

Interim Report

Level 2

Procurement Workflow Information Management System

The Architects

204067U	Gunawardana A.H.N.N.
204009V	Athukorala D.A.Y.S.
204041K	Dilshan K.G.A.P.
204065L	Gunathilaka M.D.K.L.
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Faculty of Information Technology

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Supervisor

Dr. Premarathne S.C

(Department Of Information Technology)

Faculty of Information Technology

University of Moratuwa

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Abstract

In today's world companies face several issues on a daily basis due to not having a properly organized purchasing system. While an organized system could solve these problems, our client lacks such a system to make sure the purchasing activities happen in the correct order.

Therefore, we decided to easily solve these problems by creating a properly automated procurement Work management system.

Let us provide some insight about the system we plan to create. The users and administrators can log in to the system using their usernames and passwords. After logging in they have to participate in the procurement process by fulfilling their appointed job which normally includes either approving a procurement or correcting a rejected procurement. This allows for the procurement process to occur smoothly from the point of requisition of items by different departments to the payment for the received items.

In order to make a well-functioning application we have designed UML and ER diagrams before entering the implementation process. We have decided to use React for Frontend, .NET for the Backend and Microsoft SQL Server for our Database activities.

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List of Abbreviations

Abbreviation	Meaning
SQL	Structured Query Language
JS	JavaScript
UI	User Interface
ER	Entity Relationship
EER	Enhanced Entity Relationship
SRS	Software Requirement Specification
HOD	Head of Department
TEC	Committee Technical Evaluation Committee
RFP	Request for Proposal
GRN	Goods Received Note
DG	Director General
ERP	System Enterprise Resource Planning system
ASP.NET	Active Server Pages Network Enabled Technologies
SPA	Single Page Application
DOM	Document Object Model
HTML	Hyper Text Markup Language
CSS	Cascading Style Sheets
CLR	Common Language Runtime
VB	Visual Basic

Chapter 1 Introduction

1.1 Introduction

Procurement management is the process of acquiring goods and services for an organization. It involves sourcing, generating requests, placing orders, inspecting the supply received, sending invoices, and journaling the procurement process. Procurement management systems are digital systems that help organizations streamline and optimize this process, typically by automating certain tasks and providing a centralized platform for tracking and managing procurement activities.

One of the main benefits of using a procurement management system is that it can help an organization to better manage its costs. By automating certain tasks, such as generating requests and placing orders, the system can help to reduce the time and resources required to manage procurement activities. Additionally, the system can help to ensure that orders are placed with the most appropriate vendors and that the goods or services being acquired meet the necessary quality standards.

Another benefit of using a procurement management system is that it can help to improve the transparency and accountability of the procurement process. By providing a centralized platform for tracking and managing procurement activities, the system can help to ensure that all relevant information is captured and that the process is carried out in a consistent and standardized manner. This can help to reduce the risk of errors and prevent accidental or unauthorized purchases.

1.2 Problem in Brief

Most purchasing systems used by companies have been identified to be outdated and obsolete. They suffer many difficulties due to the exploitation of system loopholes by vendors and irresponsible inside staff. Some of these difficulties are mentioned below

- Not managing a user-friendly interface. New users may struggle with complicated interfaces.
- Not having anyone accountable for accidental or unwanted purchases made.
- Manual systems take a lot of time to document the procurement proceedings.
- Manual processes may cost more money to manage.
- Not having proper evidence of transactions to refer to in future instances.

- Not following the proper steps and pre-conditions for procurement in the company.
- Not having all the relevant information about vendors and their products due to poor procurement methods. This may lead to bidding on a less appropriate seller.

1.3 Background and Motivation

A majority of large-scale companies worldwide have switched from manual systems to digitized procurement systems to overcome certain difficulties. Below is a brief explanation of what is expected from the system we are about to create.

There are several departments in a large-scale company. Each of these departments requires specific items to function for a certain period of time. The order for these items along with their budget and the evidence of authorization can be entered into the system. The evidence of authorization contains the reasons why these items are required by each department. These orders are collected and finalized in the purchasing department.

Afterward, these orders are forwarded via the procurement system to the technical committee appointed by the finance division. Here the budgets and the reasoning behind these orders are checked thoroughly.

Next approval has to be obtained from the procurement committee. A dedicated procurement system eases the duty of the procurement committee to send registered letters to existing and new vendors informing them that the bidding process for the required items is about to commence. The technical committee then uploads a report suggesting the vendors that best match our requirements.

Then the Finance division issues purchase orders to the vendors after obtaining the final approval from the Director General. These digitized approvals allow us to show exactly who is responsible for a certain order. If there was a problem in obtaining approvals, this could lead to accidental orders to which no one was accountable for. Therefore, we are motivated to give more attention to this.

Vendors will then issue a Letter of Acceptance and commence issuing goods after obtaining a Bank Guarantee or a Bond. After the goods have been received by the company, the Finance Division and the vendors have to submit Goods Received Notes and invoices respectively. These documents will have to be imputed into the system as

evidence or future reference. It is only then the Finance division is free to release payments to the vendors.

In recent years, many large-scale companies have switched from manual systems to digitized procurement systems to overcome various difficulties. The system we are proposing aims to address the following issues:

- Complicated user interfaces that are difficult for new users to navigate.
- Lack of accountability for accidental or unwanted purchases.
- Long documentation times for procurement proceedings in manual systems.
- Higher costs associated with managing manual processes.
- Lack of proper evidence of transactions for future reference.
- Failure to follow proper steps and pre-conditions for procurement in the company.
- Insufficient information about vendors and their products due to poor procurement methods, leading to bids being placed on less suitable sellers.

1.4 Aim and Objectives

1.4.1 Aim

The aim of this project is to develop a system to optimize the cost being invested by the organization via a process that involves sourcing, generating requests, placing the order, inspecting the supply received, sending invoices, and journaling the procurement process with the use of the Procurement workflow information management system.

1.4.2 Objectives

- Study SQL, React, .net, and other technologies which are used for making the System
- Design activity diagram and SRC document and Database
- The system should be able to grant access role base, and the system should maintain a log file related to the user login/logout.
- Facilitate procurement officer to create master procurement plan by creating a new series
- HOD and End User able to create and manage procurement plans division-wise
- Ability to (The system) monitors activity deadlines and generate Alert/Emails to the relevant user(s) to initiate the procurement workflow activity

- Procurement Officer able to assign and manage TEC Committee and assign ‘Request to Initiate’ Document
- TEC Committee is able to view, and manage approvals of assigned ‘RI’ Documents specifications,
- HOD, or End User able to Manage Pre-Bid Meetings, Bid Opening and Bid Closing
- Procurement Committee (Users) is able to finalize the procurement based on the TEC Committees’ TEC report.
- Internal Auditor able to view and verify procurement committee-approved Bids
- DG (Director General/ Authorized Person) is able to view the Complete Approved
- Email notifications and a system alert will be generated whenever a task is assigned to a user, and a brief note about the task will be mentioned in the Email and Alert, when the user access the procurement system alert window will display a pending task that the user should attend to
- The system is able to log all interactions with the system.

1.5 Summary

Procurement management is the process of acquiring goods and services for an organization, which involves various activities such as sourcing, generating requests, placing orders, and managing invoices. Procurement management systems are digital tools that help organizations streamline and optimize this process by automating certain tasks and providing a centralized platform for tracking and managing procurement activities. These systems can improve cost management, increase efficiency, and improve transparency and accountability. However, many existing procurement systems are outdated and suffer from various problems such as complicated interfaces, lack of accountability, inefficient manual processes, and insufficient information about vendors. The development of a new procurement management system aims to address these issues and provide a more efficient and effective way for companies to manage their procurement activities. The new system will be used to collect orders from various departments, review them through committees, and issue purchase orders to vendors after obtaining final approval. It will also provide an interface for vendors to submit bids and for the organization to track the progress of orders. By streamlining and

automating these processes, the new procurement management system aims to improve efficiency, reduce costs, and increase transparency and accountability.

Chapter 2 Existing Solutions

2.1 Introduction

There has been a significant amount of research done on the topic of procurement management systems. Many companies have implemented such systems in order to streamline their purchasing processes and improve efficiency.

One study found that the implementation of a procurement management system resulted in a 50% reduction in the time spent on procurement activities and a 25% reduction in the cost of procurement (Ngai, et al., 2010).

Another study found that a procurement management system can improve communication and collaboration between departments, leading to increased efficiency and reduced lead times (Xu & Zhang, 2014).

In addition to improving efficiency, procurement management systems can also help to improve the quality of products and services purchased. A study conducted by Al-Bayati (2013) found that the implementation of a procurement management system resulted in the purchase of higher-quality products, as the system allowed for the identification of the most suitable suppliers based on their past performance.

There are also several challenges that companies may face when implementing a procurement management system. One study found that a lack of user acceptance and training can hinder the successful implementation of such a system (Girma, et al., 2005). It is important for companies to address these challenges and ensure that all employees are properly trained in the use of the system in order to realize its full potential.

2.2 Similar Products

Procurement workflow management systems are software solutions that help organizations streamline and automate their procurement processes. These systems can help organizations manage vendor relationships, create and issue purchase orders, receive and track deliveries, and handle invoicing and payment.

There are many procurement workflow management systems available in the market, each with its own unique set of features and capabilities. These systems typically provide a range of features, such as request for proposal (RFP) management, vendor

selection, contract management, and invoicing. Some of the most popular systems include:

2.2.1 SAP Ariba

SAP Ariba is a cloud-based procurement solution that offers a range of features including supplier collaboration, procurement analytics, and contract management.

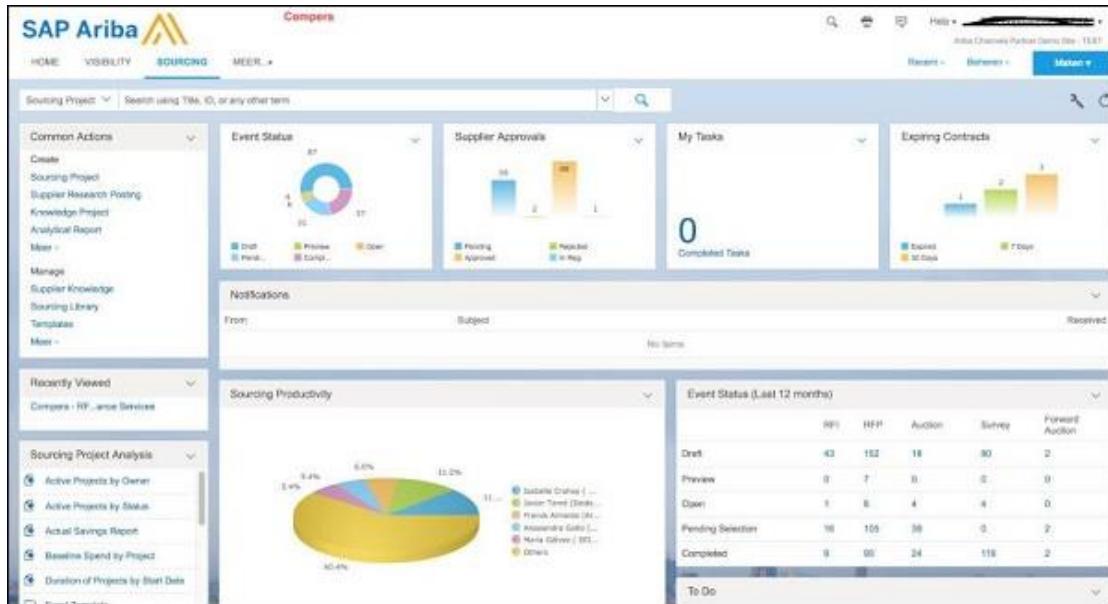


Figure 1 SAP Ariba - Dashboard

2.2.2 Coupa

Coupa is a procurement platform that offers a range of features including supplier management, spend analysis, and contract management.

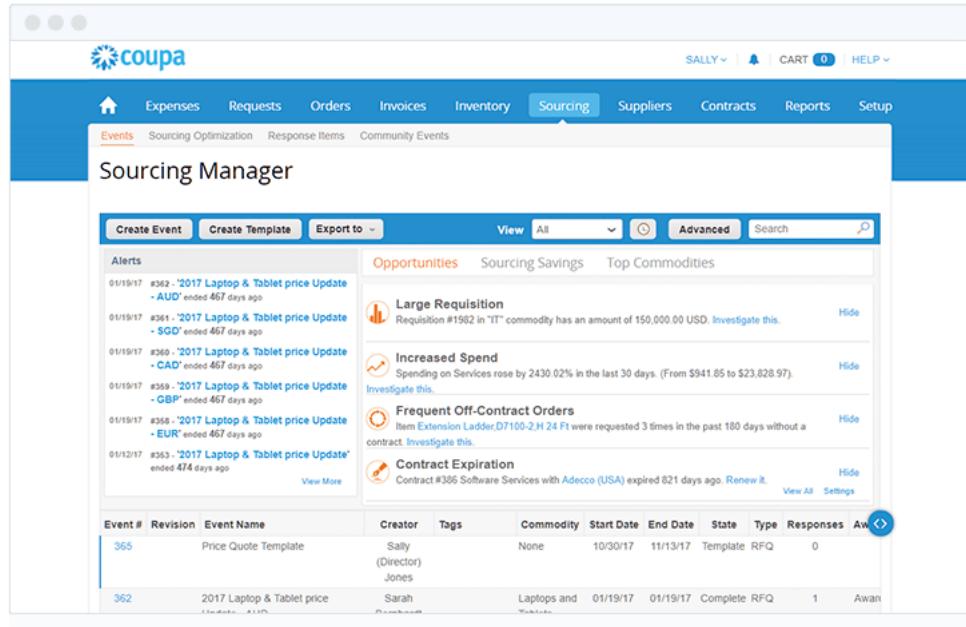


Figure 2 Coupa - Dashboard

2.2.3 Oracle Procurement Cloud

Oracle Procurement Cloud is a procurement platform that offers a range of features including supplier collaboration, procurement analytics, and contract management.

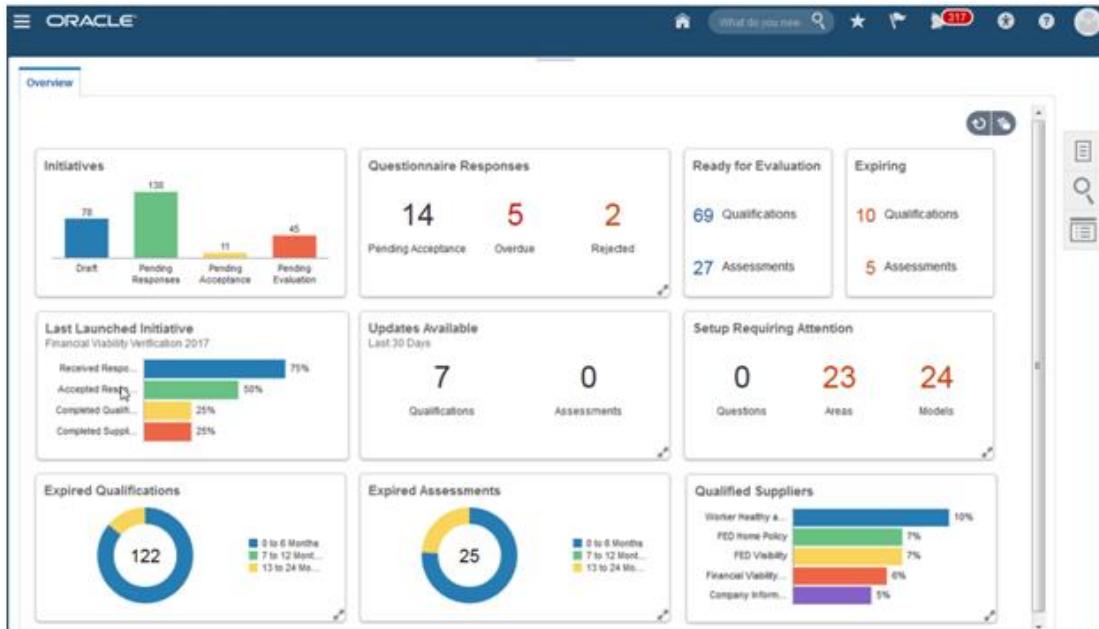


Figure 3 Oracle Procurement Cloud - Dashboard

2.2.4 Procurify

Procurify is a cloud-based procurement platform that offers a range of features including supplier management, spend analysis, and contract management.

The screenshot shows the Procurify dashboard with a green header. On the left is a dark sidebar with navigation links: DASHBOARD, REQUEST, APPROVAL, PROCURE, RECEIVE, INVENTORY, PAYMENT (with 12 notifications), MANAGE, REPORTS, and SETTINGS. The main area has a dark background with a globe graphic. A large orange banner at the top says "WELCOME TO PROCURIFY!" with the subtext "Hello! Let's get started with Procurify. This is your dashboard to quickly show you the health of your purchasing." Below this are three large orange numbers: 107 PENDING ORDERS, 321 PENDING EXPENSE, and 23 PENDING TRAVEL. Under "RECENT ACTIVITY", there are two entries: "ITEM PURCHASED Order #1062 - on Oct 9, 2015 03:22 pm" and "ITEM PURCHASED Order #322 - on Oct 2, 2015 07:46 pm". To the right is a "RECENT COMMENTS" section with five entries from users Dilip Watson, Edward Goko, Dennis Roberts, and others, each with a timestamp.

Figure 4 Procurify - Dashboard

2.2.5 Ivalua

Ivalua is a procurement platform that offers a range of features including supplier collaboration, procurement analytics, and contract management.

The screenshot shows the Ivalua dashboard with a blue header. The top navigation bar includes links for Suppliers, Sourcing, Contracts, Items (which is highlighted in yellow), Procurement, Invoices, Intelligence, User, Admin, Integration, and CONFIG. The user profile "Caurab M." is shown on the right. Below the header is a search bar with fields for "Keywords: pen", "Commodity:", "Kits:", and a "Search" button. To the right of the search bar are "Reset" and "Advanced search" buttons. The main content area displays a grid of item records. Each record includes a small image, a quantity field (e.g., "1"), a "Cart" icon, a "Image" column, a "Commodity" column (e.g., "Desk supplies"), a "Product Code" column, an "Item" column, an "Item code" column, a "Detailed Description" column (e.g., "Office supplies chairs, desks, pens, pencils"), a "Supplier" column (e.g., "Office Depot (item supplier)"), a "Current Inventory" column, a "Unit" column, a "Contract" column, a "Unit price" column (e.g., "1.00 USD"), a "Curr." column, a "Lead time (d)" column, and a "Reviews" column. The first item in the grid is a "Desk supplies" item with a "No Code" product code and "Office supplies" detailed description, supplied by "Office Depot (item supplier)".

Figure 5 Ivalua - Dashboard

2.2.6 Jaggaer

Jaggaer is a procurement platform that offers a range of features including supplier management, spend analysis, and contract management.

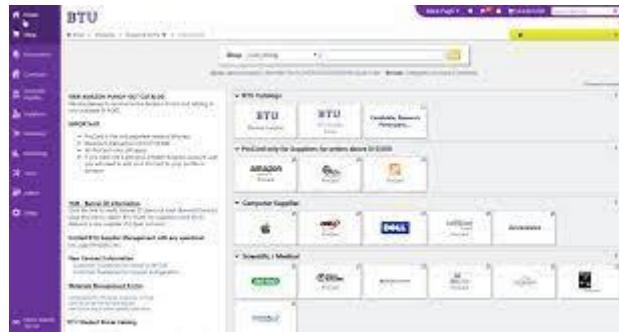


Figure 6 Jaggaer - Dashboard

These systems can help organizations streamline and automate their procurement processes, saving time and improving efficiency. They can also help organizations track and manage their spending and improve relationships with suppliers.

2.3 Summary

In conclusion, the literature suggests that procurement management systems can significantly improve the efficiency and effectiveness of a company's purchasing processes. It is important for companies to carefully consider the technology and training needed for the successful implementation of such a system.

Overall, procurement workflow management systems can help organizations streamline and automate their procurement processes, improving efficiency and reducing the risk of errors. These systems offer a range of features for managing RFPs, vendor selection, contracts, invoices, and suppliers, and can be found as standalone solutions or as part of larger ERP systems.

Chapter 3 Technologies

3.1 Introduction

In this chapter, we will focus on the technologies that we have used to build this system.

We can categorize the technologies under the following sections.

1. Frontend Technologies
 - a. React/Redux
 - b. Bootstrap
2. Backend Technologies
 - a. .NET
 - b. ASP.net
 - c. Node.Js
3. Database Technologies
 - a. Microsoft SQL Server

3.2 Frontend Technologies

Front-end technologies refer to the tools and technologies used to develop the user interface and client-side logic of web applications. Front-end technologies are used to create the visual elements of a web application that users interact with, such as the layout, design, and interactivity. Front-end technologies are important for building modern, responsive, and user-friendly web applications. They are used to create the visual and interactive elements of a web application that users interact with and are essential for creating a good user experience.

3.2.1 React/Redux

React is a JavaScript library for building user interfaces. It was developed by Facebook and is used for building single-page applications (SPAs) and mobile applications. React allows developers to build reusable UI components, which can be easily combined to create complex user interfaces. It uses a virtual DOM (Document Object Model) to optimize the rendering of UI elements, which helps to improve the performance of applications.

