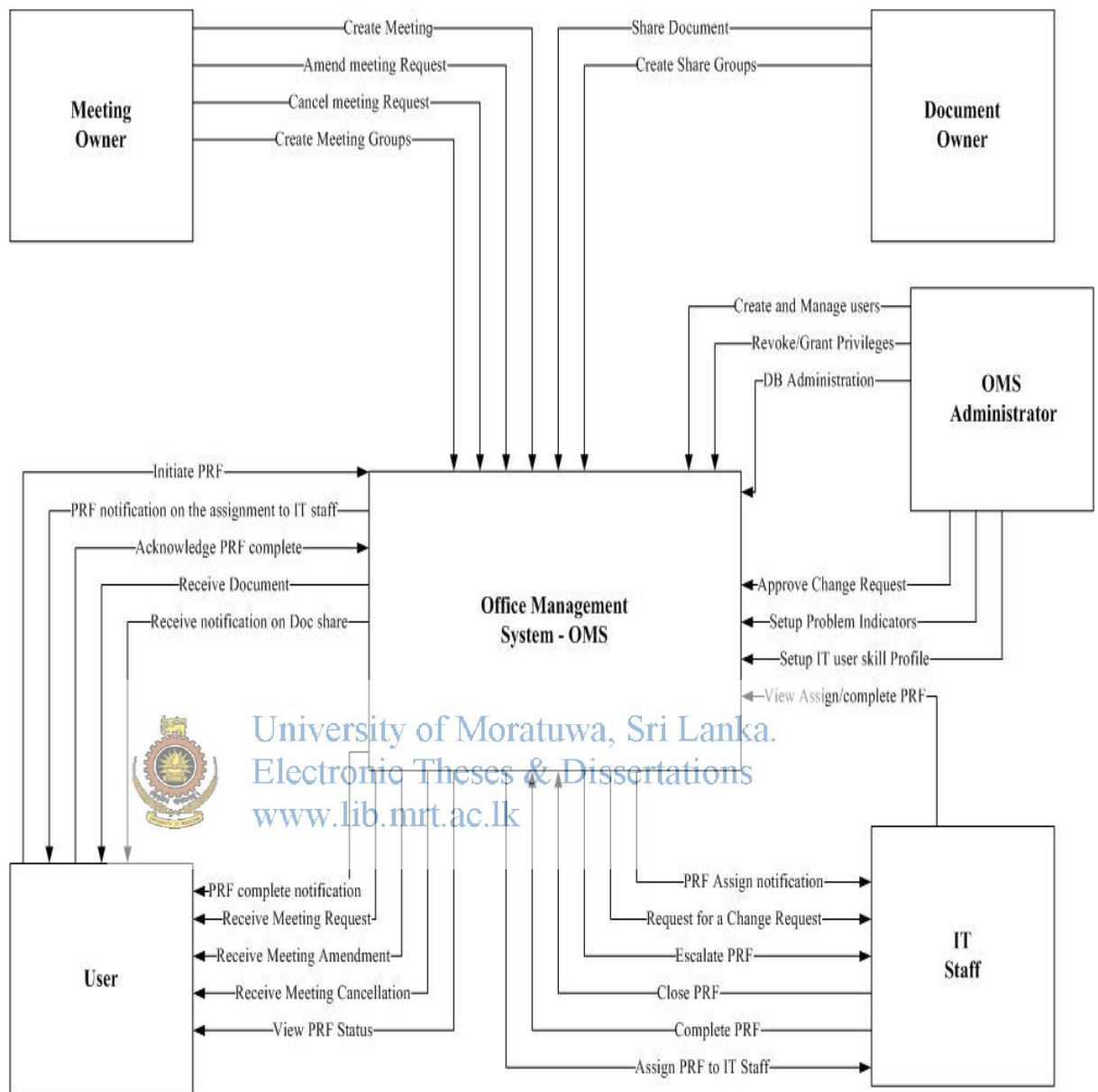
Figure 4.2: OMS Context Diagram

4.3. ER Diagram

Entity–relationship model (ER model) is a data model for describing a database in an abstract way. Following are the entities and related attributes which have been identified for the system. An ER model is an abstract way of describing a database. In the case of a relational database, which stores data in tables, some of the data in these tables point to data in other tables.
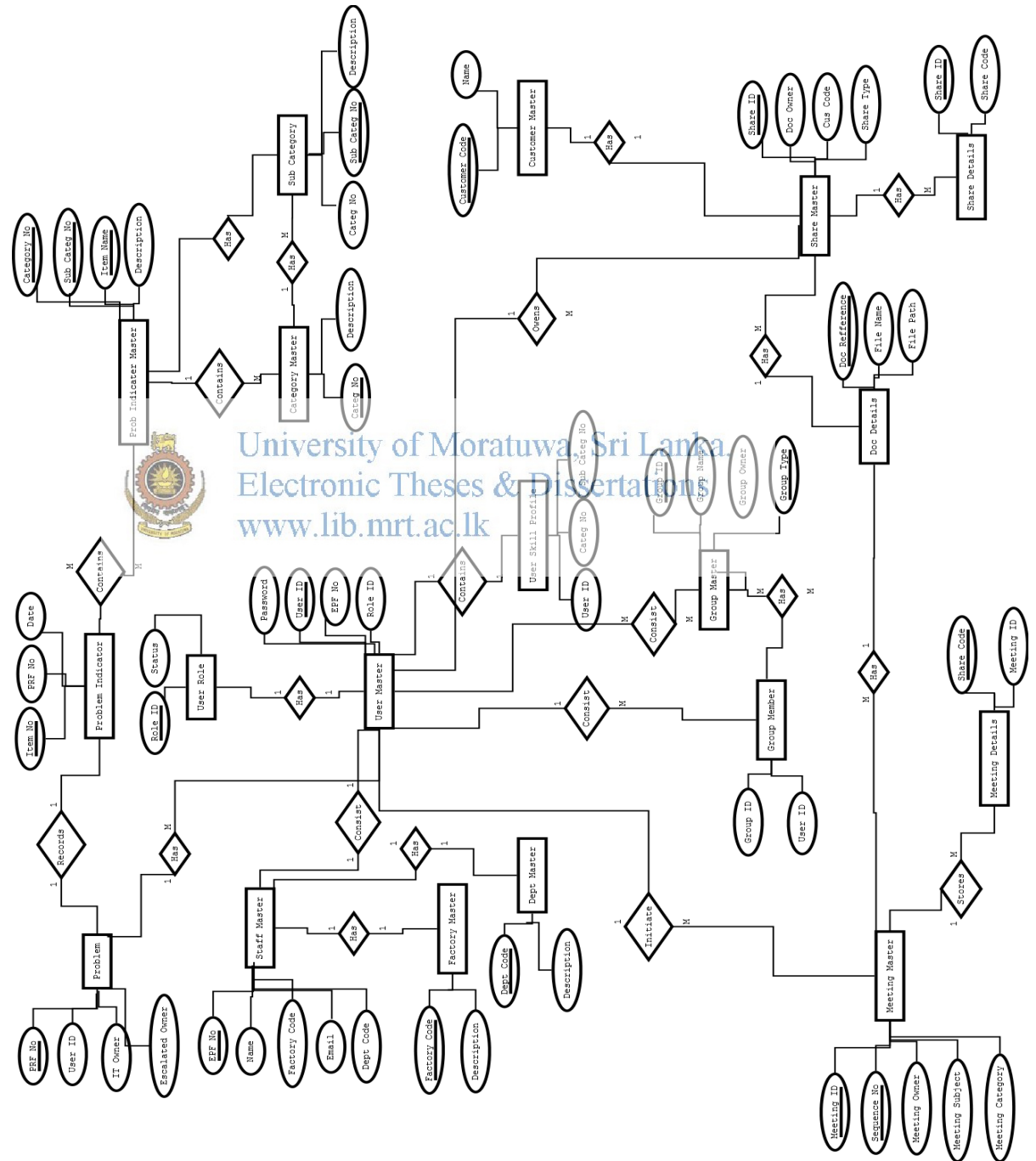
Figure 4.3: ER Diagram

4.4. Use Case Diagram

A use case diagram at its simplest is a representation of a user's interaction with the system and depicting the specifications of a use case. A use case diagram can portray the different types of users of a system and the various ways that they interact with the system. The following diagram shows the users and the relevant activities of the entire system.
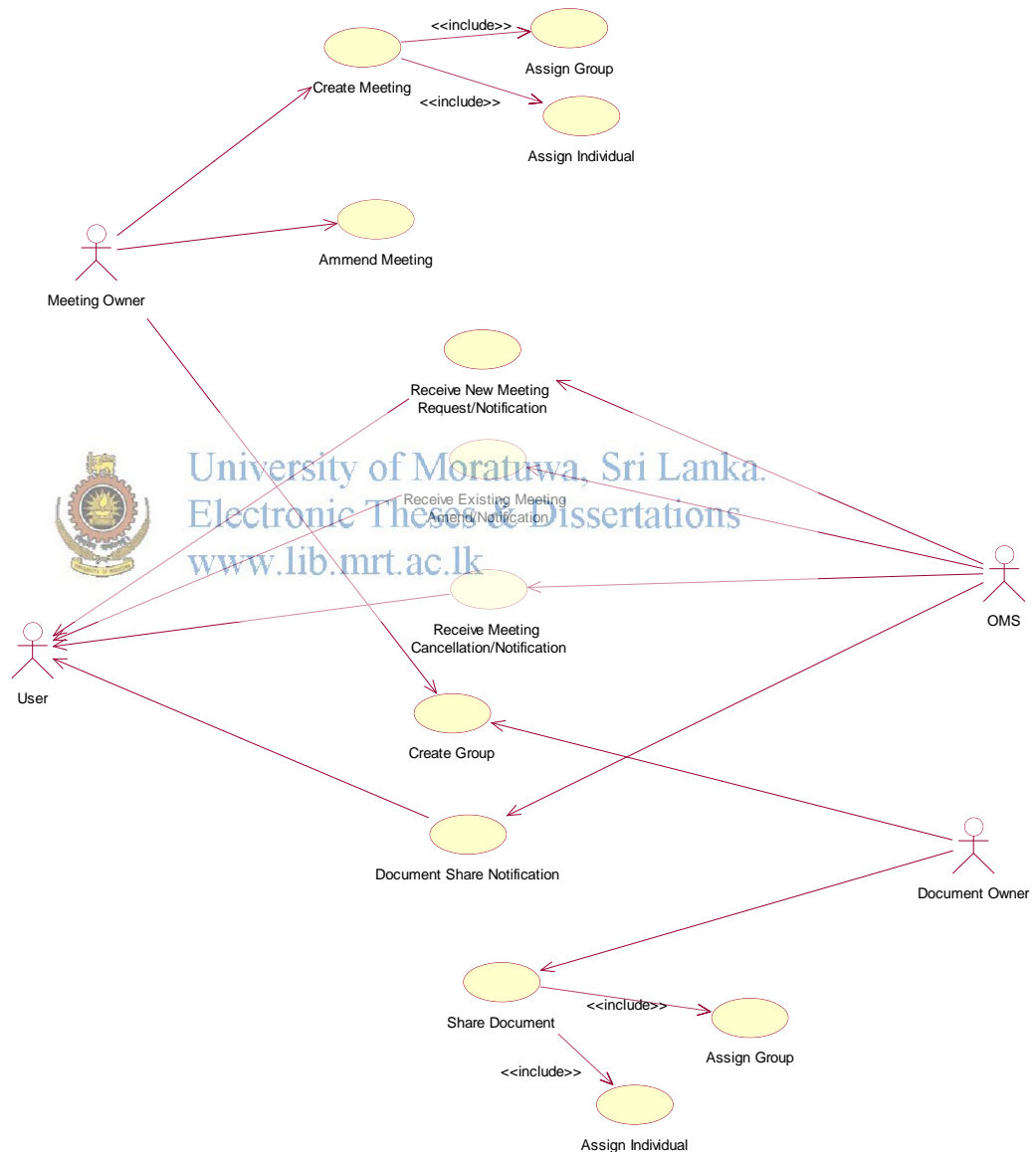
Figure 4.4: Use case Diagram – Document sharing and Meeting management

