Software Requirements Specification ON ICT Cell Management System

1. Introduction

The introduction of the Software Requirements Specification (SRS) provides an overview of the entire SRS with purpose, scope, definitions, acronyms, abbreviations, references and overview of the SRS. The aim of this document is to gather and analyse and give an in-depth insight of the complete ICT Cell Management System (IMS) by defining the problem statement in detail. Nevertheless, it also concentrates on the capabilities required by stakeholders and their needs while defining high-level product features. The detailed requirements of the ICT Cell Center Management System are provided in this document.

1.1 Purpose

The purpose of the project ICT Cell Management System is full management of ICT CELL like equipment, notice, details etc.

In short, the purpose of this SRS document is to provide a detailed overview of our software product, its parameters and goals. This document describes the project's target audience and its user interface, hardware and software requirements. It defines how our client, team and audience see the product and its functionality. Nonetheless, it helps any designer and developer to assist in software delivery lifecycle (SDLC) processes.

1.2 Project Scope

Our main scope is develop a portal for ICT Cell, NSTU .They can easily manage their communication with section officer. They can easily manage equipment, notice etc. sytem..

Primarily, the main scope of this project is to develop a web based system on computer. As more than 90% users are using computer. The system will be connected through a large database which will help us to store the data and get the necessary information without any hazard. We also visualize the connection through different diagrams. This project will reduce time and cost of both parties and it will be effective for our ICT Cell sector also.

This SRS is also aimed at specifying requirements of software to be developed but it can also be applied to assist in the selection of in-house and commercial software products. The standard can be used to create software requirements specifications directly or can be used as a model for defining a organization or project specific standard. It does not identify any specific method, nomenclature or tool for preparing an SRS.

1.3 Definitions, Acronyms, and Abbreviations

This subsection contains definitions of all the terms, acronyms, and abbreviations used in the document. Terms and concepts from the application domain are defined.

Administrator	Who will control the systems.
Section Officer	Who will able add new equipment and see notice and others

FAQ	Frequently Asked Questions
IMS	ICT Cell Management System

1.4 References

Software & Systems Requirements Engineering: In Practice forwards by Manfred Broy, technical University, Munich, and Erik Simmons, Intel Corporation

1.5 Overview

Now a days, everything in internet. People are depending on internet. But our ICT CELL System are not in proper way manage. That's why we build up a portal which can help them. They can easily store any data , view data, communicate with section officer.

2. User classes and characteristics

There are 2 types of stakeholders in our "IMS" portal. Such as:

Administrator: Admin can handle and control the full system. They can add new section officer etc.

Section officer: For our system, Section officer manage equipment for his/her own departments. Section officer able to see notice, authority details etc.

3. Design and Implementation Constraints

3.1 Interfaces

There are many types of interfaces as such supported by the IMS application system namely; User Interface, Software Interface and Hardware Interface.

The protocol used shall be HTTP.

The Port number used will be 80.

There shall be logical address of the system in IPv4 format.

3.1.1 User Interfaces

The user interface for the software shall be compatible to any browser such as Internet Explorer, Mozilla or Netscape Navigator by which user can access to the system.

The user interface shall be implemented using any tool or software package like Java Applet, MS Front Page, EJB etc**.**

3.1.2 Hardware Interfaces

Since the application must run over the windows OS ,Linux and over the internet, all the hardware shall require to connect internet will be hardware interface for the system.

3.1.3 Software Interfaces

1. The system shall communicate with the Configurator to identify all the available components to configure the service.
2. The system shall communicate with the content manager to get the product specifications, offerings and promotions.

3.1.4 Communications Interfaces

The IMS shall use the HTTP protocol for communication over the internet and for the intranet communication will be through TCP/IP protocol suite.

3.2 Licensing Requirements

Not Applicable

3.3 Legal, Copyright, and Other Notices

IMS should display the disclaimers and copyright.

3.4 Applicable Standards

It shall be as per the industry standard.

3.5 Supporting Information

Following documents will be referred:

1. Vision document for IMS
2. Use case analysis.
3. Structural models.
4. Behavioral models.
5. Non functional requirements model.
6. Project Plan

3.6 Programming Language

We will use PHP as a programming language. Java is a programming language that is used to produce softwares for multiple platforms. When a programmer writes a PHP application, the compiled code runs on most operating systems (OS), including Windows, Linux and Mac OS.