Redux is a JavaScript library for managing application state. It is often used in conjunction with React to manage the state of a React application. Redux works by storing the application state in a single, immutable state tree (also known as a store).

This state tree is managed by reducers, which are pure functions that take in the current state and an action and return a new state. Reducers are responsible for updating the state tree in response to actions dispatched by the application.

React and Redux are often used together to build modern, scalable, and maintainable web applications. React provides a powerful way to build reusable UI components, while Redux provides a central place to manage the state of the application. This helps to improve the maintainability and testability of the application and makes it easier to build complex data-driven applications.

3.2.2 Bootstrap

Bootstrap is a front-end framework for building responsive, mobile-first websites and applications. It is a collection of HTML, CSS, and JavaScript components that provide a range of pre-designed and customizable user interface elements, such as buttons, forms, navigation bars, and grids. Bootstrap was developed by Twitter and is one of the most popular front-end frameworks in use today. It is designed to make it easy for developers to build responsive and mobile-friendly websites and applications and includes a range of tools and features to help with this.

Some of the key features of Bootstrap include:

- **Responsive design:** Bootstrap's grid system and layout classes make it easy to create websites and applications that look good on all devices, from smartphones to desktop computers.
- **Pre-designed UI elements:** Bootstrap includes a range of pre-designed UI elements, such as buttons, forms, navigation bars, and alerts, which can be easily customized and incorporated into a web application.
- **Customization:** Bootstrap provides a range of customization options, including the ability to customize the color scheme, typography, and layout of a website or application.
- **Extensibility:** Bootstrap can be easily extended and modified to fit the specific needs of a project, using a range of customization options and third-party plugins.

Bootstrap is widely used by developers to build responsive and mobile-friendly websites and applications and is a popular choice for building user interfaces for web applications.

3.3 Backend Technologies

3.3.1 .NET

.NET is a software framework developed by Microsoft that allows developers to build a wide range of applications, including web, mobile, and desktop applications. It is a popular choice for building enterprise-level applications, as it provides a range of tools and libraries for developing robust, scalable, and secure applications..NET is based on the Common Language Runtime (CLR), which is a runtime environment that executes and manages code written in languages that target the CLR. This allows developers to use a variety of programming languages to build .NET applications, including C#, F#, and VB.NET.

.NET includes a range of features and tools for building applications, including:

- A set of class libraries that provide a range of functionality for building applications, including support for networking, security, data access, and other common tasks.
- A runtime environment that executes and manages code written in languages that target the CLR.
- A development environment called Visual Studio, which provides a range of tools for writing, debugging, and testing .NET applications.
- Support for building web applications using ASP.NET, which is a framework for building web applications using .NET.

Overall, .NET is a powerful and popular platform for building a wide range of applications and is widely used by developers to build enterprise-level applications.

3.3.2 ASP.net

ASP.NET (Active Server Pages. NET) is a web application framework developed by Microsoft for building dynamic, data-driven web applications. It is a part of the .NET framework and allows developers to build web applications using .NET languages, such as C# and VB.NET.

ASP.NET is built on top of the Common Language Runtime (CLR), which is a runtime environment that executes and manages code written in languages that target the CLR. This allows developers to use a variety of .NET languages to build ASP.NET applications and provides a range of features and tools for building web applications.

Some of the key features of ASP.NET include:

- A rich set of controls and libraries for building web applications, including support for forms, data access, security, and more.
- A model-view-controller (MVC) architecture, which separates the application into three components: the model (data), the view (user interface), and the controller (logic). This helps to improve the maintainability and testability of the application.
- Integration with Visual Studio, which is a development environment for building .NET applications. Visual Studio provides a range of tools for writing, debugging, and testing ASP.NET applications.
- Support for building web applications that are responsive and mobile-friendly, using tools such as Bootstrap and MVC5.

Overall, ASP.NET is a powerful and popular framework for building dynamic, data-driven web applications, and is widely used by developers to build a range of web applications.

3.3.3 Node.js

Node.js is a runtime environment for executing JavaScript code outside of a web browser. It is built on top of the Chrome V8 JavaScript engine and allows developers to build server-side applications and command-line tools using JavaScript.

Node.js is commonly used for building server-side applications, as it provides a range of features and tools for building scalable, high-performance servers. It is also used for building real-time, event-driven applications, such as chat applications and online games.

Some of the key features of Node.js include:

- An event-driven, non-blocking I/O model, which makes it efficient and scalable for building server-side applications.

- A large ecosystem of open-source libraries and tools, known as the npm (Node Package Manager) registry, which can be easily installed and used in Node.js applications.
- Support for building real-time, event-driven applications using websockets, which allows for bi-directional communication between the server and client.
- The ability to run JavaScript on the server-side, which allows developers to use a single language for both the client-side and server-side of an application.

Overall, Node.js is a popular and powerful platform for building server-side applications and real-time, event-driven applications, and is widely used by developers to build a range of web-based applications.

3.4 Database Technologies

3.4.1 Microsoft SQL Server

Microsoft SQL Server is a relational database management system developed by Microsoft. It is primarily used to store and retrieve data as requested by other software applications. It is typically used in enterprise environments to store and manage large amounts of data, but it can also be used in smaller environments. Some of the features of Microsoft SQL Server include:

- Data storage and management: SQL Server can store and manage large amounts of data, and it supports a wide range of data types and data manipulation languages.
- Security: SQL Server includes a range of security features, including authentication, authorization, and encryption, to protect data and prevent unauthorized access.
- Performance: SQL Server is designed to handle high levels of data concurrency and is able to process large numbers of queries quickly.
- Scalability: SQL Server is highly scalable, which means it can handle increasing amounts of data and users without a decrease in performance.
- Integration: SQL Server can be integrated with a wide range of applications, including .NET and Java, and it supports various programming languages, including T-SQL, Python, and R.
- High availability: SQL Server includes features to ensure high availability, including failover clustering, database mirroring, and replication.

Overall, Microsoft SQL Server is a powerful and feature-rich database management system that is widely used in enterprise environments

3.5 Summary

The system uses a combination of frontend, backend, and database technologies to function. For the frontend, the system utilizes React and Redux, which are a JavaScript libraries and state management tools used for building user interfaces and single-page applications. Additionally, the system uses Bootstrap, a front-end framework for building responsive, mobile-first websites and applications.

On the backend, the system uses .NET, a software framework for building a range of applications including web, mobile, and desktop applications. It also uses ASP.NET, a web application framework built on top of the .NET framework for building server-side web applications. In addition, the system employs Node.js, a JavaScript runtime environment for running JavaScript on the server-side.

For database management, the system uses MySQL, a popular open-source relational database management system (RDBMS) used for storing and managing data.

Chapter 4 Proposed Solution

4.1 Introduction

Our procurement Management System is a system that automates the procurement process and makes it a much more convenient process compared to doing it manually.

As we all know the procurement process requires making a master plan, getting it approved from a select group of individuals, selecting appropriate vendors for the approved items, getting the order approved a few more times before receiving the ordered items, preparing a Goods Received Note and making the required payment before generation of the payment voucher.

An alert/email lets the participants of the procurement process know that they have to complete their role within a certain period of time. This alert would contain a brief note explaining the assigned task.

The system also allows new vendors to register into our system and gives them a chance to participate in the bidding sessions conducted by the company.

Our system also has the ability to grant different access levels to different roles and maintain log files related to the user login/logout.

4.2 Software Process Model

Our team followed the **waterfall model** as the software process model when developing our system. This approach is based on a linear set of activities that progress through distinct phases, including requirements gathering and analysis, design, implementation, testing, deployment, and maintenance.

We chose the waterfall model because the customer requirements were clearly documented and fixed, and the technologies used in the project were stable and easy to organize tasks around. Additionally, the requirements for our system did not frequently change. However, it is important to note that the waterfall model may not be the most appropriate choice for all software development projects, and it is important to carefully evaluate the specific needs and constraints of a project before selecting a software process model.

4.3 Users, Input, and Output of The System

Division HOD	Activities	<ul style="list-style-type: none"> • LOGIN • Create Sub Procurement Plan • Add Item, Vendor, Specification, Justification, Evidence of Authorization • Submit Sub Procurement Plan • Inform Purchasing Division HOD
	Input	<ul style="list-style-type: none"> • User Email • Password
	Output	<ul style="list-style-type: none"> • PRINT Sub Procurement Plan
Purchase Division HOD	Activities	<ul style="list-style-type: none"> • LOGIN • Add Sub Procurement Plan • Generate Master Procurement Plan • Submit Master Procurement Plan • Request to Initiate Procurement Process • Send Master Procurement Plan to Procurement Officer
	Input	<ul style="list-style-type: none"> • User Email • Password
	Output	<ul style="list-style-type: none"> • PRINT Sub Procurement Plan • PRINT Master Procurement Plan

Procurement Officer	Activities	<ul style="list-style-type: none"> • LOGIN • Initiate Procurement Process • CREATE TEC Committee • Inform TEC Members • Call Pre-Bid Meeting • Appoint Bid Opening Committee • Select Members • Inform Bid Opening Committee • Get Bid Details • Hand over Bid details to TEC committee • Forward to obtain DGs Approval • Inform DG • Create and Issue PO • Inform Selected Vendors • Revise Procurement Plan • Create Goods Received Note • Send Goods Received Note to vendor • Request Finance Division to pay vendors • Creating Payment Voucher • Send Payment Voucher to Vendor
	Input	<ul style="list-style-type: none"> • User Email • Password
	Output	<ul style="list-style-type: none"> • PRINT TEC Committee Details • PRINT Staff Details • PRINT Bid Opening Committee Details • PRINT Auditors Review • PRINT Finalize Procurement Plan

		<ul style="list-style-type: none"> • PRINT Goods Received Note • PRINT Payment Voucher
TEC Committee	Activities	<ul style="list-style-type: none"> • LOGIN • Approve Specification • Inform Procurement Committee • Inform Sub division HOD to revise • Select Vendors • Create Tec Report • Inform Procurement Committee
	Input	<ul style="list-style-type: none"> • User Email • Password
	Output	<ul style="list-style-type: none"> • PRINT Specification of Item • PRINT placed Bid applications and required documents • PRINT TEC Report
Procurement Committee	Activities	<ul style="list-style-type: none"> • LOGIN • Approve Specification • Send Mails to Vendors • Send RI Doc to Corporate Communication Division • Inform Subdivision HOD to revise • Create Minutes of Procurement Committee • Send finalize Procurement Plan • Inform Internal Auditor
	Input	<ul style="list-style-type: none"> • User Email • Password

	Output	<ul style="list-style-type: none"> • PRINT Specification and Details of Items • PRINT TEC Report
Bid Opening Committee	Activities	<ul style="list-style-type: none"> • LOGIN • Opening Bid • Inform Vendors • Closing Bid • Inform Procurement Officer
	Input	<ul style="list-style-type: none"> • User Email • Password
	Output	<ul style="list-style-type: none"> • PRINT Vendor List
Vendor	Activities	<ul style="list-style-type: none"> • LOGIN • Place Bid • View Bid Status • Submit Required Document • Sends invoice • Inform Procurement Officer
	Input	<ul style="list-style-type: none"> • Company Full name • Registration type • Salutation • First Name • Last Name • Username • Contact No • Email • Job Title

		<ul style="list-style-type: none"> • Address • State • City • Password • Business Registration Document • Tax Identification Document • Insurance certificate • Other Document
	Output	<ul style="list-style-type: none"> • PRINT Invoice
Internal Auditor	Activities	<ul style="list-style-type: none"> • LOGIN • Inform Procurement Officer
	Input	<ul style="list-style-type: none"> • User Email • Password
	Output	<ul style="list-style-type: none"> • PRINT Finalize Procurement Plan
DG	Activities	<ul style="list-style-type: none"> • LOGIN • Approve to raising PO • Inform Procurement Officer
	Input	<ul style="list-style-type: none"> • User Email • Password
	Output	<ul style="list-style-type: none"> • PRINT Finalize Procurement Plan

Table 1 Users, Input and Output of the System

4.4 Process

A company needs to purchase certain items for a particular period in order to remain functional. These items may include pens, pencils, laptops, staplers etc. Therefore, the Heads of Departments of different departments in the company would make a list comprising of the items that the department requires for that period of time along with a reasoning as to why those items are required. This list would be then sent to the purchasing division. The head purchasing division then requests the Finance division to start the procurement process.

The Finance division initiates the procurement process. The Head of the Finance Division, who is also the Procurement Officer appoints a team known as the Tec Committee. The Tec Committee will collect evidence from every department and check the specifications of the items. If these specifications don't add up to their expectations, the order is sent back to the department heads. However, if these are passed from the Tec Committee a detailed report is forwarded to the Procurement Committee.

The procurement Committee would check this report and approve it. If approval is not given, the order is sent back to the Heads of the Departments, and they must submit a reconciled list of items.

Afterwards the Procurement Committee would proceed to advertise tenders for the required items by the use of Newspaper advertisements. New vendors are allowed to register into our system through our web application. Letters are sent to vendors who are already registered in the system through prior procurements.

The Procurement Officer then holds a pre-bid meeting after calling all the registered vendors. The Procurement Officer also appoints a group called the Bid-Opening Committee whose responsibility is to open and close the bidding session. After the conclusion of a successful bid, the Tec Committee would select a group of vendors for the required item list.

This list of selected vendors is given to the Procurement Committee. The Procurement Committee will then finalize this list and forward it to the Internal Auditor along with the Annual Budget plan.

The Procurement Committee would then send Purchase Orders and send it to the Director General to obtain approval. The DG would approve the document and send it

to the Finance Division. The Finance Division would then send the approved purchase orders to the selected vendors.

Vendors would accept this Purchase Order and send their letter of agreement along with a Bank Guarantee to initiate business.

Finally, when goods have been received by the company, the Finance Division would issue a Goods Received Note to the relevant vendor. The Vendor would send the invoice of the good sent and the Procurement Officer would request the Finance Division to pay the vendors as required.

The system would check whether the payment has been made or not. If the payment has been made the payment voucher would be made but if the payment has not been made, the Finance division would be reminded to make the payment.

4.5 Our Approach

To achieve the objectives of this project, the following steps could be taken:

1. Conduct research to identify the technologies and tools that will be used to develop the procurement management system. This may include studying SQL, React, .NET, and other technologies as needed.
2. Design an activity diagram and SRC document to outline the workflow of the procurement process and the various steps involved. This will help to ensure that the system is designed to meet the needs of the organization and to streamline the procurement process.
3. Create a database to store all relevant information about the procurement process, including vendor and product data, purchase orders, invoices, and other documents.
4. Implement role-based access controls to ensure that users only have access to the information and features that are relevant to their role.
5. Develop a system to maintain a log file related to user login/logout, to provide a record of who has accessed the system and when.
6. Design and implement features that will enable procurement officers to create master procurement plans and to manage the procurement process effectively. This may include features for generating requests, placing orders, inspecting the supply received, and sending invoices.

7. Test the system thoroughly to ensure that it is functioning correctly and meeting the objectives of the project.
8. Deploy the system and provide training to users as needed to ensure that they are able to use the system effectively.
9. Monitor and maintain the system over time to ensure that it continues to meet the needs of the organization and to make any necessary updates or improvements.

4.6 Project Management Plan

To create a fully functional successful system we have adhered to a project management strategy. It is an official, authorized document that explains how our project is carried out, tracked, and managed. We are following our management plan, and to improve management, we employed the Jira program.

To distribute tasks among the group members, establish deadlines, and share documents, we utilize Trello. The software in question resembles our suggested fix a little bit. Our task boards are made with several columns, and the tasks are moved between them. Task statuses such as To Do, In Progress, and Done are displayed on columns.

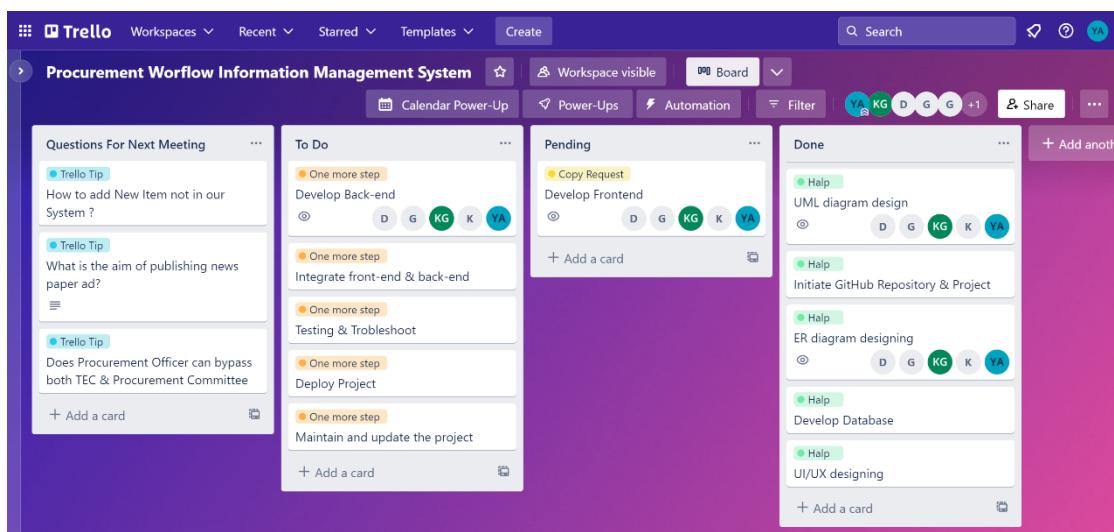


Figure 7 Trello Board-Team ArchiTects

Task	January	February	March	April	May
Develop the front end	Start				
Design database		Start			
Develop the back end			Start		
Integrate front end with back end				Start	
Complete non functional requirements					Start
Testing & Trouble shooting				Start	
Trial Run					Start
Deploy final product & Final report preparation					Start

Figure 8 Gantt chart

4.7 Summary

The proposed solution is a procurement management system that automates and streamlines the procurement process. It allows new vendors to register and participate in bidding sessions and provides different access levels to different roles. The development of the system follows the waterfall model, with a focus on requirements gathering and analysis, design, implementation, testing, deployment, and maintenance. The system will include features for creating master procurement plans, managing the procurement process, and generating requests and orders. It will also include a log file for user login/logout and role-based access controls. The project management plan includes strategies for risk assessment and management, as well as a timeline for the various phases of development. The project will be evaluated for its effectiveness in meeting the objectives and meeting the needs of the organization.

Chapter 5 Analysis and Design

5.1 Introduction

After determining the issue, we gathered our client's requirements and began formulating a solution. We created some UML diagrams to help us get a better understanding of the system. The structural and behavioral diagrams were both created by us.

5.2 Analysis

We have determined the system's functional and non-functional needs before creating it, as our client mentioned. The SRS document mentions both the functional and non-functional requirements.

5.3 Design

We will concentrate on the diagrams that we created to represent the functional and non-functional needs in this chapter. We created the diagrams using LucidChart Software. We drew the following UML diagrams:

1. Use case Diagram
2. Activity Diagram
3. Class Diagram
4. Sequence Diagram
5. ER Diagram

We were able to create the system mockups after generating the aforementioned diagrams.

5.3.1 Use Case Diagram

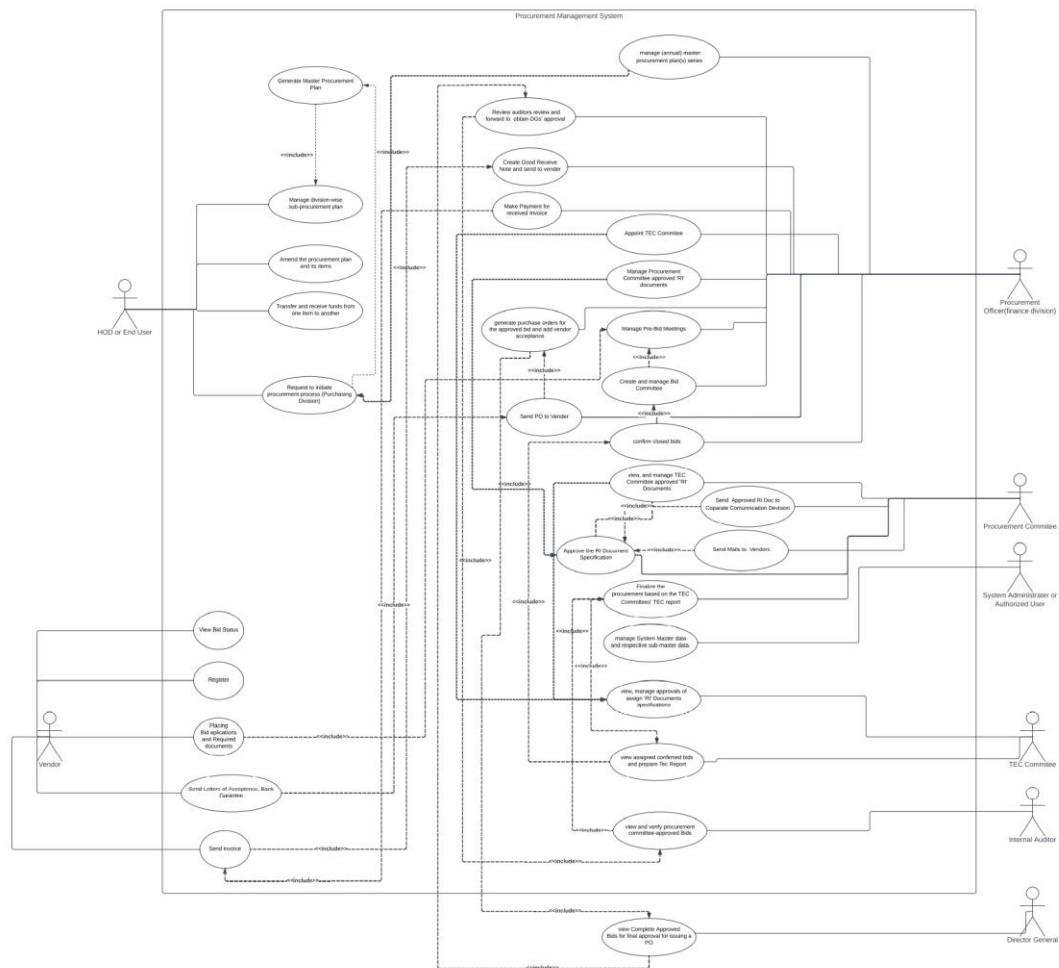


Figure 9 Use Case Diagram

5.3.2 Activity Diagrams

We have created activity diagrams to demonstrate the main features of our system.