Create User

Create Group

Set up user skill profile

Setup Problem indicator

Revoke/Grant Privileges

OMS Admin

Create Backups

Initiate PRF

<<include>>

Assign PRF IT Staff

OMS

User

PRF Notification from asign IT Staff

<<extends>>

Refere Knowledgebase

Initiate Change Request

Approve Change Request

IT Staff

View PRF Status

Escalate PRF

Aknowlegde PRF Complete

Complete PRF

Close PRF
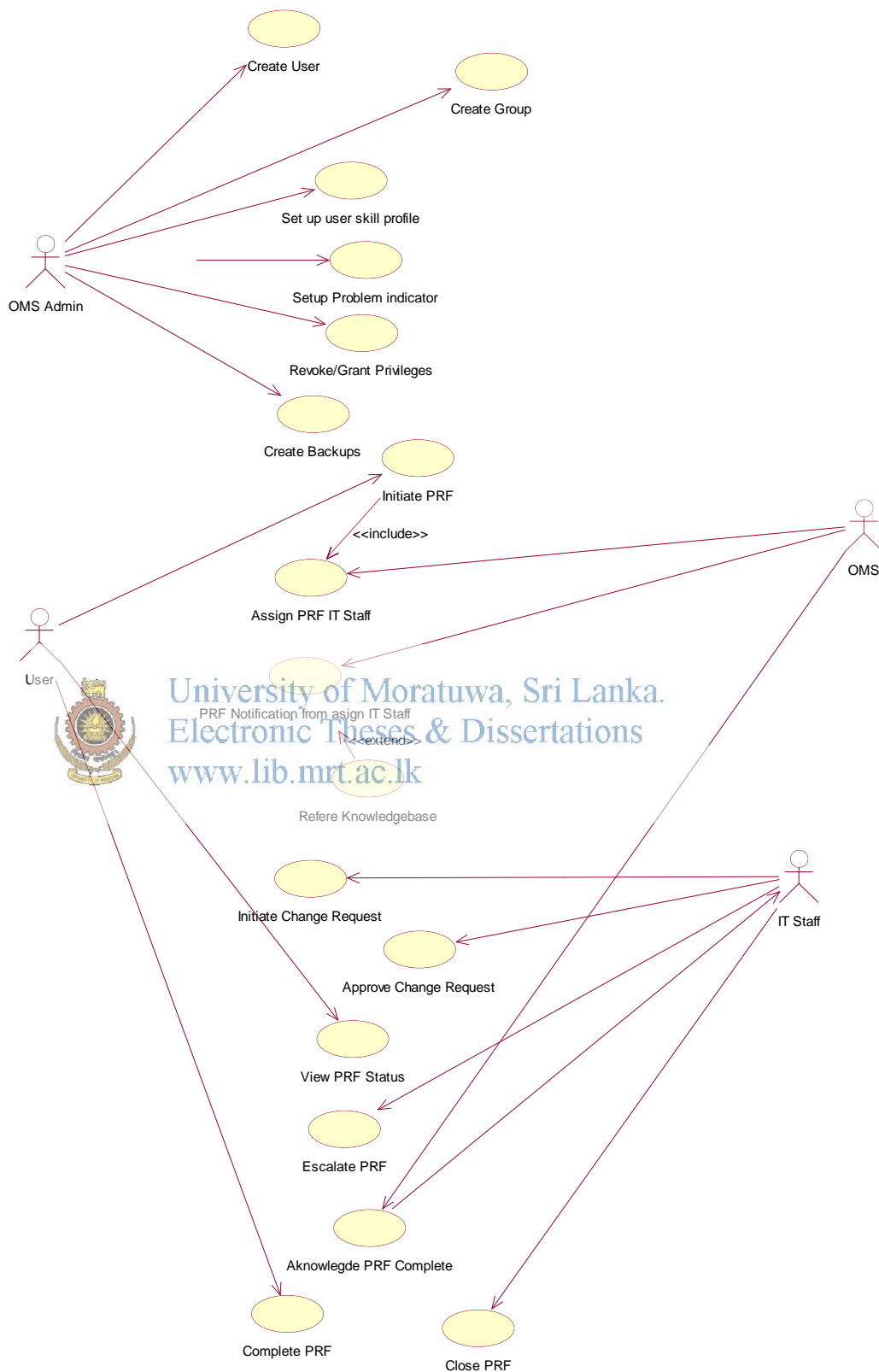
Figure 4.5: Use case Diagram – IT help Desk and OMS Admin

4.5. Database Implementation

Data base implementation has been deployed in MySQL and the OMS database consists of 19 tables. The database diagram shows the relation between tables. The structures of tables in the database have been provided in the Appendix 1.1.
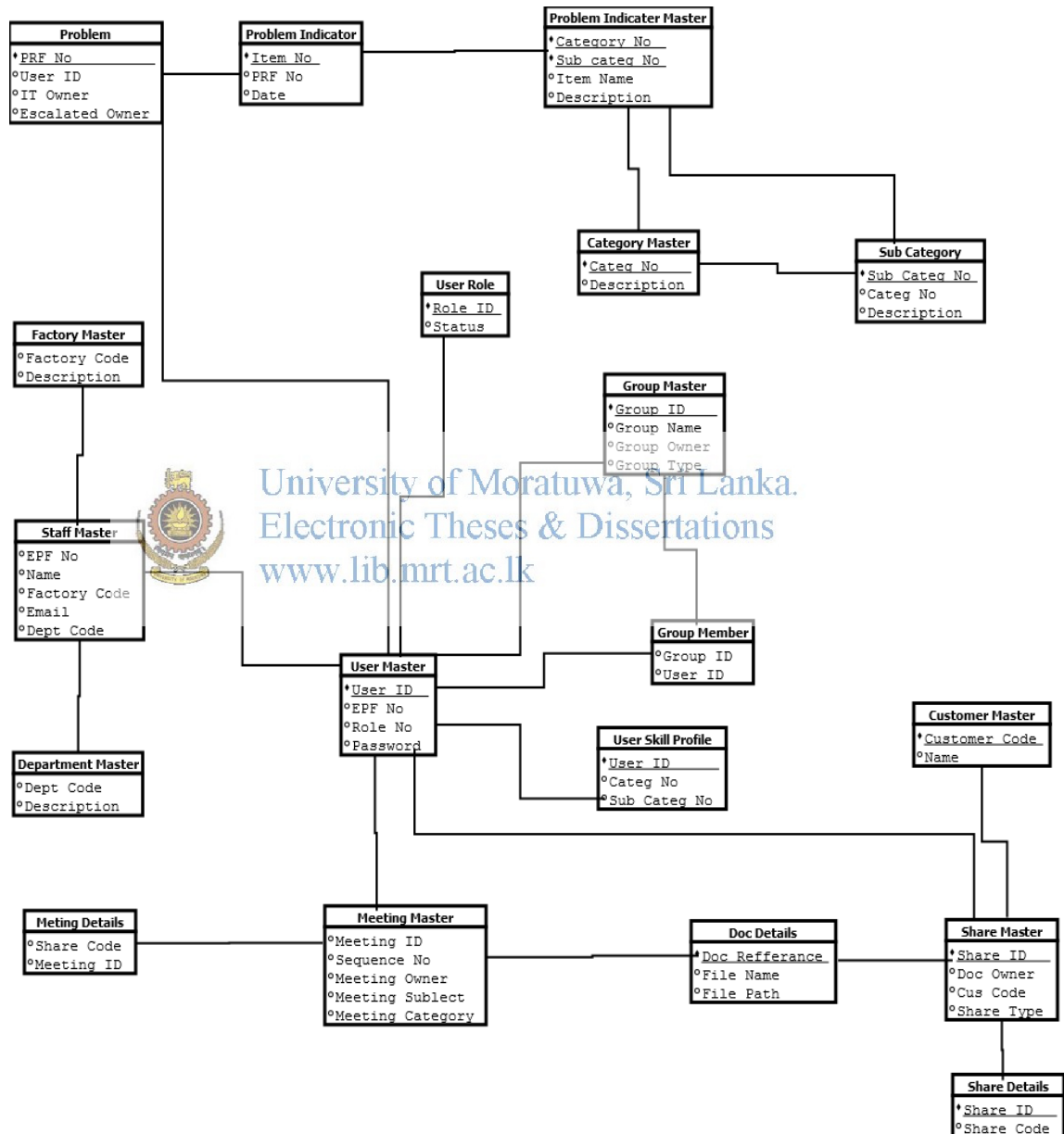
Figure 4.6: OMS table relation ship

4.6 Summary

The chapter has outlined the functional design and the database implementation of the Office management application. The database relationship of the system has been described using entity relationship diagram, context diagram has describe the high level functionality distributed for each role of the system. to elaborate more user case diagrams has been used to understand the system.

5.1. Introduction

The Project is to be implemented Phase by phase. The three major functions are going to implement in three different time lines. Specially that is due to the prototyping and gets the user confirmation on the each function and the functions need to run parallel without hindering the current practice. specially in document sharing users are requested to share all document what they have having currently by the new document sharing system which will take more time to evaluate capacity of sharing those to the users again. Both Meeting minutes and the It help desk system need time to train to use the new functions. Backup procedure will be in place to back up all the tables daily and monthly backup using ARC server.

In this chapter the Logic of the three major functions, Meeting management function, document sharing function and IT helpdesk function have been describe using Flow charts with the description of the each activities.

5.2 Program Logic of the Three Major functions in OMS using Flow charts.

In this chapter it will describe the Logic of the three main functions of document sharing function, meeting management function and the IT Helpdesk system. using data flow diagrams, three functions will be describe.