3.7 HTML

Hyper Text Markup Language (HTML) is the set of markup symbols or codes inserted into a file intended for display on the Internet. The markup tells web browsers how to display a web page's

words and images.

3.8 Implemented Tools and Platform

Every business plan or project comes down to tactics, tools and strategies. If we want to develop and implement a social media marketing strategic plan then we must need those three critical components.

3.9 Web Server

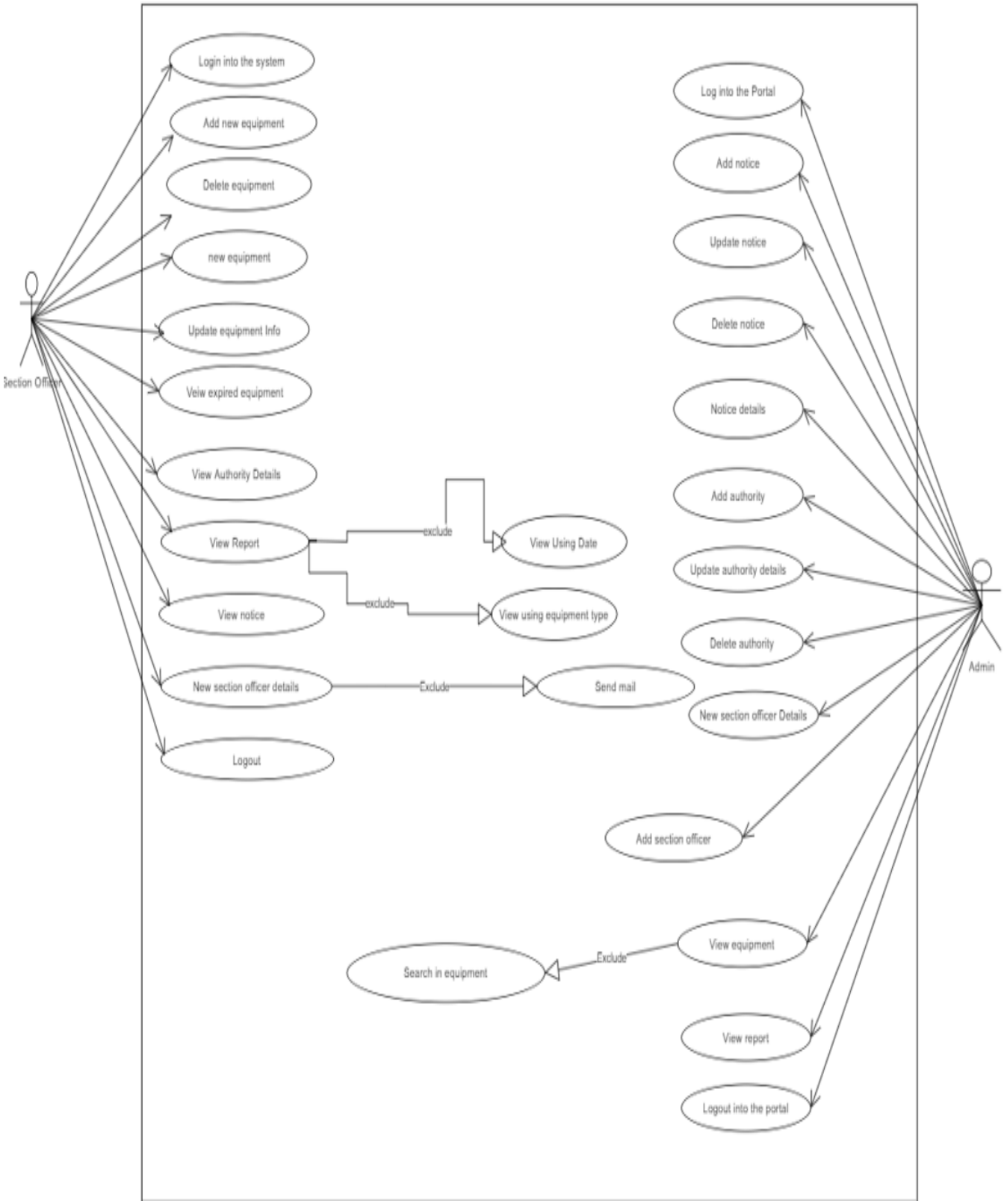
A web server is a system that delivers content or services to end users over the internet. A web server consists of a physical server, server operating system (OS) and software used to facilitate HTTP communication. A web server is also known as an internet server. The most simple definition is that a web server runs a website by returning HTML files over an HTTP connection. This definition may have been true in the early days of the internet, but the line has blurred between websites, web applications and web services, etc. A better definition might be that a web server is any internet server that responds to HTTP requests to deliver content and services.