- Activity Diagram 1- Initiate Procurement Process
- Activity Diagram 2 - TEC/Procurement Committee Approval Process
- Activity Diagram 3- Auction Process
- Activity Diagram 4-Vendor Approval Process
- Activity Diagram 5 - Inventory Management Process

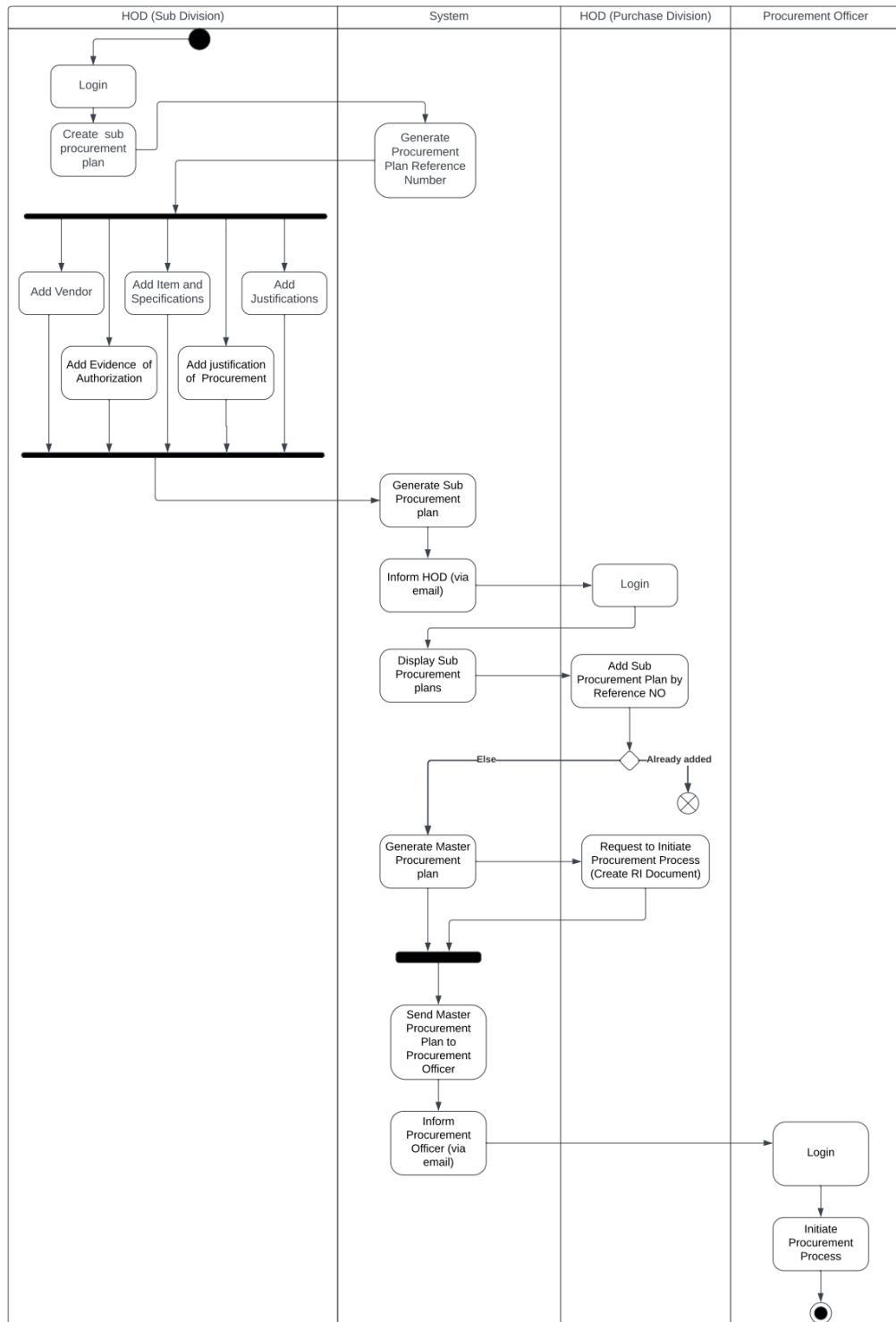


Figure 10 Activity Diagram 1- Initiate Procurement Process

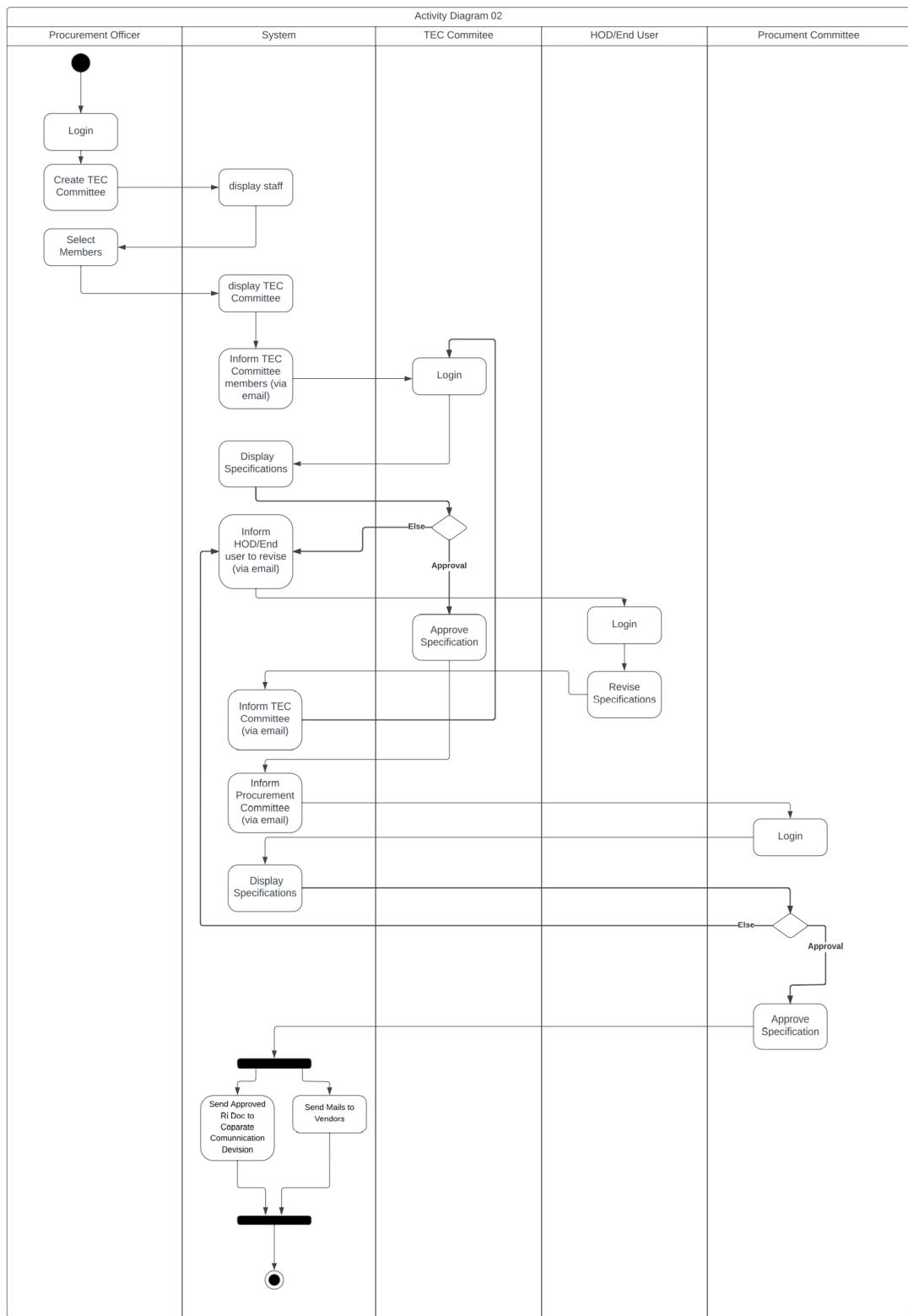


Figure 11 Activity Diagram 2 - TEC/Procurement Committee Approval Process

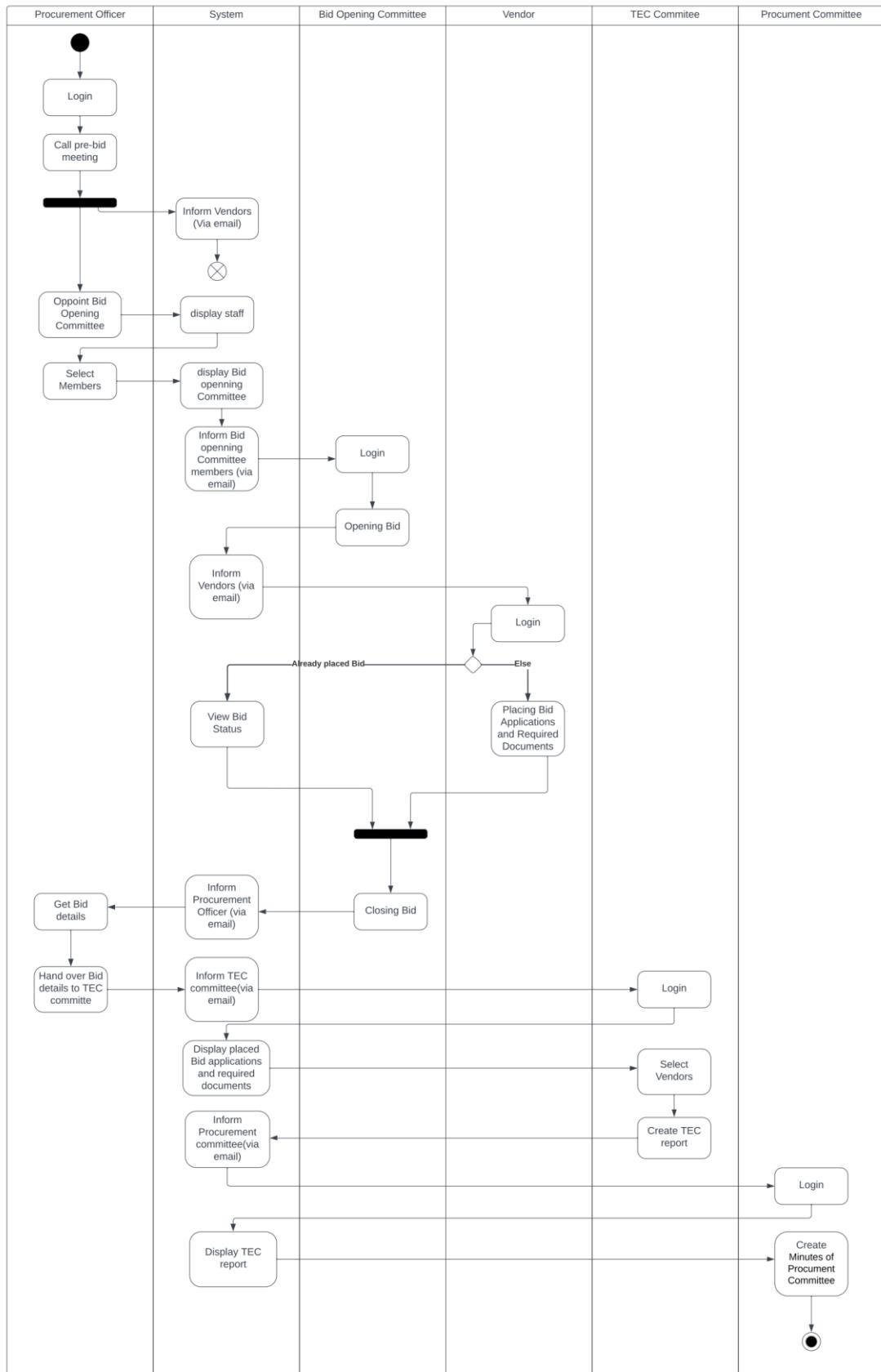


Figure 12 Activity Diagram 3- Auction Process

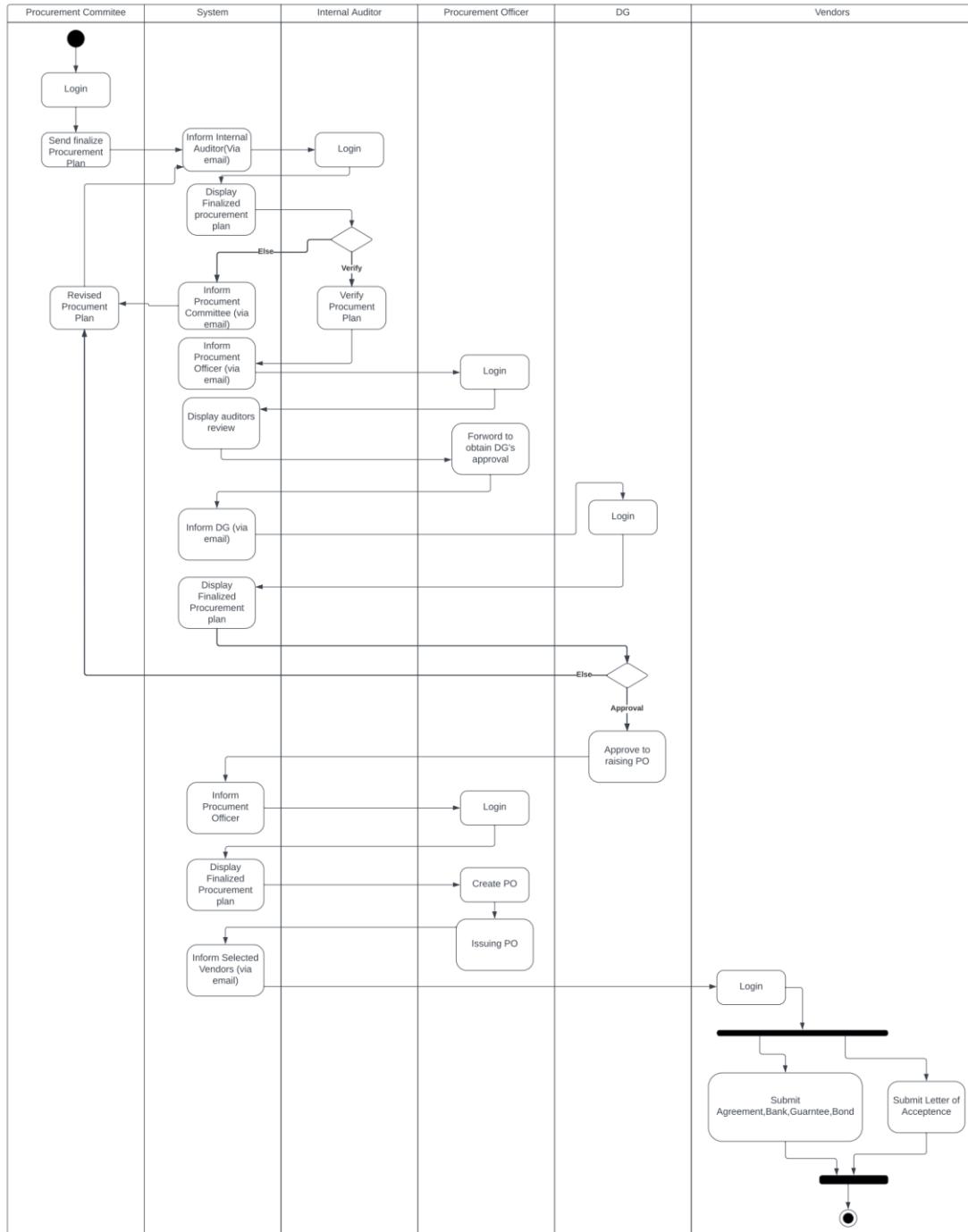


Figure 13 Activity Diagram 4-Vendor Approval Process

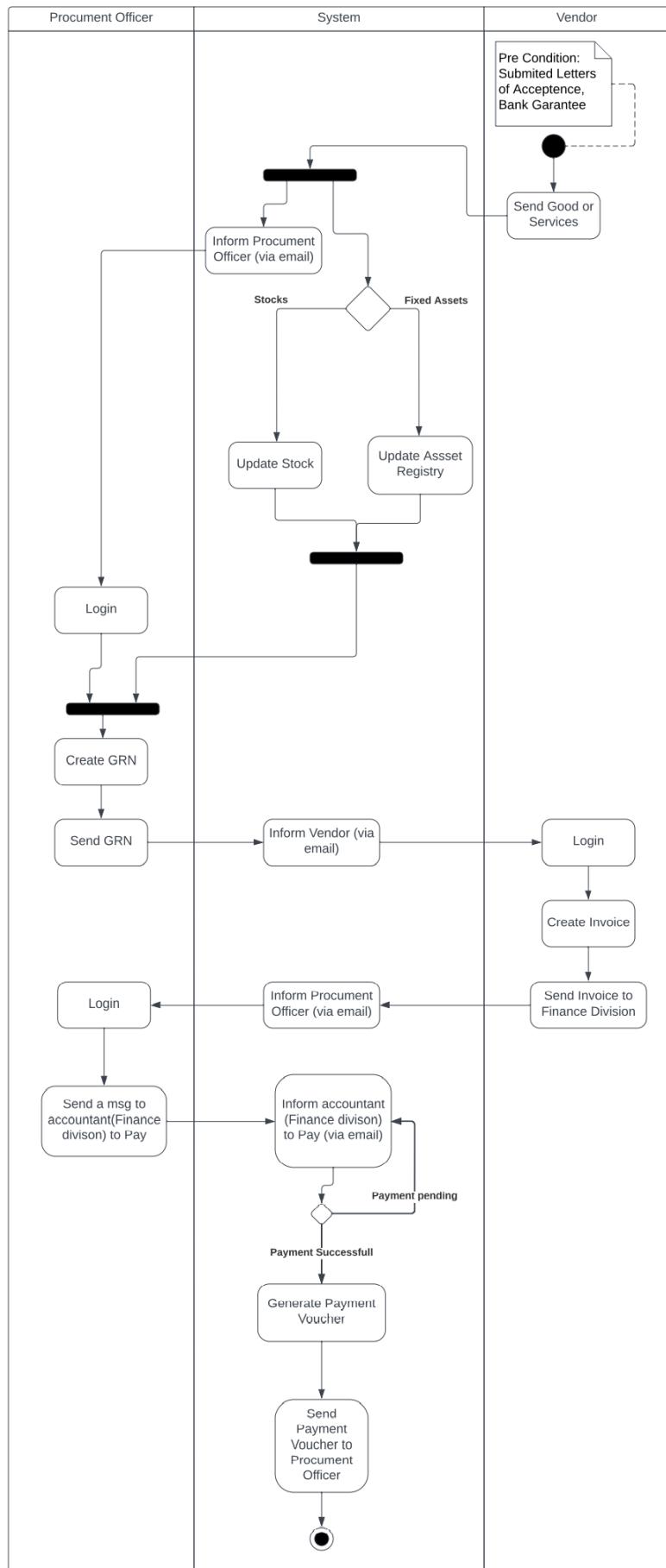


Figure 14 Activity Diagram 5 - Inventory Management Process

5.3.3 Class Diagram

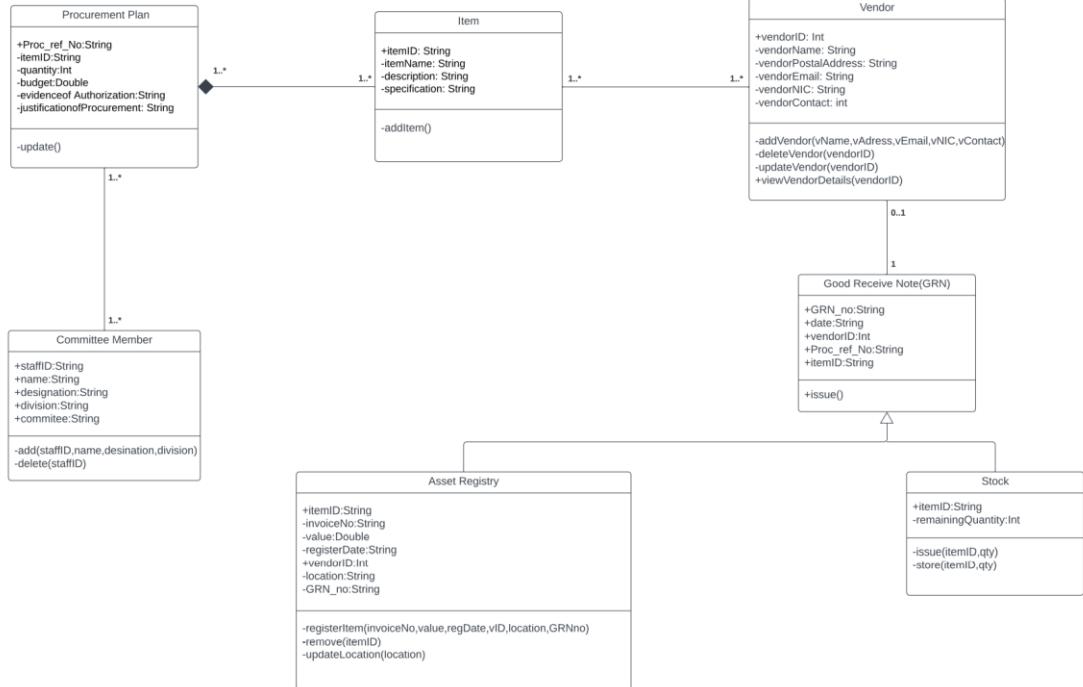


Figure 15 Class Diagram

5.3.4 Sequences Diagrams

We have created Sequence diagrams to demonstrate the main features of our system.