5.2.1 Meeting management function flow chart

Meeting Management Function
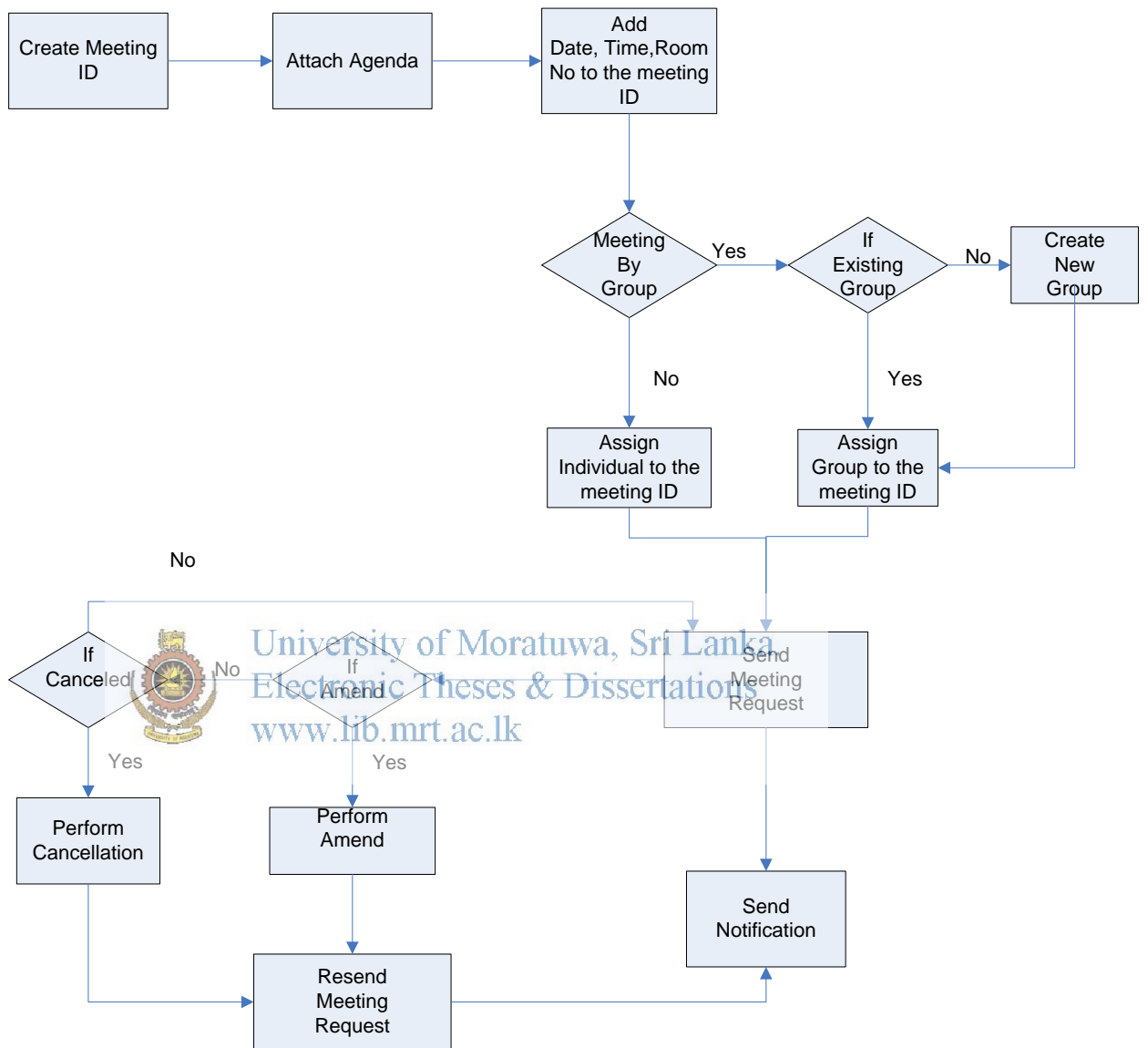
Figure 5.1: Meeting Management Function flow

5.5.2 Activities in the Meeting management system.

1. Meeting ID will be crated Automatically once the New meeting is initiated

2. Meeting agenda can be attached as a document or can be written in the system

3. Add Date, Time, Meeting room, Type of Meeting (VC/telephone/normal) to the Meeting ID

4. Option is available to select the Meeting attendees by Groups or by individuals. Groups can be created beforehand or option has given to create a new group at the time of creating meeting and assign individuals to the group.

5. Meeting request can be sent to the staff you have selected individually or the staff assigned to the selected group or groups.

6. Once you finish the selection you can save the meeting.

7. Option is available to distribute the Meeting to selected attendees.

8. If any amendment or cancellation for the existing meeting ID can be done before the meeting due date.

9. Notification will be sent to the staff form of e-mail, SMS, notification their Account in the office management system.

10. Meeting minutes can be sent, by selecting a Meeting ID. Once the meeting ID has selected it will distribute the Meeting minutes only for the attendees attached to the Meeting ID.

5.2.3 Document sharing function flow chart

Document Sharing Function
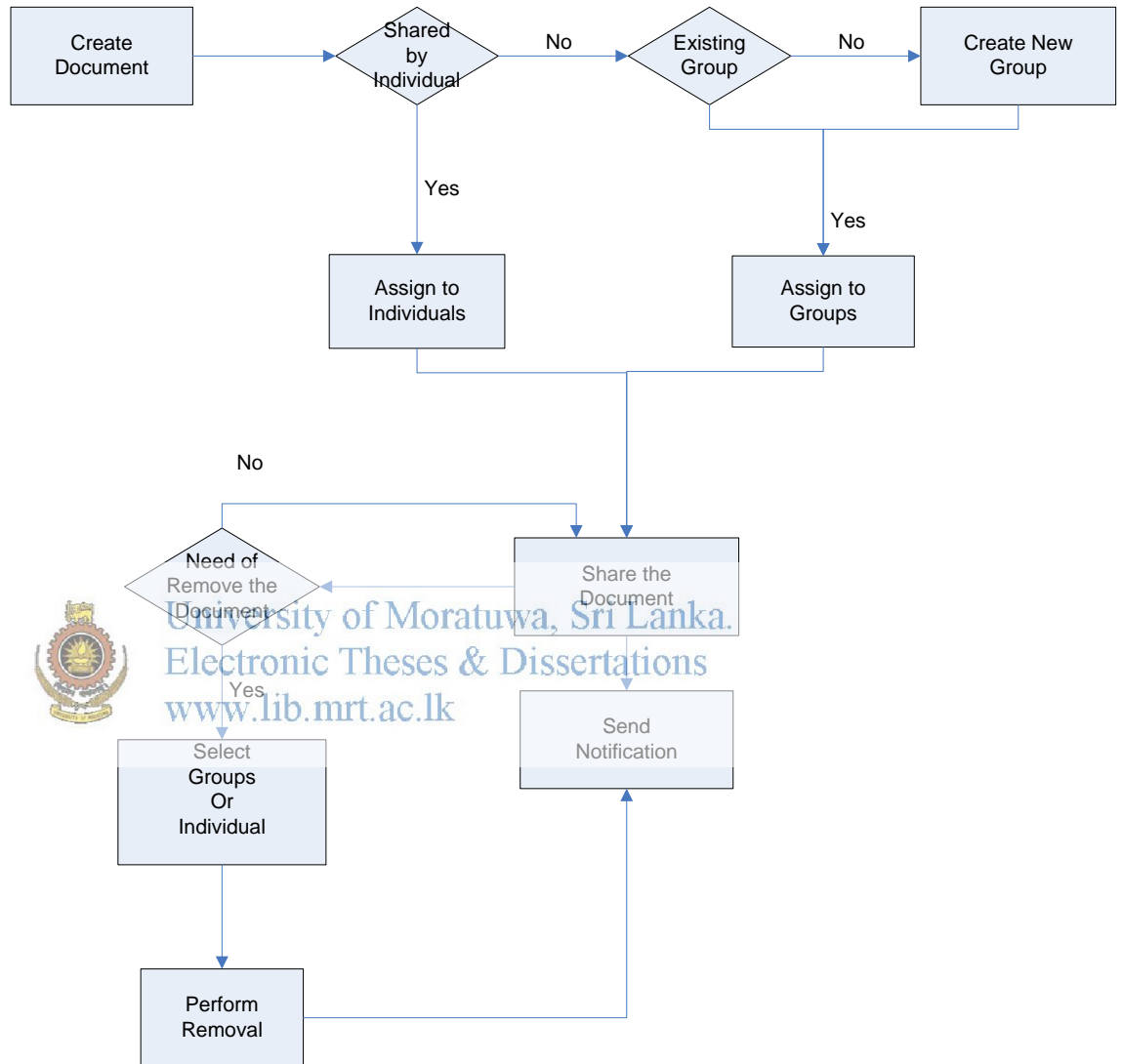
Figure 5.2: Document Sharing Function flow

5.2.4 Activities in the document sharing function.

1. Create the document.
2. Option is available to select the Staff by Groups or by individuals to share the documents. Groups can be created beforehand or option has given to create a new group at the time of sharing the document, and assign individuals to the group.
3. Option has given to share the document.
4. Shared document can be removed from by individuals or by whole group.
5. Notification will be sent to the system about the sharing/remove of document/documents.
6. Same document cannot be shared to the same individual or the group without changing the document name. thus it will force the users to use document version controls.