3.10 Database Server

The term database server may refer to both hardware and software used to run a database, according to the context. As software, a database server is the back-end portion of a database application, following the traditional client-server model. This back-end portion is sometimes called the instance. It may also refer to the physical computer used to host the database. We will use MYSQL database server to store all the information of this system.

4. Use Case Diagram

Figure 1: Use Case Diagram of HandyMan



5. Requirement Specification

The complete requirement specification based on the elicitation process is described in this section

5.1 Functional Requirements

Functional requirements are specified something the system should do. It specifies a behavior or function. Here are our Functional requirements.

5.1.1 Section officer can log into the system

R1	**Section officer can log into the system**
Description	In the opening, Section officer should log into the portal to access all service.
Stakeholders	Section Officer
Priority	High Priority

Table 1: Section officer can log into the system

5.1.2 Section officer add a new equipment

R2	**Section officer add a new equipment**
Description	Section officer can add any type of equipment
Stakeholders	Section Officer
Priority	High Priority

Table 2: Section officer add a new equipment

5.1.3 Section officer delete an equipment

R3	**Section officer delete an equipment**
Description	Section officer can delete any type of equipment
Stakeholders	Section officer
Priority	Medium Priority

Table 3: Section officer can add any type of equipment

5.1.4 Section officer can view his/her department equipment

R4	**Section officer can view his/her department equipment**
Description	Section officer can view his/her department equipment details
Stakeholders	Section officer
Priority	High Priority

Table 4: Section officer can view his/her department equipment

5.1.5 Section officer can view expired his/her department equipment

R5	**Section officer can view expired his/her department equipment**
Description	Section officer can view his/her department equipment
Stakeholders	Service taker
Priority	Medium Priority

Table 5: Section officer can view expired his/her department equipment

5.1.6 Section officer view Authority Details

R6	**Section officer view Authority Details**
Description	Section officer can view Authority Details
Stakeholders	Section officer
Priority	High Priority

*Table 6: **Section officer view Authority Details***

5.1.7 Section officer view reports of equipment

R7	Section officer view reports of equipment
Description	Section officer can view reports of equipment

Stakeholders	Section officer
Priority	High Priority

Table 7: Section officer view reports of equipment

5.1.8 Section officer view notice

R8	Section officer view notice
Description	Section officer can view notice
Stakeholders	Section officer
Priority	Medium Priority

Table 8: Section officer view notice

5.1.9 Section officer view section officer details

R9	Section officer view section officer details
Description	Section officer can view all section officer details
Stakeholders	Section officer
Priority	Low Priority

Table 9: Section officer view section officer details

5.1.10 Section officer can log out into the system

R10	Section officer can log out into the system
Description	Section officer can log out into the system
Stakeholders	Section officer
Priority	High Priority

Table 10: Section officer can log out into the system

5.1.11 Section officer updates own profile

R11	Section officer updates own profile
Description	Section officer has own profile. He/she can change his/her information like name, email, Mobile no etc.