- Sequence Diagram 1- Initiate Procurement Process
- Sequence Diagram 2 - TEC/Procurement Committee Approval Process
- Sequence Diagram 3- Auction Process
- Sequence Diagram 4-Vendor Approval Process
- Sequence Diagram 5 - Inventory Management Process

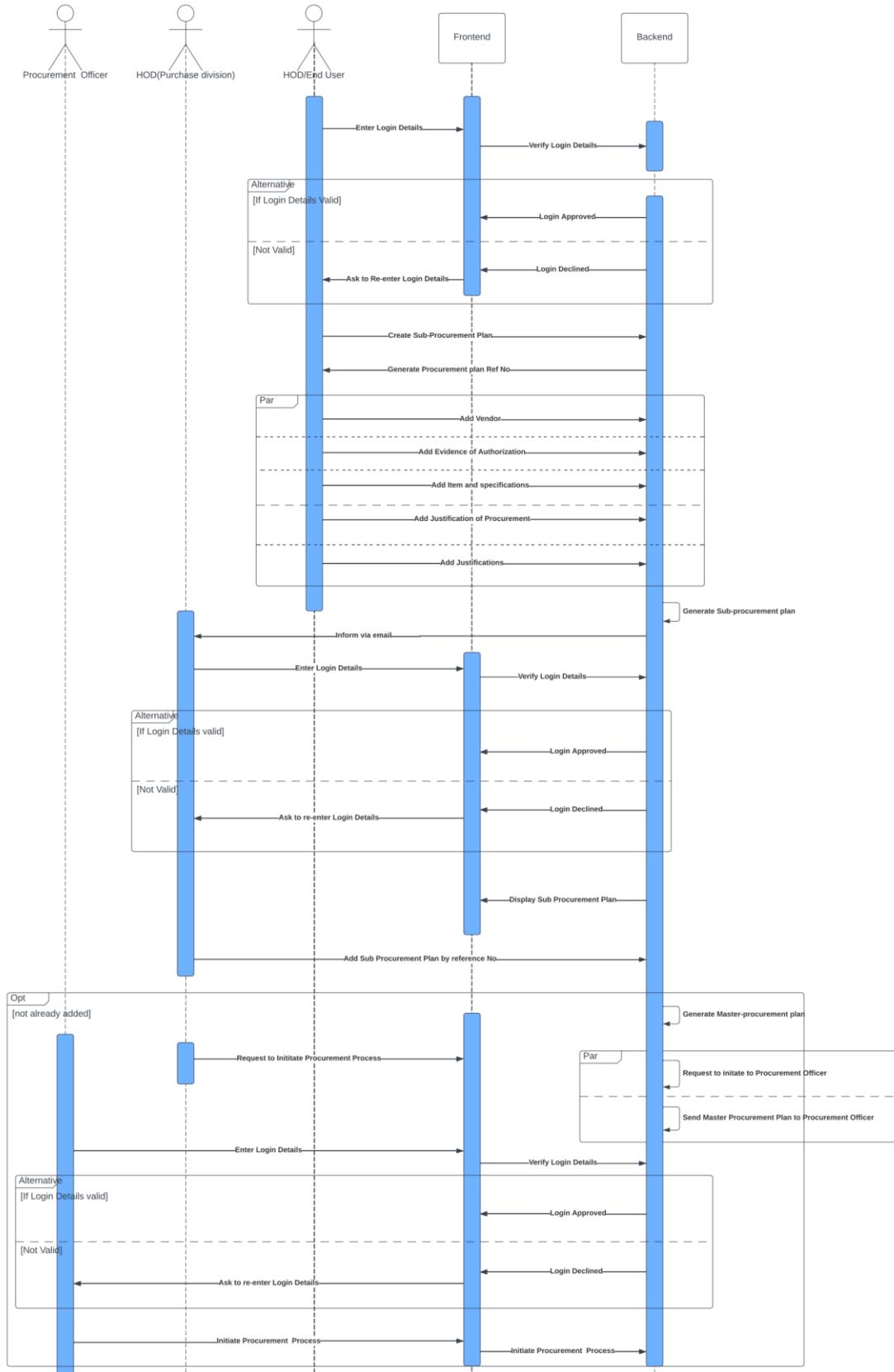


Figure 16 Sequence Diagram 1- Initiate Procurement Process

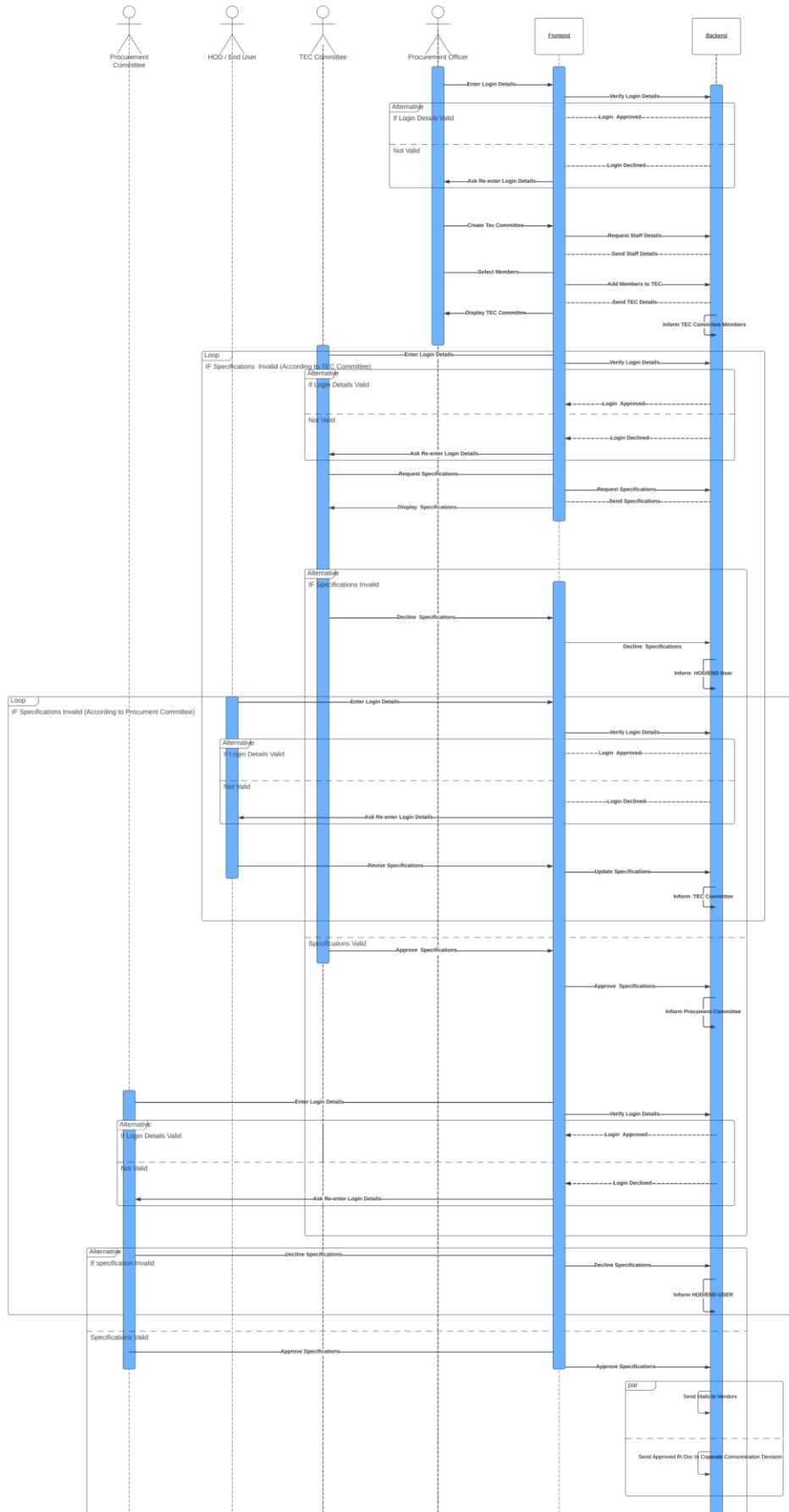


Figure 17 Sequence Diagram 2 - TEC/Procurement Committee Approval Process

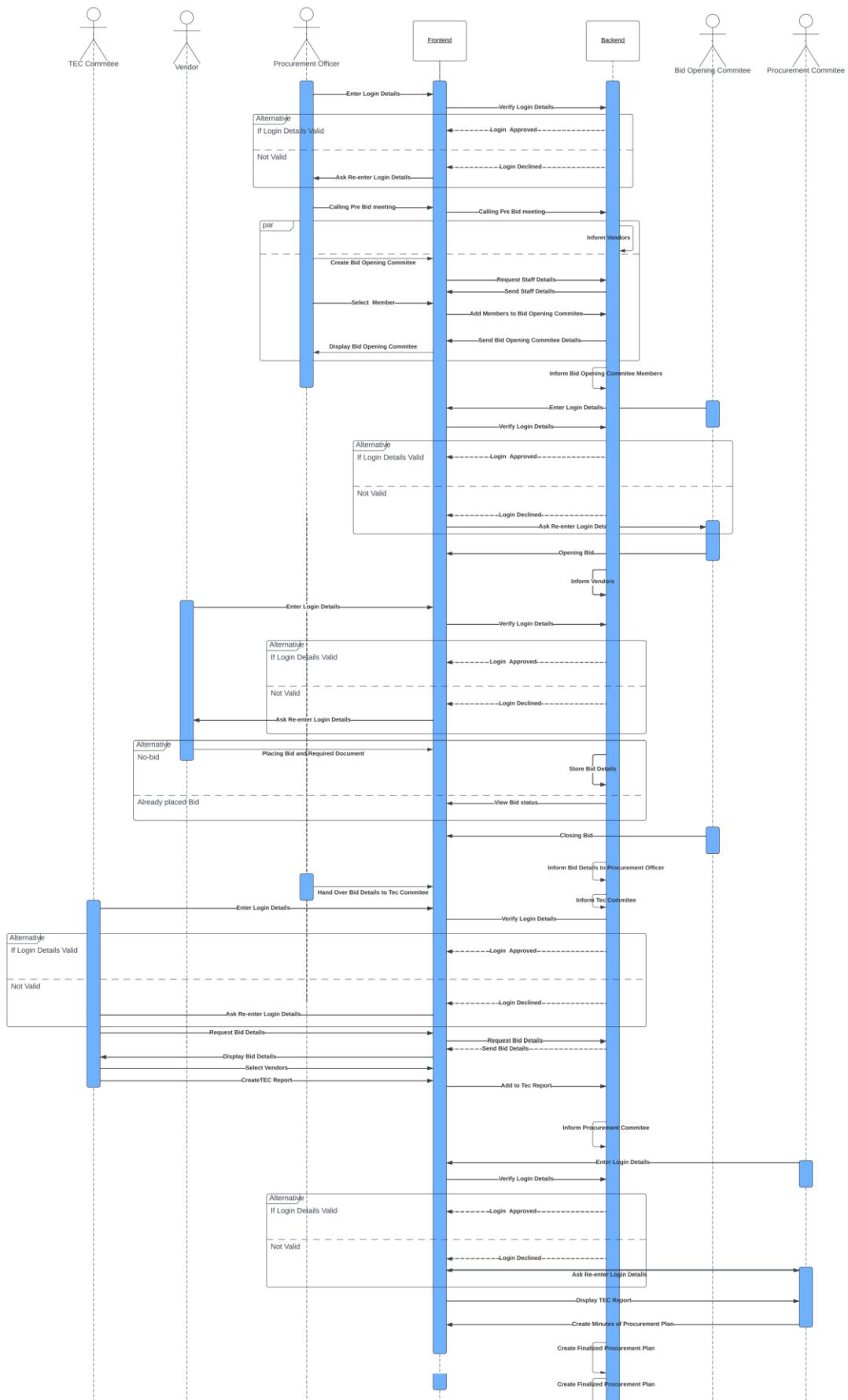


Figure 18 Sequence Diagram 3- Auction Process

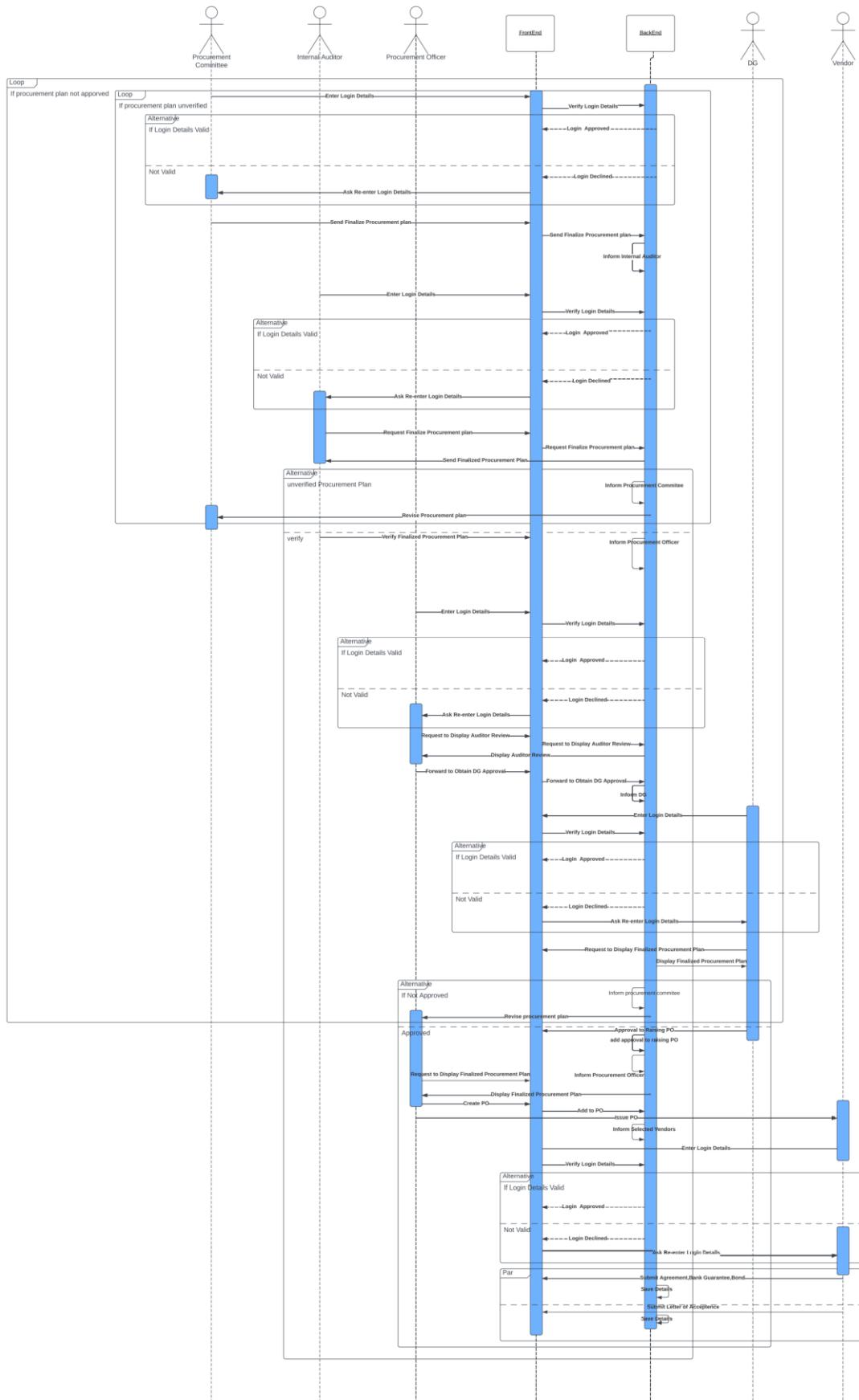


Figure 19 Sequence Diagram 4-Vendor Approval Process

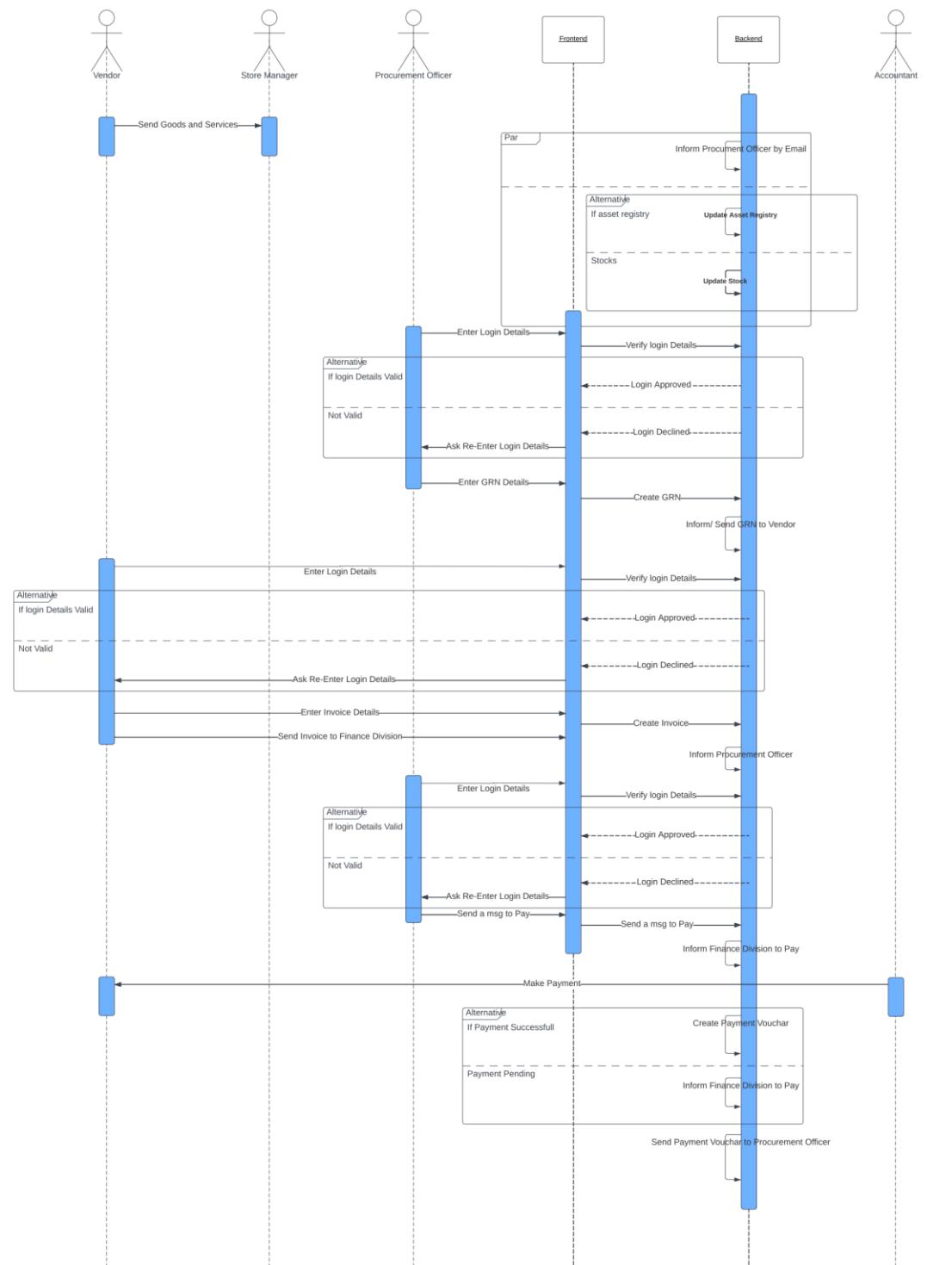


Figure 20 Sequence Diagram 5 - Inventory Management Process

5.3.5 Entity Relationship (ER) Diagram

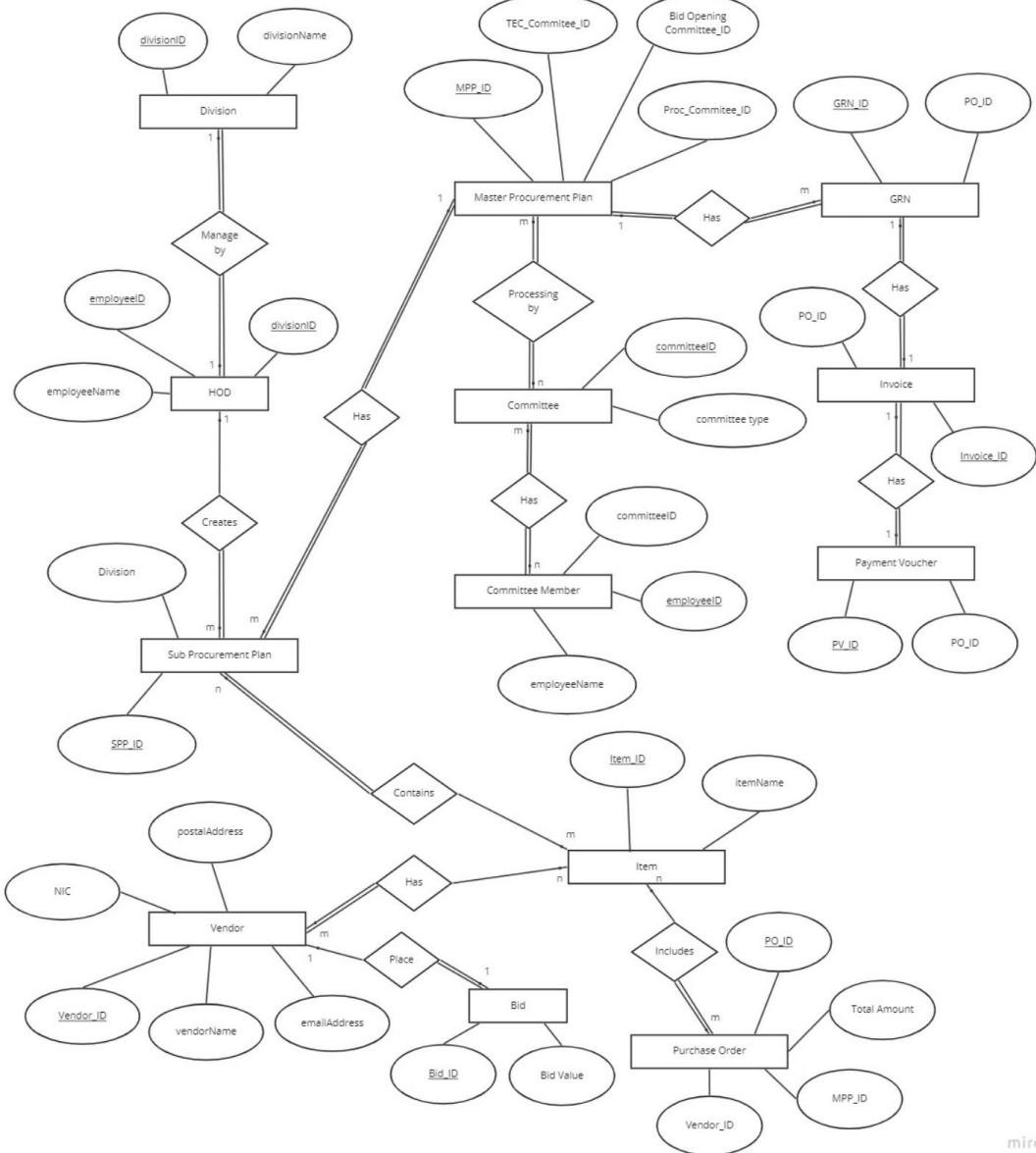


Figure 21 ER Diagram

5.4 Summary

We have illustrated diagrams like Use case, Activity, Class, Sequence, and EER through this chapter's analysis and design, which gives a fundamental understanding of our design and analysis mechanism.

Chapter 6 Implementation

6.1 Introduction

This chapter shows the implementation of the system. We have selected the Waterfall model as our software process model. This is because we are completing the software step by step and we are unable to get feedback from the client on a regular basis. We designed activity, sequence, class, use case diagrams and EER diagrams in order to get a complete idea about our system. We have started coding the front end of our software using React Technology.

6.2 Triggers of Implementation

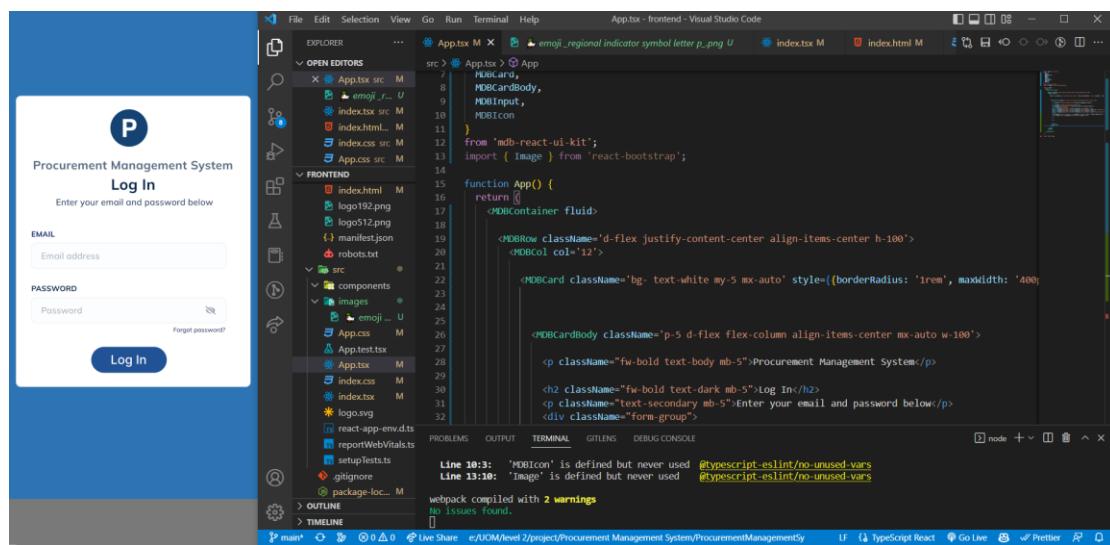


Figure 22 Implementation - Frontend Login

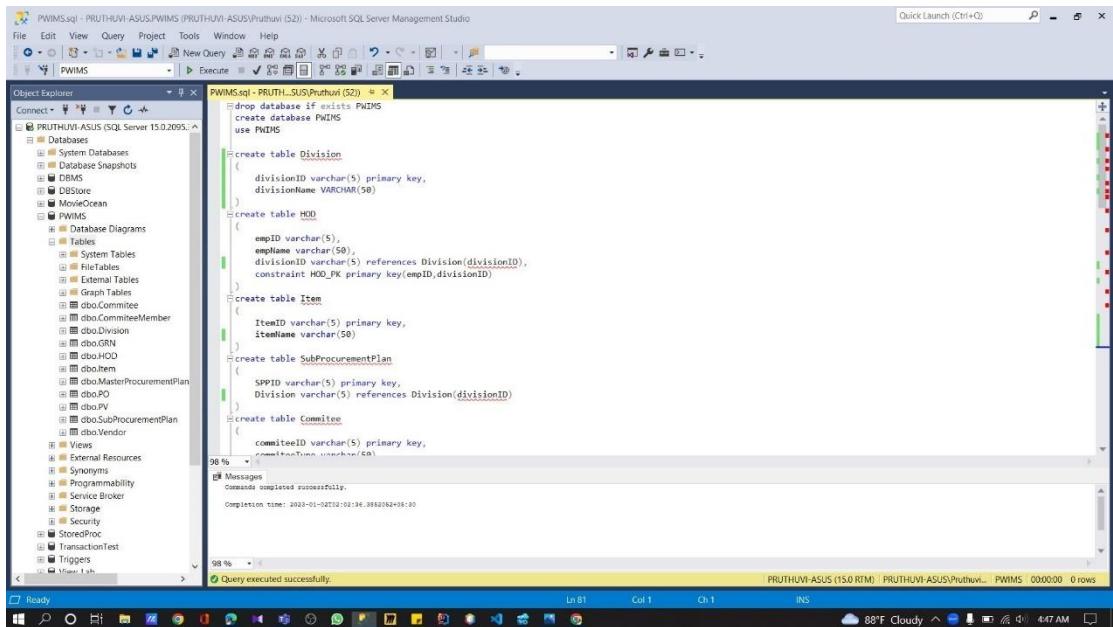


Figure 23 Implementation – Database

yesitha / ProcurementManagementSystem Public

Code Issues Pull requests Actions Projects Wiki Security Insights Settings

main 1 branch 0 tags Go to file Add file < Code

yesitha Update README.md 0ed7d63 4 days ago 5 commits

- Code/frontend front end basic code added 3 weeks ago
- Documents/Project Proposal 2022... Basic Code & Documents Added last month
- .gitattributes Initial commit last month
- README.md Update README.md 4 days ago

README.md

Procurement Workflow Information Management System

Introduction

Procurement management is the process of acquiring goods and services for an organization. It involves sourcing, generating requests, placing orders, inspecting the supply received, sending invoices, and journaling the procurement process. Procurement management systems are digital systems that help organizations streamline and optimize this process, typically by automating certain tasks and providing a centralized platform for tracking and managing procurement activities.

Collaborators

- Nelaka Gunawardhana
- Yesitha Sathsara
- Pruthuvi Dilshan
- Kalana Lakshan
- Shakila Kularathna

Figure 24 Version Control

6.3 Summary

We have shown diagrams like Use case, Activity, Class, Sequence, and ER that provide a fundamental understanding of our design and analysis process through this chapter's analysis and design.

Chapter 7 Discussion

7.1 Introduction

Through this chapter, we discuss the evaluation and testing of our solution and how our solution differs from other solutions in the market, further developments, and implementation is also discussed in this chapter.

7.2 Evaluation and Testing

As of now we have not been able to evaluate or test our system as we are still in the initial stages of our project. Therefore, we would like to discuss how our system differs from the other products available in the market.

7.3 How Our Solutions Differ from Other Solutions

There are a few Procurement Management Systems in the market today. They contain the basic functions that are needed from a procurement management system. The specialties of our software are

- The ability to track the progress of each procurement from start to finish. This will become very useful for Managers to check the state of each procurement.
- The ability for Vendors to make tender bids through the software itself. Vendors are given the ability to register themselves into the system and join the bidding process through the software.
- Ability to create certain unique teams (Tec committee) for each procurement plan through the software.
- Notifying individuals of their role through email and alert once prerequisites are completed.

7.4 Further Development

We have planned to create a software with basic features and creative ideas. However, there are a few features that we would like to implement in the future. Some of those features would be

- Ability to make different types of reports within the software.
- The software is specially made for our client. However, it is our intention to make the software compatible universally. We can do this by allowing customers to change the approval workflow of the system according to the needs of their organization.

7.5 Summary

Through the above paragraph, we have discussed the functions that we perform through our application and how those functions differ from existing applications and the future developments that we expect to perform.

Chapter 8 References