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5.2.5 IT Help desk function flow chart

IT Help Desk
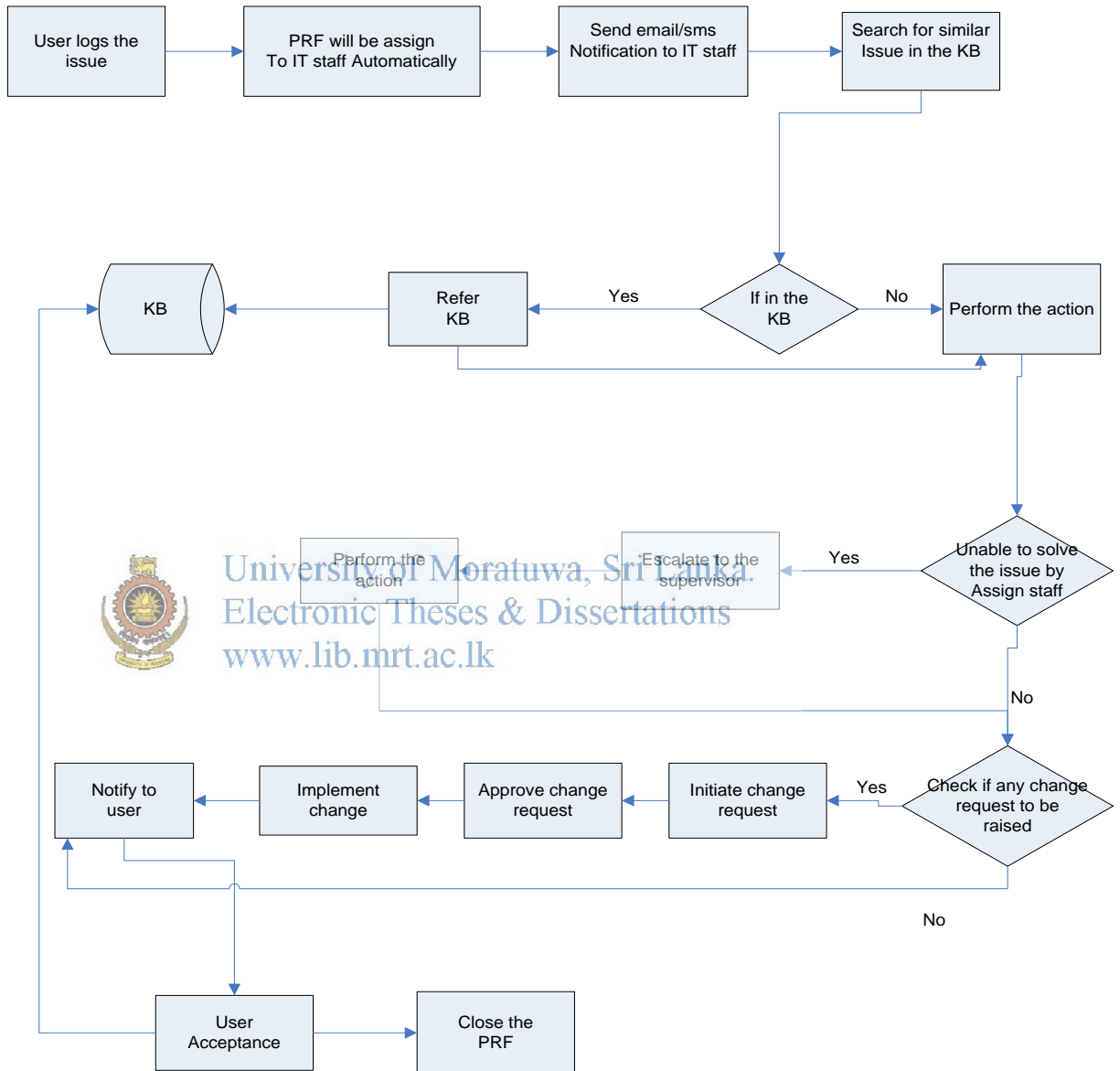
Figure 5.3: IT Help desk high-level function flow

5.2.6 Activities in the IT help Desk system.

1. User will log the Problem. At the time of saving the Issue it will create the Problem reporting from number. (PRF#). It will be sent to the queue

2. Background job reads the queue and attached the PRF to the IT staff automatically. It staff capabilities, and the details related to the Ares has been setup in the system.

3. Once the PRF has been attached to the IT staff, From of email, SMS and notification to the office management system will be set automatically.

4. It staff can search the knowledge base if the PRF is relets to an existing issues has been reported before, then the solution can be dig from the old PRF to solve the solution.

5. If there is no record in the KB, It staff has to solve the issue. All the details of the resolving the issue should be written in the area provided in the screen.

6. If the IT current IT staff cannot be resolved the assigned IT issue, that can be escalated to his supervisor.

7. If any change request is required to solve the issue (ie. Program modification, data fixing,) Change request has to be initiated.

8. Change request should be approved by the Head of IT to proceed.

9. Implement the Change request.

10. Once the implementation has done It staff should complete the PRF, for the user acceptance.

11. User need to accept the Problem has been resolved if he/she satisfied.

12. Then the IT staff can close the PRF.

5.2.7 Proposed Notifications distribution in the help desk system.

Below table will describe the proposed notifications distribution to be planned to send IT helpdesk function.

Function Description	To	Notification By Email	Notification by SMS	Notification OMS
PRF Assignment to the IT staff	IT Staff User	Yes	Yes	Yes
Escalate to the Supervisor	Supervisor Head of IT	Yes	YES	Yes
Initiate Change request	Head Of IT	Yes	No	Yes
Approve change Request	IT staff/s	Yes	No	Yes
PRF complete	User	Yes	No	Yes
User Acceptance	IT Staff	Yes		Yes
Not attended PRF	Head Of IT	Yes	No	Yes
Not completed on time	Head of IT	Yes	No	Yes
Not completed Priority one	Head of IT	Yes	Yes	Yes

Figure 5.4: Proposed IT Help desk Notification table

5.3 Implementation of the OMS:

Office management system consists of three functions. Document sharing, meeting management and IT help desk function. Each function flow will be discussed.

5.3.1 Document sharing

Document sharing function is one of the key functions developed in the OMS. It enables team leaders to share documents among their team members. Team leader can create Groups, and share the documents to the group. Facility is available to select individual people and share the document.

5.3.1.1 User Login

User login Scree enables users to sign in to the OMS. Valid user ID and password credentials must have to access the OMS.
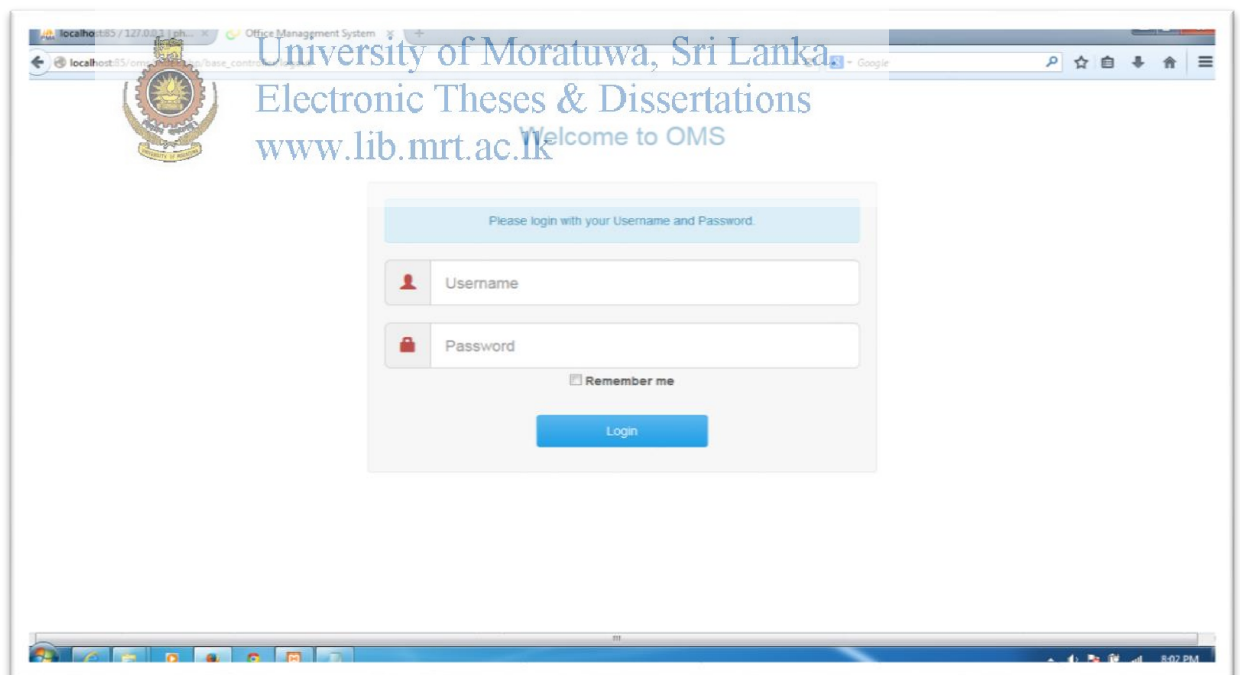
Figure 5.5: User login Screen

5.3.1.2 Create Groups

Function will facilitate to create Groups to share documents among teams.
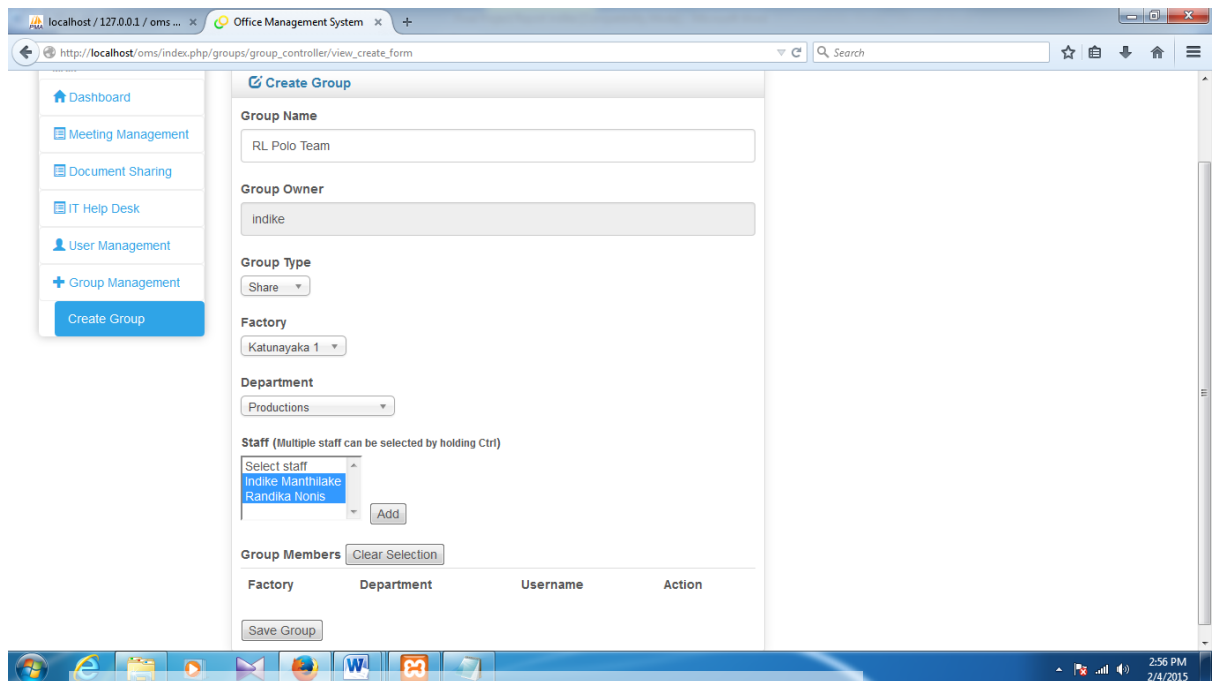
Figure 5.6: Create Groups