Stakeholders	Section officer
Priority	Medium Priority

Table 11: Service provider updates own profile

5.1.12 Admin can log into the system

R12	Admin can log into the system
Description	Admin can log into the system
Stakeholders	Service provider
Priority	High priority

Table 12: Admin can log into the system

5.1.13 Admin can add new notice

R13	Admin can add new notice
Description	Admin can add new notice for any department
Stakeholders	Admin
Priority	High priority

Table 13: Admin can add new notice

5.1.14 Admin can update notice

R14	Admin can update notice
Description	Admin can update notice for any department
Stakeholders	admin
Priority	High priority

Table 14: Admin can update notice

5.1.15 Admin can delete notice

R15	Admin can delete notice

Description	Admin can delete notice for any department
Stakeholders	admin
Priority	High priority

Table 15:: Admin can update notice

5.1.16 Admin can view notice

R16	Admin can view notice
Description	Admin can view notice for any department
Stakeholders	admin
Priority	High priority

Table16:: Admin can update notice

5.1.17 Admin can add a new authority

R17	**Admin can add a new authority**
Description	Admin can add a new authority for the system
Stakeholders	admin
Priority	medium priority

Table17:: Admin can add a new authority

5.1.18 Admin can delete authority details

R18	Admin can update authority details
Description	Admin can update authority details if requires
Stakeholders	admin
Priority	Low priority

Table 18: Admin can update authority details

5.1.19 Admin can Delete authority details

R19	**Admin can Delete authority details**
Description	Admin can Delete authority details if require
Stakeholders	admin
Priority	low priority

Table 19: Admin can update notice

5.1.20 Admin can add a new section officer

R20	**Admin can add a new section officer**
Description	Admin can add a new section officer
Stakeholders	Admin
Priority	High priority

Table 20: Admin can add anew section officer

5.1.21 Admin can view section officer

R21	**Admin can view section officer**
Description	Admin can view section officer
Stakeholders	Admin
Priority	High priority

Table 21: Admin can view section officer

5.1.22 Admin can view equipment details

R22	**Admin can view equipment details**
Description	Admin can view equipment details for all department
Stakeholders	Admin

Priority	High priority

Table 22: Admin can view all department equipment details

5.1.23 Admin can view report

R23	**Admin can view report**
Description	Admin can view report and create a pdf .
Stakeholders	Admin
Priority	Medium priority

Table 23:: Admin can add anew section officer

5.1.24 Admin can log out into the system

R24	**Admin can log out into the system**
Description	Admin can able to log out into the system
Stakeholders	Admin
Priority	High priority

*Table24: **Admin can log out into the system***

5.2 Data Requirements:

Data requirements are prescribed directives or consensual agreements that define the content and/or structure that constitute high quality data instances and values. Here are requirements for Data:

- The system shall input, process and output data types of integers, strings, characters and real due to the variation of information that will be stored
- The system shall have accurate and up-to date information
- The system shall handle information from various sources

Firstly, we need build a data model. We need to focus on entity of data, quantity of data, capacity of data resource, data availability etc. For collecting data, we are following these steps:

- **Data Object Selection:** A data object is a representation of information which has different properties or attributes that must be understood by software. Firstly we find all Attributes of our System.
- **Data Objects and Attributes:** we find necessary attribute for each Entity
- **Relation between Data object:** Now we define all relation between two entity and it's attribute.
- **E-R Diagram:** Entity relationship diagram displays the relationships of entity set stored in a database.
- **Schema Diagram:** Using E-R diagram, we draw Schema of our database
- **Create table:** Now create table and set data types it's attribute.
- **Normalization :** Normalization is the process of reorganizing data in a database so that it meets two basic requirements:
    1. There is no redundancy of data (all data is stored in only one place), and
    2. Data dependencies are logical

  At last, we do Normalization.

5.3 Performances Requirements:

Performances are very Important issue of our application. Performance requirements define how well the system performs certain functions under specific conditions. The Performance requirements are often based on Supporting our System end User Tasks. To ensure our System Performance, we need to maintain some issue. Here we describe the issues by which we are going to enhance the performance of our Application.

5.3.1 Speed & Latency Requirements:

Speed & Latency requirements must be ensured while retrieving data from the cloud Server

SLR-1	**Search must be faster**
Description	When service taker search for service, the search result must show within one second
Stakeholder	Section officer,Admin
Priority	High Priority

Table 15: Search must be faster

5.3.2 Precision & Accuracy Requirements:

Search result that is shown to end user Must be accurate. Wrong Information might be Ruined the whole business Process.

PAR-1	**Search Result must be Accurate**
Description	When Service taker search for service, the result must be According to input value given by service taker
Stakeholder	Section officer, Admin
Priority	High Priority

Table 16: Search Result must be Accurate

5.3.3 Capacity Requirements:

The system must be capable to handle user data, provide accurate data, handling database, manage http etc.