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Chapter 9 Appendices

Appendix A Individual Contribution

204067U -Gunawardhana A.H.N.N

As the leader of this team, it was my responsibility to make sure the team stays on track so we can create a successful system.

I established communications with both the company as well as with our supervisor for fixing meetings and asking for directions. After realizing the scope of this project, I proceeded to assign different parts of the project to the other members according to their skills.

The scope of the project assigned to me includes addition of requisitions along with an Evidence of Authorization by Heads of Departments, making of the master procurement plan by the purchasing division, Getting the plan approved by both Tec and Procurement Committees, advertisement of tenders by the procurement committee, Registration of new vendors, requesting to initiate the procurement process and the Initiation of the procurement process.

Afterwards as our first task we started to map UML and EER diagrams. The next activity was to start working on our UI and UX designs. While doing this we acquired a great understanding of the software, Figma.

I also contributed to making our system database using MySQL as we have already learned that software for our Database Management Systems module.

As a team we started learning React through an Udemy course in order to code the front end of our system.

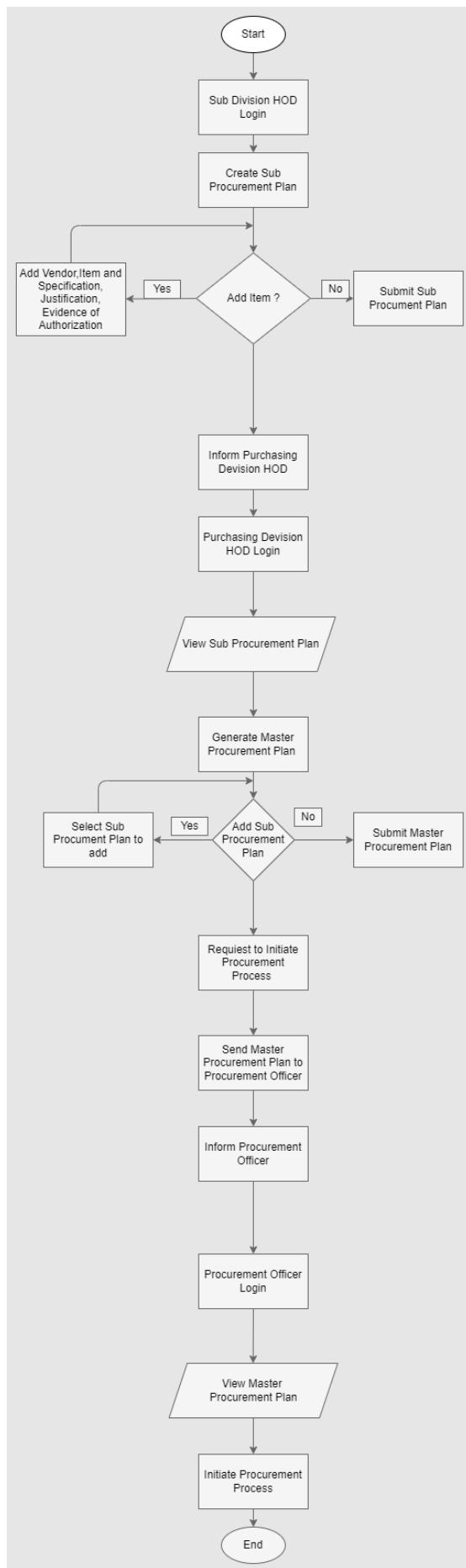


Figure 25 204067U - Flowchart

Pseudo Code

BEGIN

LOGIN Sub Division HOD

Create Sub Procurement Plan

IF Add Item THEN

Add Vendor,Item and Specification,Justification,Evidence of Authorization

ELSE

Submit Sub Procurement Plan

ENDIF

Inform Purchasing Devision HOD

LOGIN Purchasing Devision HOD

PRINT Sub Procurement Plan

Generate Master Procurement Plan

IF Add Sub Procurement Plan THEN

Select Sub Procument Plan to add

ELSE

Submit Master Procurement Plan

ENDIF

Request to Initiate Procurement Process

Send Master Procurement Plan to Procurement Officer

Inform Procurement Officer

PRINT Master Procurement Plan

Initiate Procurement Process

END

204009V -Athukorala D.A.Y.S

I am responsible for the features that appoint TEC Committee members(Inform via both email and app), login TEC Committee Members, Procurement Committee members and Corporate Communication Division members, get specification approval process from TEC Committee, After that get approval from Procurement Committee, Notify already registered vendors via emails(This will allow to email multiple vendors that supply the same item at once), Inform Corporate Communication Division Member and allow to Publish Newspaper ad only in Particular time frame(Corporate Communication Division Member can get all the items with their details to need to receive bids).

After receiving approval for our project, we began by creating a Use Case diagram, Class diagram, and EER diagram to gain a better understanding of how the different features would work together. I contributed to the creation of these diagrams. For the features for which I am responsible, I have drawn the activity diagram and sequence diagram. We then spent time learning how to use Figma and collaborated to design the user interfaces for the features we were responsible for.

In addition to working on the front-end design, I also contributed to the development of our system database using MySQL, a skill I had learned in a Database Management Systems module.

With the front-end design now complete, our focus has shifted to the actual development of the system. To that end, I am currently learning React, Redux, and Bootstrap to help with front-end development. Once that is finished, we plan to work on the back end and databases to ensure the highest possible quality for the project. To prepare for this phase, I am also planning to study .NET Core and ASP.NET, which will be necessary for back-end development.

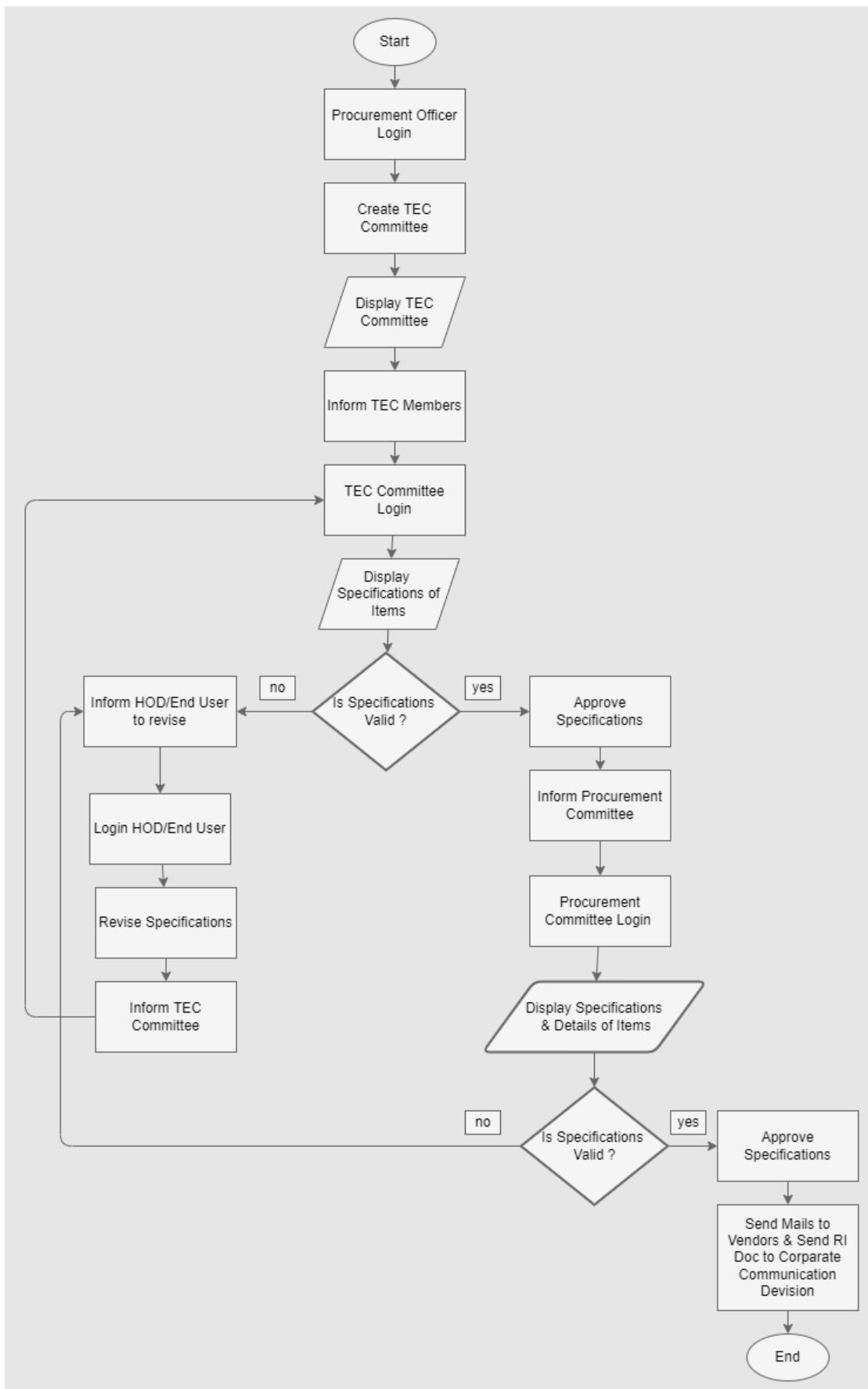


Figure 26 204009V - Flowchart

Pseudo Code

BEGIN

 LOGIN Procurement Officer

 CREATE TEC Committee

 PRINT TEC Committee

 Inform TEC Members

 LOGIN TEC Committee

 PRINT Specification of Item

 IF Specification Valid from Tec Committee

 Approve Specification

 Inform Procurement Committee

 LOGIN Procurement Committee

 PRINT Specification and Details of Items

 IF Specification Valid from Procurement Committee

 Approve Specification

 Send Mails to Vendors

 Send RI Doc to Corporate Communication Devision

 ELSE

 Inform Sub devision HOD to revise

 LOGIN Sub Devision HOD

 Revise Specification

 Inform Tec Committee

 ENDIF

ELSE

Inform Sub devision HOD to revise

LOGIN Sub Devision HOD

Revise Specification

Inform Tec Committee

ENDIF

END

204041K -Dilshan K.G.A.P

I am responsible for the parts where the procurement officer holds a pre-bid meeting after calling all the registered vendors, appointment of a Bid-Opening Committee to open and close the bidding session, selection of a group of vendors by the Tec committee for the required item list and the provision of the selected vendor list to the procurement committee who proceeds to finalize this list.

Initially the group worked together in order to create the UML diagrams along with the EER diagrams. By drawing these diagrams, the team acquired a composite understanding of the scope of the project. I also contributed by drawing the activity and sequence diagrams for my parts of the project

We then took some time to become familiar with Figma before working together to create the user interfaces for the features we were in charge of.

I contributed to the construction of our system database using MySQL, a skill I had learnt in a Database Management Systems curriculum, in addition to working on the front-end design.

Now that the front-end design is finished, we are concentrating on creating the system itself. In order to assist with front-end development, I am now learning React, Redux, and Bootstrap. After that is accomplished, we want to work on the databases and back end to guarantee the project's maximum level of quality. I also intend to learn.NET Core and ASP.NET, which are required for back-end development, in order to get ready for this stage.

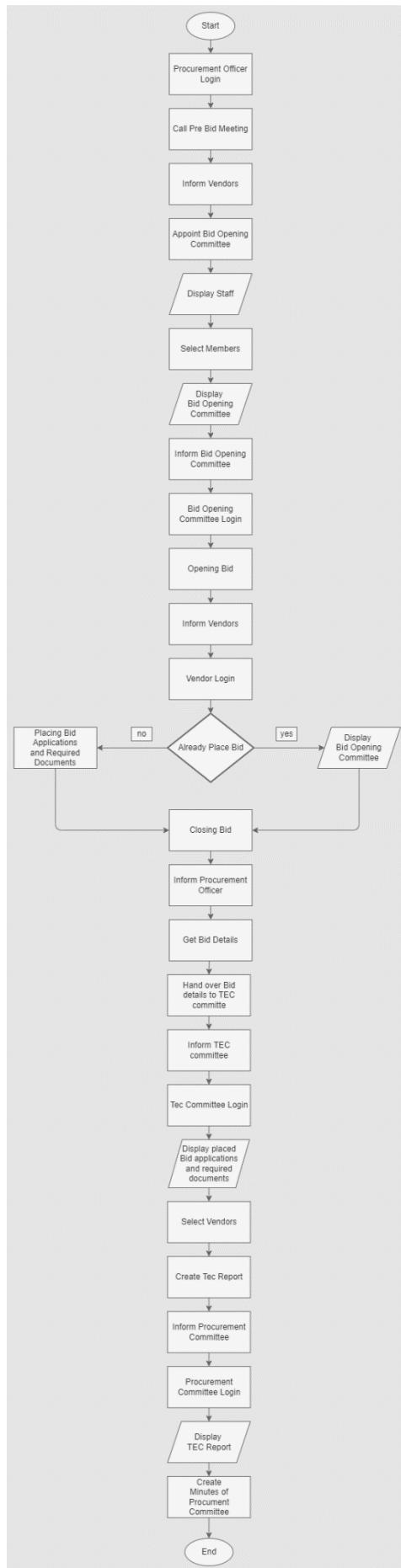


Figure 27 204041K - Flowchart

Pseudo Code

BEGIN

LOGIN Procurement Officer

Call Pre Bid Meeting

Inform Vendors

Appoint Bid Opening Committee

PRINT Staff

Select Members

PRINT Bid Opening Committee

Inform Bid Opening Committee

LOGIN Bid Opening Committee

Opening Bid

Inform Vendors

Vendor Login

IF Already Place Bid

PRINT Bid Opening Committee

ELSE

Placing Bid Applications and Required Documents

ENDIF

Closing Bid

Inform Procurement Officer

Get Bid Details

Hand over Bid details to TEC committee

Inform TEC committee

Tec Committee Login

PRINT placed Bid applications and required documents

Select Vendors

Create Tec Report

Inform Procurement Committee

Procurement Committee Login

PRINT TEC Report

Create Minutes of Procurement Committee

END

204065L -Gunathilake M.D.K.L

I am in charge of developing the part of the system after the procurement committee finalizes the list of vendors until the point where vendors have to send Bank Guarantees after being issued the purchase order. The parts that come under my part are the auditing of the annual budget plan and the vendor selection by the internal auditor, approving of the purchase orders by the director General, issuing of purchase orders to the vendors, Receiving Letters of acceptance and Bank Guarantees/ Agreements from the vendors.

I was involved in the very first task of our project which was the creation of the UML diagrams and the EER diagrams. This allowed us to get a better understanding of the software that we needed to create.

Our next challenge was the creation of the UI for our software for our interim evaluation. My teammates and I learned about Figma in order to create a beautiful and user-friendly interface. Next, we completed our database using the knowledge of MySQL.

We plan on creating a login before the interim evaluation. For that I have studied React through many YouTube and Udemy courses. I have contributed greatly to the implementation of that as well. We have decided to start on the backend of our system as well. For that we are currently studying .NET and ASP.NET technologies.

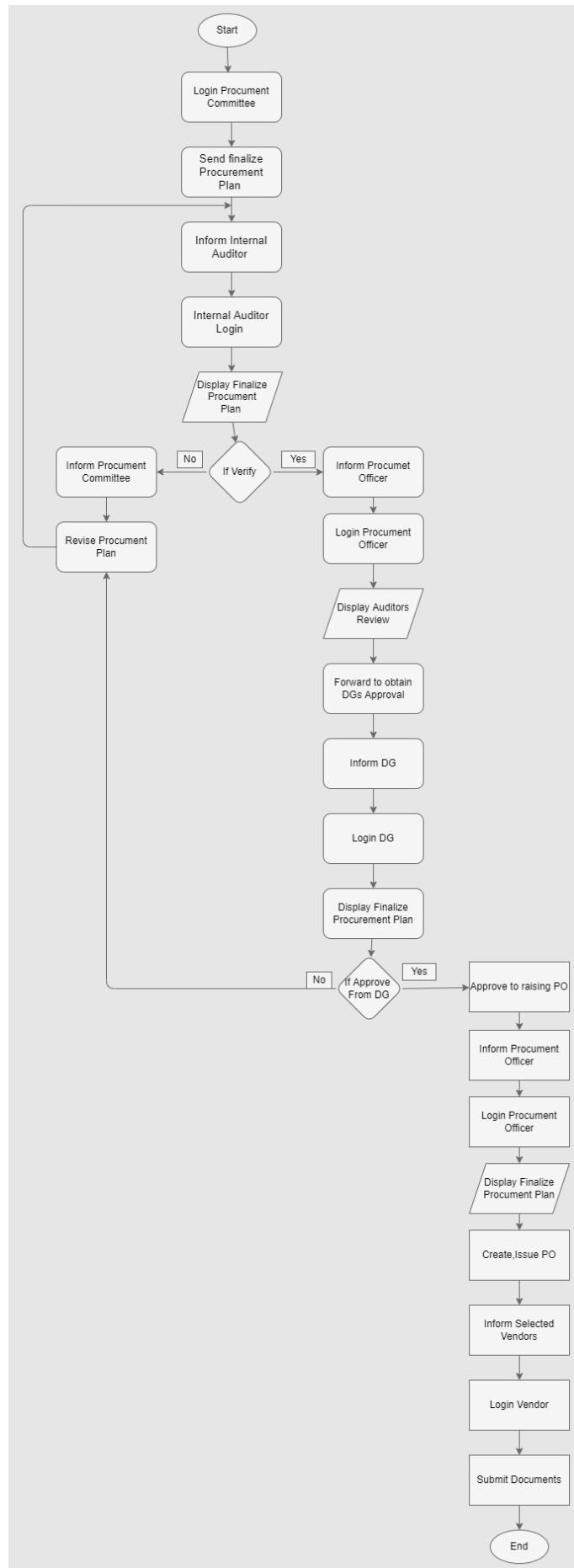


Figure 28 204065L - Flowchart

Pseudo Code

BEGIN

Login Procument Committee

Send finalize Procurement Plan

Inform Internal Auditor

Login Internal Auditor

PRINT Finalize Procument Plan

IF Internal Auditor Verify THEN

 Inform Procumet Officer

 Login Procument Officer

 PRINT Auditors Review

 Forward to obtain DGs Approval

 Inform DG

 Login DG

 PRINT Finalize Procurement Plan

 IF Approve from DG THEN

 Approve to raising PO

 Inform Procument Officer

 Login Procument Officer

 PRINT Finalize Procument Plan

 Create,Issue PO

 Inform Selected Vendors

 Login Vendor

 Submit Documents

ELSE

 Revise Procurement Plan

ENDIF

END

204104H -Kularathna M.D.S.A

I am responsible for the part of the procurement process when the requested goods have already been received till the end of the procurement process. This includes the preparation of the Goods Received Note by the Finance Division, updating the inventory of the system through the database with reference to the goods received, receiving of the invoice and finally issuing payment vouchers once the payment has been completed. I am also responsible for making and maintaining the inventory system used in the software.

We started off our project by drawing the UML diagrams which included the use case diagram, Class Diagram, Activity Diagram and Sequence Diagrams. These helped us look at the software from different angles and perspectives. Next, I contributed to the drawing of the EER diagram.

We spent the next portion of our time learning the basics of the software, Figma, in order to create the different interfaces of our software. Next, we used the skills acquired from our DBMS module in order to create a database using MySQL.

Currently I am following Udemy courses for both React, .NET and ASP.NET technologies. We have chosen React for the development of our front end while .NET and ASP.NET have been chosen for the development of our back end. I am prepared to contribute to the development of these parts of the software as well.

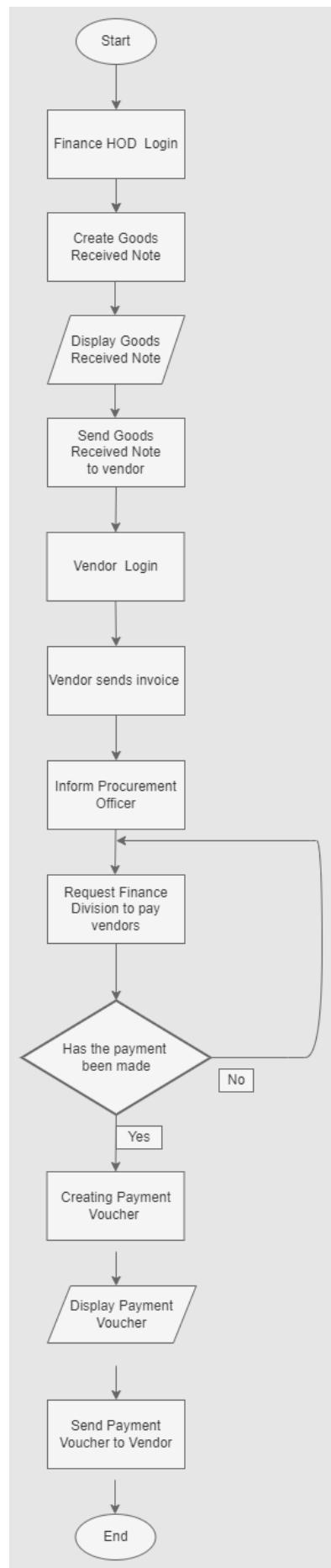


Figure 29 204104H - Flowchart

Pseudo Code

BEGIN

 Finance HOD Login

 Create Goods Received Note

 PRINT Goods Received Note

 Send Goods Received Note to vendor

 Vendor login

 Vendor sends invoice

 Inform Procurement Officer

 Request Finance Division to pay vendors

 IF Has the payment been made THEN

 Creating Payment Voucher

 PRINT Payment Voucher

 Send Payment Voucher to Vendor

 ELSE

 Request Finance Division to pay vendors

 ENDIF

END

Appendix B Action Plan

	September				October				November				December				January			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Studying the technologies and designing ER & UML diagram																				
UI and UX designing																				
Developing interfaces																				
Coding front-end functions																				

Table 2 Action Plan 1

	February				March				April				May				June			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Developing the database																				
Integrating the front-end with database through back-end functions																				
Developing other remaining functions																				
Testing and troubleshooting																				
Implementation and trial run																				
Final report submission																				

Table 3 Action Plan 2

Appendix D Mockups

The figure displays six screenshots of the Procurement Management System's user interface, arranged in a grid:

- Log In:** A modal window titled "Procurement Management System Log In" asking for email and password.
- Dashboard:** The main dashboard showing a welcome message, a notification box ("1 Item Rejected"), and a calendar for January, 2023.
- Notification:** A list of notifications with three entries, each with a "View" button.
- Sub Procurement Plan:** A table for managing procurement plans, with columns for Item ID, Item Name, Quantity, Specification, Recommended Vendors, and Expected Delivery date.
- [Add / Modify / Modify Rejected] Item to Sub Procurement Plan:** A form for adding new items to a sub-procurement plan, including fields for Item Name, Item ID, Quantity, Estimated Budget, Recommended Vendor, Expected Date, Specification, Evidence of Authorization, and an "ADD ITEM" button.
- < [Add / Modify / Modify Rejected] Item to Sub Procurement Plan:** A simplified version of the previous form, showing Item ID (0000), Item Name, Item Category, Specification, and an "Add" button.

Figure 30 Division HOD-Interfaces

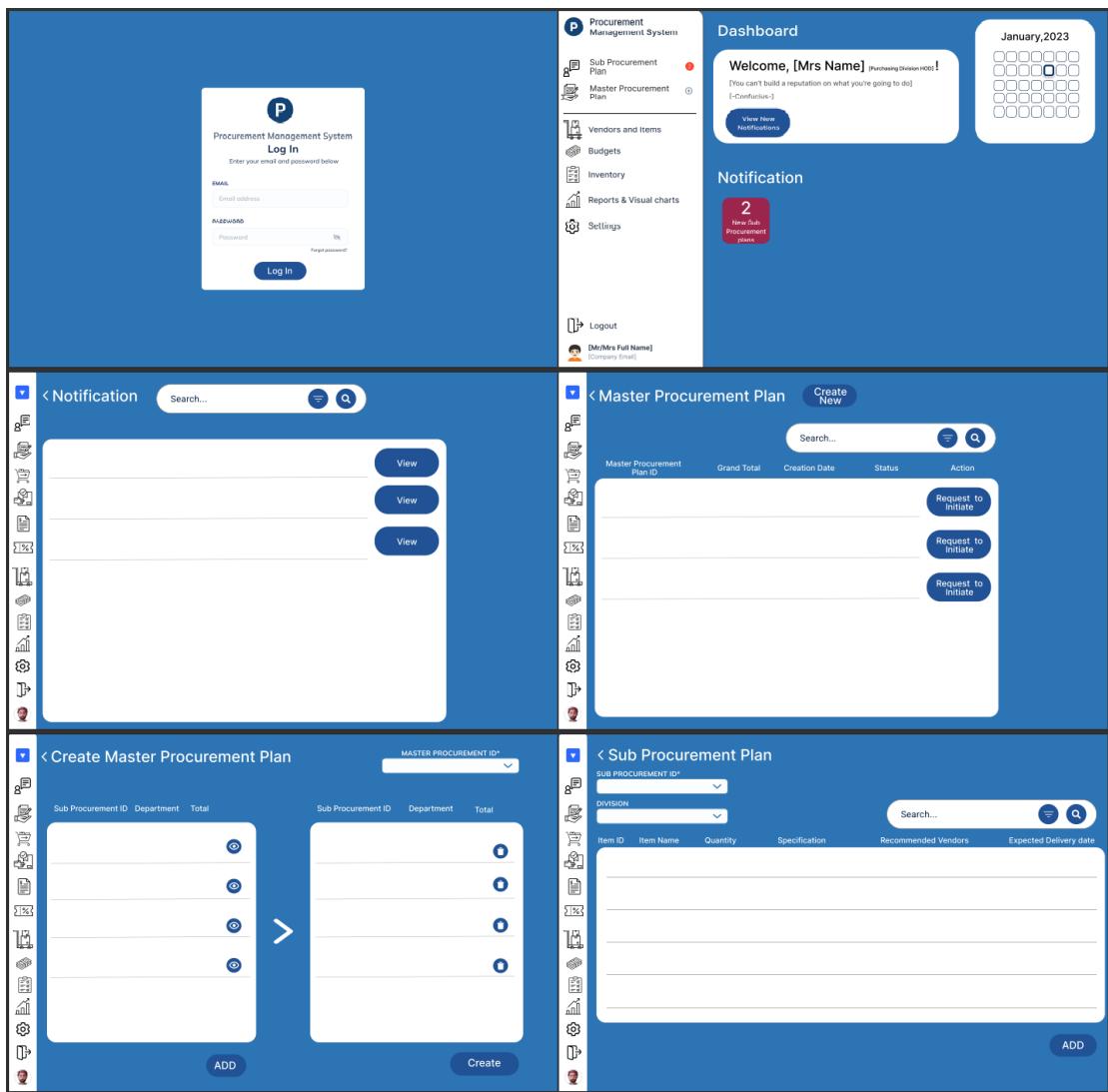


Figure 31 Purchasing Division HOD - Interfaces

Figure 32 Finance Division HOD - Interfaces

<Master Procurement Plan

Search...

Master Procurement Plan ID	Grand Total	Creation Date	Status	Action	Action
			<input type="button" value="View"/>	<input type="button" value="View"/>	<input type="button" value="Appoint TEC Committee"/>
			<input type="button" value="View"/>	<input type="button" value="View"/>	<input type="button" value="Modify TEC Committee"/>
			<input type="button" value="View"/>	<input type="button" value="View"/>	<input type="button" value="Appoint TEC Committee"/>

<[Create / Modify] TEC Committee

MASTER PROCUREMENT ID: MP003

Employee ID	Employee Name	Devision
		<input type="button" value="Edit"/>
		<input type="button" value="Edit"/>
		<input type="button" value="Edit"/>

<[Create / Modify] Bid Opening Committee

MASTER PROCUREMENT ID: MP003

Employee ID	Employee Name	Devision
		<input type="button" value="Edit"/>
		<input type="button" value="Edit"/>
		<input type="button" value="Edit"/>

< Audit Report

MASTER PROCUREMENT ID*

Search...

Item ID	Item Name	Quantity	Division	Specification	Vendor	Expected Delivery date	Auditors' Status	Action
							<input checked="" type="checkbox"/>	<input type="button" value="Edit"/>
							<input checked="" type="checkbox"/>	<input type="button" value="Edit"/>
							<input checked="" type="checkbox"/>	<input type="button" value="Edit"/>
							<input checked="" type="checkbox"/>	<input type="button" value="Edit"/>
							<input checked="" type="checkbox"/>	<input type="button" value="Edit"/>

< Sub Procurement Plan

SUB PROCUREMENT ID*:

DIVISION:

Search...

Item ID	Item Name	Quantity	Specification	Recommended Vendors	Expected Delivery date

< Master Procurement Plan Status

1. 2. 3. 4. 5. 6. 7. 8. 9.

<Master Procurement Plan

MASTER PROCUREMENT ID*:

Search...

Item ID	Item Name	Quantity	Division	Specification	Recommended Vendors	Expected Delivery date

Appoint TEC Committee

Video provides a powerful way to help you prove your point. When you embed a video, you can paste in the embed code for the video you want to add. You can also click "Search" to search online for the video that best fits your document

Figure 33 Finance Division HOD - Interfaces

< Evaluate Vendor Finance Status

Vendor Item Submit Documents Action

< Good Receive Note

PURCHASE ORDER ID*

GRN ID*	Item ID	Item Name	Order Quantity

< Goods Received Note

GRN No
PO #: [12321]

Supplier Name : Date : Delivered by :
Digital Signature :

Item ID	Item Name	Specifications	Order Qty	Delivered Qty	Remaining Qty	Note

Supplier Name : [Name] Checked By : [Name]

PRINT **SEND TO VENDOR**

X

Enter Note.....

Add

< Bid Details

Search...

Item ID	Item Name	Quantity	Specification	Minimum Bid	Num of Bids Received	Action
LKR 4000		05				
LKR 8000		05				
.....			
LKR 2000		05				

< [Item Name]

Search...

Vendor Name	Time Stamp	Bid Value
LKR 4000		
LKR 5000		
LKR 3000		
LKR 4000		

< Invoices To Be Pay

Invoice ID Vendor Name Action

>

Invoice ID Vendor Name Payment Status

		Success
		Success
		Pending
		Success

< PUCSL

14TH FLOOR,
BOC MERCHANT TOWER,
ST. MICHAEL'S ROAD,
COLOMBO 9,
SRI LANKA

Bill To

[Company Name]
[Address/ Department]
[Street Address]
[City/Zip Code]
[Phone]
[Fax]

Invoice

Date: [17/12/2023]
Invoice #: [2314]
Customer ID :
Due Date :

Item ID	Item Name	Delivered QTY	Description	Unit Price	Taxed	Amount

< Vendor Verification

Click to Download Following Documents

Business Registration TAX Identification Insurance Certification Other Documents

X

Enter Comment.....

Reject

Figure 34 Finance Division HOD - Interfaces

The image displays a composite screenshot of the TEC Committee - Interfaces, showing five distinct panels:

- Login Screen:** A modal window titled "Procurement Management System Log In" asking for email and password.
- Dashboard:** A main interface with a welcome message, a calendar for January 2023, and sections for "View Master Procurement Plan", "Vendor Selection", and "Revise Vendor Selection".
- Notification:** A list of notifications with "View" buttons.
- Master Procurement Plan:** A list of plans with "View" buttons.
- Approval for Master Procurement Plan:** A detailed view of a specific plan with columns for Item ID, Item Name, Quantity, Estimated Budget, and Action.
- < [Item Name]:** A detailed view of an item with columns for Sub Procurement ID, Department, Quantity, Specification, Recommended Vendors, Expected Delivery date, Evidence of Authorization, and Action.
- < Vendor Selection:** A form for selecting vendors with columns for Vendor ID, Vendor Name, Item, Quantity, Specification, Bid Value, Vendor Verification, and Action.
- < Revise Vendor Selection:** A form for revising vendor selection with columns for Vendor ID, Vendor Name, Item, Quantity, Specification, Bid Value, Vendor Verification, and Action.

Figure 35 TEC Committee - Interfaces

Procurement Management System

Log In
Enter your email and password below

EMAIL: Email address
PASSWORD: Password Forgot password?

View

Procurement Management System

Dashboard

Welcome, [Mrs Name] (Procurement Committee)!
[You can't build a reputation on what you're going to do]
[-Confucius-]

View New Notifications

Sub Procurement Plan Master Procurement Plan Purchase Orders

Vendors and Items Budgets Inventory

Committee Members Reports & Visual charts Settings

Evaluate Master Procurement Plan **Send Letters to Vendors**

View Minutes of Procurement Committee

Logout
[Mr/Ms Full Name] [Company Email]

Notification

January,2023

Master Procurement Plan

Approval for Master Procurement Plan

Approved Item List

Minutes of Procurement Committee

Vendor List

Print Minutes

Figure 36 Procurement Committee - Interfaces

Top Left: A modal dialog box with a text input field labeled "Enter Comment....." and a red "Reject" button.

Top Middle: A "Procurement Management System Log In" page with fields for "EMAIL" and "PASSWORD", and a "Log In" button.

Top Right: A "Notification" list page with a search bar and three items, each with a "View" button.

Middle Left: A "Dashboard" page featuring a welcome message to "[Mrs Name]", a calendar for "January, 2023", and a "Publish Paper Ad" button.

Middle Middle: A "SPECIFICATION" form with fields for Item ID, Item Name, Quantity, and Item Category, along with a large "SPECIFICATION" text area.

Middle Right: A "Publish Paper AD" interface showing a table with columns for Item ID, Item Name, Quantity, and Action, with "View" buttons.

Bottom Left: A "View GRN" list page with columns for GRN ID, PO ID, Date, and Action, showing five entries.

Bottom Middle: A detailed "GRN NO" view page with sections for GRN No, Supplier Name, and Delivery details, and a table for item specifications.

Figure 37 Corporate Communication - Interfaces

The image displays six screenshots of a procurement management system's vendor interfaces:

- Vendor Sign Up:** A form titled "Procurement Manager Vendor Sign Up" with sections for "Business Info" (Company Full Name, Registration Type, Business Registration No., No. of Employees), "User Sign up info" (Salutation, First Name, Last Name, Contact No., User Name, Email, Job Title), "Primary Address" (Address Line 1, Address Line 2, City, State, Postal Code), and "Upload Required Documents" (Business Registration Document, Tax Identification Document, Insurance Certificate, Other Documents). It includes terms of use and privacy policy checkboxes, and "Sign Up" and "Cancel" buttons.
- Login:** A "Procurement Management System Log In" page with fields for "Email" and "Password". It includes a "Forgot password?" link, a "Log In" button, and a "Don't have an account? Sign up" link.
- Dashboard:** A central hub for the vendor. It shows a welcome message "Welcome, [Mrs Name] (Vendor)!", a date "January, 2023", and a grid of icons for Bid Tender, Bid History, Purchase Orders, Good Receive Note, and Settings. Below the dashboard are notification counts: 1 Bid Tender, 1 Bid History, 1 Items To Be Shipped, and 1 Logout. A sidebar lists "Procurement Management System" features: Bid Tender, Bid History, Purchase Orders, Good Receive Note, and Settings. A bottom bar shows user information "[Mr/Mrs Full Name] (Company Email)" and navigation icons.
- Notification:** A list of notifications with three "View" buttons.
- Bid Tender:** A table for creating tenders. It has columns for Item Name, Quantity, Specification, Due Date, Bid Status, and Action. One row is shown with "Item Name": LKR 4000, "Quantity": 1, "Specification": Not Bided, and "Action": a green "Place Bid" button.
- Bid History:** A table showing bid history details. It has columns for Item Name, Quantity, Specification, Bid Value, Bid Status, Verification, and Verification Status. Four rows are listed: LKR 4000 (Selected, Approved), LKR 7000 (Not Selected, Pending), LKR 5000 (Pending, Pending), and LKR 6000 (Selected, Rejected).

Figure 38 Vendors - Interfaces

< Bid Verification Submit

Tender Details

SPECIFICATION
ITEM NAME
QUANTITY
BID VALUE

Upload Required Documents

Agreement	View	Upload	Delete
Bank Guarantee	View	Upload	Delete
Bond	View	Upload	Delete

< Letter Of Acceptance

Tender Details

SPECIFICATION
ITEM NAME
QUANTITY
UNIT PRICE

Sample Letter of Acceptance

Date: _____
To: [Company Name]
From: [Vendor Name]
Subject: Acceptance of Offer to Purchase Goods/Services
Dear [Company Name],
We are pleased to confirm our acceptance of your offer to purchase the following goods/services:
[Description of goods/services]
The price for these goods/services is [price] and the total cost, including taxes and fees, is [total cost].
Delivery will be made on or before [delivery date].
We are pleased to confirm that we are able to offer these goods for a period of [Number of Years] years/months.
Thank you for the opportunity to work with your company.

Sincerely,
[Vendor Name]

< Purchase Orders

Search...

Purchase Order Id	Date	Total Value	Action
1712.2020			<input type="button" value="View"/>
1712.2020			<input type="button" value="View"/>

< PURCHASE ORDER

PUCSL
6TH FLOOR,
80 MERCHANT TOWER,
ST. MICHAEL'S ROAD,
COLOMBO 5,
SRI LANKA

Date: [17/12/2023]
PO # :[2314]

VENDOR

[Company Name]
[Contact or Department]
[Street Address]
[City, Zip Code]
[Phone]
[Fax]

Item ID	Item Name	Description	Quantity	Unit Price	Total

< Items to be Shipped

PURCHASE ORDER ID
DATE

Item ID	Item Name	Shipped QTY	Description	Unit Price	Remaining QTY

< INVOICE

PURCHASE ORDER ID : V003
DATE
GRN ID : G003

Item ID	Item Name	Delivered QTY	Description	Unit Price	Amount

< PUCSL

6TH FLOOR,
80 MERCHANT TOWER,
ST. MICHAEL'S ROAD,
COLOMBO 5,
SRI LANKA

Invoice
Date: [17/12/2023]
Invoice ID : [2314]
Customer ID :
Due Date :
Bill To

[Company Name]
[Contact or Department]
[Email Address]
[City, Zip Code]
[Phone]
[Fax]

Item ID	Item Name	Delivered QTY	Description	Unit Price	Taxed	Amount

< View Invoices

Invoice ID	GRN ID	Payment Status	Action
		Success	<input type="button"/>
		Success	<input type="button"/>
		Pending	<input type="button"/>
		Success	<input type="button"/>

Figure 39 Vendors - Interfaces

The figure displays five screenshots of a Procurement Management System interface:

- Invoice View:** Shows an invoice for PUCSL, dated 17/12/2023, with details like Item ID, Item Name, Delivered QTY, Description, Unit Price, Taxed, and Amount.
- Login Page:** A log-in form for the Procurement Management System, requiring Email and Password, with a Log In button.
- Dashboard:** A main dashboard with sections for Auctions (Manage Auctions), Notifications (Welcome [Mrs Name], January 2023, View New Notifications), and a Pre-Bid Meeting Date reminder (2023.09.08).
- Notification View:** A list of notifications with three 'View' buttons.
- Manage Auction View:** A table of items to auction with columns for Item ID, Item Name, Quantity, Vendors, Opening Date, Closing Date, Remaining Days, and Action (Schedule/View).
- Vendor Verification:** A modal window titled 'Vendor Verification' with a note to download documents. It lists four document types: Business Registration, TAX Identification, Insurance Certification, and Other Documents, each with a download icon.

Figure 40 Bid Opening Committee - Interfaces

The figure consists of six screenshots arranged in a 3x2 grid, illustrating different interfaces of the Procurement Management System:

- Top Left:** Vendor Verification dialog box. It displays a message: "Click to Download Following Documents" and four download icons: Business Registration, TAX Identification, Insurance Certificate, and Other Documents.
- Top Right:** Log In screen for the Procurement Management System. It features a logo, field labels for Email address and Password, a "Forgot password?" link, and a "Log In" button.
- Middle Left:** Dashboard. It includes a sidebar with navigation links: Master Procurement Plan, Vendors and Items, Budgets, Inventory, Reports & Visual charts, and Settings. The main area shows a welcome message to "[Mrs Name] [Internal Auditor]", a calendar for January 2023, and a notification section indicating 1 finalized Master Procurement plan for review.
- Middle Right:** Notification interface. It shows a list of notifications with "View" buttons next to them. The sidebar on the left contains icons for various system functions.
- Bottom Left:** Finalized Master Procurement Plan interface. It lists procurement plans with columns for Master Procurement Plan ID, Grand Total, Creation Date, and Action. Each row has a "View" button with a red badge showing the number 1.
- Bottom Right:** Another view of the Finalized Master Procurement Plan. It shows a table with columns: Item ID, Item Name, Quantity, Division, Specification, Vendor, Expected Delivery date, and Action. The table rows contain icons for viewing and editing, along with green checkmarks and red X's.

Figure 41 Internal Auditor - Interfaces

Figure 42 Director General - Interfaces

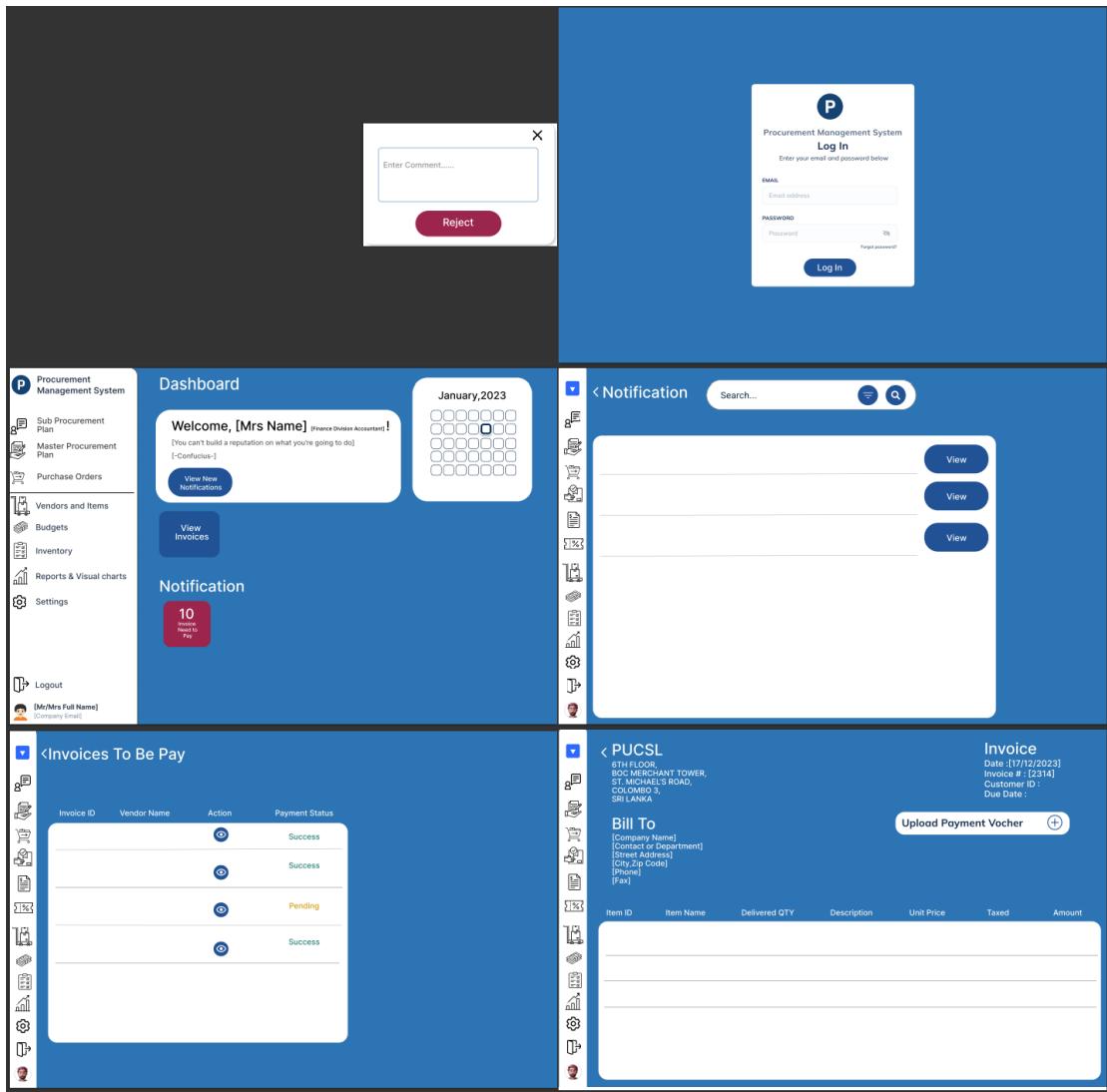


Figure 43 Finance Division Accountant - Interfaces

The image shows a screenshot of the Procurement Management System interface, divided into several sections:

- Top Left:** Log In screen for the Procurement Management System.
- Top Right:** Dashboard section with a welcome message, a grid of icons, and a date indicator for January, 2023.
- Middle Left:** Notification module showing a list of notifications with "View" buttons.
- Middle Center:** Stock module displaying Stock Summary (Total Items: 10, Total Value: LKR 100000), Purchase Summary (LKR 100000), and Issue Summary (LKR 100000). It also shows a table for Items In Stock.
- Middle Right:** Asset Registry module showing Asset Registry Summary (Total Items: 10, Total Value: LKR 100000) and Purchase Summary (LKR 100000). It displays a table for Items In Asset Registry.
- Bottom Left:** Add New Item module with fields for Item ID, Item Name, Specification, Item Category, and Quantity, along with an "Add" button.
- Bottom Right:** Settings module listing Basic Settings, Location Management, User Management, Unit Management, and Payment Terms, each with a description of "Supplier and vendor view and management".

Figure 44 Inventory Manager - Interfaces

The screenshot displays a procurement management system interface with the following panels:

- Issue Item**: A form for entering item details. Fields include ITEM ID, ITEM NAME, ITEM CATEGORY (dropdown), and QUANTITY. A large box labeled "SPECIFICATION" is present. A blue "Issue" button is at the bottom right.
- Settings**: A sidebar menu with links to Basic Settings, Location Management, User Management, Unit Management, and Payment Terms. Each link includes a description and a right-pointing arrow.
- Vendors & Items**: A sidebar menu with links to Vendor Management, Item Management, Category Management, and Unit Management. Each link includes a description and a right-pointing arrow.
- Requests for Proposals**: A panel showing 2 Draft and 2 Pending proposals. It includes a "Create" button and a "Create from Requisition" button. A table header row is visible with columns: #, Status, Location/Requester, Other Details, Total, Purchase Orders, Delivery Date/Creation Date, Purchase Order Delivery Date, and Action.
- Purchase Orders**: A panel showing 2 Send to supplier and 1 Approve. It includes a "Create" button and a "Create from Requisition" button. A table header row is visible with columns: #, Status, Location, Other Details, Total, Delivery Date/Creation Date, Purchase Order Delivery Date, and Action.
- Procurement Officer Dashboard**: A panel with buttons for Create master procurement plan, Modify master procurement plan, and Attach files to master procurement plan.

Figure 45 Other Interfaces

Appendix E Software Requirements Specification

The software requirements specification report has been attached to this document as an appendix. Note that captions, page numbers, figures numbers, and table numbers in the SRS documents are not linked with the project interim report.

Software Requirements

Specification

for

Procurement Workflow

Management System

Version 1.0

Prepared by The ArchiTects

Faculty of Information Technology

University of Moratuwa

01/01/2023

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Revision History

Date	Version	Description
Jan 01, 2023	1.0	Initial Version

1. Introduction

1.1 Purpose

The purpose of this Software Requirements Specification (SRS) document is to provide a detailed description of the procurement management system for a large-scale company. The system aims to optimize the cost being invested by the organization via a process that involves sourcing, generating requests, selecting vendors, placing order, inspecting the supply received, sending invoices, and journaling the procurement process.

1.2 Document Conventions

This Document was created based on the IEEE template for System Requirement Specification Documents.

1.3 Intended Audience and Reading Suggestions

Employees of the company such as

- Heads of Departments who make the procurement requisitions
- The Purchasing Department Head who makes the main procurement plan
- The Finance Division Head appoints a TEC committee for each procurement plan. They are also responsible for issuing a Goods Received Note once the required items are received.
- The TEC committee which approves the specifications of the procurement plan.
- The Procurement Committee along with the Procurement Officer who approves the specifications of the procurement plan.
- The Bid Opening Committee is responsible for opening and closing bid sessions.
- Internal Auditor who audits the selected vendor list along with the Annual Budget Plan.
- Director General who also needs to approve the purchase orders.

External users such as

- Vendors who register into the system in order to make bids on tenders released by the system.

1.4 Scope of the Document

The purpose of the procurement workflow information management system is to provide a user-friendly interface for departments to place orders for necessary items, ensure that all necessary approvals and budget checks are conducted, and to track the entire procurement process from vendor selection to payment. The system will also serve as a central repository for all relevant information about vendors and their products, as well as providing proper documentation of transactions for future reference.

The scope of the system includes the following functionalities:

- Departmental request for items
- Budget and authorization check
- Vendor registration and selection
- Issuance of purchase orders
- Good, received note and invoices
- Payment to vendors
- Tracking and documentation of all procurement activities

1.5 References

- IEEE 830-1998 standard for writing SRS document
- Software Requirements Specification document with an example - Krazytech
- Software Requirement Specification (SRS) Format - GeeksforGeeks

2. Overall description

2.1 Product Perspective

This product was specifically made for a specific client in mind , however it can still be used in other similar companies with a few minor tweaks. This system will cover all the activities of the procurement process. Therefore it can be used in production companies, schools, universities, malls or basically any institution that requires to purchase goods and services required to support its daily operations.

In our system we have provided a platform where Heads of departments could request items and afterwards the process of making a procurement plan and getting approval for it, begins. This would be replacing a traditional manual system where it takes forever to get the approval of many individuals in order to finalize a procurement order.

Procurement Manager is a closed source software due to it being custom made considering the client. We as the development team hope to get feedback from our client as much as possible in order to support and maintain the software. It will be able to run on any browser.

2.2 Product Functions

2.2.1 Procurement Plan Creation

Heads of departments can send a list of items(sub procurement plans) that they require to keep their department operational for a specific period of time along with the reason as to why they need the items.

The purchasing division gets access to these sub procurement plans and proceeds to make the master procurement plan. Here the items of all sub procurement plans are put into a single list.

2.2.2 Evaluation of the Master Procurement Plan

The TEC committee created by the head of the Finance Division, the procurement officer will collect evidence from every department and check the specifications of the items. If specifications are proper, the plan would be approved, and a detailed report is sent to the procurement committee. Otherwise, it would be rejected and sent back to the heads of departments for altering.

The procurement Committee can check this report and approve if it matches the expectations.

2.2.3 Indicating the Procurement Status

The procurement officer can check the status of each master procurement plan until the procurement process has been finished.

The procurement officer should be able to see whose approvals are pending and get an idea about how much more is left in the procurement process.

2.2.4 New Vendor Registration

Vendors who are interested in supplying to the company can register to the system online by using his/her email and their own password.

2.2.5 Bidding Function

The procurement officer can advertise tenders for the required items in the finalized procurement plan

The Procurement Officer holds a pre-bid meeting after calling all the registered vendors. Procurement officer has authority to appoint a group called Bid-Opening Committee. The Committee's responsibility is to open and close the bidding session.

After a successful bid, the Tec committee would select a group of vendors from the vendors participating in the Tender

2.3 User Classes and Characteristics

Different classes of users have been granted different levels of access. These classes are listed below

- Admin - No admin
- Super Editors- TEC Committee, Finance Division, Inventory Manager
- Editors- Bid-Opening Committee, Internal Auditors
- Other Users- Vendors

2.4 Operating Environment

The software has been made to run on any pc/mobile which has a web browser and a stable internet connection.

2.5 Design and Implementation Constraints

- We will use React Framework for our front end development.
- We will use the .NET Framework for our backend development.
- MySQL Server has been chosen as the Database Technology for our software.

2.6 User Documentation

We have obtained online help for the ease of use of our application.

2.7 Assumptions and Dependencies

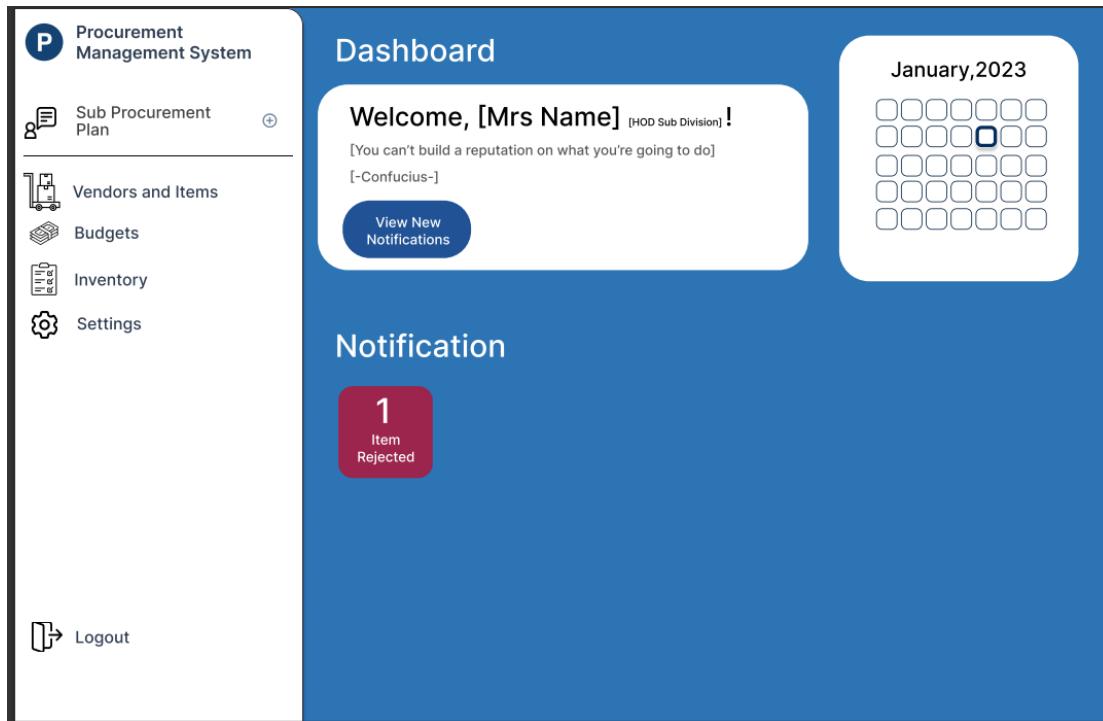
All the users must be connected to the internet for proper functioning of the system.

This system would be very important to conduct the procurement process fast and in an efficient manner.

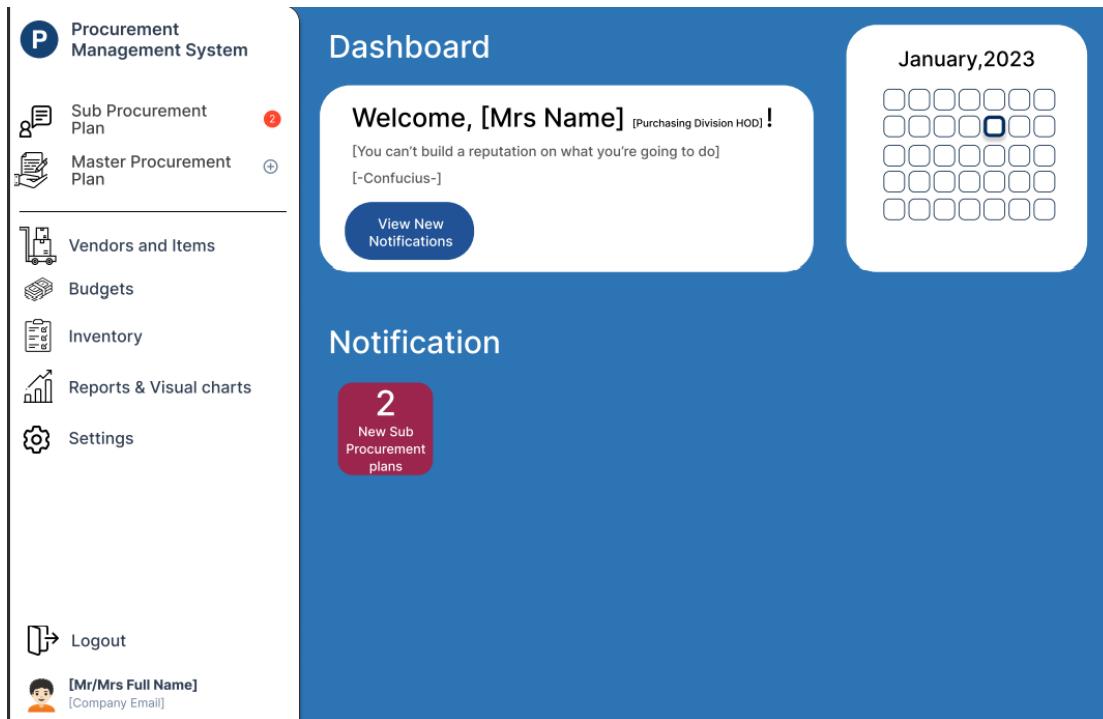
3. External Interface Requirements

3.1 User Interfaces

Division HOD-Dashboard



Purchasing Division HOD - Dashboard



Finance Division HOD - Dashboard

Procurement Management System

- Sub Procurement Plan (1)
- Master Procurement Plan (2)
- Purchase Orders (3)
- Good Receive Note
- Payment Voucher
- Vendors and Items
- Budgets
- Inventory
- Committee Members
- Reports & Visual charts
- Settings
- Logout

[Mr/Mrs Full Name]

Welcome, [Mrs Name] [Finance Division HOD]!
[You can't build a reputation on what you're going to do]
[-Confucius-]

January,2023

Dashboard

Notification

1 New Master Procurement plans	Set Pre Bid Meeting Date	1/30 Auctions End	Internal Auditor Report Available	10 Approved Items from DG	10 Items Shipped By Vendors
--------------------------------	--------------------------	-------------------	-----------------------------------	---------------------------	-----------------------------

Set Pre Bid Meeting Date

Appoint Bid Opening Committee

Evaluate Master Procurement Plan

Create Purchase Order

Create GRN

Evaluate Vendor Finance Status

View Master Procurement Plan

TEC Committee - Dashboard

Procurement Management System

- Sub Procurement Plan
- Master Procurement Plan (2)
- Vendors and Items
- Committee Members
- Reports & Visual charts
- Settings
- Logout

[Mr/Mrs Full Name]
[Company Email]

Welcome, [Mrs Name] [TEC Committee]!
[You can't build a reputation on what you're going to do]
[-Confucius-]

January,2023

Dashboard

Notification

2 New Master Procurement plan for Evaluate	1 Rejected Item Modified	1/30 Auctions End	1 Vendor Rejected
--	--------------------------	-------------------	-------------------

View Master Procurement Plan

Vendor Selection

Revise Vendor Selection

Procurement Committee - Dashboard

Procurement Management System

- Sub Procurement Plan
- Master Procurement Plan (2)
- Purchase Orders (1)
- Vendors and Items
- Budgets
- Inventory
- Committee Members
- Reports & Visual charts
- Settings

Logout

[Mr/Mrs Full Name]
[Company Email]

Welcome, [Mrs Name] [Procurement Committee]!
[You can't build a reputation on what you're going to do]
[-Confucius-]

Notification

2
New Master Procurement plan for Evaluate

January,2023

Corporate Communication - Dashboard

Procurement Management System

- Vendors and Items
- Committee Members
- Reports & Visual charts
- Settings

Logout

[Mr/Mrs Full Name]
[Company Email]

Welcome, [Mrs Name] [Corporate Communication]!
[You can't build a reputation on what you're going to do]
[-Confucius-]

Notification

2
New Master Procurement plan for Evaluate

January,2023

Vendors - Dashboard

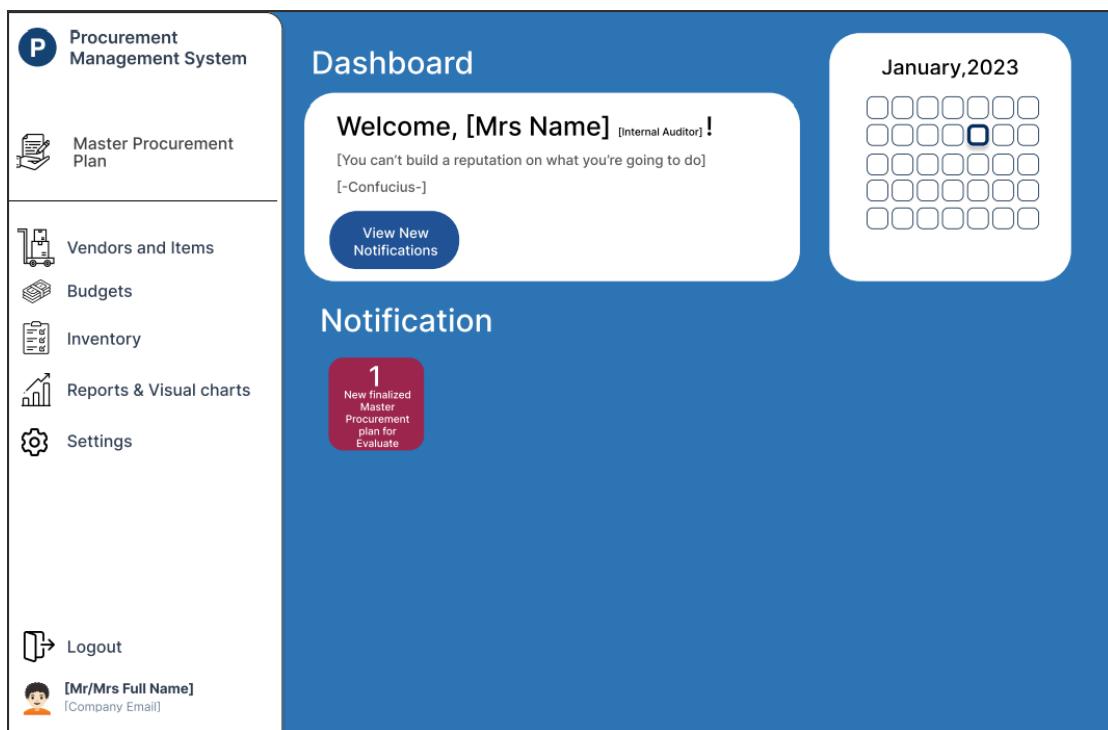
The dashboard for Vendors displays a central 'Welcome' message and navigation links. On the left, a sidebar lists 'Bid Tender', 'Bid History', 'Purchase Orders' (with 3 notifications), 'Good Receive Note' (with 3 notifications), 'Settings', 'Logout', and user profile information. The main area shows a grid calendar for January 2023, a 'View New Notifications' button, and three action buttons: 'Bid Tender', 'Bid History', and 'View Invoice'. Below these are sections for 'Notification' (including a pre-bid meeting date) and a summary of activity counts.

Category	Count
BID APPROVED	1
Verification Statuses Evaluated	2
New Purchase Order	1
New GRN	1
Payment Received	1

Bid Opening Committee - Dashboard

The dashboard for the Bid Opening Committee displays a central 'Welcome' message and navigation links. On the left, a sidebar lists 'Auctions', 'Bid History', 'Settings', 'Logout', and user profile information. The main area shows a grid calendar for January 2023, a 'View New Notifications' button, and a 'Manage Auctions' button. Below these are sections for 'Notification' (including a pre-bid meeting date) and a quote by Confucius.

Internal Auditor - Dashboard



The dashboard for the Internal Auditor features a sidebar on the left with a blue header containing the system logo and title. The main area has a dark blue header with the word "Dashboard". Below it is a white callout box with a welcome message and a quote from Confucius. A "View New Notifications" button is located at the bottom of this box. To the right is a large white area for notifications, showing a red box with the number "1" and a message about a new finalized master procurement plan. A 4x6 grid of small squares in the top right corner represents a calendar for January 2023.

- Procurement Management System**
- Master Procurement Plan**
- Vendors and Items**
- Budgets**
- Inventory**
- Reports & Visual charts**
- Settings**

Welcome, [Mrs Name] [Internal Auditor] !
 [You can't build a reputation on what you're going to do]
 [-Confucius-]

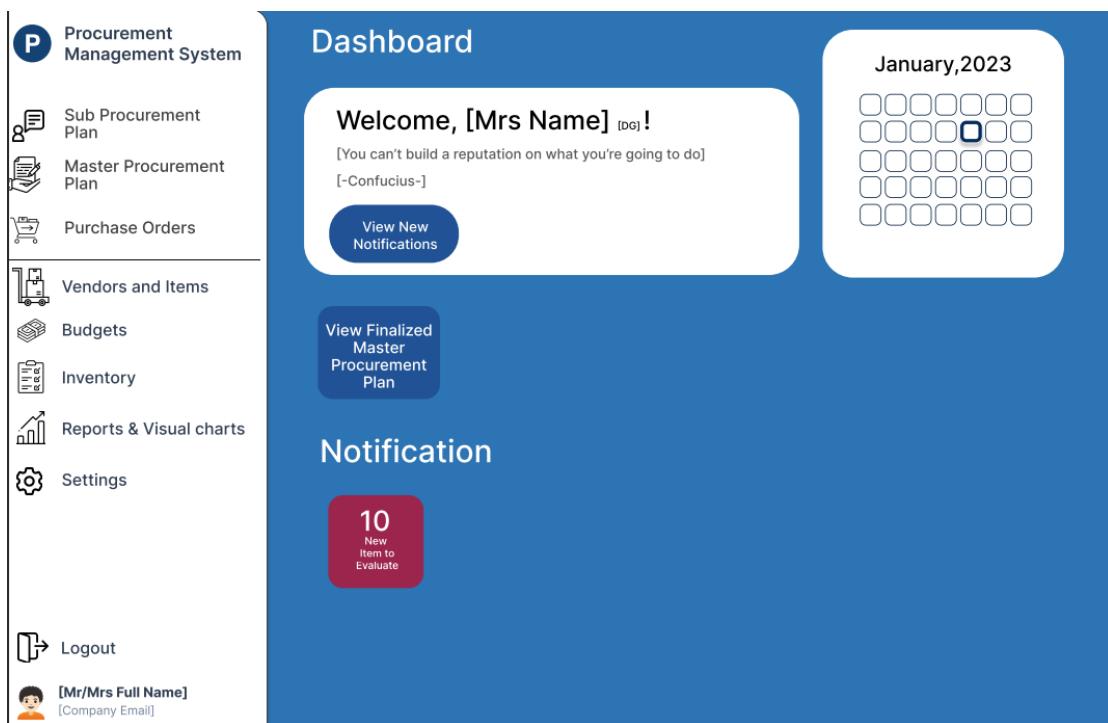
View New Notifications

Notification

1
 New finalized Master Procurement plan for Evaluate

January,2023

Director General - Dashboard



The Director General's dashboard follows a similar structure to the Internal Auditor's. It includes a sidebar with a blue header, a main area with a dark blue header, and a central notification section. The notification section shows a red box with the number "10" and a message about new items to evaluate. The 4x6 calendar grid in the top right corner is also present.

- Procurement Management System**
- Sub Procurement Plan**
- Master Procurement Plan**
- Purchase Orders**
- Vendors and Items**
- Budgets**
- Inventory**
- Reports & Visual charts**
- Settings**

Welcome, [Mrs Name] [DG] !
 [You can't build a reputation on what you're going to do]
 [-Confucius-]

View New Notifications

View Finalized Master Procurement Plan

Notification

10
 New Item to Evaluate

January,2023

Finance Division Accountant - Dashboard

Procurement Management System

- Sub Procurement Plan
- Master Procurement Plan
- Purchase Orders
- Vendors and Items
- Budgets
- Inventory
- Reports & Visual charts
- Settings

Logout

[Mr/Mrs Full Name]
[Company Email]

January,2023

Inventory Manager - Dashboard

Procurement Management System

- Sub Procurement Plan
- Master Procurement Plan
- Purchase Orders
- Vendors and Items
- Budgets
- Inventory
- Reports & Visual charts
- Settings

Logout

[Mr/Mrs Full Name]
[Company Email]

January,2023

3.2 Hardware Interfaces

Due to the use of bootstrap our software can run on any web browser either via desktop or mobile device without any interruption. We currently do not offer a specific mobile application but we plan on making an optimized website specially for mobile devices.

Accessing this software would also require a stable internet connection . It would not require any additional CPU or GPU processing power. As a device depends on an exact hardware specification for routine browsing, it will be the bare minimum hardware requirement for running this software.

3.3 Software Interfaces

Any type of browser has to be installed on the phone/PC before using the application.

Requirement Manager can be connected with MySQL to import the relevant details

3.4 Communication Interfaces

The users will be required to stay connected to the internet in order to receive access to the features of the software.

4. System Features

Under this topic we will organize the functional requirements for the product by system features, the major services provided by the product. We can divide the functional requirements into the following categories.

4.1 Creation of Procurement Plan

4.1.1 Description and Priority

This is a very important process because this initiates the procurement process. The Head of the departments must fill in the form by selecting the required items. The forms from each department are entered into a mini plan known as the sub procurement plan. These documents are sent to the Purchasing division. The purchasing division then creates the master procurement plan with reference to the sub procurement plans provided by the heads of the departments.

4.1.2 Functional Requirements

REQ-1: Heads of every department should be able to enter the required items that is necessary to continue operations throughout a certain period

REQ-2: The Purchasing Division Head should be able to add items into the master procurement plan

REQ-3: The Purchasing Division should be able to add items which are not in the system and to modify items that already exist.

4.2 Approval Requisition Process

4.2.1 Description and Priority

The master procurement plan needs to be checked thoroughly before being finalized. For this to happen it has to be passed and approved by a number of individuals.

- The Tec Committee appointed by the Procurement Officer will check the specifications of the plan before approving it.
- Next the Procurement Committee will also need to approve this document.
- Once a vendor list has been selected by the TEC committee, t the Procurement committee will need to approve this list.
- Purchase orders will be created to start the transaction. These purchase orders need to be approved by the Director General of the company.

4.2.2 Functional Requirements

REQ-1 : The individuals/committees listed above should be given the authority to review their respective documents and then approve or reject it. If rejected , the relevant document would be sent back to alter or recorrect.

4.3 Procurement Status Indicator

4.3.1 Description and Priority

The procurement officer needs to check the status of each master procurement plan. Basically, he must be able to able to track the progress of each procurement through the procurement status indicator

4.3.2 Functional Requirements

REQ-1: The procurement officer should be able to check the status of a procurement .

REQ 2: The procurement officer should be able to see whose approvals are pending and the reasons as to why a procurement is rejected.

4.4 Registration of New Vendors and the Bidding Process

4.4.1 Description and Priority

Vendors who want to participate in the procurement process of the company are free to register into the system via the software on the internet. They can enter a preferred email and create a profile thus registering themselves.

After the master procurement has been fully approved, the procurement committee would proceed to advertise tenders for the required items by the use of email and newspaper advertisements. Registered vendors are allowed to bid and the Tec committee would select a group of vendors for the required item list.

4.4.2 Functional Requirements

REQ-1: Vendors must be able to access the procurement manager software through a preferred web browser via the internet.

REQ-2: Vendors must be able to see the tender and place their bids through the software itself

REQ-3: Chosen vendors would be notified through the software itself and by email too.

5. Other Non-Functional Requirements

5.1 Performance Requirements

- The system must perform the features mentioned below effectively and efficiently
- Each user must be granted access to access and perform their respective duties through the system.
- Whenever a Head of Department decides to request for items, a sub procurement plan must be created in real time and the procurement process must be initiated immediately.
- In the process whenever a prerequisite has been completed for a particular process, the person responsible for the next process must be notified immediately by either email or alert.
- Whenever the procurement plan passes a stage in the procurement process, its status must be changed so that the higher level managers can track its progress.
- Vendors must be able to register into the system and gain access to the tenders offered by the company. The bids that they place for the tender must be updated in real time as a time difference could result in a less qualified vendor being chosen for the required job.
- The integrated email/alert function should function as intended.

5.2 Safety Requirements

The system has measures in place to protect the data it stores, such as a backup system. The system is backed up regularly in case of an emergency need of a restore. Additionally a system maintenance schedule will be implemented to ensure that user impact is kept as low as reasonably possible. This helps to prevent data loss or tampering.

5.3 Security Requirements

The system has measures in place to control access to the system such as user authentication and authorization. This helps prevent unauthorized access to the system and the data it holds.

All the company personnel would be provided the login information from the company itself . However, the vendors have the option to register through any email they have with a preferred password. Users are not permitted to create accounts.

5.4 Software Quality Attributes

As of right now this system is being made according to the requirements and structure of our client's organization. It allows the company to have a smooth and fast procurement process. By doing so the company would save a lot of time and money as procurement is efficient and all items included are well documented for.

The system is independent of which platform you use as it can be accessed using devices of any screen size.

5.5 Business Rules

The admin has the rights for creating, modifying and deleting other user roles in the system. While the TEC committee members, the Finance Division and the Inventory manager are classified as Super Editors, the Bid Opening Committee and Internal Auditors are classified as Editors. They have been granted these access levels depending on their role in the procurement process. Vendors have been classified as other as they log in externally. When users sign up to the system, the system will check their email address.