5.3.1.3 Share Document by Groups

Document can be shared by groups. All the candidates attached to the group will receive the shared document.
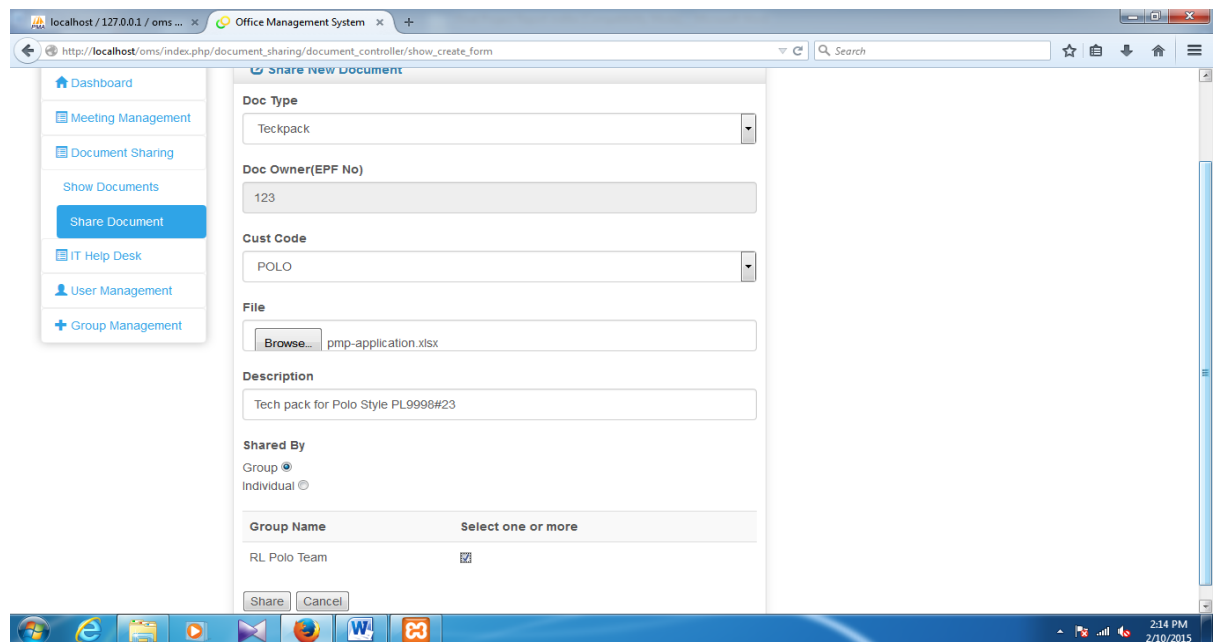
Figure 5.7: Share document by Groups

5.3.1.4 Share Document by Individuals

Documents can be shared by individuals. Need to select the Factory and the department. It will show users under the factory and department to be selected to share the documemt.
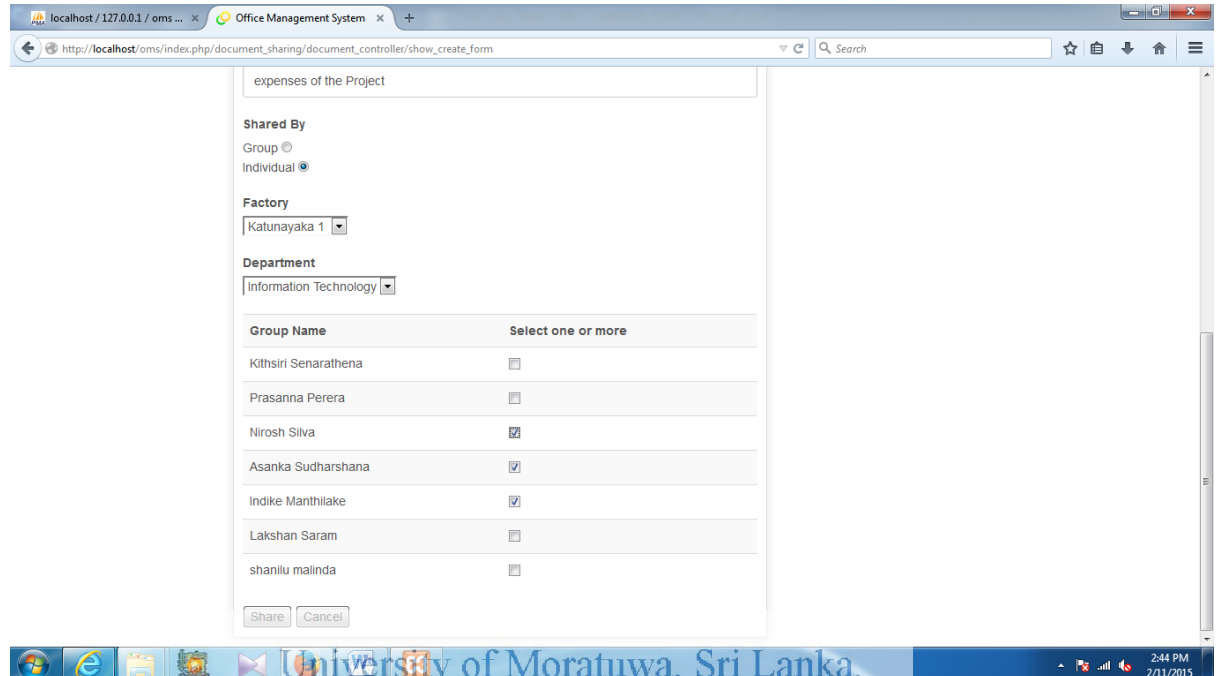
Figure 5.8: Share document by individuals

5.3.2. Meeting Management

Meting Request can be sent to the user using the Meeting Management Function. Meeting can be initiated to a group of staff or individual groups. Meeting can be change and the meeting can be cancelled. Group leader and the admin category has the rights to initiate meeting to the users.

5.3.2.1 Initiate Meeting by Groups

Team leader can be initiating a meeting to the group of people assigned to a group. All groups created by the User will be showing in the Screen. Needs to fill the details of meeting date and time, meeting room etc. By selecting a groups meeting can be initiated to the users.
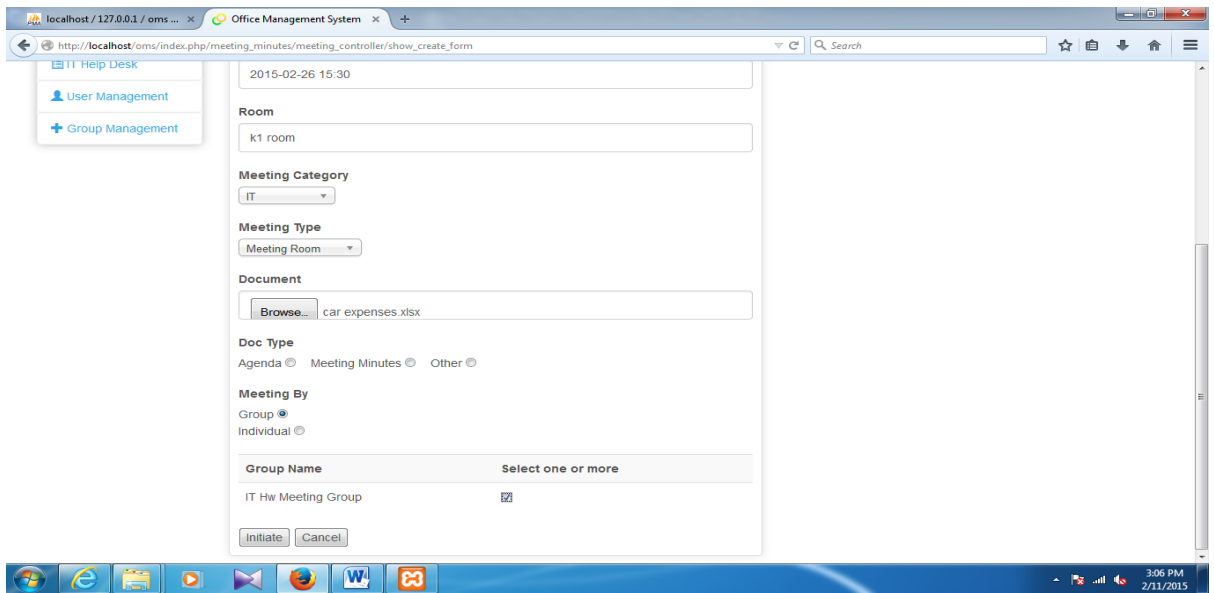
Figure 5.9: Initiate Meeting by Groups