CR-1	**The system Must be handled 100 thousands of data**
Description	The system needs to handle 100 thousands of every moment
Stakeholder	Section officer, Admin
Priority	High Priority

Table 17: The system must be handled 100 thousands of data

5.4 Dependability Requirements:

The systems have the ability to deliver the service when it's requested, the ability to deliver the service as specified, the ability to operate without catastrophic failure, the ability to protect itself against accidental intrusion, the ability of to resist or recover from damaging event. So the term Dependability measures as five dimensions such as

- Availability
- Reliability
- Safety
- Security
- Resilience

5.4.1 Reliability & Availability Requirements:

RAR-1	**The system must be Available on 24X7**
Description	The system must be available 24 hours, every day in a week
Stakeholder	Section officer, Admin
Priority	High Priority

Table 18: The system must be Available on 24X7

5.4.2 Robustness or Fault-Tolerance Requirements:

RFR-1	**The system handles all user access without system errors**
Description	Thousands of users might hit our application system at a time. All their requests must be handled without any fault.
Stakeholder	Section officer, Admin
Priority	High Priority

Table 19: The system handles all user access without system errors

5.4.3 Safety-Critical Requirements:

There are no safety-critical requirements in our project.

5.5 Maintainability & Supportability Requirements:

It is very important to provide after service or support to the end users.

5.5.1 Maintainability Requirements:

MR-1	**System helps to update user profile**
Description	In our system, Section officer can update their own profile
Stakeholder	Section officer
Priority	Medium Priority

Table 20 : System helps to update user profile

5.5.2 Supportability Requirements:

Supportability requirements may have related to some extends. Like:

- Testability
- Extensibility
- Adaptability
- Maintainability
- Compatibility
- Configurability
- Serviceability
- Install ability

Our application meets all of the above requirements related to supportability

5.5.3 Adaptability Requirements:

There are no adaptability requirements in our system software.

5.6 Security Requirements:

Security Requirements is very important issue for making software. We need to ensure user security and data. Here are our Security requirements:

- Section office & Admin r must log in
- Get access only verified and logged user (Section officer, Admin)
- Get & change information only logged user(Section officer, Admin)
- Password encrypted hashed(Md5) password and store in database and it is one way password
- Section officer & Admin can log out to the system

5.6.1 Access Requirements:

For accessing our system, our end user must be verified and authentic. In every module in my Application can Access only Authentic user.

AR-1	**Application provides Security Mechanism**
Description	In our system, Every Module can access only Authorized and verified User
Stakeholder	Section officer, Admin
Priority	High Priority

Table 21: Application provides Security Mechanism

5.6.2 Integrity Requirements:

Integrity Requirements refers to a security system which ensures an expectation of data quality. In our system, we keep our end user data safely & and never be accidental damaged & exposed data. We keep our end user password and store in database which is encrypted to Hashed password. It is impossible to decrypt to the Hashed Password.

5.6.3 Privacy Requirements:

In our system, we need to ensure our user privacy. There are no third party can access the system without knowing password. User are permitted to access the system to logged user

5.7 Usability and Human-Interaction Requirements:

Our system must be user friendly and anyone can use easily.

5.7.1 Ease of Use Requirements:

Our application is easy to use and also easily understandable.

UHIR-1	**Application must be useable for our user**
Description	Our App's every modules are understandable and useable anyone can operate our system.
Stakeholder	Section officer, Admin
Priority	High Priority

Table 22: Application must be useable for our user

5.7.2 Personalization and Internationalization Requirements:

There are not any personalization and internationalization requirements to our system. This maiden version of our application is only be operated by Noakhali, Bangladesh.

5.7.3 Understand ability and Politeness Requirements:

Our system is useable enough and Any educated and literate person can understand our every module of our system. We make our system are user friendly. If error occurs, then our system will provide hints or how to solve it, then any one can easily operate our system.

5.7.4 Accessibility Requirements:

There are no specific accessibility requirements associated to our system yet.

5.7.5 User Documentation Requirements:

There are no specific User Documentation requirements for our system

5.7.6 Training Requirements:

Our application is open business Application. Anyone can use our system. Our main stakeholders are service taker, & service provider, so it is impossible to training every of our Stakeholder

5.8 Look and Feel Requirements:

Look & Feel requirements refers how look our Apps user interface and how user expect the user graphic interface.