5.3.2.2 Initiate Meeting by Individuals

Meetings can be initiated by Individual users. Users will be showed in the form by factory and department.
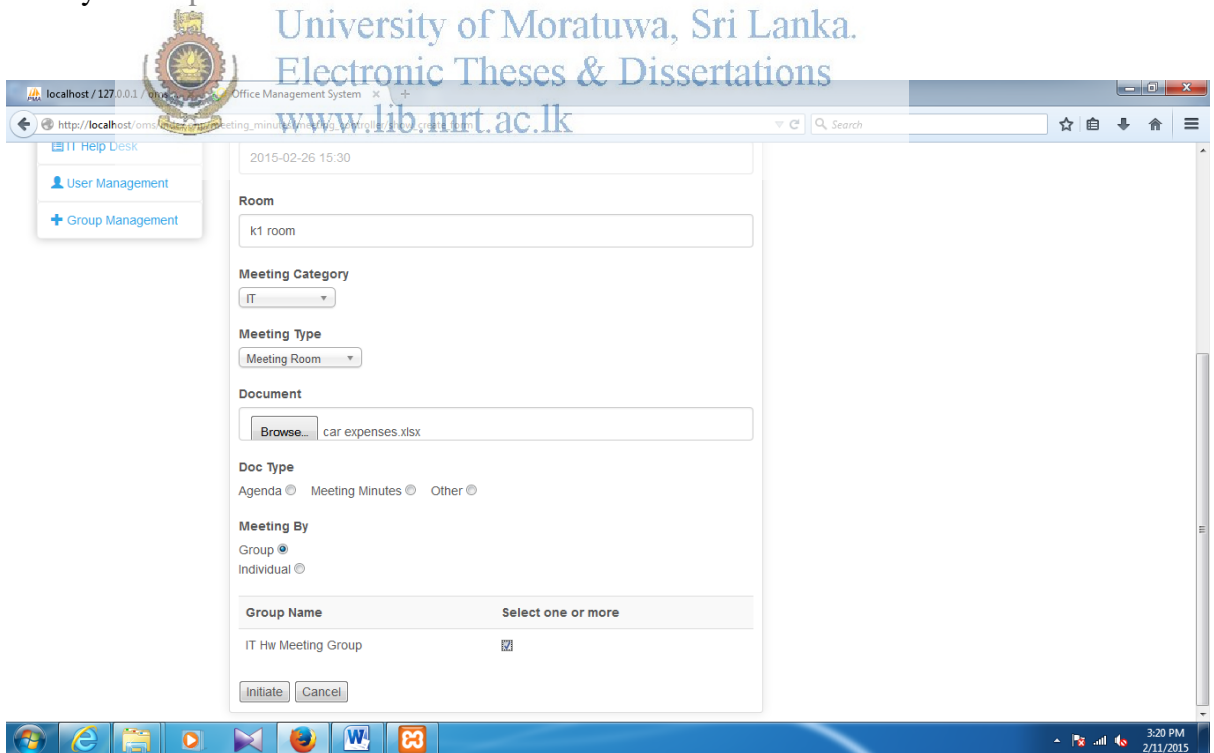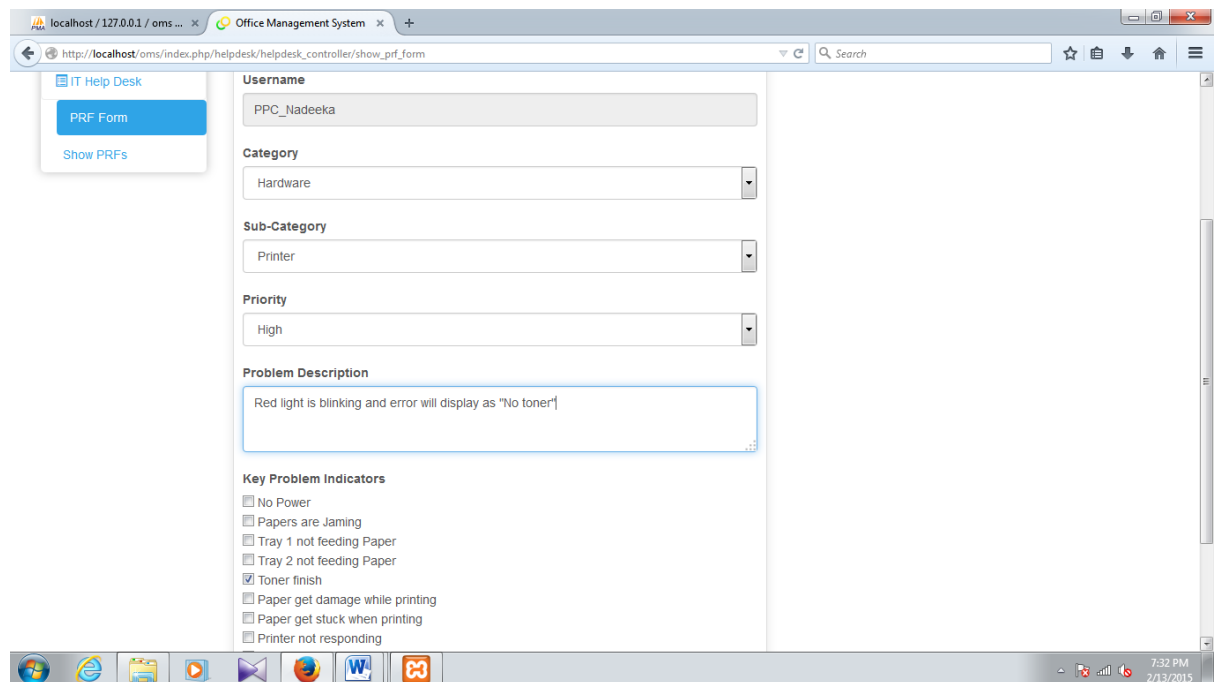
Figure 5.10: Initiate Meeting by Individuals

5.3.3. IT Help Desk

IT Help desk function is going to be used to report all IT related Issues. User can be log a PRF (Problem Reporting Form). By selecting the category and the subcategory system will show the problem indicators to be selected by the user. User will select the problem indicator depending on the issue he/she faced. User has the option to write his comments on the problem. He can select the priority of the PRF and submits the PRF. Once the PRF is submitted System automatically assigns the PRF to the available IT user. Then the IT users will be attended the PRF. IT user will have the facility to see the previous similar PRF has been reported by simply clicking a button. Then previous PRF listing will be shown. If an IT user feels that he can't complete the PRF, he has the option to escalate the PRF to his supervisor. If any PRF needs a change request to be made due to the changes need to be done to the production environment, IT user should be raised the change request to the Head of IT. Then Head of IT will see the CR request and he can approve or reject the CR.

5.3.3.1 Initiate Problem Reporting Form

All the users can raise a PRF. User can select the category and related subcategories, then the system will prompt the entire problem indicator attached to the category and the subcategory. Users can key his/her additional problem description if necessary.

Figure 5.11: IT User Actions on the PRF

5.3.3.2 IT User Actions on the PRF

IT user can update the action he/she has done, then he/she can complete the PRF, or if he/she unable to complete can be Escalate to a Supervisor, or request for a Change request. A button has been given to see the Similarities or previous PRFs have been completed with the same Problem indicators.

Figure 5.12: IT User Actions on the PRF

5.3.3.3 Setup Problem Indicators

IT help desk system has been designed to simplify the reporting of the IT issues. Users may not be able to interpret the issue correctly. The way of expressing the same issue will mislead the IT staff due the explanation given by the average user me differ. Due that it was decide to setup a predefined problem indicator to be selected by the user. It will standardize the Problem indicator across the IT helpdesk function. In the option it will allow to add ned Problem to the system in order to make the new issue available in the system
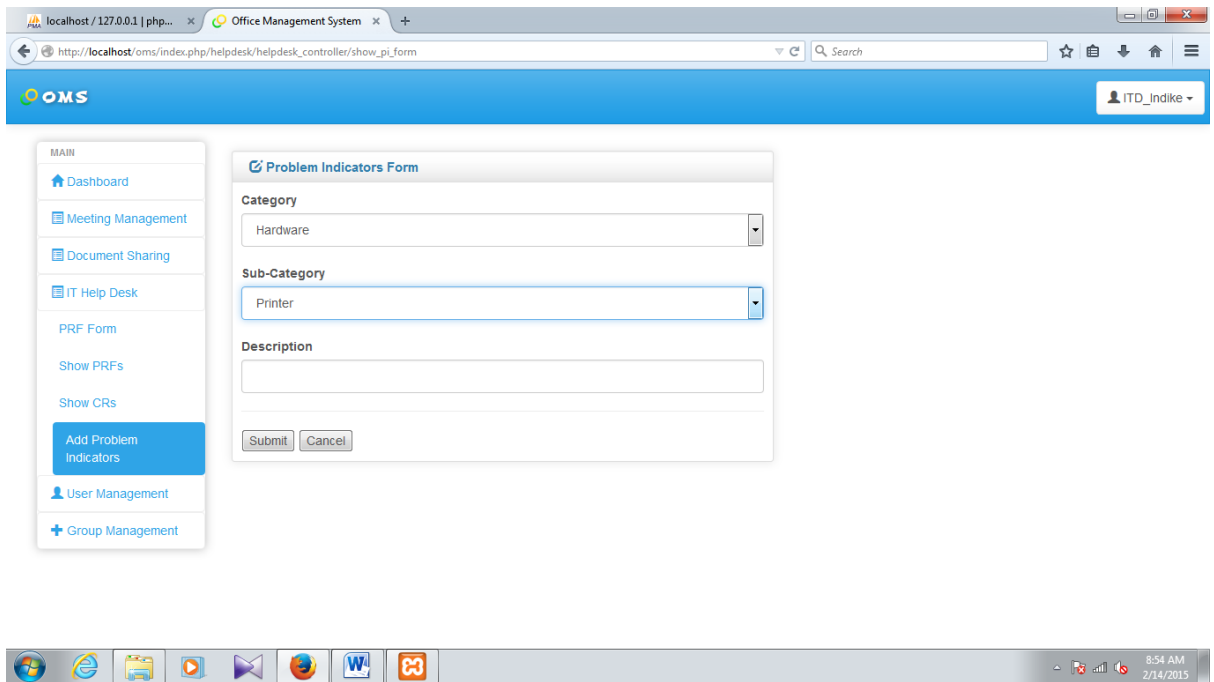
Figure 5.13: Setup Problem Indicators

5.4 Summary

The chapter has described the complete operating procedures of the Office management system. It is important that all documentations must be completed at the end of the project. Key Operating Procedures must include all vital functions performed by all stakeholders i.e User, administrator, Team leader, and IT staff.

6.1 Introduction

The testing of the Office management System have been conducted in four 4 main areas of the system as given below.

1. Black Box Testing:

   The main purpose of the testing is to test the architecture of the office management application. The application core has been tested in the black box testing.

2. User Interface Testing:

   Verifies the design Interface has been developed throughout the office management system. Checks functionality of the in interface is working as we expected. It the interface is user-friendly, since the prototyping has been used it is must to see the user interface is same as the way we showed to users and get signed.

3. Functional Testing:

   Overall system with functions will be tested. Document sharing, meeting management and IT help desk should work together as it has been designed.

4. Acceptance Testing: User perspective of the system's quality.

The test cases have been created in line with the requirement specifications and system design. The relevant test cases are described under below sections.

6.2. Black Box Testing

Following test cases have been defined in order to test the application core architecture. The tests are usually carried out by the high level system owners of the application.

No.	Test Objective	Description
	Whether the application could be installed as specified.	Perform installations of the application on Windows 7 and Windows XP with XAMPP Server simulation software kit.
	Check whether the application	The Application and database should be

	could be brought up as expected	able to start up through the XAMPP Console.
	Whether the database and application interacts with each other	Check whether sample data keyed into the application would get stored in the tables of the database. Perform input, modification and deletion of data for all tables.
	Check the Background process is working optimally	There is a Background job has been written in the system to allocated the PRF to the IT user automatically.
	Checks the user Access (roles) level works as designed	Performs the login test with each user roles assigned to the users and see the user have their credential as set in the user role file. This is one of the major testing to see the specific controls only access by the designated users only.

Table 6.1: Black Box Testing

6.3. User Interface Testing

This is a predominantly application level testing in order to check whether all user interfaces of the client application are working fine. User interface is one of the key to the stability of the environment as unstable interfaces might lead to garbage coming into the environment.

No.	Test Objective	Description	Result	Sign Off
	Log on screen	Checks the log in screen is validating a correct user credentials. Mainly the User Id and the Password.		
	Dashboard with available menus	Check the correct menus are displaying with the user credentials set in the user roles.		

	Document sharing Functions	Test the activities available to the share the documents are working. Check all necessary messages, are displaying.		
	Meeting management function	Test the activities available to the meeting management functions are working. Check all necessary messages, are displaying.		
	IT Help desk function	Test the activities available to the IT help desk functions are working. Check all necessary messages, are displaying.		
	Appropriateness of Menus	Check whether the size of the menus is appropriate, language, accessibility, FAQ articles.		
	Positioning of User interfaces	Whether the user interfaces are developed under best practices of Human Computer Interaction. Positioning of menus within the programs, whether the user is able to identify the options available?		

Table 6.2: Test Cases – User Interface Testing

6.4. Functional testing

The functional tests are carried out in order to check the entire system functionality. Generally this could be handled with the participation of administrators and end users. The functional testing would attract the highest user participation.