5.8.1 Appearance Requirements:

Service taker and service provider must know which input fields are required and which are not. For that reason, we will use labels for all input fields. Input fields might be text type, radio, checkbox etc.

AR-1	**Labels of mandatory fields must be bold**
Description	The mandatory field's label must be bold and all input fields must have placeholder to make it easier for the users
Stakeholder	Section officer, Admin
Priority	Low priority

Table 23: Labels of mandatory fields must be bold

5.8.2 Screen Requirements

Our application can use different type of mobile models. Three are different types models are different size. Our user interface must be fill full of mobile screen

SR-1	**Application must fill the browser Screen**
Description	For Different size of tab of browser, the user graphical interface automatically changes and fill the full screen
Stakeholder	**N/A**
Priority	High Priority

Table 24: Application must fill the full mobile Screen

5.8.3 Style Requirements:

There are no requirements for style requirements

5.9 Operational and Environmental Requirements:

Operational and environmental requirement refers to the capabilities, performance measurements, process, measurements of effectiveness, measurements of performance, measures of sustainability, measurements of technical performances etc.

5.9.1 Expected Physical Requirements:

There are no specific Expected Physical Requirement for our system.

5.9.2 Requirements for Interfacing with Adjacent Systems:

There are no requirements for Interfacing with Adjacent System for our system.

5.9.3 Release Requirements:

There are no specific Release requirements for our system.

5.10 Legal Requirements:

Legal requirements refer terms of condition, privacy policy etc.

5.10.1 Compliance Requirements:

There are no specific standards requirements for our system.

5.10.2 Standards Requirements:

There are no specific standards requirements for our system.

6. Requirement Engineering Process

Requirements engineering refers to the process of defining, documenting and maintaining requirements in the engineering design process. It is a common role in systems engineering and software engineering.

6.1 Requirement Elicitation Techniques

Requirement elicitation is the process of collecting and refining stakeholder's requirements. Projects are garbage-in-garbage-out meaning that poor quality requirements typically lead to project issues and failure.

6.1.1 Hold Elicitation Interviews

We hold interviews that can be performed one-on-one of stakeholders. They are an effective way to elicit requirements without taking too much stakeholder time because we meet with people to discuss only the specific requirements that are important to this system. Interviews are helpful to separately elicit requirements from members in preparation for workshops where those members of this system come together to resolve any conflicts.

6.1.2 Current System Analysis

Analyzing the current system can help reveal how systems currently work or what they are supposed to do. Documentation includes any written information about current systems, business processes, requirements specifications, competitor research. Reviewing and analyzing the documents can help identify functionality that needs to remain, functionality that isn't used.

6.1.3 Distribute Questionnaires

We arranged an online survey to collect requirements for this project. Questionnaires are a way to survey large groups of users to determine what they need. Questionnaires are useful with any large user population but are particularly helpful with distributed groups.

6.2 Requirement Validation

Validation ensures that the requirements are correct and demonstrate the desired quality that you want from this system. Requirements that seem fine when you read them might turn out to have ambiguities and gaps when to try to work with them.

6.2.1 Review the Requirements

Peer review of requirements, particularly the type of rigorous review called inspection, is one of the highest-value software quality practices available. Assemble a small team of reviewers who represent different perspectives and carefully examine the written requirements, analysis models, and related information for defects.

6.2.2 Test the Requirements

We test constitute an alternative view of the requirements. We also conduct writing tests about how to tell if the expected functionality was correctly implemented. Derive tests from the user requirements to document the expected behaviour of the product under specified conditions.

6.2.3 Simulate the requirements

To simulate the requirements commercial tools are available that we have used to simulate a proposed system either in place of or to augment written requirements specifications. Simulation takes prototyping to the next level.

6.3 Change Management

We used an online survey for handling change requests and tracking open issues is essential. Change always has a price, so using change management practices to control scope creep is

vital in a contract-development situation. We will provide these following issues in change management.

- Evaluate and prioritize defect corrections and enhancement requests
- Dynamically adjust the scope of future releases or iterations
- Evaluate the impact of proposed changes on users and business processes participation in making change decisions

Appendix

We've prioritized the requirements by following **Three-level Scale** technique.