No.	Test Objective	Description	Result	Sign Off
	User Id creation	Administrator only be able to create the users. Should be created users with right credentials that the users are assigned to. There are four categories of user s in the system and should be check that they are getting their menus assigned to that roles.		
	Group Creation	Groups can only be created by the users who have Team leader and administrator credentials. Groups can be created under Share or meeting category. Users can be added by factory and department level.		
	Document sharing function	Documents can be		

		shared to desired users. Sharing can be done to the groups you created and individually. There is no restriction to share the document types. Details like Customer,		
	Meeting Management Function	Meetings can be initiated by users who have the Team leader and Admin credentials. Meeting also can be initiated to a group or individuals. Meetings should be have, date, time, which room, meeting type. A document can be shared if necessary. Meeting cancellation or a meeting change can be notified with the same function.		
	Log PRF form	PRF can be logged by any users who		

		have the access to the office management system. Users need to select the category and the subcategory. Depending on the combination user has been selected, it will show Key porbem indicators to the users to be selected to inform the IT users. Mean time users can describe his/her issue under Problem description area. Priority can be selected by the users.		
	PRF assigned Automatically.	PRF will be assigned automatically, it will check the priority set in the PRF and by looking at the User skill profile table. There is a logic built to assign the		

		PRF in the model.		
	IT User Activities.	Once the PRF is assigned to a IT user, he/she can be view all PRF has been logged similar to the new PRF by just a clicking a button. From the database it will be retrieved the old PRF and IT user can be show those. IF IT user feels that he needs someone helps to sort the PRF he/she can be escalate the PRF to the supervisor. IT user can be raise the Change request to the Head of IT if any Changes need to do the production environment. Head of IT can be viewed the Cr request and he can approve or reject the CR as he wish. Once the IT user finishes the PRF he		

		will complete the PRF that will change the status and the user who logs the PRF should give the acknowledge.		
	IT Admin Activities.	Admin has the authority to create OMS users, Will setup the IT user Skill profile, and setup the Problem indicators for the Category and subcategory. Add all other user functions are available to the IT Admin.		

Table 6.3: Test Cases – Functional Testing

6.5. Acceptance testing

The acceptance testing will be done through a serious of meeting with all stake holders and key users. Section by section will be examined and acceptance will be signed off by the User, Department head and the Head of IT and sponsor Finance department will be signed.

6.6. Evaluate System

Finally quality of the software must be assessed in accordance with acceptable standards,

	Criteria	Excellent	Good	Satisfactory	Weak
	Reliability Measure if product is reliable enough to sustain in any condition. Should give consistently correct results. Product reliability is measured in terms of working of project under different working environment and different conditions.				
	Maintainability Different versions of the product should be easy to maintain. For development its should be easy to add code to existing system, should be easy to upgrade for new features and new technologies time to time. Maintenance should be cost effective and easy. System be easy to maintain and correcting defects or making a change in the software.				
	Usability This can be measured in terms of ease of use. Application should be user friendly. Should be easy to learn. Navigation should be simple. The system must be easy to use for input preparation, operation, and interpretation of output. Provide consistent user interface standards or conventions with our other frequently used systems. Easy for new or infrequent users to learn to use the system.				

Portability This can be measured in terms of Costing issues related to porting, Technical issues related to porting, Behavioral issues related to porting.				
Correctness Application should be correct in terms of its functionality, calculations used internally and the navigation should be correct. This means application should adhere to functional requirements.				
Efficiency To Major system quality attribute. Measured in terms of time required to complete any task given to the system. For example system should utilize processor capacity, disk space and memory efficiently. If system is using all the available resources then user will get degraded performance failing the system for efficiency. If system is not efficient then it cannot be used in real time applications.				
Integrity or security Integrity comes with security. System integrity or security should be sufficient to prevent unauthorized access to system functions, preventing information loss, ensure that the software is protected from virus infection, and protecting the privacy of data entered into the system.				
Testability System should be easy to test and find defects. If required should be easy to divide in different modules for testing.				
Flexibility				

	Should be flexible enough to modify. Adaptable to other products with which it needs interaction. Should be easy to interface with other standard 3rd party components.				
	Reusability Software reuse is a good cost efficient and time saving development way. Different code libraries classes should be generic enough to use easily in different application modules. Dividing application into different modules so that modules can be reused across the application.				
	Interoperability Interoperability of one system to another should be easy for product to exchange data or services with other systems. Different system modules should work on different operating system platforms, different databases and protocols conditions.				
	Quality of interfaces				

Table 6.4: Evaluate system Testing Metrix

6.7 Summary

Testing is vital for the smooth functionality of any application. Testing must be carried out with all stakeholders i.e. both external and internal staff of the help desk must be involved with this process. Testing is a rigorous and time consuming exercise. There were many obstacles to complete the testing. Major challenge was the time, and the commitment given by the stakeholders. It was identified that the testing of the system with relevant stake holders that they have expected is something different than we have built even we users the Spiral model to develop the system,

Chapter 7
Conclusion and Further Work

7.1. Introduction

The Office management system has been developed to stream line the some of the functions have been identified by the management that is not good enough to have in the company with the current process. The main objective of the project is to implement a system to facilitate the process that been identified as not efficient and many inbuilt faults and issues, should be maintained electronically. The system has addressed all the key function in the manual process and strengthen some of the areas that couldn't available in the manual system. knowledge base has been introduce that will help the IT users, transparency of the IT help desk process, any time the user can see the status, IT user allocation on the PRF to the head of IT, notification to the system on each functionality were not available in the manual process.

7.2. Achievement of the Aim and the Objectives of the project

The system has been able to demonstrate key functions of the Document sharing, Meeting management and IT help desk function. The application has been able to cater for sharing document to the users, managing the Meetings and IT help desk activities to the users effectively. Objective of the project has been achieved but few changes to be happen in future due course.

7.3. Challenges of the project and Problems encountered

Main challenges found is that although there are a number of free and open source tools available, such systems cannot be tailor made within a standalone system with a narrow scope for the project.

The smart shirts group whole environment has been running on the Microsoft products and all are licensed. To introduce an open source technology to the company was the one of the major challenges I faced. But discussing with the management and the technical director of the group I was able to convince them that there is no issue in using open source software in smart shirts.

One of the other challenges was to send SMS to the Users mobiles has to be stopped due to the privacy issues raised by the users. They were reluctant to give their

personal mobile number to receive the SMS especially for IT help desk function. Suggestion was to issue company sims to users were turned down by the management considering the cost factor.

7.4. Usability Evaluation

Usability testing is a technique used in user centered interaction design to evaluate a product by testing it on users. This can be seen as unique usability practice, since it gives direct input on how real users use the system. This is in contrast with usability inspection methods where experts use different methods to evaluate a user interface without involving users.

Usability testing focuses on measuring a human-made product's capacity to meet its intended purpose. Examples of products that commonly benefit from usability testing are foods, consumer products, website and web applications

In the OMS system there are four user roles.

1. Administrator User role
2. IT staff User role
3. Team Leader user role
4. Normal user

To perform the usability evaluation it has been selected users with different user roles and distributes the feedback form to be filled using the system and their designated user functions. Usability matrix has been designed with four categories of Easy, Moderate, difficult and not available. Four of these categories will be assigned weight Easy = 10, Moderate = 8, Difficult = 5 and Not available = 0.

User: Administrator

Functionally	Easy	Moderate	Difficult	Not Available
Create Meeting	✓			
Show meeting	✓			
Share Document	✓			
Show Document	✓			
Create Groups		✓		
Create User				
Skill Profile Management	✓			
Log PRF	✓			
Show PRF	✓			

Show CRs	✓			
Add problem Indicators	✓			
User Logging	✓			
Backup				✓
Change Password	✓			
Reports		✓		

Table 7.1: Usability Evaluation feedback for Administrator

Total Weight assigned to Administrator = 10 * 15 = 150

Actual Points given by the administrator = (10*11) + (5*2) = 120

Percentage of the Usability function = 80%

User: IT Staff

Functionally	Easy	Modarate	Difficult	Not Available
Show meeting	✓			
Show Document	✓			
Log PRF	✓			
Show PRF	✓			
User Logging	✓			
Change Password	✓			
Reports				✓

Table 7.2: Usability Evaluation feedback for IT User

Total Weight assigned to Administrator = 10 * 7 = 70

Actual Points given by the administrator = (10*6) = 60

Percentage of the Usability function = 85.7%

User: Team Leader

Functionally	Easy	Moderate	Difficult	Not Available
Create Meeting	✓			
Show meeting	✓			
Share Document	✓			
Show Document	✓			
Create Groups		✓		
Log PRF	✓			
Show PRF	✓			
User Logging	✓			
Change Password	✓			
Reports				✓

Table 7.3: Usability Evaluation feedback for Team Leader

Total Weight assigned to Administrator = 10 * 10 = 100

Actual Points given by the administrator = (10*8) + (5*1) = 85

Percentage of the Usability function = 85%

User: Normal User

Functionally	Easy	Moderate	Difficult	Not Available
Show meeting	✓			
Show Document	✓			
Log PRF	✓			
Show PRF	✓			
User Logging	✓			
Change Password	✓			
Reports				✓

Table 7.4: Usability Evaluation feedback for Normal User

Total Weight assigned to Administrator = 10 * 7 = 70

Actual Points given by the administrator = (10*6) = 60

Percentage of the Usability function = 85.7%

7.5. Further work

- Email Notification need to be completed. Due to the fact that smart shirts are running on with two different Email technologies (IBM Outlook and Microsoft Outlook) the email notification will be available once the smart shirt has full migrated to outlook.

- If any additional reports and the enhancement to the system functions by the stake holders will be address in future.

- One of the future plans are to be introduce the new function to apply user's leaves and their approvals through the office management system. The current leave process is done through a manual process and the information to the top management is limited.

- Current Administrator functionality is lies with the Head of IT, it is needed to decomposed some of the functions to the IT administrator in future.

7.6. Summary

The post implementation review must be conducted in order to obtain feedback from various parties. Such reviews often create the platform to make further improvements to the system. Also, would help for the development of systems of such nature in the future. Meanwhile, it is highly recommended that more emphasis is given to the enhancement of the knowledge management system of the application.