Three-level Scale: When a BA categorizes the requirements in any of the ordering or ranking scale, it is subject to the analyst's understanding of the business. Many analysts suggest that this method has some drawbacks and advocate methods that have more than one scale.

Covey, Rebecca and Merrill would have never in their wildest dreams have thought that their "The four-quadrant '**Eisenhower Decision Matrix**' for importance and urgency", from their self-help book First things First, would become one of the most widely used prioritization techniques in the IT space.

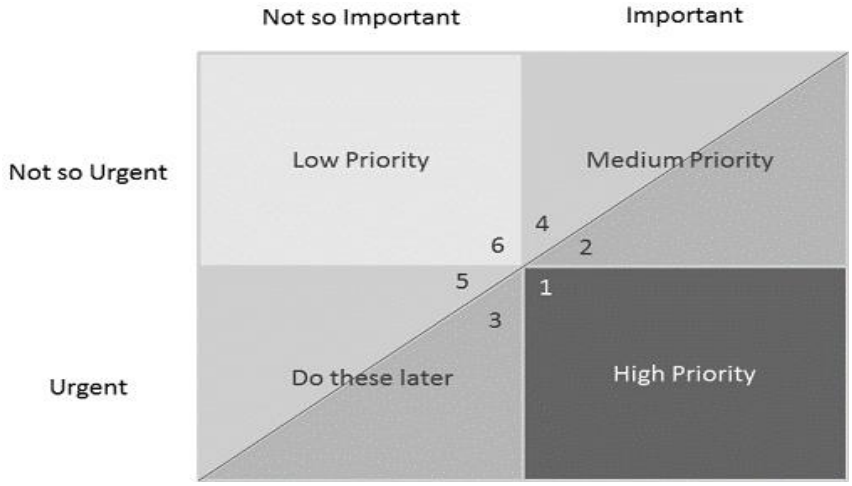


Figure 2: Eisenhower Decision Matrix – Lower the number, higher the priority of the section

.
With the numbering on the different sections of the diagram, the priority of the sections is implicit. Important items have the highest preference, while urgent items have lower preference.

1. High Priority – These requirements are urgent and important. These are requirements that are generally with respect to compliance or contract that cannot be left out. These requirements need to be implemented in the current release and not implementing the same will have some adverse effect on the business.
2. Medium Priority – These requirements are important but not as urgent. Implement these after you implement the high priority items. If you see closely there is a line that splits this quadrant into 2 parts. Implement the items that are on the right side of the line first as they are relatively of higher medium priority.
3. Do these later – These items are urgent but do not have a lot of effect on the business. Hence do it after completing the more important medium priority items. Similar to the medium

priority items, this quadrant has also been split into two; the items on the right side have a higher priority relatively to the items on the left.

4. Low Priority – These items are neither important nor are they urgent. Complete the items at your leisure after completing the items in sections 4 and 5 respectively.

The items on the right-hand side of the diagonal have higher priority. Start with the bottom-right corner of the high-priority quadrant and work your way up and left.

Prioritization of the Performance requirements of IMS:

SLR1 – High Priority: Search service must be faster. It is urgent & important. Search result should show within a second.

PAR1 – High Priority: Accurate result are urgent. Because wrong information might be running the whole business system.

CR1 – High Priority: The system must be above thousands of data.So it is urgent and important.

Prioritization of the Dependability requirements of IMS:

RAR1 – High Priority: User can need any service at any time. So our system must be available at any time. So it is urgent and important

RFR1-High priority: If System error occurs in the Application, then we should handle the error. It is urgent and important.

Prioritization of the Maintainability requirements of IMS:

MR1-stakeholders may need to change any information of his profile like phone number, address etc. for various reason. This requirement is useful but not so much important.

Prioritization of the Usability and Human-Interaction requirements of IMS:

UHIR1– High priority: It is urgent and also important. Because system must be understandable and useable.

Prioritization of the Usability and Human-Interaction requirements of IMS:

AR1 – Low priority: It is not important that label fields are bold.

SR1 – High priority: Our system can use different type mobile models. So user interface must be filling full mobile Screen. So it is Urgent and importa