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Appendixes

1. OMS Table Structures of the Database

tbl_category_master

Column	Type	Null	Default	Comments	MIME
cat_no	int(11)	No			
description	varchar(50)	No			

Indexes

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	cat_no	2	A	No	

tbl_subcat

Column	Type	Null	Default	Comments	MIME
subcat_no	int(11)	No			
cat_no	int(11)	No			
description	varchar(100)	No			

Indexes

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	subcat_no	21	A	No	
				cat_no	21	A	No	

tbl_problems

Column	Type	Null	Default	Comments	MIME
prf_no	int(11)	No			
user_id	int(11)	No			
date_time	timestamp	No	CURRENT_TIMESTAMP		
cat_no	int(11)	No			
sub_cat_no	int(11)	No			
description	varchar(500)	No			
priority	varchar(10)	No	normal		
it_owner	int(11)	Yes	NULL		
escalated_owner	int(11)	Yes	NULL		
status	enum('new', 'wip', 'escalated', 'complete', 'close')	No	new		
est_completion_date	varchar(20)	Yes	NULL		
actual_completed_date	varchar(20)	Yes	NULL		
action_taken	varchar(500)	Yes	NULL		
department	int(11)	Yes	NULL		
cr_status	enum('yes', 'no')	Yes	no		
cr_approve_status	enum('yes', 'no')	Yes	NULL		
cr_reject_description	varchar(500)	Yes	NULL		
cr_approve_date	varchar(20)	Yes	NULL		
cr_request_date	varchar(20)	Yes	NULL		

Column	Type	Null	Default	Comments	MIME
cr_reject_date	varchar(20)	Yes	*NULL*		

Indexes

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	prf_no	4	A	No	

tbl_prob_indicator_master

Column	Type	Null	Default	Comments	MIME
item_no	int(11)	No			
cat_no	int(11)	No			
sub_cat_no	int(11)	No			
description	varchar(100)	No			

Indexes

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	item_no	14	A	No	

tbl_prob_indicators

Column	Type	Null	Default	Comments	MIME
prf_no	int(11)	No			
item_no	int(11)	No			
date_time	timestamp	No	CURRENT_TIMESTAMP		

Indexes

No index defined!

tbl_user_skill_profile

Column	Type	Null	Default	Comments	MIME
user_id	int(11)	No			
cat_no	int(11)	No			
sub_cat_no	int(11)	No			
level	tinyint(1)	No			
max_jobs	int(11)	No			
assigned_jobs	int(11)	No			

Indexes

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	user_id	3	A	No	

tbl_share_master

Column	Type	Null	Default	Comments	MIME
share_id	int(11)	No			
created_date	timestamp	No	CURRENT_TIMESTAMP		
doc_type	varchar(30)	No			
doc_owner	varchar(11)	No			
cust_code	varchar(11)	No			
share_type	varchar(11)	No			
description	varchar(200)	No			

tbl_share_details

Column	Type	Null	Default	Comments	MIME
share_id	int(11)	No			
epf_no	varchar(25)	No			
created_date	timestamp	No	CURRENT_TIMESTAMP		

Indexes

Indexes
No index defined!

tbl_meeting_master

Column	Type	Null	Default	Comments	MIME
meeting_id	int(11)	No			
sequence_no	varchar(11)	Yes	*NULL*		
subject	varchar(50)	No			
date_time	timestamp	Yes	*NULL*		
category	varchar(30)	No			
room	varchar(11)	No			
created_date	timestamp	Yes	CURRENT_TIMESTAMP		
meeting_type	varchar(20)	No			
meeting_owner	varchar(11)	No			

Column	Type	Null	Default	Comments	MIME
doc_type	varchar(50)	No			
file_path	varchar(400)	Yes	*NULL*		
meeting_by	varchar(11)	No			

Indexes								
Keyname	**Type**	**Unique**	**Packed**	**Column**	**Cardinality**	**Collation**	**Null**	**Comment**
PRIMARY	BTREE	Yes	No	meeting_id	0	A	No	

tbl_meeting_detail

Column	Type	Null	Default	Comments	MIME
meeting_id	int(11)	No			
epf_no	varchar(11)	No			
created_date	timestamp	Yes	CURRENT_TIMESTAMP		

Indexes
No index defined!

tbl_customer_master

Column	Type	Null	Default	Comments	MIME
cust_code	varchar(11)	No			
cust_name	varchar(50)	No			

Indexes								
Keyname	**Type**	**Unique**	**Packed**	**Column**	**Cardinality**	**Collation**	**Null**	**Comment**

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	cust_code	4	A	No	

tbl_group_master

Column	Type	Null	Default	Comments	MIME
group_id	int(5)	No			
group_name	varchar(50)	No			
group_owner	varchar(25)	No			
group_type	varchar(30)	No			
created_date	timestamp	No	CURRENT_TIMESTAMP		

Indexes

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	group_id	3	A	No	

tbl_group_members

Column	Type	Null	Default	Comments	MIME
group_id	int(11)	No			
epf_no	varchar(25)	No			

Indexes

No index defined!

tbl_users

Column	Type	Null	Default	Comments	MIME
user_id	int(11)	No			
epf_no	varchar(25)	No			
username	varchar(100)	No			
password	varchar(100)	No			
display_name	varchar(30)	No			
status	tinyint(1)	No			
role_id	int(5)	No			
created_date	timestamp	No	CURRENT_TIMESTAMP		
updated_date	timestamp	No	0000-00-00 00:00:00		
created_by	int(11)	No			
updated_by	int(11)	No			
is_deleted	tinyint(1)	No			
session_id	varchar(300)	No			
session_ip	varchar(50)	No			

Indexes

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	user_id	53	A	No	
epf_no	BTREE	Yes	No	epf_no	53	A	No	
epf_no_2	BTREE	Yes	No	epf_no	53	A	No	

tbl_roles

Column	Type	Null	Default	Comments	MIME
role_id	int(11)	No			
description	varchar(100)	No			
is_deleted	tinyint(1)	No			

Indexes							
Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	role_id	4	A	No	

tbl_doc_details

Column	Type	Null	Default	Comments	MIME
doc_reference	varchar(20)	No			
file_name	varchar(400)	No			
description	varchar(300)	Yes	*NULL*		

Indexes
No index defined!

tbl_factory_master

Column	Type	Null	Default	Comments	MIME
factory_code	int(11)	No			
description	varchar(100)	No			

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	factory_code	9	A	No	

tbl_department_master

Column	Type	Null	Default	Comments	MIME
department_code	int(11)	No			
description	varchar(100)	No			

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	department_code	10	A	No	

tbl_staff_master

Column	Type	Null	Default	Comments	MIME
epf_no	varchar(25)	No			
name	varchar(100)	No			
address	varchar(250)	No			
factory_code	varchar(30)	No			
dept_code	varchar(30)	No			
telephone	varchar(20)	No			
email	varchar(50)	No			

Indexes

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	epf_no	52	A	No	

2. OMS Text Cases

Following test cases have been used in order to check the core of the application functionality. The tests were centered on the implementation capabilities of the application, interoperability with the environment e.g. functionality with the hardware, operating systems and other supportive application software required.

Test Case 1: TC1/BB/001

Test Case:	TC1/BB/001	
Test Objective	Whether the application could be installed as specified.	
Description	Perform installations of the application on Windows 7 and Windows XP with XAMPP Server simulation software kit.	
	Activity	Result (note all observation in the given space
Steps	1. Check the o/s version and service pack number	[ ] Windows XP [ ] Windows 7 Service Pack………. Observations [PASS/FAIL] Notes:
	2. Install the XAMPP Server	Observations [PASS/FAIL] Notes:
	3. Unzip the Application binaries and install the program.	Observations [PASS/FAIL] Notes:
	4. Start the XAMPP Server and run the application	Observations [PASS/FAIL] Notes:
	5. Login to application	Observations [PASS/FAIL] Notes:

	6. Check basic functionalities in order to check basic features e.g. login as a user, click on items, open forms etc.	Observations [PASS/FAIL] Notes:
	7. Close the application including shutting down the XAMPP Server	Observations [PASS/FAIL] Notes:

Test Case 2: TC2/BB/001

Test Case:	TC2/BB/001	
Test Objective	Check whether the application could be brought up as expected	
Description	The Application and database should be able to start up through the XAMPP Console.	
	Activity	Result (note all observation in the given space
Steps	1. Start the XAMPP Server	Observations [PASS/FAIL] Notes:
	2. Open the web browser	Observations [PASS/FAIL] Notes:
	3. Start the main login console of the application via the web browser. URL is localhost\helpdesk	Observations [PASS/FAIL] Notes:
	4. Start the XAMPP Server and run the application	Observations [PASS/FAIL] Notes:

Test Case 3: TC3/BB/001

Test Case:	TC3/BB/001	
Test Objective	Whether the database and application interacts with each other	
Description	Check whether sample data keyed into the application would get stored in the tables of the database. Perform input, modification and deletion of data for all tables.	
	Activity	Result (note all observation in the given space
Steps	1. Add a new user using admin control panel. Record the name of the user and category.	Observations [PASS/FAIL] Notes:
	2. Login as the help desk user and create a new incident. Record the incident number.	Observations [PASS/FAIL] Notes:
	3. Login as the Support User and create a new change request.	Observations [PASS/FAIL] Notes:
	4. Login as Support User and create a new knowledgebase article.	Observations [PASS/FAIL] Notes:

Test Case 4: TC4/BB/002

Test Case:	TC4/BB/002	
Test Objective	Whether the database and application interacts with each other	
Description	Check whether sample data keyed into the application would get stored in the tables of the database. Perform input, modification and deletion of data for all tables. Check whether the data input into the system through the user interface has properly saved in the respective tables.	
	Activity	Result (note all observation in the given space
Steps	1. Open the local database through admin console and select following tables one by one and ensure the availability of data input in the previous tests.	Observations: mark the availability of data as pass or fail. Tables: • tbl_user [PASS/FAIL] • tbl_group_master [PASS/FAIL] • tbl_group_members [PASS/FAIL] • tbl_meeting_master[PASS/FAIL]

		• tbl_meeting_detail [PASS/FAIL]
		• tbl_prob_indicators [PASS/FAIL]
		• tbl_prob_indicator_master [PASS/FAIL]
		• tbl_problems [PASS/FAIL]
		• tbl_user_skill_profile [PASS/FAIL]

Test Case 5: TC5/BB/001

Test Case:	TC5/BB/001	
Test Objective	Validate User Login Function	
Description	Testing User login function with the validations and security measures adopted to the password.	
	Activity	Result (note all observation in the given space)
Steps	1. Passwords are not visible when entering 2. Passwords are stored in encrypted mode (MD5) when storing in the database 3. Cannot enter into the system by entering wrong passwords 4. The desired access levels are provided under each account type i.e. ensure the correct profile is loaded under help normal user, Team Leader, IT Staff and Administrator.	Observations 1. Entered Password will not be visible. For each character key in will show a black dot. 2. Once the new user is created the password field in the table will not be able to recognize due to the encryption. 3. Should display an error message "Wrong User ID or Password" 4. User role will be set in the data table.

Test Case 6: TC6/BB/001

Test Case:	TC6/BB/001	
Test Objective	Validate Input details	
Description	Check the User creation validation is correct	
	Activity	Result (note all observation in the given space
Steps	1. User Name cannot be null 2. Password cannot be null 3. EPF Number cannot be null 4. EPF number cannot be invalid 5. Name should automatically be taken from the data base 6. User Role should be selected	Observations 1. Should display an error message like "Mandatory fields cannot be null" 2. Should display an error message like "Mandatory fields cannot be null" 3. Should display an error message like "Mandatory fields cannot be null" 4. Should display an error message like "Invalid EPF number" 5. Name will be appearing in the Name text field. 6. Should display an error message like "Mandatory fields cannot be null" Notes: