Draft System Design Document
For
Consolidation, Integration and Up gradation of CPA's Existing ICT based facilities/system

Submitted to

Chittagong Port Authority

Covered Modules

- Case Management System
- Training Institute Automation
- Central Library Management System
- Board Decision Computerization
- Appointment/Schedule Management System
- Access Control System in CPA
- CCTV in CPA Area
- Integration of exiting access control and surveillance system for CPA
- Automation of Computer related equipment and peripherals maintenance management system
- E-GP (E-Tendering System)
- E-Filing System
- Automation of Marine Department
- Vessel Traffic Management Information System (VTMIS)
- Hydrographic Automation System

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1 Introduction

This chapter provides an overview of scope and purpose of the document. The chapter is divided into the following topics:

1.1 Purpose of Design Document

This design document provides a comprehensive architectural overview of “Consolidation, Integration and Up gradation of CPA’s existing ICT based facilities/system” using a number of different architectural views to depict different aspects of the system. It is intended to capture and convey the significant architectural decisions that have been made on the system.

1.2 Scope of Computerized System

The design document, used in conjunction with the system requirements system, provides a system specification of all user requirements. It also reflects the user’s perspective of the system design.

As part of customization of Port automation system and upgradation, CPA aims to automate their existing process of the current system. The scope of the work will include the development of an online software system to perform operations of CPA offices and upgradation of database for more security and efficiency.

The scope of this document covers the below modules as per TOR:

- ***Case Management System***
- ***Training Institute Automation***
- ***Central Library Management System***
- ***Board Decision Computerization***
- ***Appointment/Schedule Management System***
- ***Access Control System in CPA***
- ***CCTV in CPA Area***
- ***Integration of exiting access control and surveillance system for CPA***
- ***Automation of Computer related equipment and peripherals maintenance management system***
- ***E-GP (E-Tendering System)***
- ***E-Filing System***
- ***Automation of marine Department***
- ***Vessel Traffic Management Information System (VTMIS)***
- ***Hydrographic Automation System***

1.3 Definitions, Acronyms & Abbreviation

The following table lists definitions, acronyms, and abbreviations used in this document.

Table 1: Acronyms

Acronyms	Full Forms
CPA	Chittagong Port Authority
HOD	Head of Department
PMIS	Personal Management Information System
CCTV	Close Circuit Television
RCR	Radio Control Room
VTMIS	Vessel Traffic Management Information System
VHF	Very High Frequency
Foreign Vessel	Also called Mother Vessel
LOV	List of Value
CRAFT	Vessel, owned & managed by CPA
Chart	Survey data of a particular area
MAP	Map created by using Survey Data using special software.
License	Recognition by CPA to particular vessel to operate in particular area.
Mooring	Parking area of vessel

Water Vessel	Vessel used to supply fresh-water to Mother vessel
Berth	A particular area in a port where vessel can load/unload things
Navigation	Movement of Vessel
O/A	Outer Anchorage
API	Application Programming Interface
River Dues	Fees collected from vessel to operate in Karnaphuli river
License Office	CPA run office alongside river & sea to monitor vessel and collect fees

1.4 References

The following table lists the reference documents related to the CPA system.

Table 2: References

S#	Document Name	Date
1.	Term of Reference (TOR)	19-March-2019
2.	Inception Report	19-May-2019
3.	CPA System Study & Need Assessment Final Report	17-November-2019

1.5 Critical Requirements

Following are the critical requirements, client is requested to address:

- Digital Attendance machine recorded data should be accessible.
- Payment Gateway (PG) related APIs will be delivered by customer with proper documentation
- E-Mail server related information will be delivered by CPA
- SMS gateway related APIs will be delivered by CPA with proper documentation
- Domain name for web hosting
- SSL certificate
- CPA Should provide NID integration API
- CPA Should provide BRTA integration API
- Access Point should be defined
- Visitor card should be configured with access control machine
- CCTV installation point should be defined
- Computer equipment should have unique number.
- Employee/Section wise equipment allocation list.
- Fresh-water demand through online by Shipping Agent
- License office collection automation
- Regular Mooring status
- VHF log book & any incident log automation with suggestive content
- Survey data & map sale through online payment

2 Module: Case Management System

We, CNS develop a proposed design for the Case Management module of CPA system.

The proposed module will be work on below listed ways;

- Case department will create some list;
  - Case Category list
  - Lawyer list
  - Lawyer rate chart
  - Case Register
- Assign a lawyer as per case category; Sometimes CPA chairman can assign lawyer from outside based on the consultation of law office/law advisor
- Assigned lawyer start to move with the case
- Assigned lawyer update the case department about his/her assigned case
- Case department will update the case register.
- Lawyer will submit bill to the system
- Case department will review the bill and send to accounts department.
- Case department request accounts department for routine bills of lawyer
- Account department make payment to lawyer account

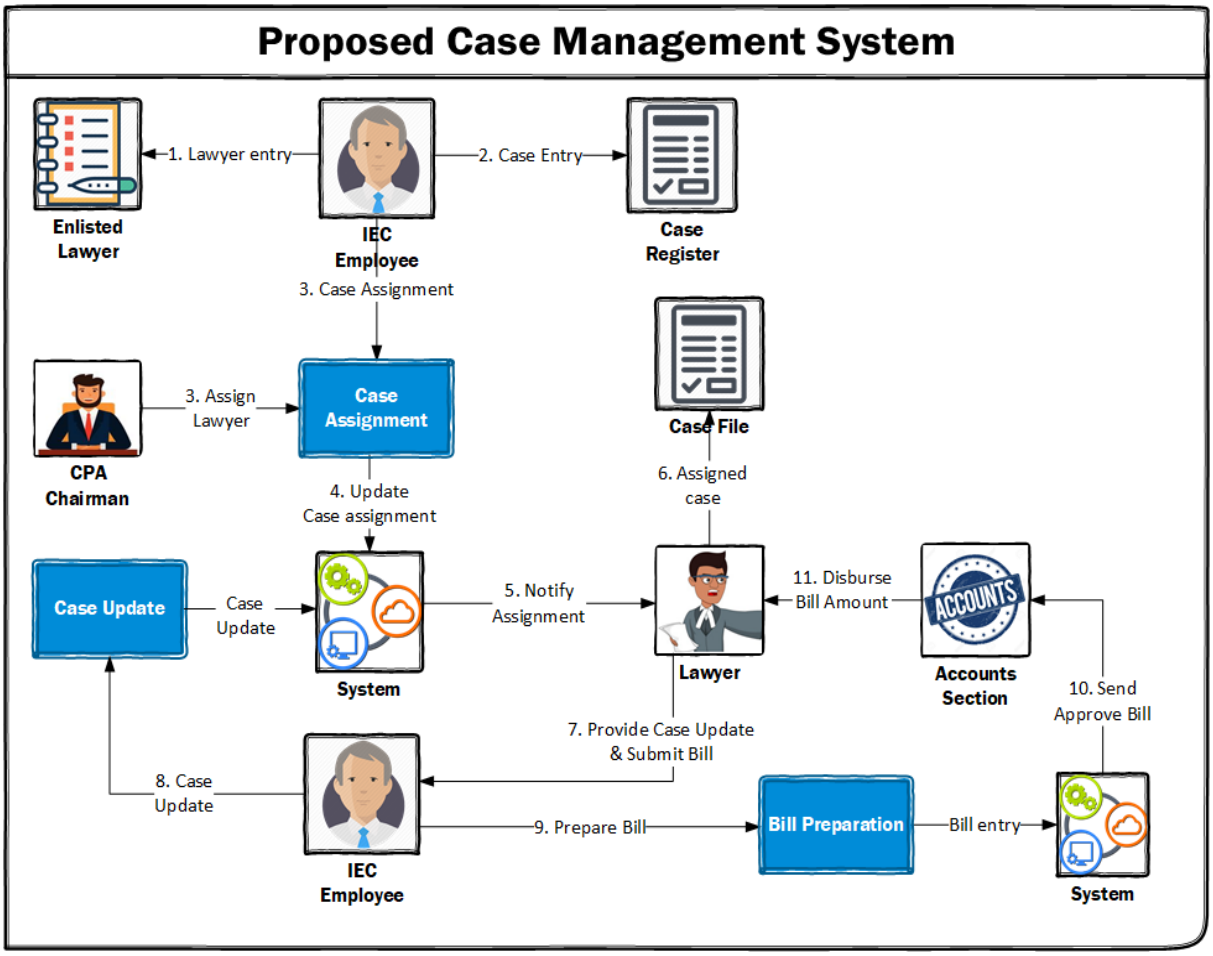


Figure 1: Case Management System

We CNS, develop an integrated system for CPA. Case Management module will use data from other modules and also provide data to another module for process.

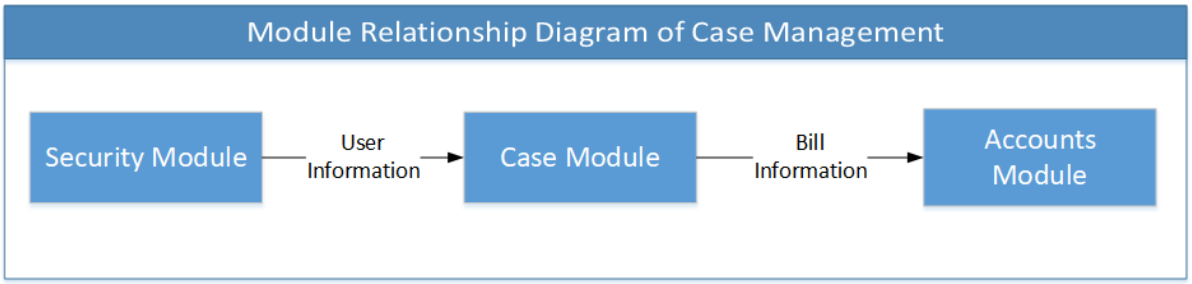


Figure 2: Module Relationship of Case Management

- Case module will use user related data from Security module
- Case Module will provide bill related data to Accounts module

2.1 Business Process of Case Management

Case Management System consist with multiple business processes. These are:

- Case Register
- Rate Chart
- Lawyer Management
- Lawyer Assignment to Case
- Case Update
- Lawyer Bill preparation

2.1.1 Case Register Process

Due to digitalization of Case Management System, IEC section needs to categories cases. Sometimes CPA act as complainant and also act as Defendant of a case. IEC section needs to track the case information and case status. So, this part will be digitalized with CPA automation system.

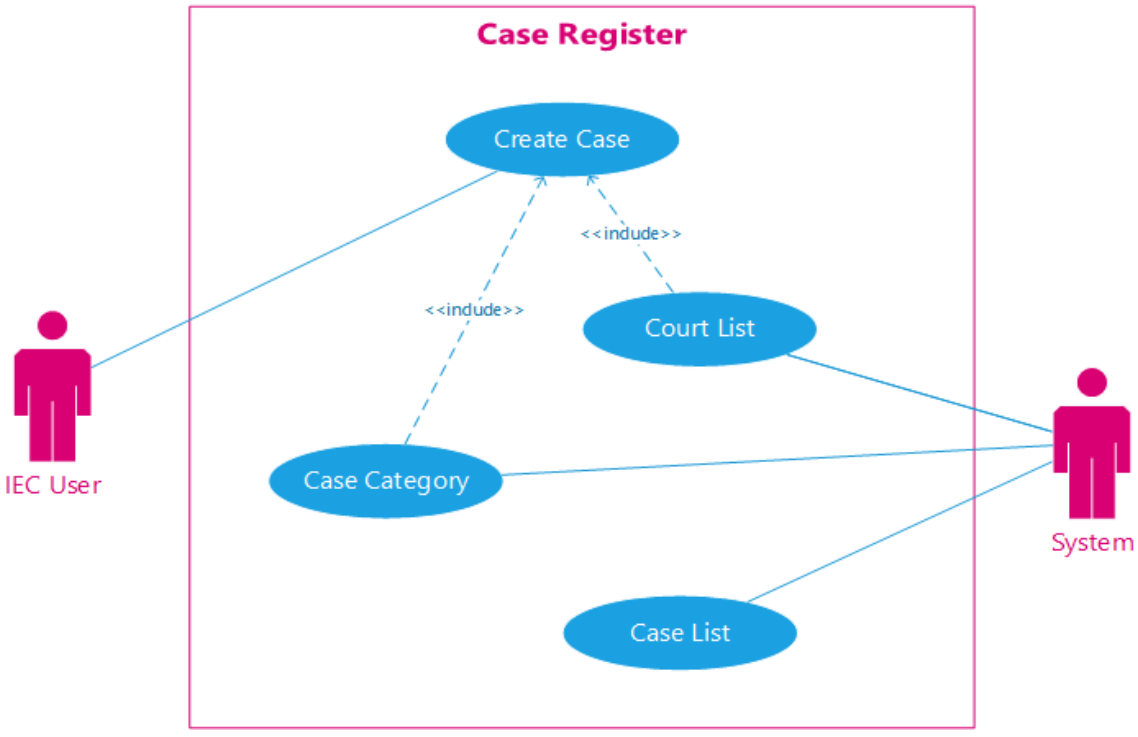


Figure 3: Use Case for Case Register

Use Case ID:	UC-CM-001
Use Case Name:	**Case Register**
Actors:	• IEC User • System
Trigger:	When IEC user intends to insert a case information to the system.
Description:	The functionality “Case Register” facilitates to insert a new case to the system with definition of case category and court information.
Preconditions:	• User must have landed on CPA system • Case categories must be defined • Court list must be available to the system
Assumption:	• Provided valid inputs.
Goal:	To insert a case information and update the case register.
Normal Flow:	• Insert Case number and Case Date with description. • Select Case category, Court, and Status. • Upload case related documents. • Verify the information. • Submit information to the system.
Alternate Flow:	N/A
Failure:	• Connection Lost. • Mandatory field missing.
Post conditions:	• Notifications about successful case insert. • Created case will be available to case list.
Frequency of Use:	Occasionally
Business Rules/Constraints	• Case Category must be listed. • Court should be available to the system.
Non Functional Requirements:	N/A
Reference:	N/A

2.1.1.1 Case Category

Case categories will be managed by this mockup. It is possible to insert & update case category from here.

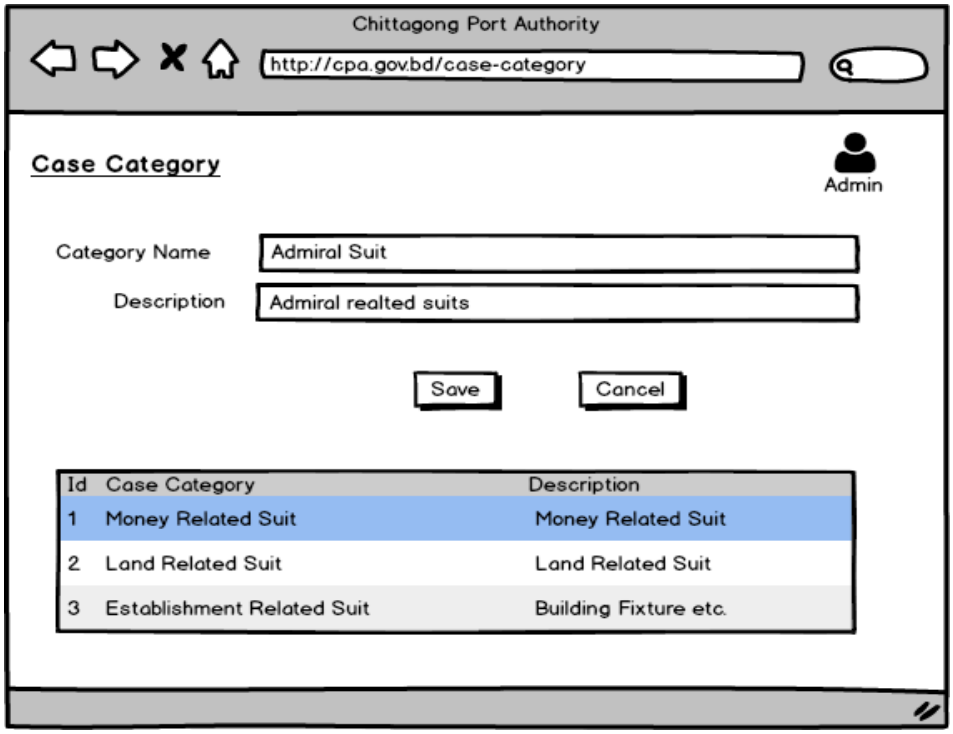


Figure 4: Mockup for Case Category

2.1.1.2 Court Information

Court information will be managed by this mockup. It is possible to insert & update case court from here.

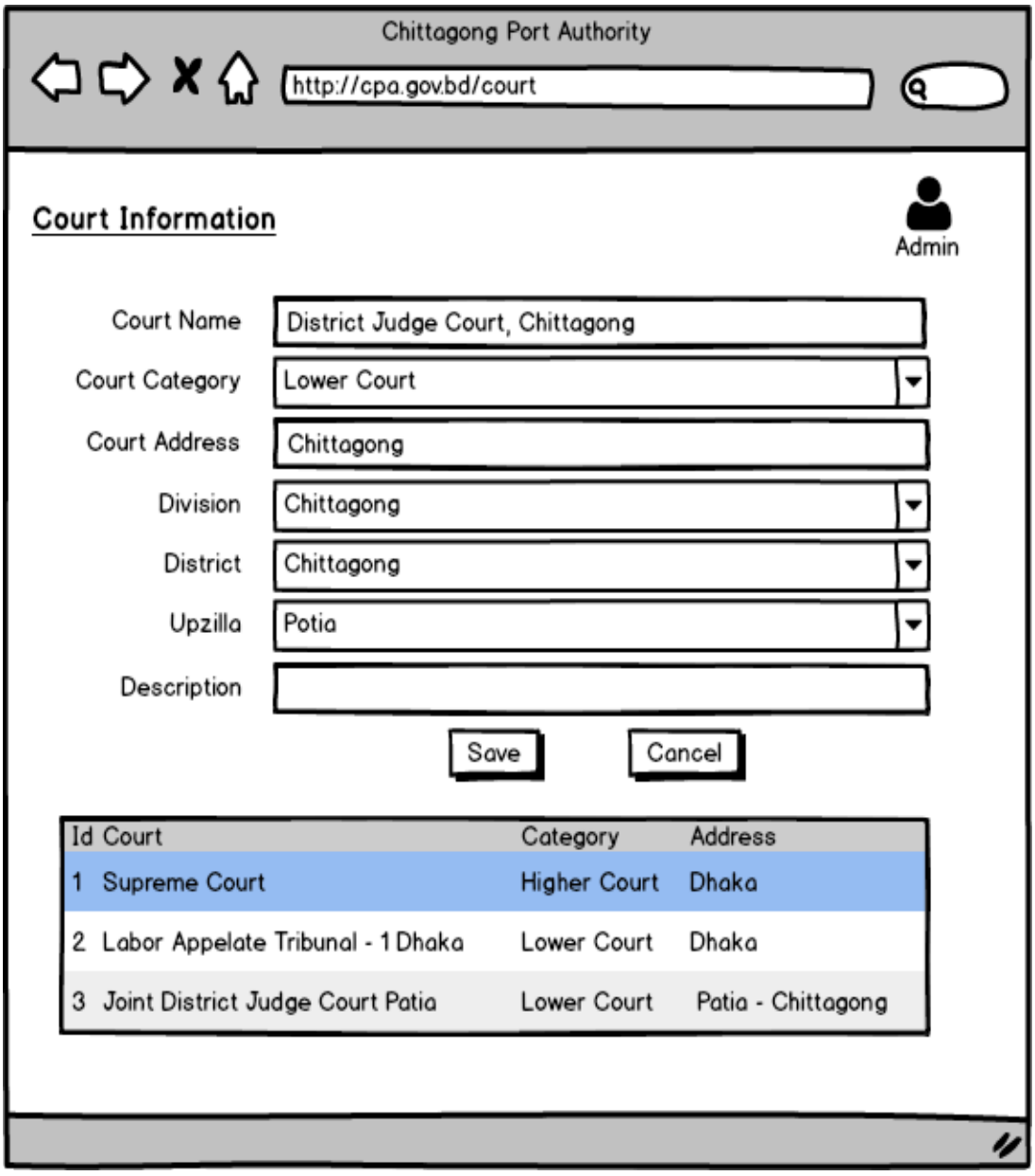


Figure 5: Mockup for Court Information

- Case category name should be unique
- Court type as like lower court, lower bench etc. should be mapped with court name
- Court address is mandatory here.

2.1.1.3 Case Information

Case information will be managed by this mockup. It is possible to insert & update case from here.

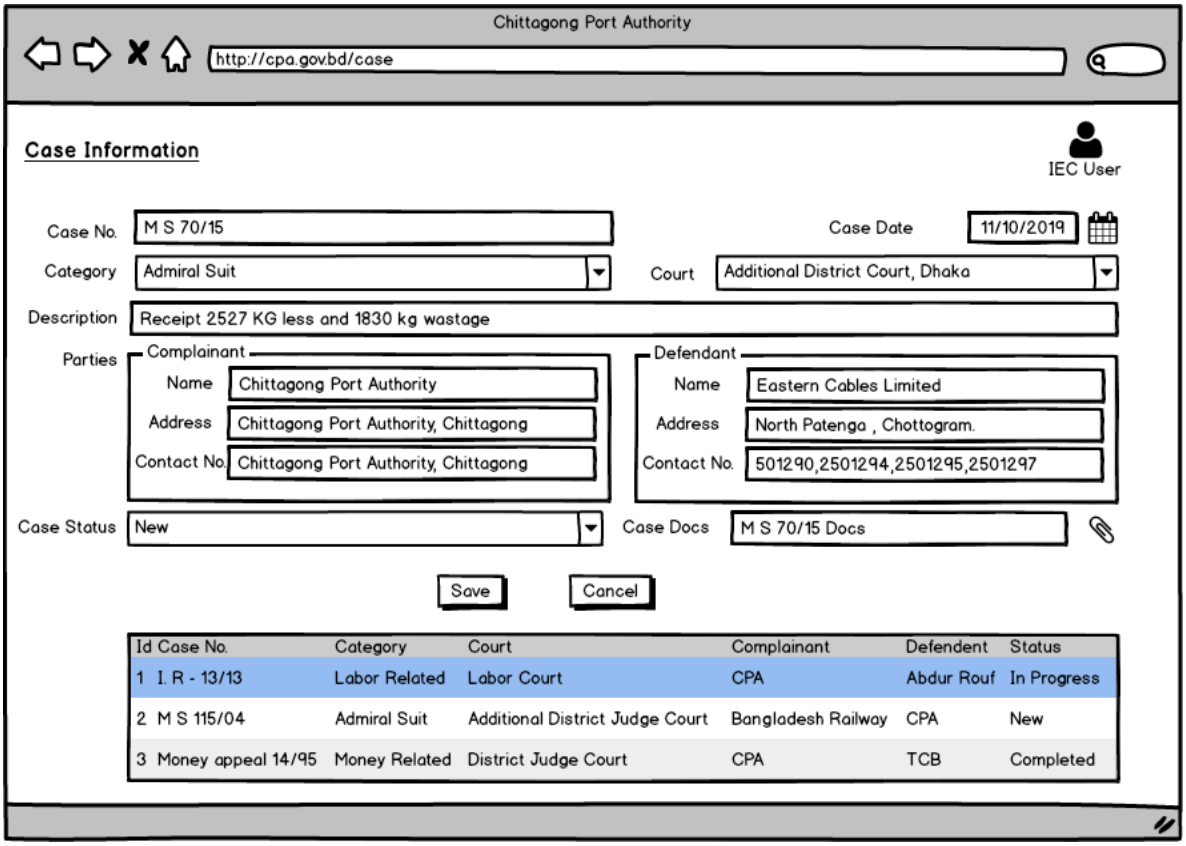


Figure 6: Mockup for Case Information

- Case Number and Date must be added.
- Case Category & Court should be selected from list.
- Case Description, Complainant & Defendant details should be added here as per case paper.
- Case status should be declared here as like new, in process, closed etc.
- There is an option to attach case related papers here.

2.1.2 Rate Chart Management Process

CPA is maintaining a rate chart to define service rate for lawyers. Rate chart may change on time basis.

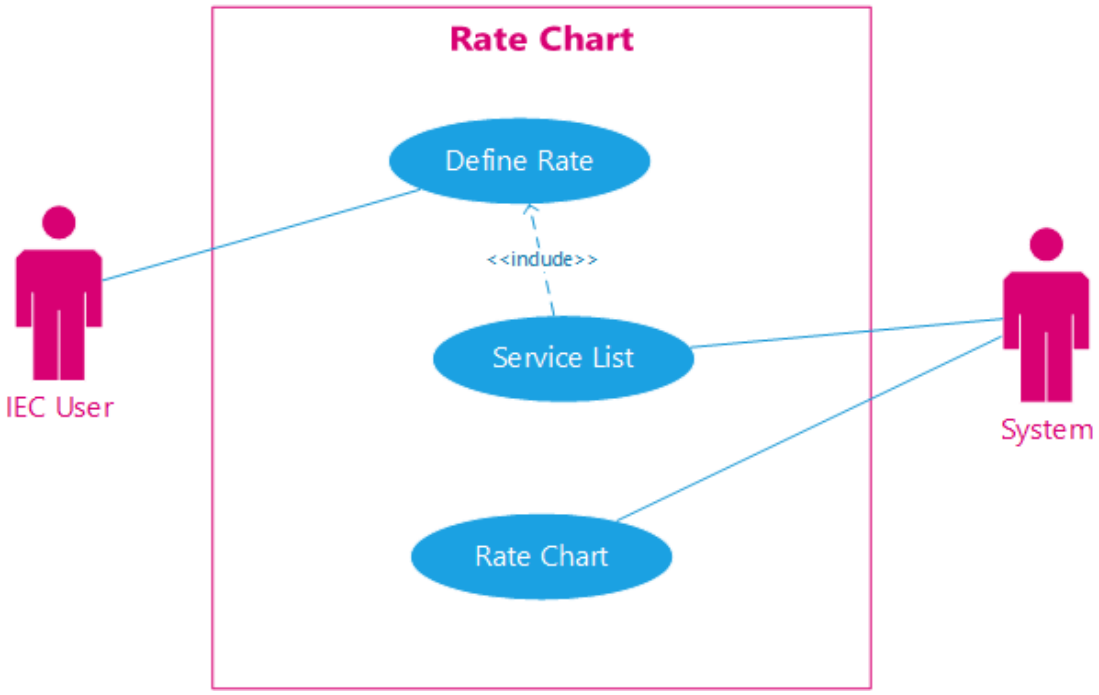


Figure 7: Use Case for Rate Chart

Use Case ID:	**UC-CM-002**
Use Case Name:	**Rate Chart**
Actors:	• IEC User • System
Trigger:	When IEC user intends to define rate for a service.
Description:	The functionality “Rate Chart” facilitates to insert a rate for a service.
Preconditions:	• User must have landed on CPA system • Service must be defined.
Assumption:	• Provided valid inputs.
Goal:	To insert or update a rate.
Normal Flow:	• Insert Service name. • Insert Minimum & maximum rate of the service. • Select rate duration. • Verify the information. • Submit information to the system.
Alternate Flow:	N/A
Failure:	• Connection Lost. • Broken pages. • Mandatory field missing.
Post conditions:	• Notifications about successful rate chart insert/update. • Created rate chart will be available for billing.
Frequency of Use:	Occasionally
Business Rules/Constraints	• Service rate should be specified. • Maximum rate must be greater than minimum rate. • To date of a service should be greater than or equal of from date.
Non Functional Requirements:	N/A
Reference:	N/A

2.1.2.1 Rate Chart Information

Rate chart will be managed by this mockup. It is possible to insert & update case from here.

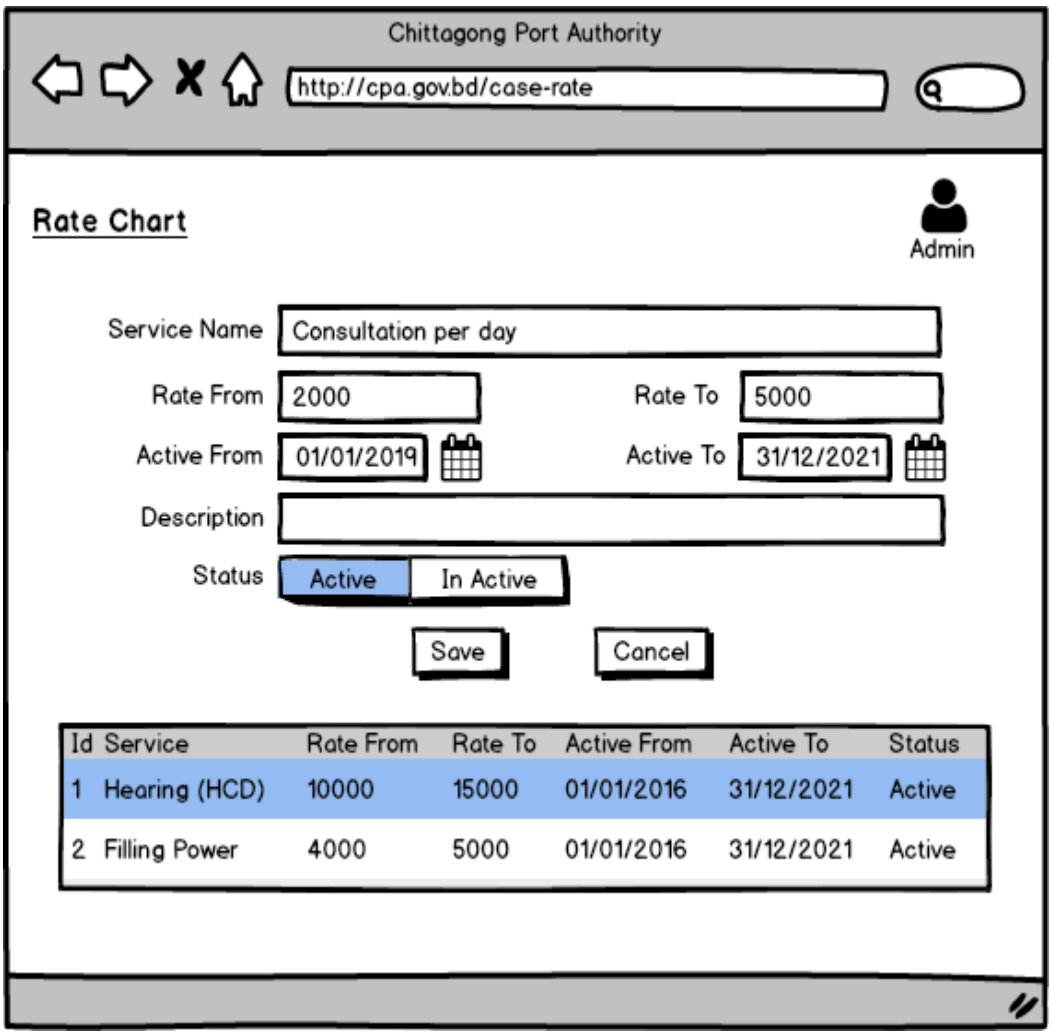


Figure 8: Mockup for Rate Chart

- Service name should be added (identical).
- Maximum and Minimum rate amount should be defined. Maximum rate amount must be greater than minimum amount.
- Service rate length should be defined. To date should be greater than or equal of from date.

2.1.3 Lawyer Management Process

CPA has some enlisted lawyers who are assigning to handle the cases. CPA publish advertisement on daily newspaper for lawyer enlistment. Lawyer apply for enlistment with a prescribe application form with a bank draft (currently which is BDT 100/-). IEC section & CPA board authority select the lawyer as per their requirement. Finally, IEC section will need to update lawyer list to the system.

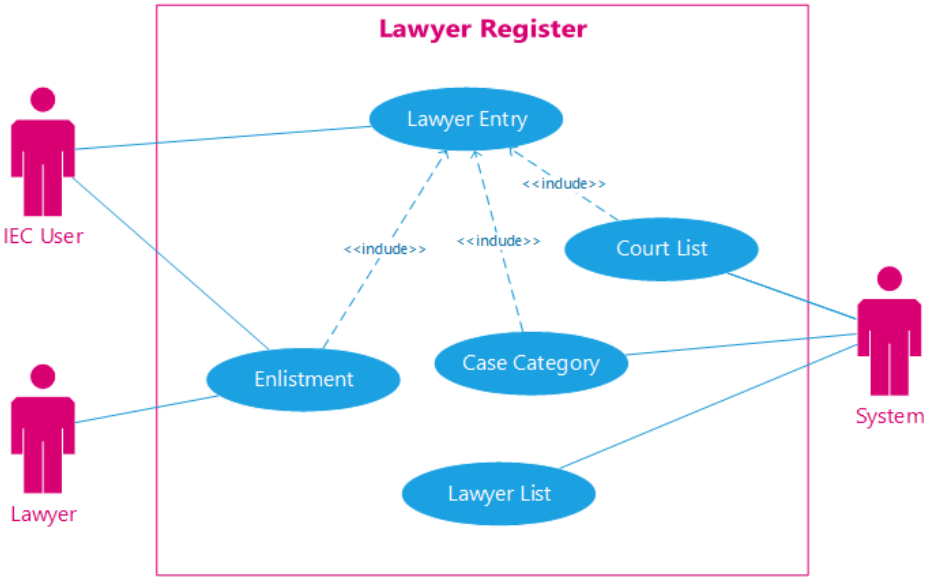


Figure 9: Use Case for Lawyer Register

Use Case ID:	**UC-CM-003**
Use Case Name:	**Lawyer Register**
Actors:	• IEC User • Lawyer • System
Trigger:	When IEC user intends to insert or update lawyer information.
Description:	The functionality “Lawyer Register” facilitates to insert/update lawyer information.
Preconditions:	• User must have landed on CPA system • Lawyer should be entitled.
Assumption:	• Provided valid inputs.
Goal:	To insert or update a lawyer information.
Normal Flow:	• Insert lawyer information. • Insert lawyer enlisment inforamtion with enlistment exprire date • Select permitted court and performed case categories. • Verify the information. • Submit information to the system.
Alternate Flow:	N/A
Failure:	• Connection Lost. • Broken pages. • Mandatory field missing.
Post conditions:	• Notifications about successful lawyer information insert/update. • Inserted lawyer should be availabe for case assignment.
Frequency of Use:	Occasionally
Business Rules/Constraints	• Lawyer should be enlisted. • At least one court should be mapped with a lawyer. • At least one case category must be assigned for a lawyer.
Non Functional Requirements:	N/A
Reference:	N/A

2.1.3.1 Lawyer Information

Lawyer information will be managed by this mockup. It is possible to insert & update lawyer information from here.

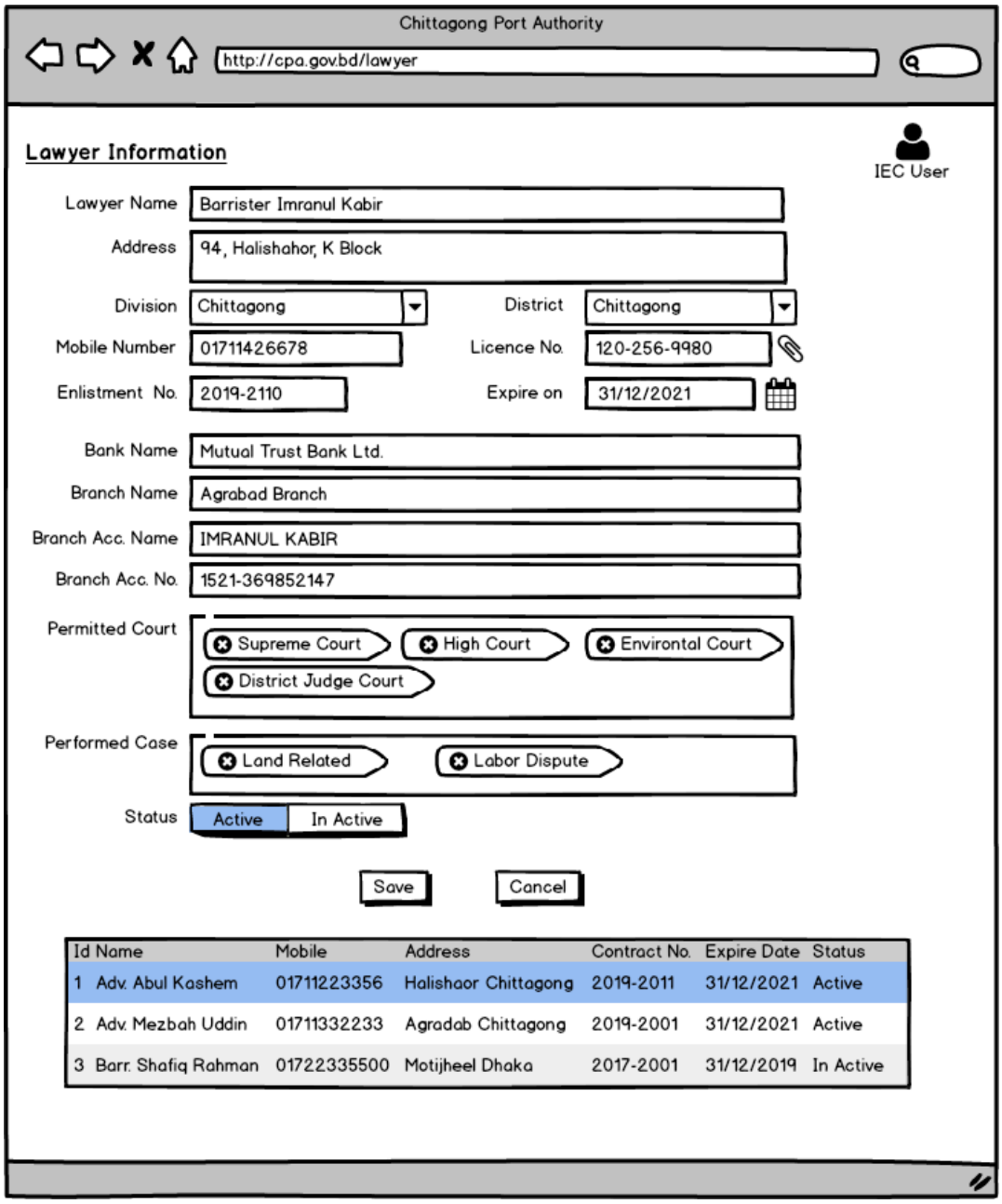


Figure 10: Mockup for Lawyer Information

- Lawyer name, Mobile Number, address & License number (identical) should be added.
- Establishment number and expire date need to update as per contract letter.
- Lawyer status should be automatically inactive when it over the expire date.
- Lawyer should have entitled at least one court & case type.

2.1.4 Lawyer Assignment Process

CPA records their cases and assign lawyer to operating a case. Most of time the enlisted lawyers are assigned to operate the case; But is some special case or special reason CPA Chairman directly assign some lawyer to operate a case.

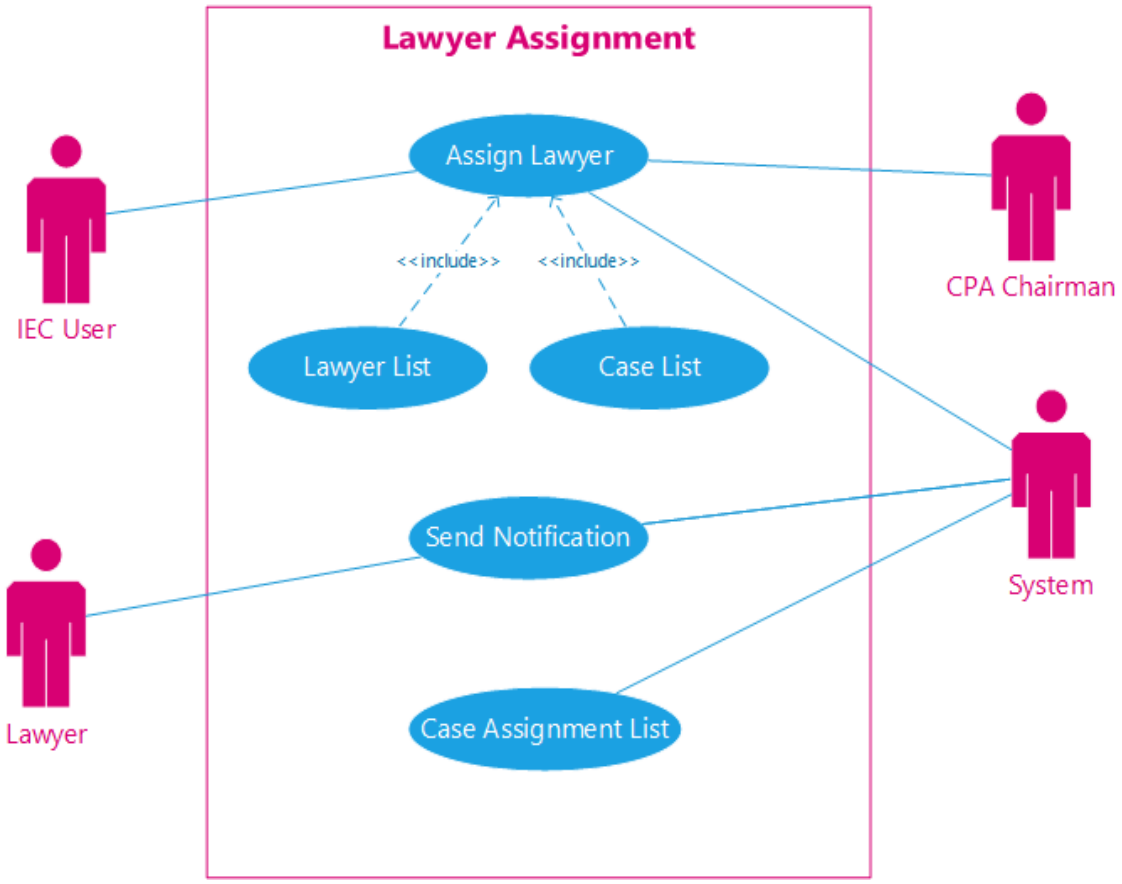


Figure 11: Use Case for Lawyer Assignment

Use Case ID:	**UC-CM-004**
Use Case Name:	**Lawyer Assignment**
Actors:	• CPA Chairman • IEC User • Lawyer • System
Trigger:	When IEC user intends to assign a case to a lawyer.
Description:	The functionality “Lawyer Assignment” facilitates to assign a lawyer to operate a case.
Preconditions:	• User must have landed on CPA system. • Case should be recorded. • Lawyer should be entitled.
Assumption:	• Provided valid inputs.
Goal:	To assign a lawyer with a case.
Normal Flow:	• Select a case & map a lawyer with this case. • Verify the information. • Submit information to the system. • System should send a notification to Lawyer about his/her assignment. (SMS/Email).
Alternate Flow:	• CPA Chairman assign non-listed lawyer for some special case.
Failure:	• Connection Lost. • Broken pages.

	• Mandatory field missing.
Post conditions:	• Lawyer will be notified via SMS/Email about his/her assignment.
Frequency of Use:	Frequently
Business Rules/Constraints	• Lawyer should be enlisted. • Case should be recorded.
Non Functional Requirements:	N/A
Reference:	**UC-CM-001, UC-CM-002**

2.1.4.1 Lawyer Assignment

Lawyer assignment related information will be managed by this mockup.

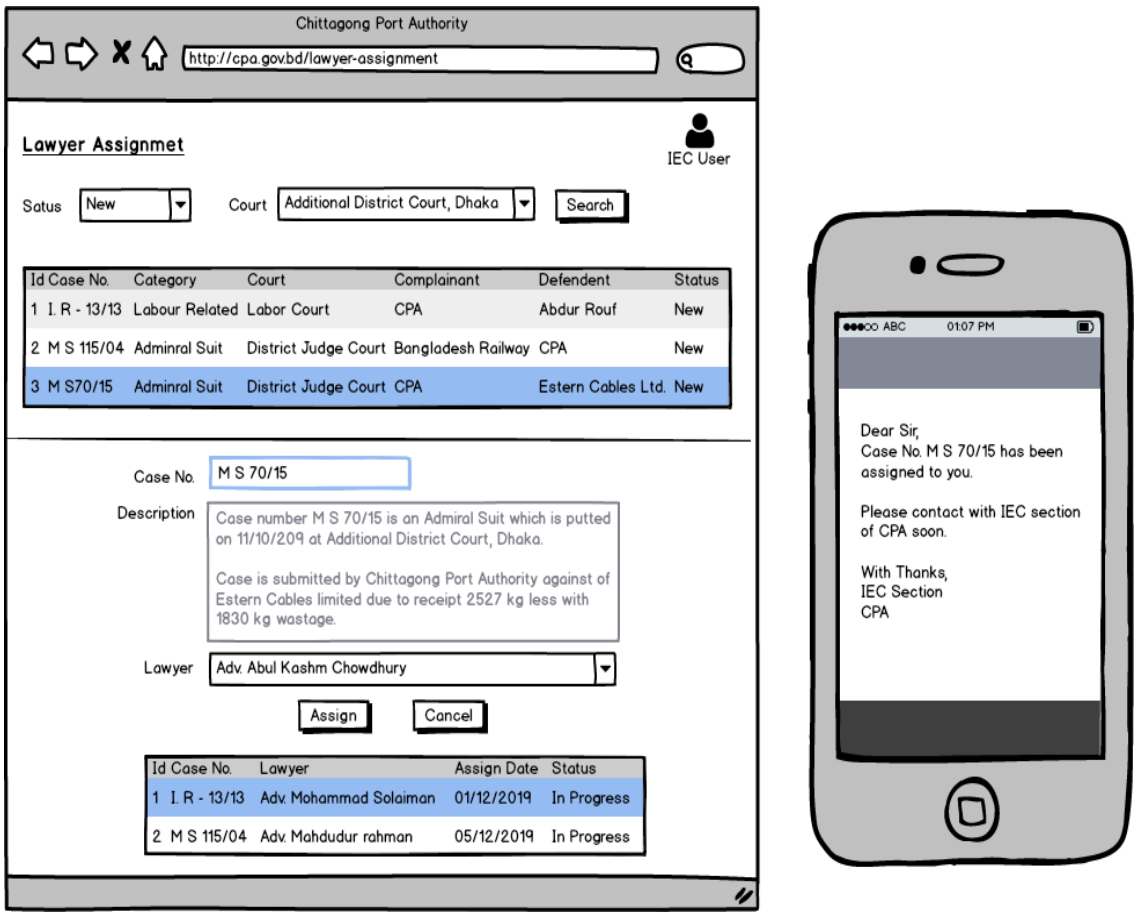


Figure 12: Mockup for Case Assignment

- Case wise lawyer should be assigned.
- Lawyer will receive notification about his/her assignment.

2.1.5 Case Update Process

Assigned lawyer move with the cases. Lawyer provide the case update to IEC officer. IEC user will update the case information to system.

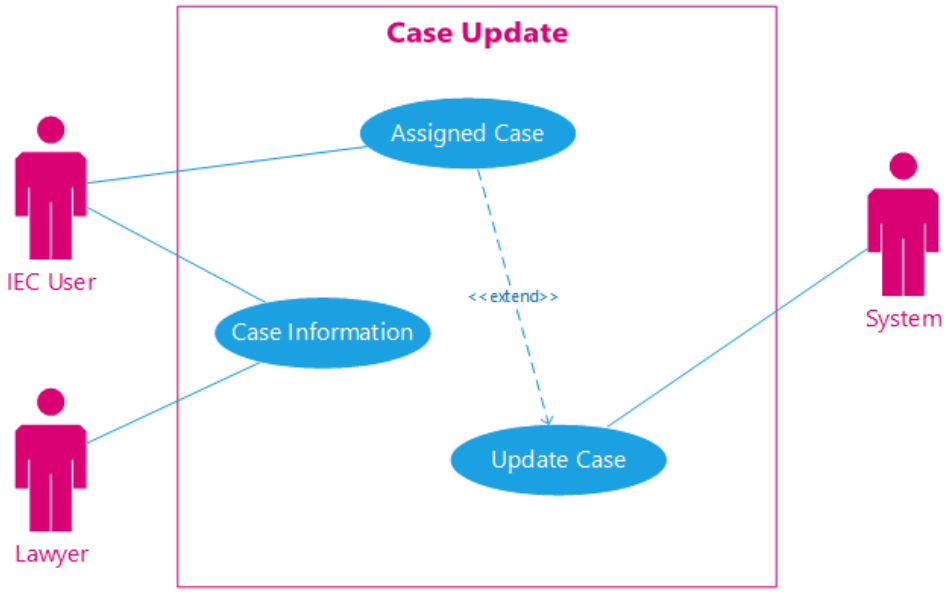


Figure 13: Use Case for Case Update

Use Case ID:	**UC-CM-005**
Use Case Name:	**Case Update**
Actors:	• IEC User • Lawyer • System
Trigger:	When IEC user intends to update case information.
Description:	The functionality “Case Update” facilitates to update case status & information.
Preconditions:	• User must have landed on CPA system. • Case should be recorded. • Lawyer should be assigned.
Assumption:	• Provided valid inputs.
Goal:	To update a case information.
Normal Flow:	• Select a case. • Check Casestep and Case Status. • Update next Date and Reasons. • It may provide update descriotion. • Atrtach document (if any). • Verify the information. • Submit information to the system.
Alternate Flow:	• N/A
Failure:	• Connection Lost. • Broken pages. • Mandatory field missing.
Post conditions:	• Case Information will be updated.
Frequency of Use:	Frequently
Business Rules/Constraints	• Lawyer should be enlisted. • Case should be recorded.
Non Functional Requirements:	N/A
Reference:	**UC-CM-001, UC-CM-002, UC-CM-004**

2.1.5.1 Case Information Update

Lawyer assignment related information will be managed by this mockup.

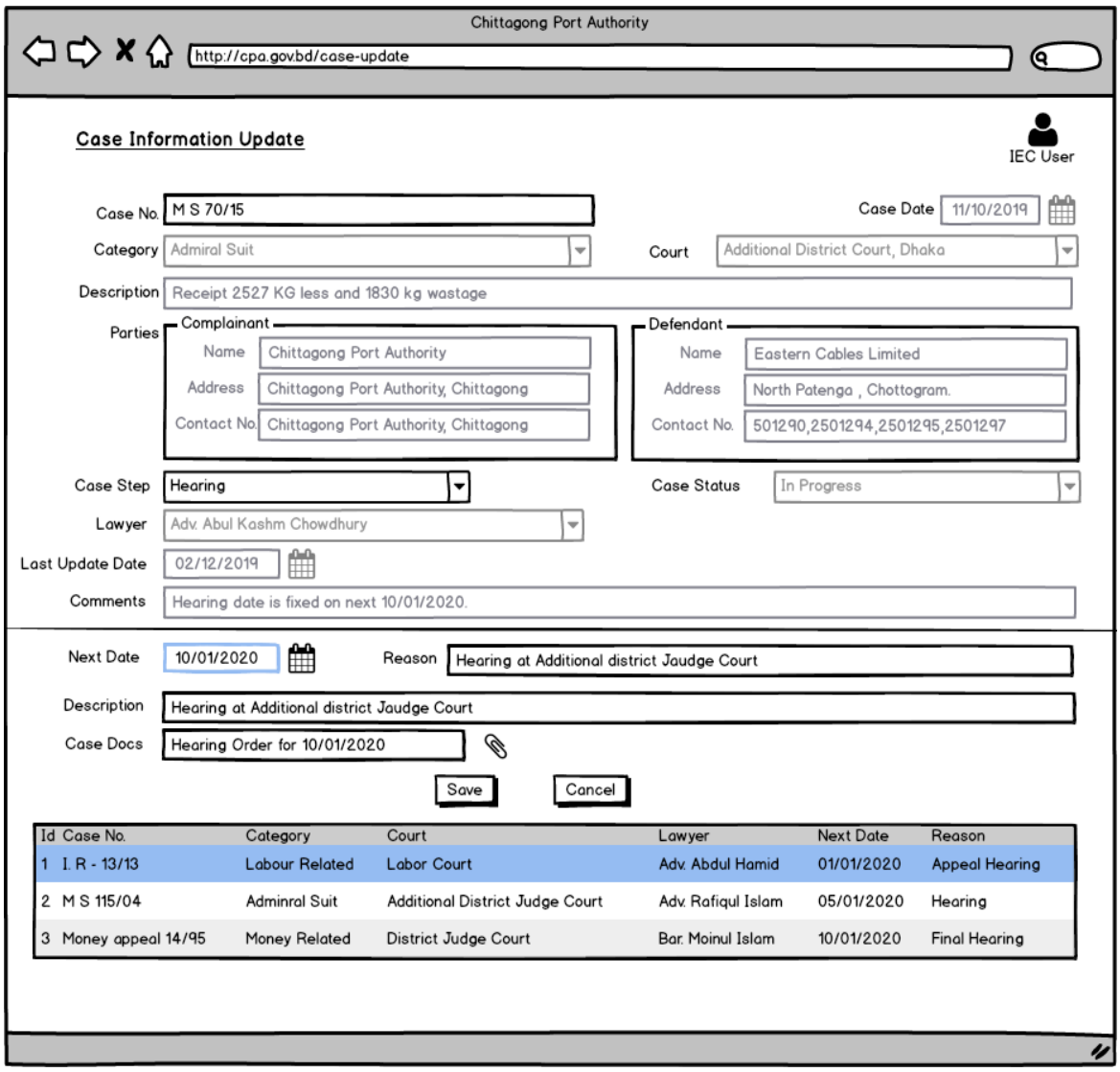


Figure 14: Mockup for Case Update

- Identify case with case number.
- Update case status and step, if required.
- Next date, Reason, and Description fields should be disabled, if user select closed option as case status.
- Next date and reason should be putted here.

2.1.6 Lawyer Bill Process

Lawyer submit bills to IEC section on behalf of his/her service. IEC section user will verify the bill with rate chart and prepare the final bill. Approved bill will be updated to the system for consideration of Accounts Department. Accounts will disburse the bill to lawyer.

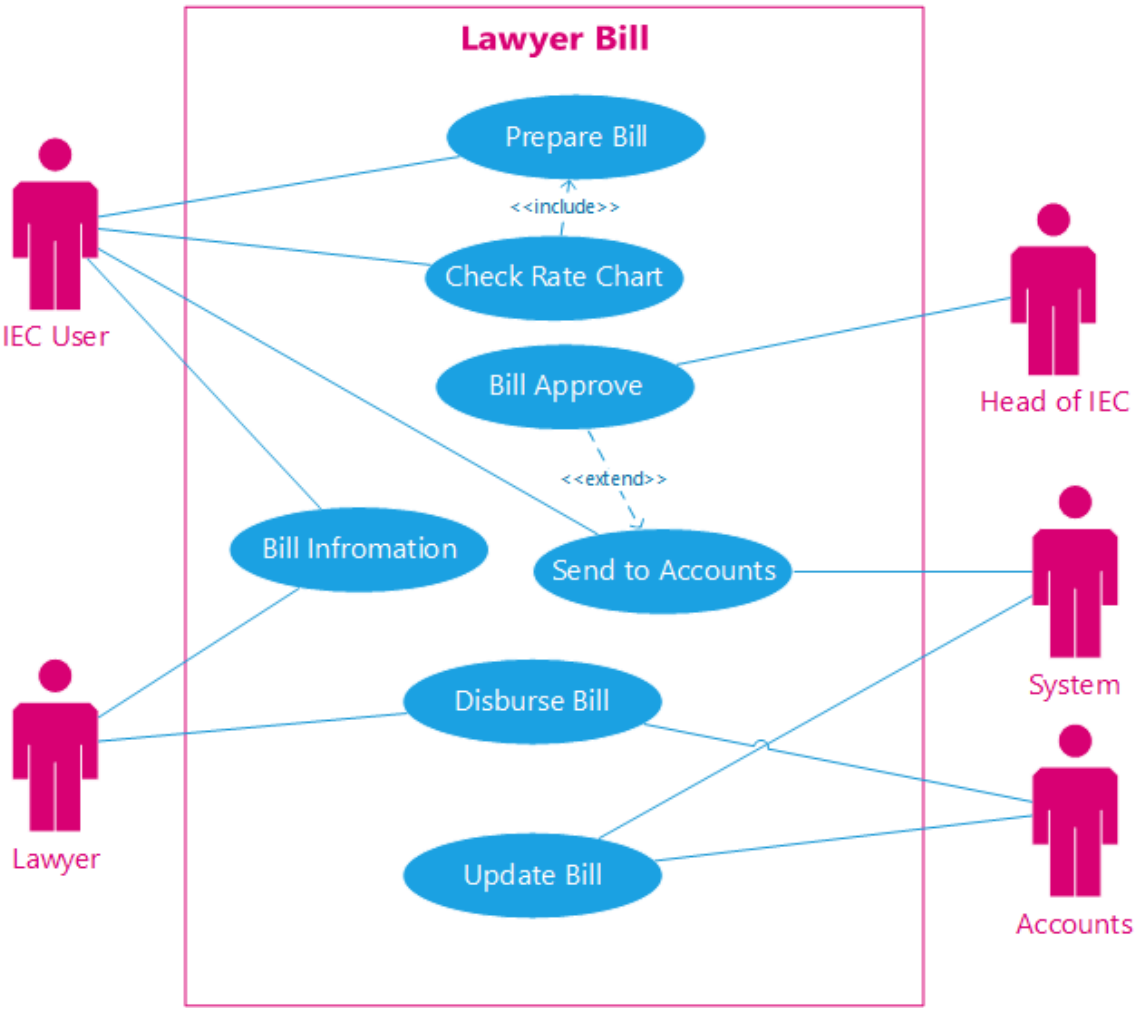


Figure 15: Use Case for Lawyer Bill

Use Case ID:	**UC-CM-006**
Use Case Name:	**Lawyer Bill**
Actors:	• IEC User • Head of IEC • Lawyer • Accounts • System
Trigger:	When IEC user intends to submit bills for Lawyers.
Description:	The functionality “Lawyer Bill” facilitates to prepare, update, approve, and disbursement of lawyer bill.
Preconditions:	• User must have landed on CPA system. • Bill must be submitted my lawyer.
Assumption:	• Provided valid inputs.
Goal:	To prepare and disburse lawyer bills.
Normal Flow:	• Receive bill from lawyer • Prepare the bill • Approved the bill by Head of IEC • Insert the bill into system

	• Forward the bill to Accounts • Account disbusrse the bill to Lawyer account.
Alternate Flow:	• N/A
Failure:	• Connection Lost. • Broken pages. • Mandatory field missing.
Post conditions:	• Bill information should be updated after disbursement.
Frequency of Use:	Frequently
Business Rules/Constraints	• Lawyer should be enlisted. • Case should be recorded. • Lawyer should be assigned for a case. • Case infroamtion should be updated against of bill. • Bill amount should be matched with rate chart. • Bill should be approved by IEC head.
Non Functional Requirements:	N/A
Reference:	**UC-CM-001, UC-CM-002, UC-CM-003, UC-CM-004, UC-CM-005**

2.1.6.1 Lawyer Bill Information

Lawyer bill will be preparing and submitted by this mockup.

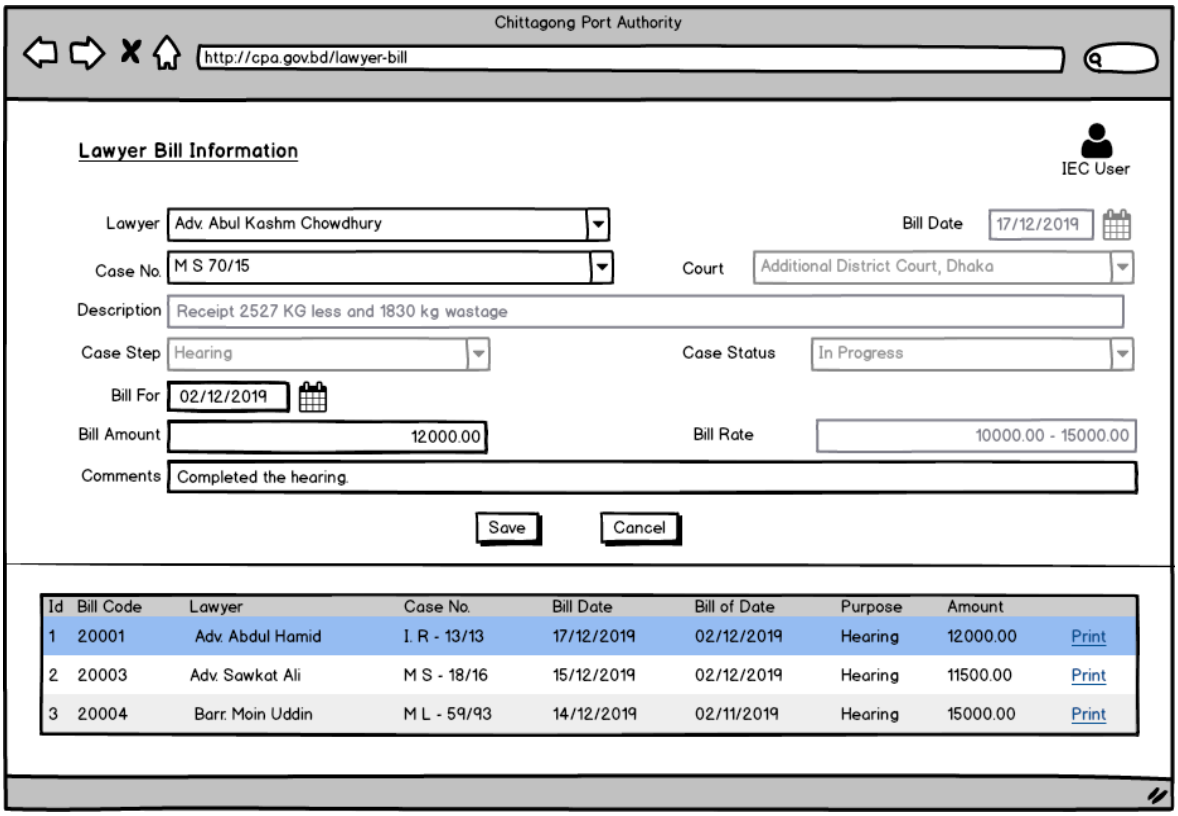


Figure 16: Mockup for lawyer bill

- Bill for date and Bill amount should be required.
- Bill amount should be checked against of Rate chart.

2.1.7 Case Module Reports

We have listed some reports for Case module.

2.1.7.1 Court list Report

System will provide facility to generate court list based on multiple criterion. These are:

- Court Category wise court list
- Division wise Court list
- District wise court list

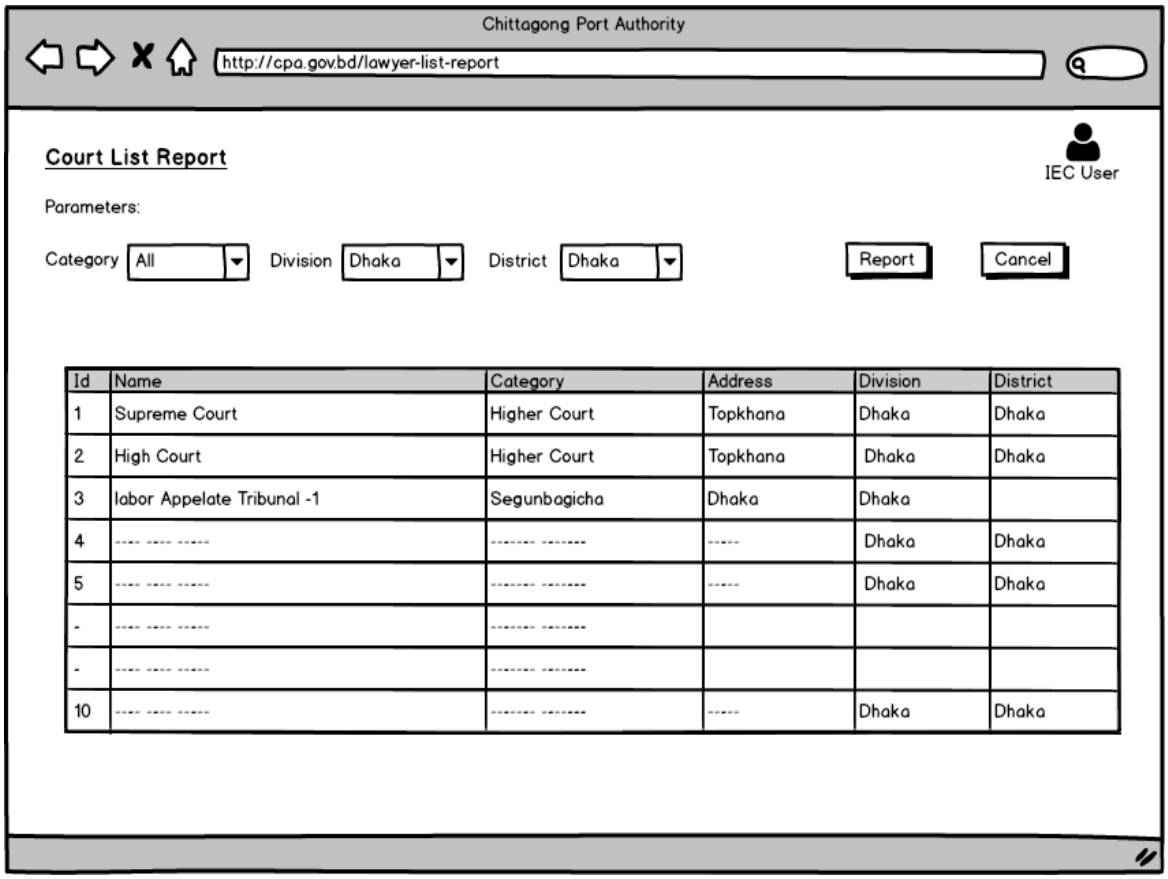


Figure 17: Mockup for Court List Report

2.1.7.2 Lawyer list Report

System will provide facility to generate lawyer list based on multiple criterion. These are:

- Lawyer list as per Enlistment Status
- Court wise lawyer list
- Expire date wise lawyer list

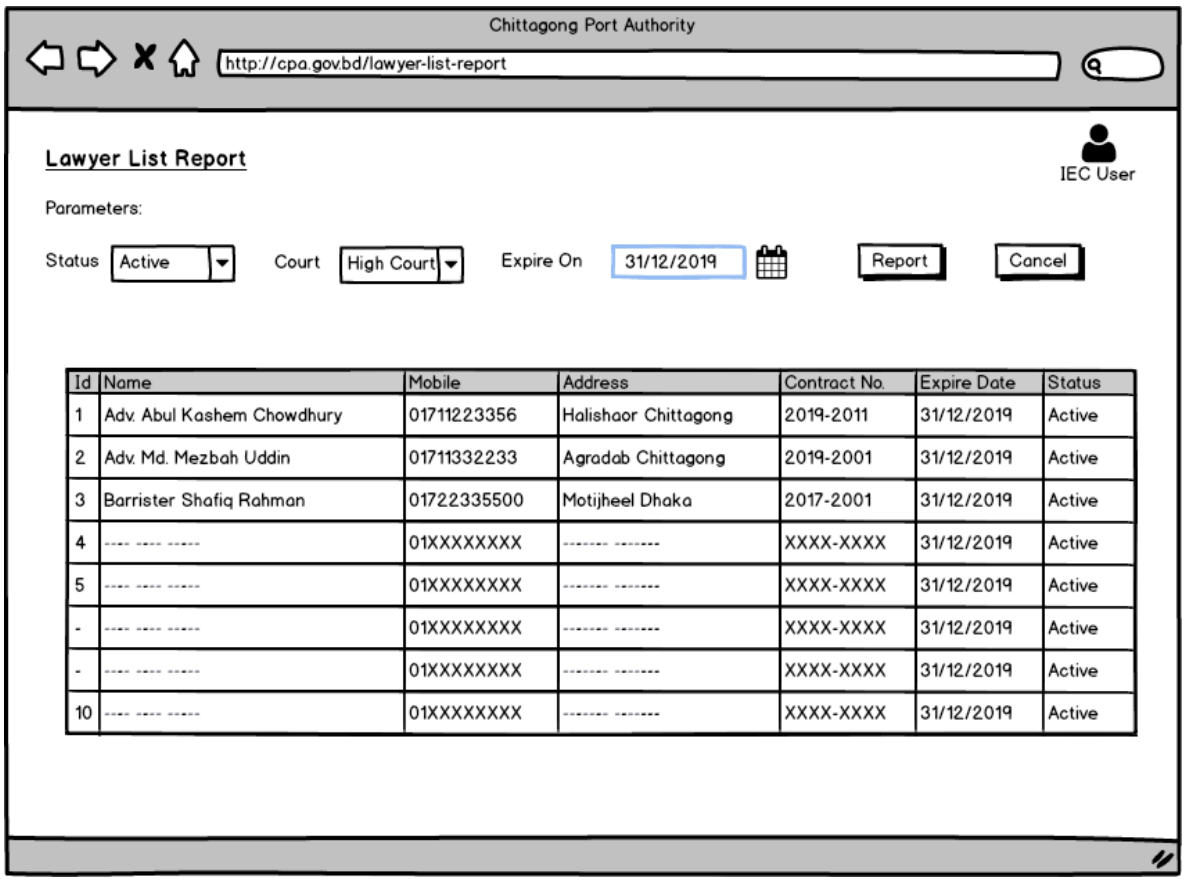


Figure 18: Mockup for Lawyer List Report

2.1.7.3 Rate Chart Report

System will provide facility to generate rate chart list based on multiple criterion. These are:

- Minimum Rate
- Maximum Rate
- Active From
- Active To
- Status

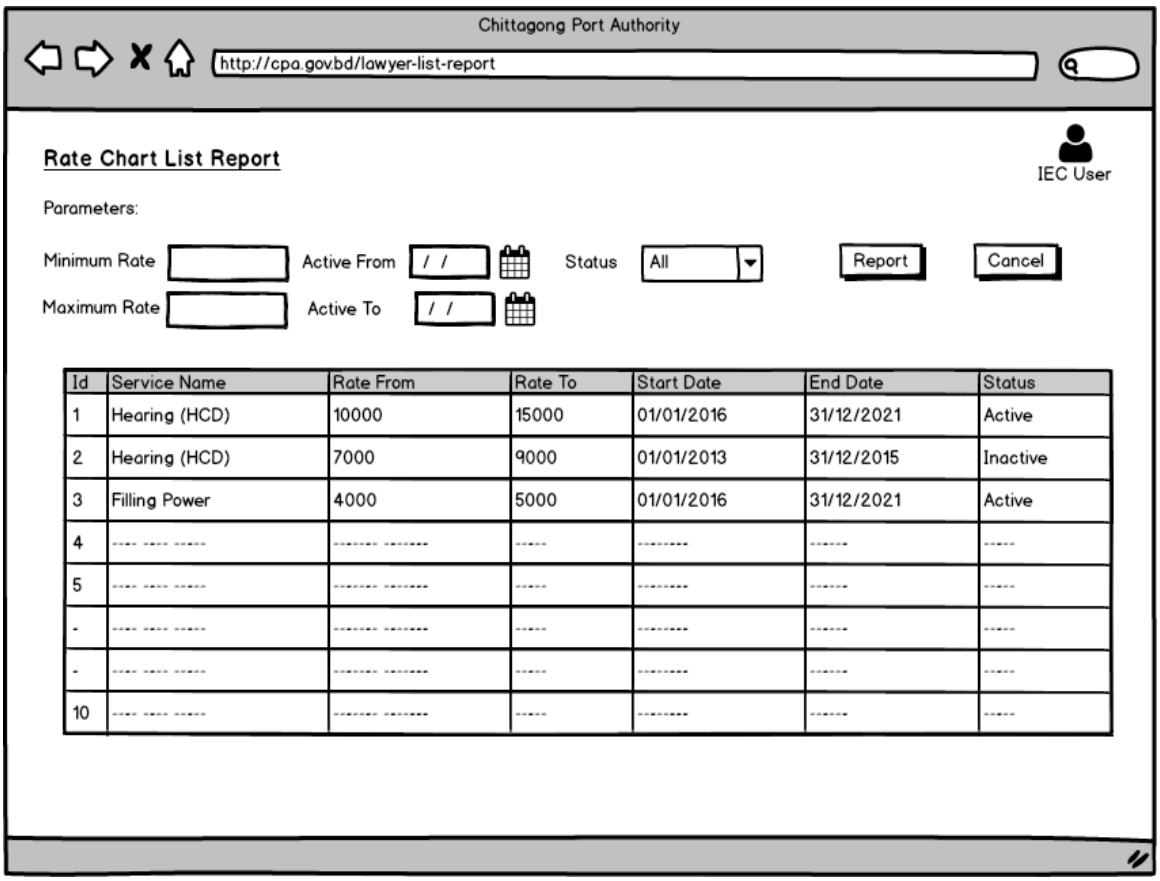


Figure 19: Mockup for Rate Chart Report

2.1.7.4 Case list Report

System will provide facility to generate case list based on multiple criterion. These are:

- Court wise case list
- Lawyer wise case list
- Status wise case list
- Case step wise case list
- Next Date wise case list

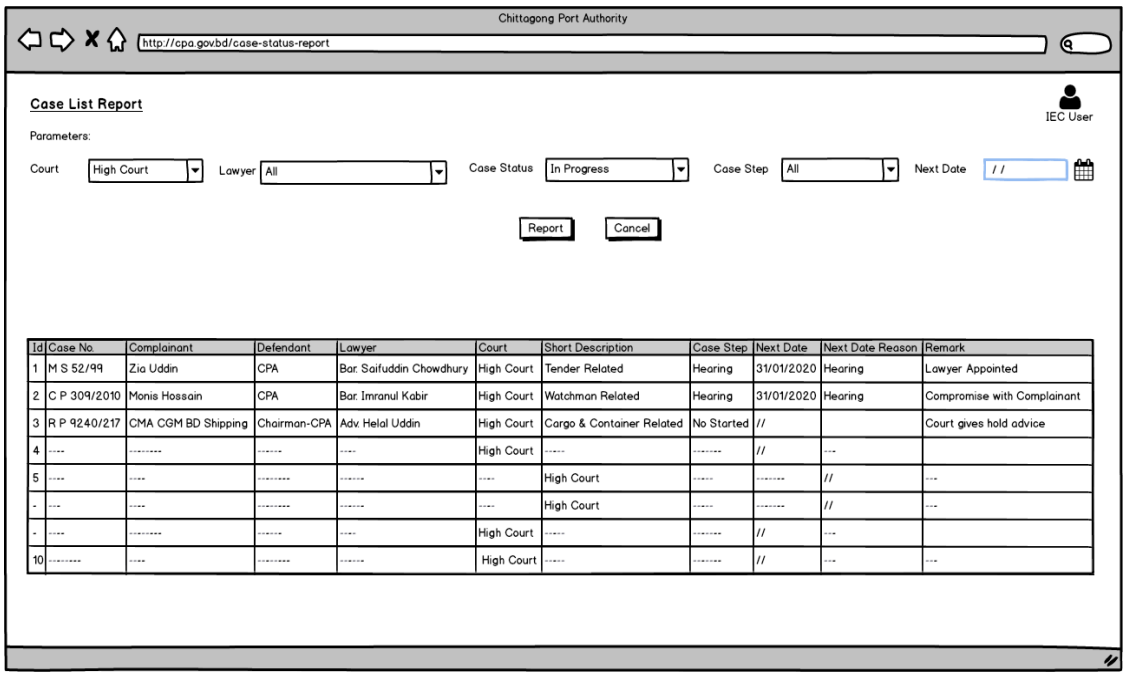


Figure 20: Mockup for Case List Report

2.1.7.5 Lawyer Report

Bill report will be available from the system.

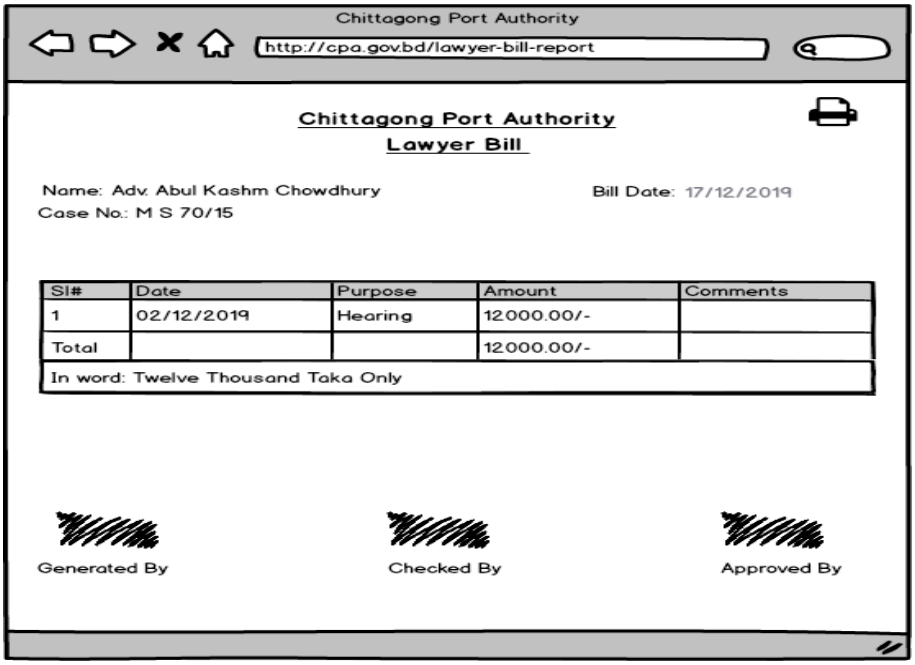


Figure 21: Mockup for Bill Report

2.1.7.6 Case Module Summary Report

System will provide some summary reports as like:

- Case Summary report
- Court wise Summary Report
- Lawyer wise Summary Report
- Yearly Case Summary

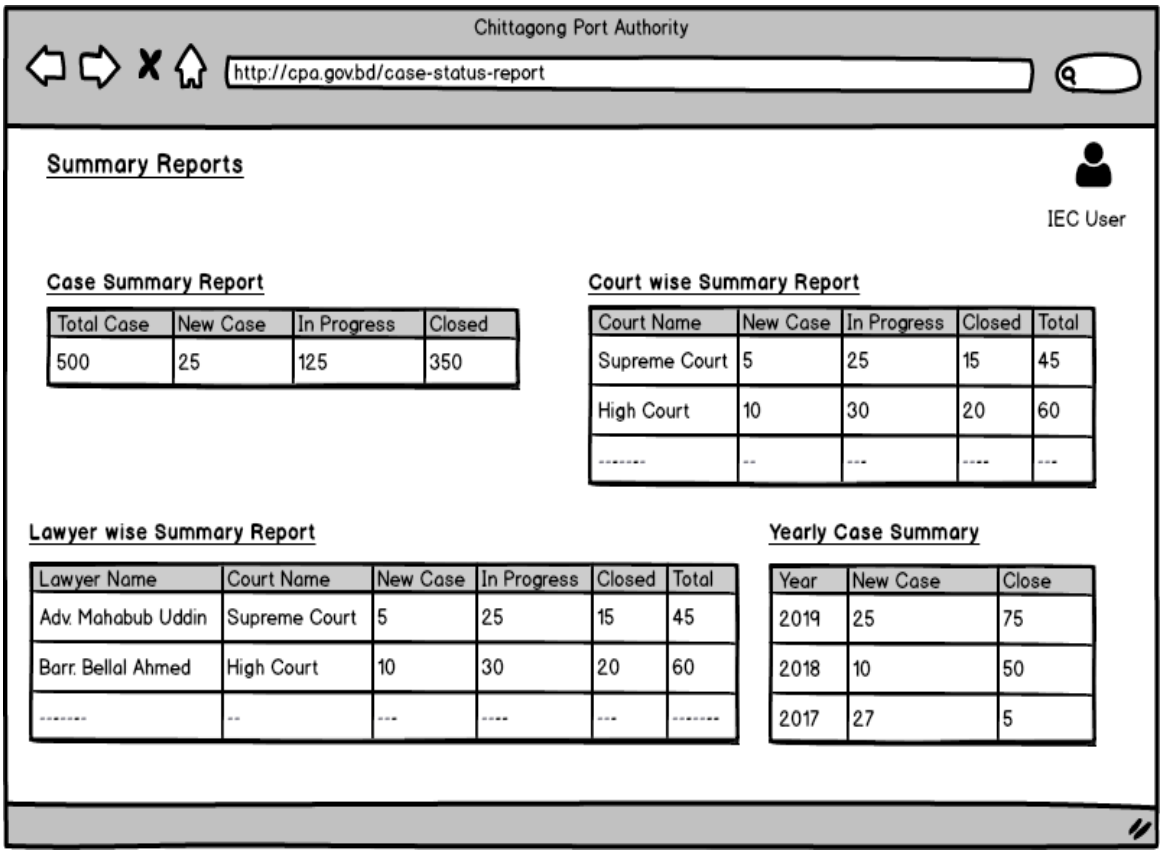


Figure 22: Mock up for Case Summary Reports

3 Module: Training Institute Automation

We, CNS develop a proposed design for the Training Management Module of CPA system.

The proposed module will work on below listed ways;

- Various departments will apply for their Training.
- Training Institute receive training request and create training calendar.
- Manage trainer information and assign trainer for training.
- Schedule and manage batches for conducting training.
- Record trainee information and their feedback.
- Provide training related other infrastructure and facilities.

Major services provided by Training department are given below:

- Prepare Training Plan
- Arrange Training
- Assign Trainer
- Collect Trainee information & their feedback
- Trainee Evaluate

3.1 Prepare Training Plan

The purpose of the Training Plan is to identify the appropriate training strategies and activities required to achieve the desired learning outcome needed for CPA employees for different department.

The Training Plan provides a clear understanding of what must happen to meet the training requirements that have been defined, thus, end-users receive training in the knowledge, skills, and/or abilities required to support the new roles, business processes and/or technology.

Software in use	Covered Area	Remark
No	CPA Training Center.	New application will be developed for both Web and Mobile Apps.

3.1.1 Training Request

Every Department is requested to provide their requirements on Training for the year. Using this system user can provide their request for training to training institute.

- Training Category should be General, Operational, Financial or technical.
- Training participant/applicable for should be Officers or Stuffs of CPA.

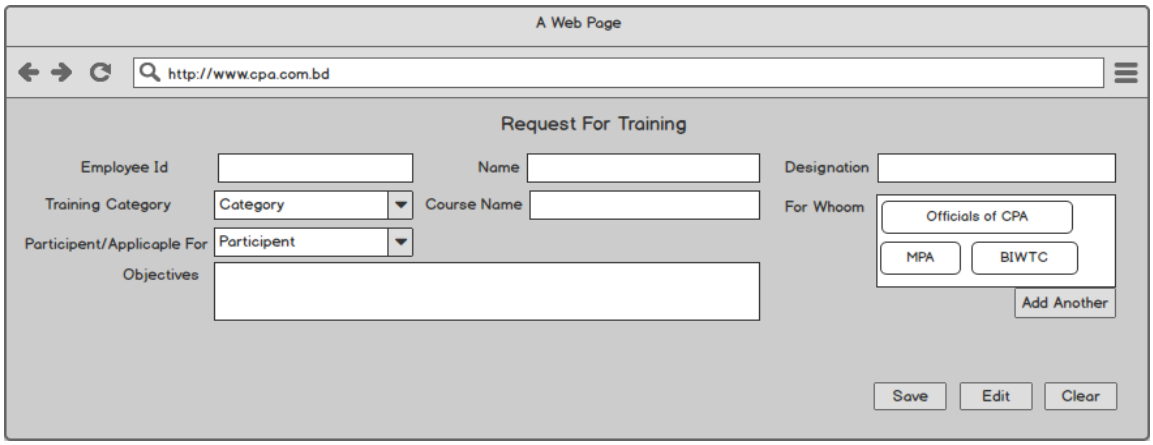


Figure 23: Mockup for Training Request

Form 01: Request for Training Form

Input	Process	Output
Requester information and requested training details.	System store request of training and send it to training institute.	Requester details and requested training information will be shown.

3.1.2 Training Information

- Training category should be categorized as-
    - General Course
    - Operational Course
    - Financial Course
- Full course content should be attached.
- Course objectives should be highlighted in objective text field.
- Methodology that used in this course should be populated in teaching methodology.

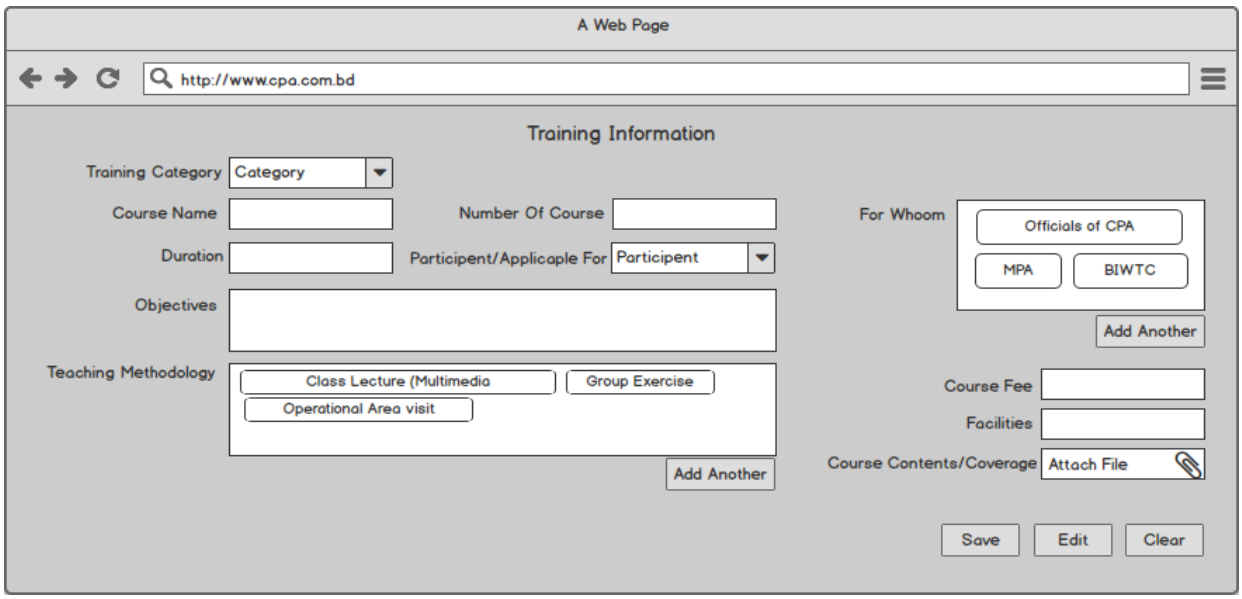


Figure 24: Mockup for Training Information

Form 02: Training Information Form

Input	Process	Output
Training Category (General, Operational, Financial), and other inputs	Required trainings are saved for Training Department for further use.	Training Dept. can view required training.

3.1.3 Trainer Information

Trainer information enlisted here. All trainers of Training institute should be enlisted here before conduct any training.

- Trainer should be categorizing as internal, external of foreign.
- All professional certificates attached in this form.

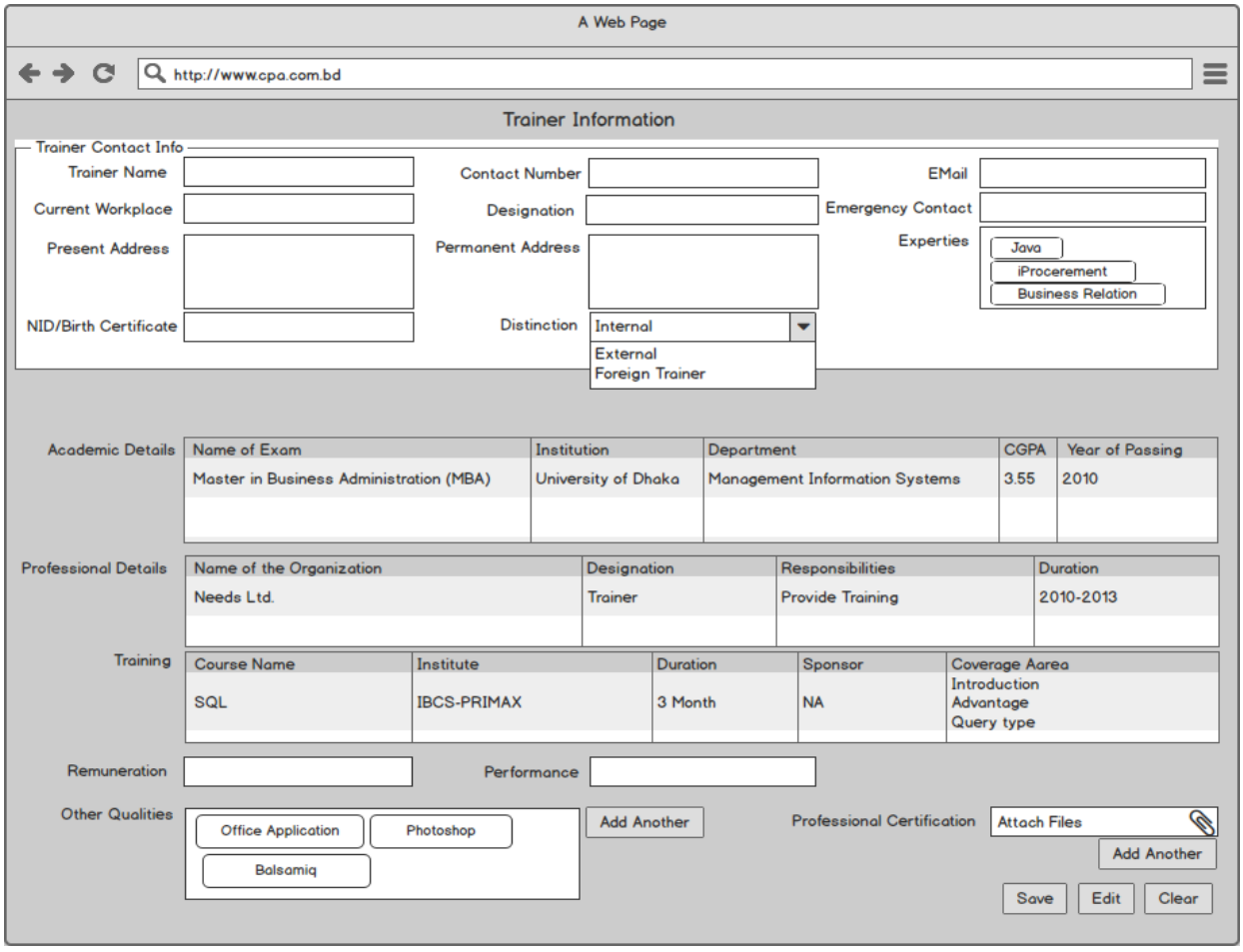


Figure 25: Mockup for Trainer information

Form 03: Trainer Information Form

Input	Process	Output
Trainers information should be input with this form.	Trainers any kind of academic, professional and other details should be enlisted here.	All enlisted trainer information will be shown here.

3.1.4 Training Schedule Management

Using this service system will manage training schedule and generate batch for yearly training calendar. Every Department is requested to provide their requirements on Training for the year. Training Section of Administration Department consolidates all the requests and generate batch on the basis of the request. Training Calendar is then printed and handed over to different Departments.

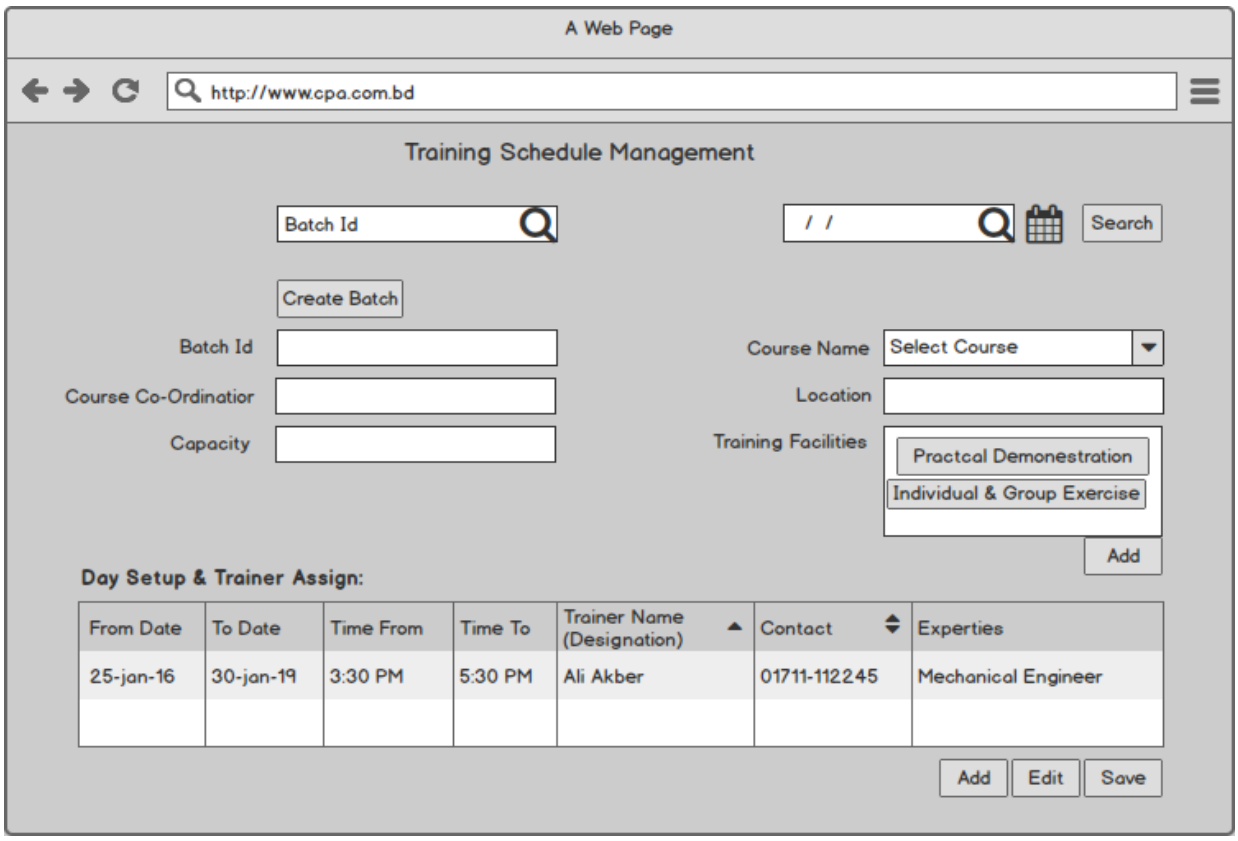
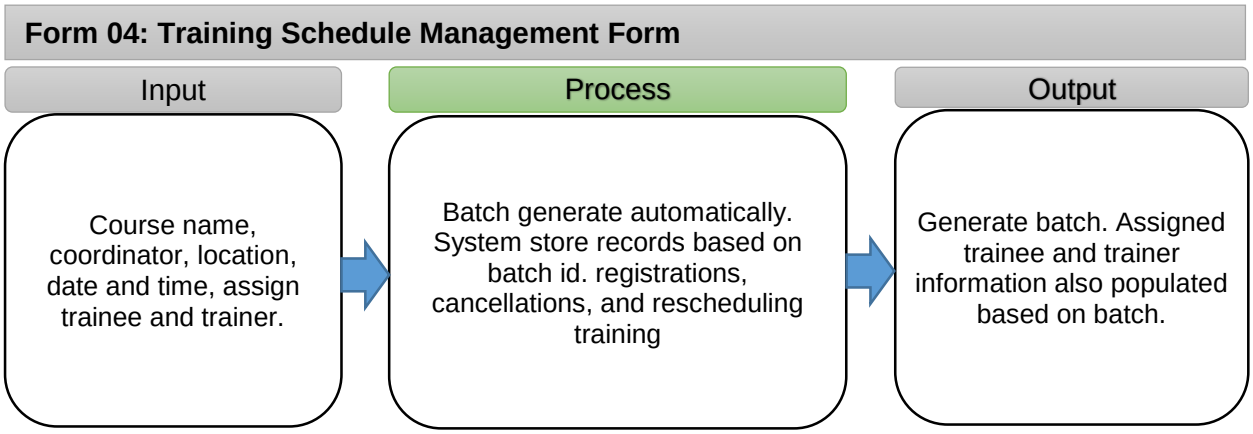


Figure 26: Mockup for Training Schedule Management



3.1.5 Foreign Tour

CPA employee's training, PSI, FAT and port visit in abroad should entry in here.

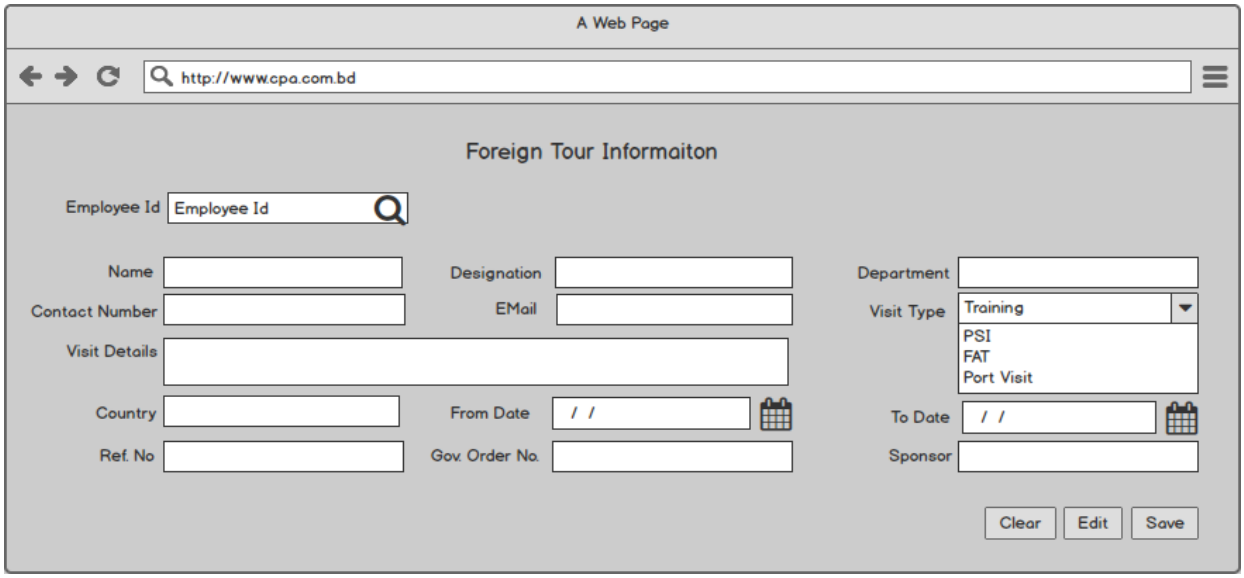
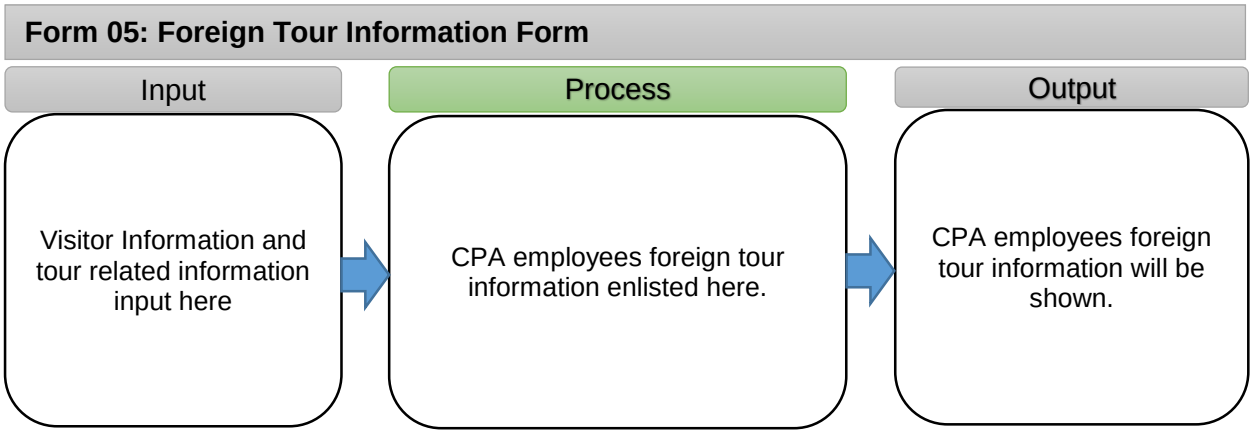


Figure 27: Mockup of Foreign Tour



3.2 Training Execution Service

- The main purpose of training execution service is to conduct training.
- After that institute also manage trainee attendant and other related information.
- Department heads nominates trainees for specific course.
- Record training category and batch wise feedback report for further use.
- Evaluate every trainee on the basis of their performance.

Software in use	Covered Area	Remark
No	Execute training and record training information	New application will be developed for both Web and Mobile Apps

3.2.1 Trainee Information

Training institute collect/store all trainee information using this system. In case of any emergency contact or other further use, the use this trainee information.

- Trainee information register on first day of training.
- Trainees previous training details also enlisted in training information.

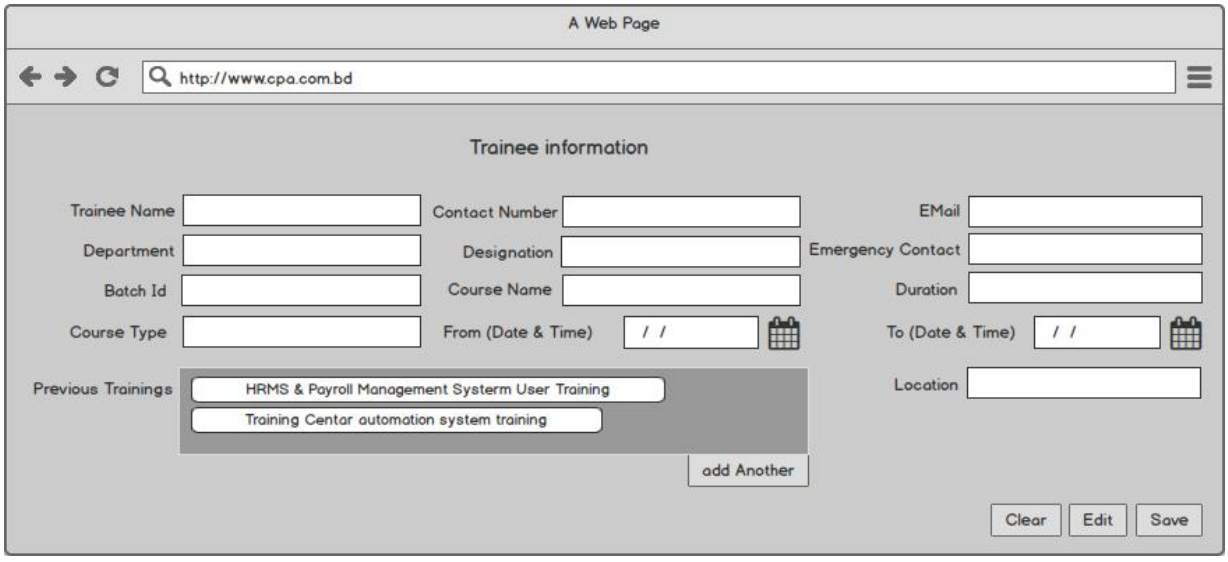


Figure 28: Mockup for Trainee Information

Form 06: Trainee Information Form

Input	Process	Output
Trainee info who are applied for the training.	Training Head / Co-coordinator approves /rejects / edit any trainee.	approves /rejects / edit info

3.2.2 Trainee Attendance

When conducting any training trainee attendance also maintain and save in this system using below form. System will automatically send message and email of training schedule and in any case postponed class and reschedule class.

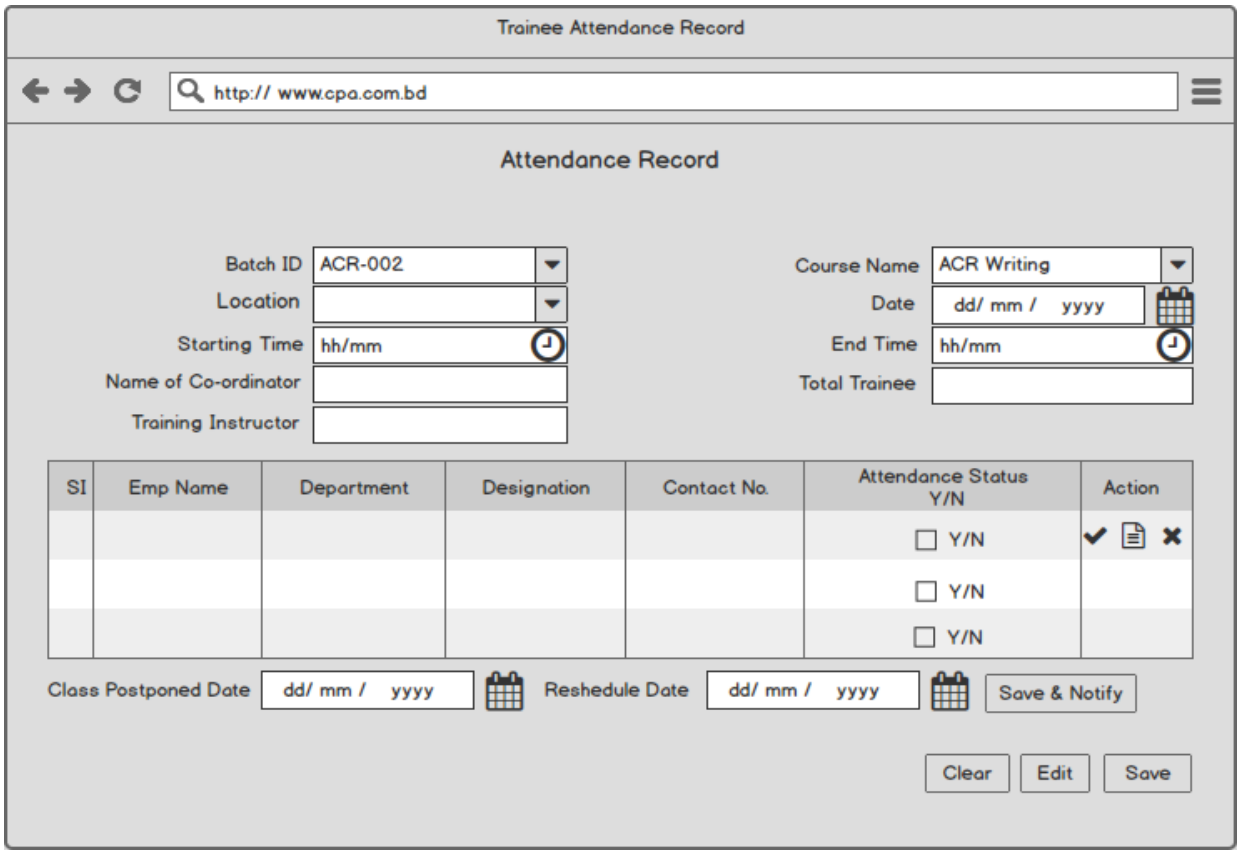
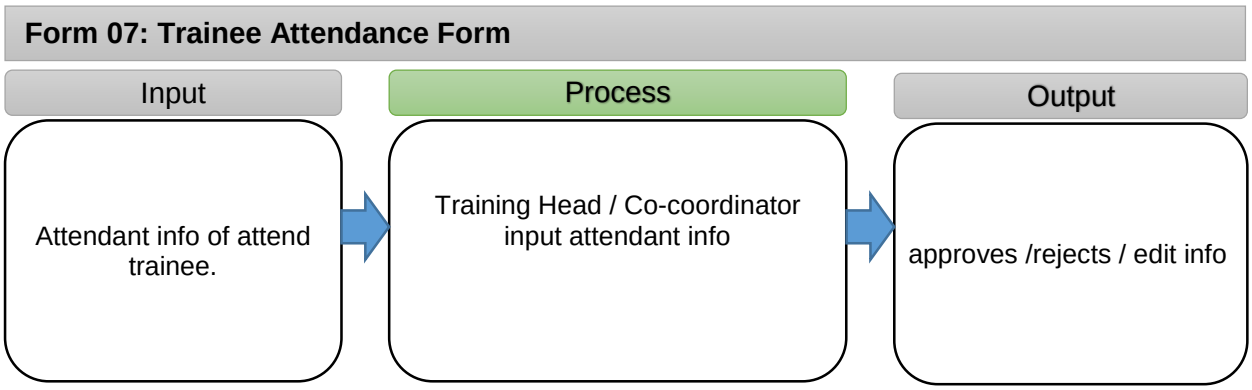


Figure 29: Mockup for Trainee Attendance Record



3.2.3 Trainee Feedback

Training feedback should be taken at the end of the course from trainee. Trainee Should-

- Rating the course on the basis of its importance and objectives.
- They should also be ratting trainer's knowledge and skills and fulfillment of objectives.
- There should be also an option for rating overall satisfaction on administrative and training materials.

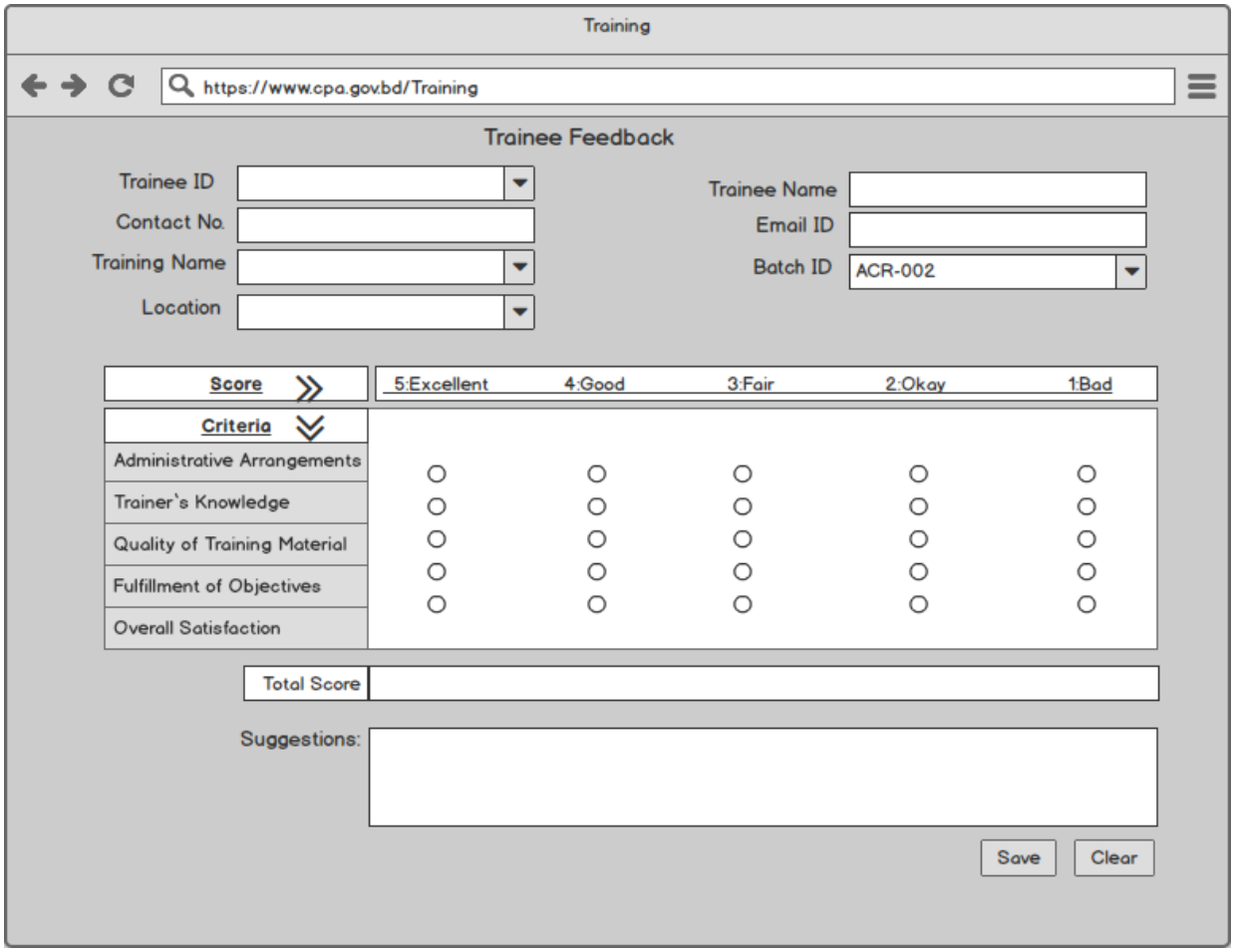
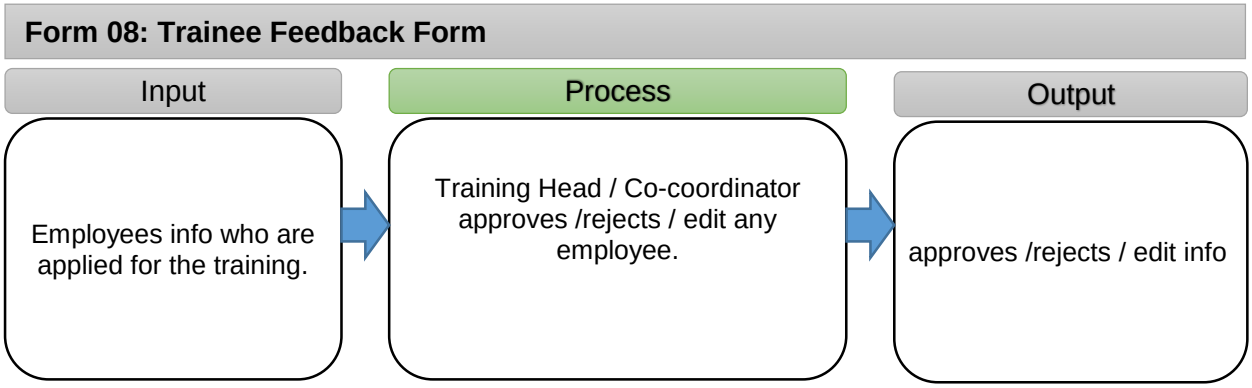


Figure 30: Mockup for Trainee Feedback



3.2.4 Trainee Evaluation

As per training schedule there may be classify evaluation into various ways. Based on the examination criteria trainee's outcome result will be saved into system and evaluate them.

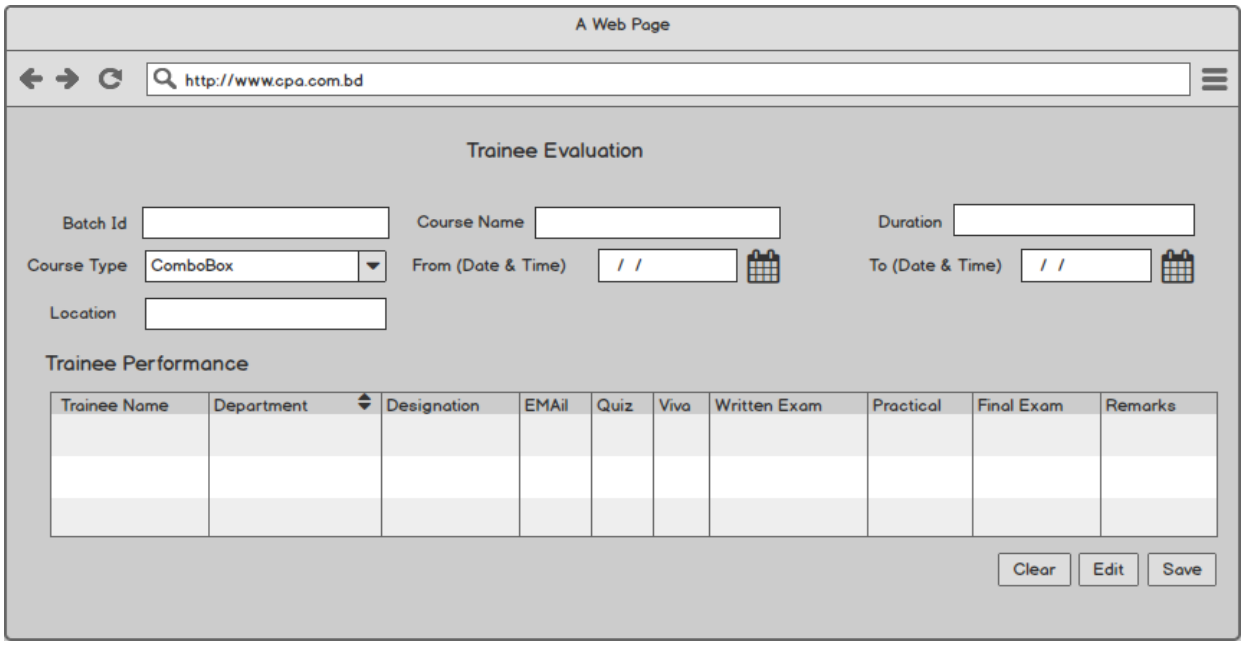
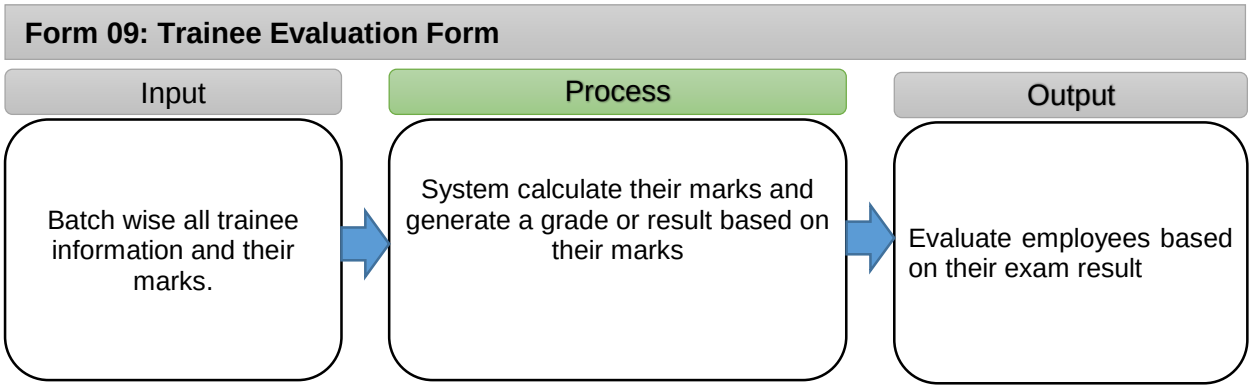


Figure 31: Mockup for Trainee Evaluation



3.3 Reports of Training Institute

- Department wise trainee information report.
- Designation wise training information report.
- Course wise training schedule.
- Batch wise training schedule.
- Date wise training schedule.
- Performance Assessment Report

4 Module: Library Management

We, CNS develop a proposed design for the Library Management module of CPA system.

The proposed module will be work on below listed ways;

- New Book Enlistment.
- Books reader Time management (Entry and exit).
- Register and provide Book for employee to read at library.
- Register and provide Book for employee to borrow to outside.
- Register and receive return Books.

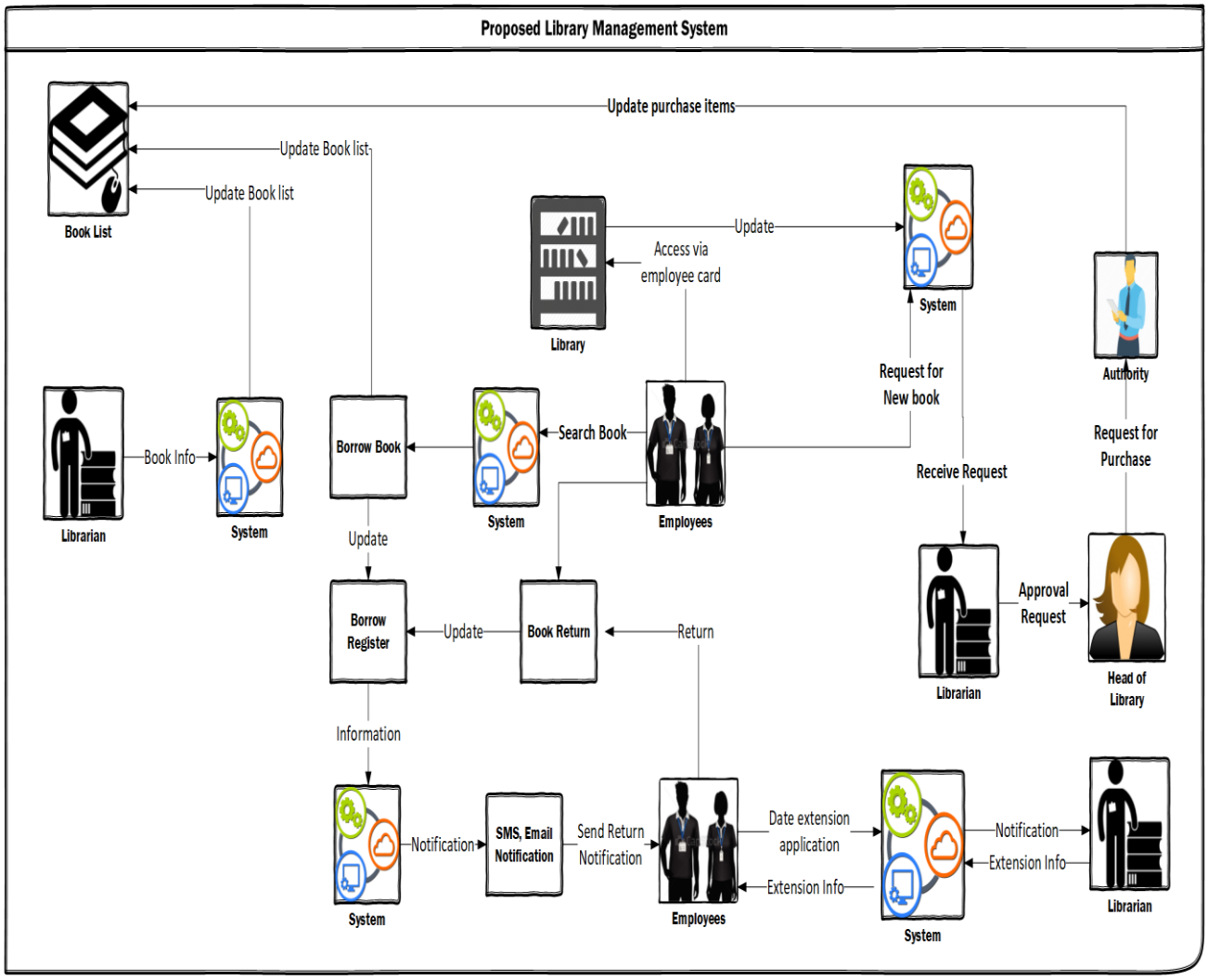


Figure 32: Library Management System

4.1 Module Relationship of Library Management

We CNS, develop an integrated system for CPA. Library Management module will use data from other modules and also provide data to another module for process.

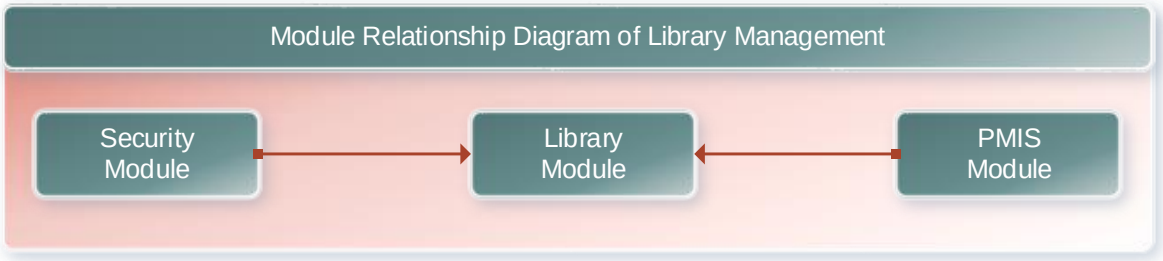


Figure 33: Module Relationship of Library Management

- Library module will use user related data from Security module.
- Library Module will use library visitors related data from PMIS module.

4.2 Business Process of Library Management

Library Management System consist with multiple business processes. These are:

- New Book Enlistment.
- Books reader Time management (Entry and exit).
- Register and provide Book for employee to read at library.
- Register and provide Book for employee to borrow to outside.
- Register and receive return Book.

4.2.1 Librarian Dashboard Management Process

Librarian play the key role of Central library. So he manages his work through his dashboard panel. From the dashboard panel librarian can manage/monitor all of his work. Register entry or exit time of visitor, read/return information register etc. may done from dashboard. Any type of query to find any item of central library can perform from librarian dashboard.

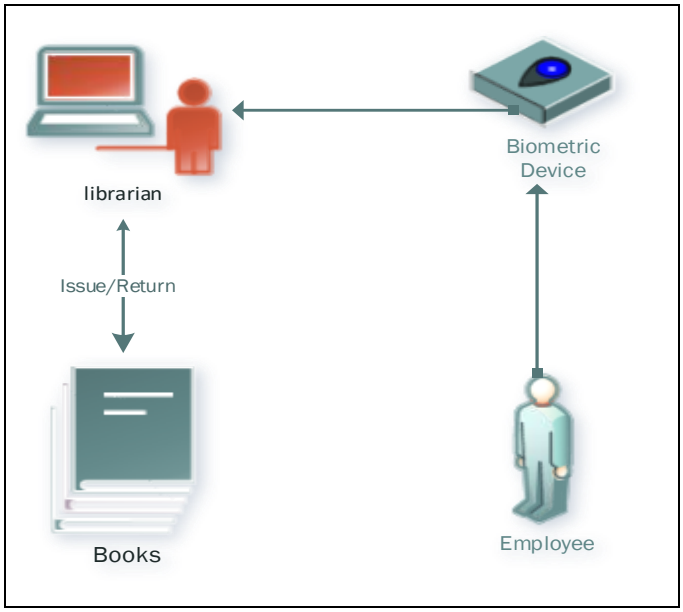


Figure 34: Use Case for Librarian Dashboard

Use Case ID:	**UC-LM-001**
Use Case Name:	**Librarian Dashboard**
Actors:	• Employee • Librarian • System
Trigger:	When CPA employees visit Central Library and borrow books or other items.
Description:	Employees entry and exit time of central library. Search items and register for reading information maintain by system.
Preconditions:	● Reader must be CPA Employee.
Assumption:	● Provided valid inputs.
Goal:	To insert an employee's library, visit and reading information.
Normal Flow:	• Employee visit Central library to borrow, read or return items. • Select item category and register by librarian into system. • Librarian manage borrower & items borrow/return information. • Verify the information. • Submit information to the system.
Alternate Flow:	N/A
Failure:	● Connection Lost. ● Mandatory field missing.
Post conditions:	● Notifications about successful item borrow/return information insert. ● Employee entry & exit informstion, Item registry information will be available into system.
Frequency of Use:	Regularly
Business Rules/Constraints	● Item Category must be listed. ● Employee Information should be available to the system based on their employee Id..
Non Functional Requirements:	N/A
Reference:	N/A

4.2.1.1 Library Management Dashboard

Library visitors will be managed by this mockup. It is possible to insert & update reader's information from here.

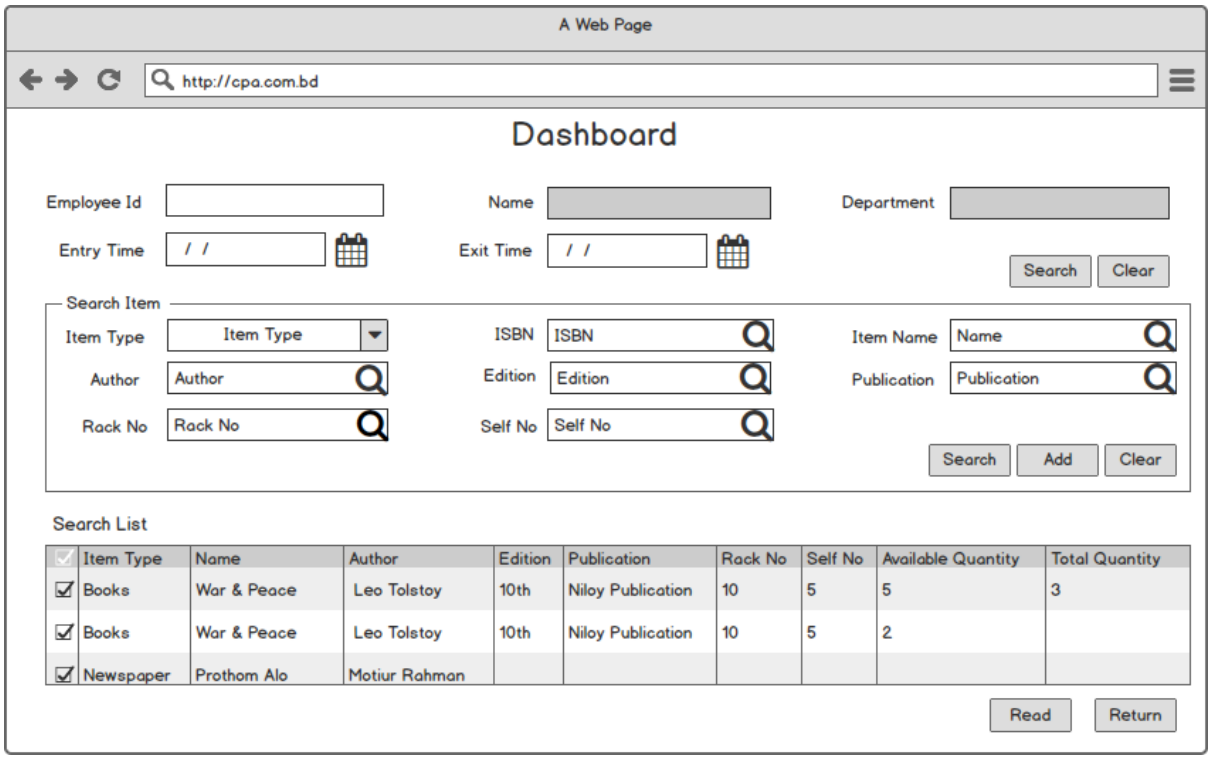


Figure 35: Mockup of Dashboard

4.2.1.2 New Item Enlistment

New Item Enlistment is one of the major service provided by Central Library Department. First library items should be categorized as Books, Journals, Newspapers and Magazines etc. New items will add as category wise. Authority will decide to purchase new items for library on the basis of requirements and request from employees and then item register enlist new books in the system.

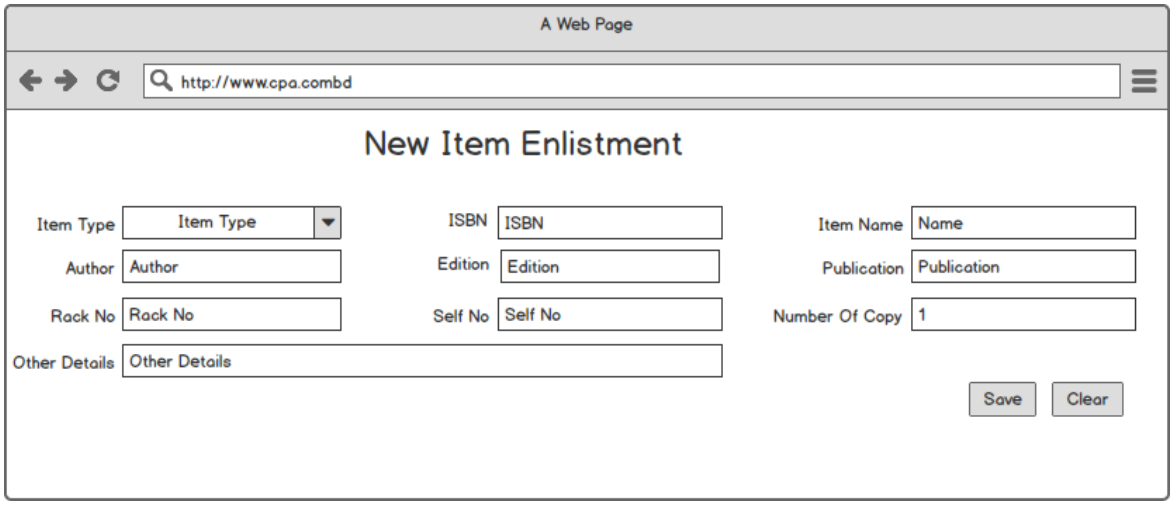


Figure 36: Mockup of New Item Enlistment

- Item type should be Books, Journals Newspapers and Magazines.
- ISBN Number Must be a unique identifier

4.2.1.3 Item Borrow & Return Information entry

Using this service system will manage and register borrower information, update item register (quantity of the item), borrow type etc. System identify borrowers using employee identification number. System will send automatic notification for book return to the borrower by SMS & email. System will send notification to borrower if he/she can fail to return the books on time. Item return information update and adjust inventory of library.

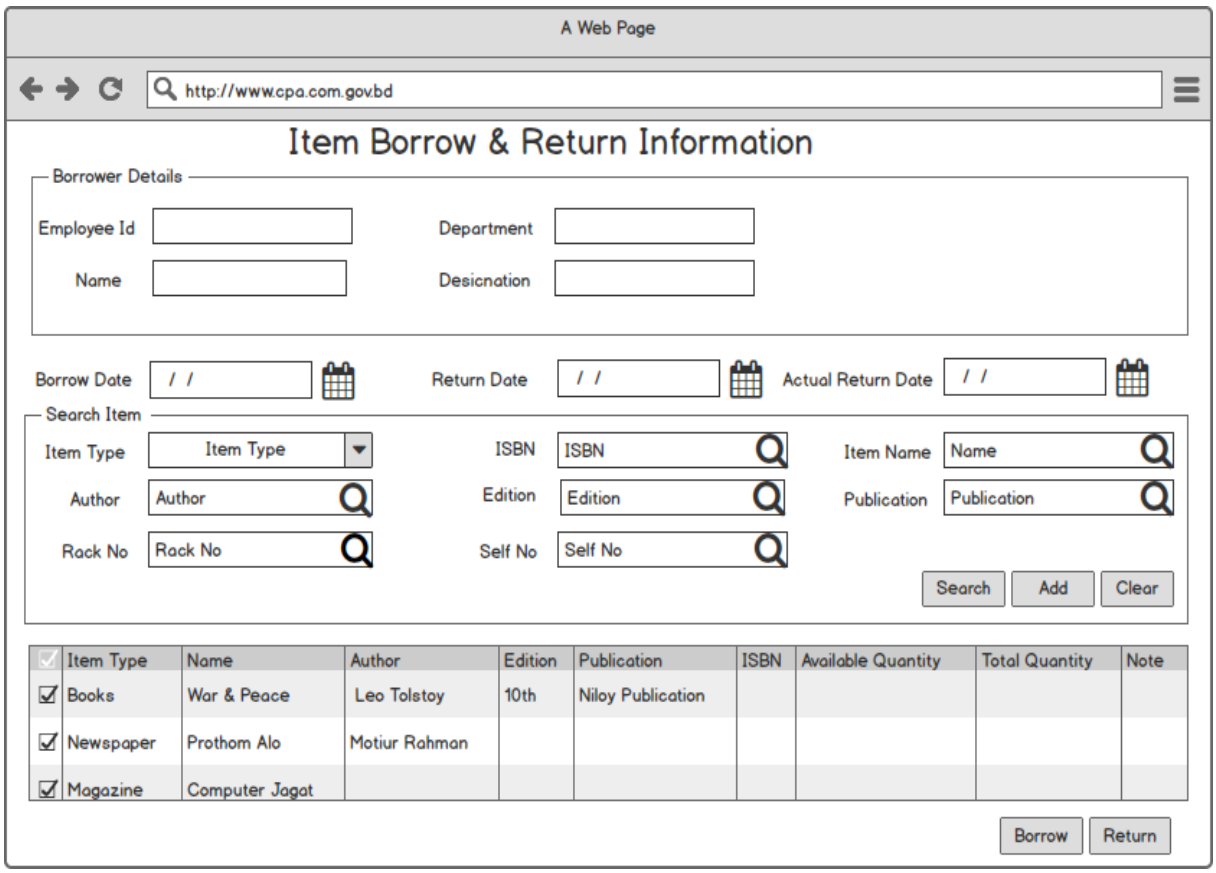


Figure 37: Mockup for Item Borrow Information

- Employee details should be populated from PMIS based on employee Id.
- Item borrow information should be stored and populated based on employee id.

4.2.1.4 Request for New Items

As per requirements Employee/Reader of the Central Library can request for new items via his or her dashboard. This request received by librarian. Librarian send the request to HOD for approval the request. HOD send the purchase requisition to the authority and new item is purchase after approval of authority. Item register will be update for the new purchased items.

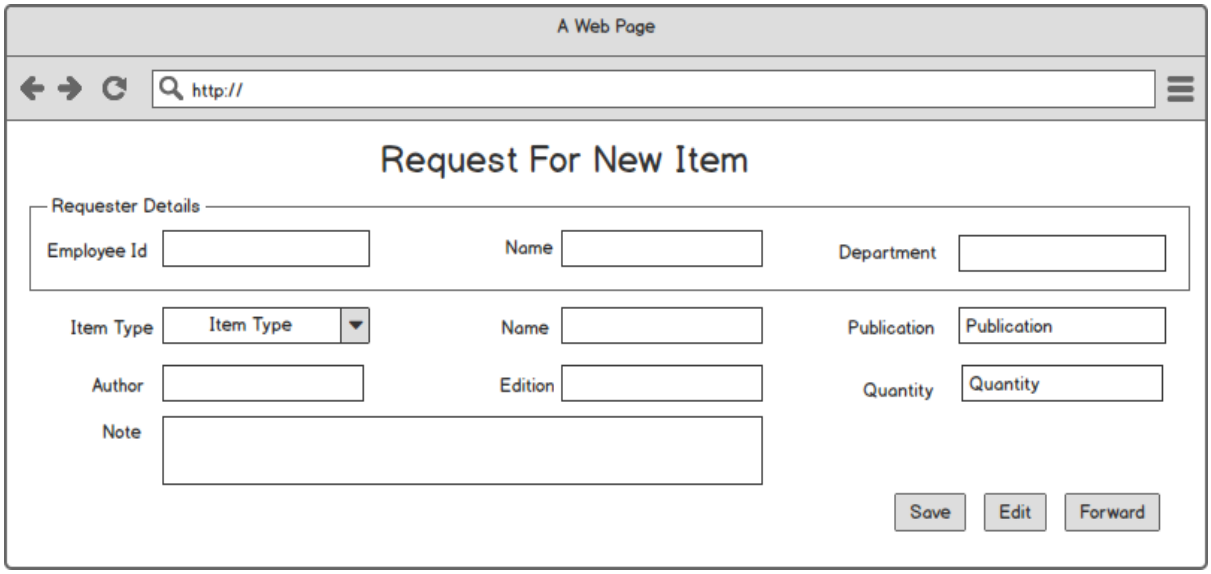


Figure 7: Mockup for New Item Request form

- If there need any argent purchase employee should write down in note section.
- Item type should be Books, journal, magazine or newspaper

4.2.1.5 Purchase Request Details for new items

Librarian receive request for item (Books, journals, magazine etc.) from employees. Librarian may update quantity of items and send it to Head of department.

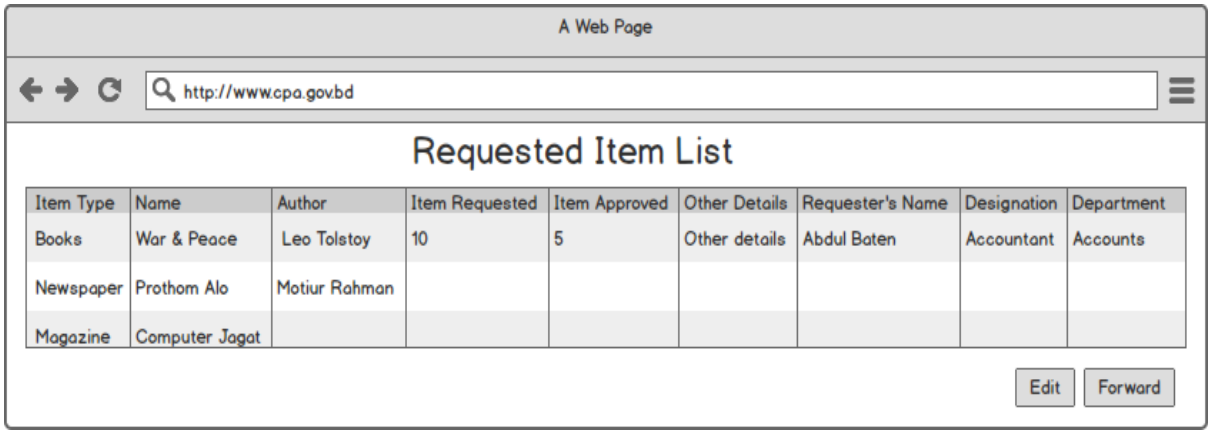


Figure 38:Mockup for Purchase Request Details

4.2.1.6 Reports of Library Management System

Library Management System important reports are-

- Date wise visitors list
- Date wise Borrower list
- List of borrower which are not return books on due time
- List of books are not return in due time.
- Item category wise total item list.
- Item stock (available items and outside from library items represent separately)

5 Module: Board Decision Computerization

We, CNS develop a proposed design for Board decision computerization module of CPA system.

The proposed module will be work on below listed ways;

- Secretary will generate board meeting event based on chairman approval
- System will require meeting agenda, participants, schedule, and location information
- System will send meeting invitation to proposed participants via SMS/Email/Employee Dash board.
- System will update the appointment/Schedule of CPA Chairman
- After completion of meeting, Secretary will update the meeting information and upload required files to system as like Meeting Minutes, Attendance list etc.
- Secretary also generate am e-File about the board meeting decision.

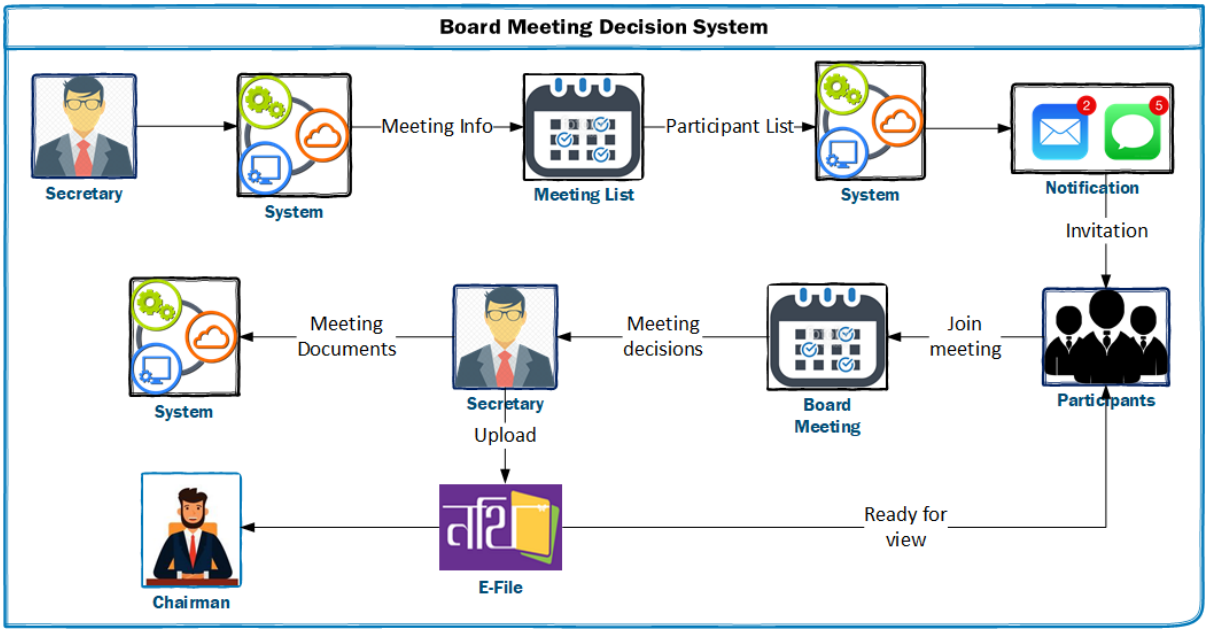


Figure 39: Board Meeting System

5.1 Module Relationship of Board Decision Computerization

We CNS, develop an integrated system for CPA. Board Meeting Computerization module will use data from other modules and also provide data to another module for process.

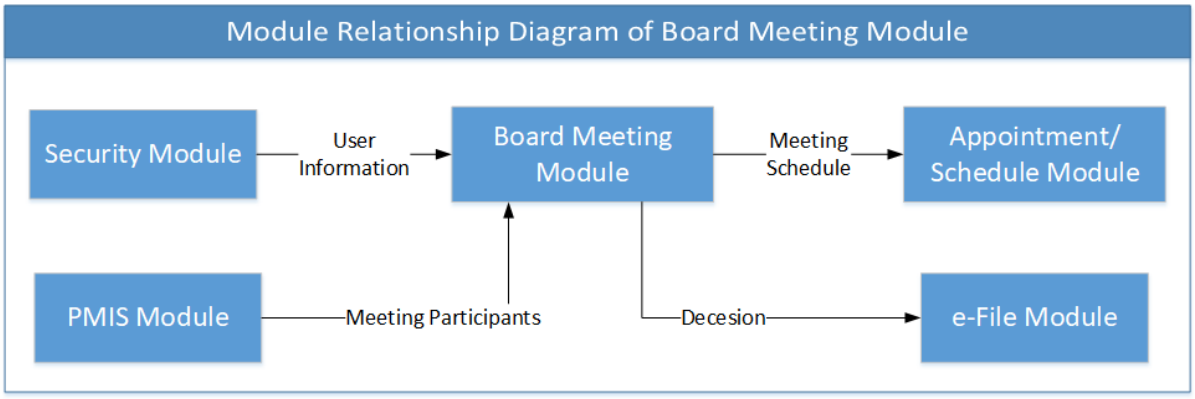


Figure 40: Module Relationship of Board Meeting System

- Board Decision module will use user related data from Security module
- Board Decision module will use participant related information from PMIS Module
- This module will provide meeting information to Appointment/Schedule module to update CPA Chairman schedule.
- This module will provide meeting decision to e-File module.

5.2 Business Process of Board Decision

Board Decision consist a single business processes i.e. Board Meeting management

5.2.1 Board Meeting Process

Due to digitalization of Board Decision system, CPA needs to log entire board meeting and decision.

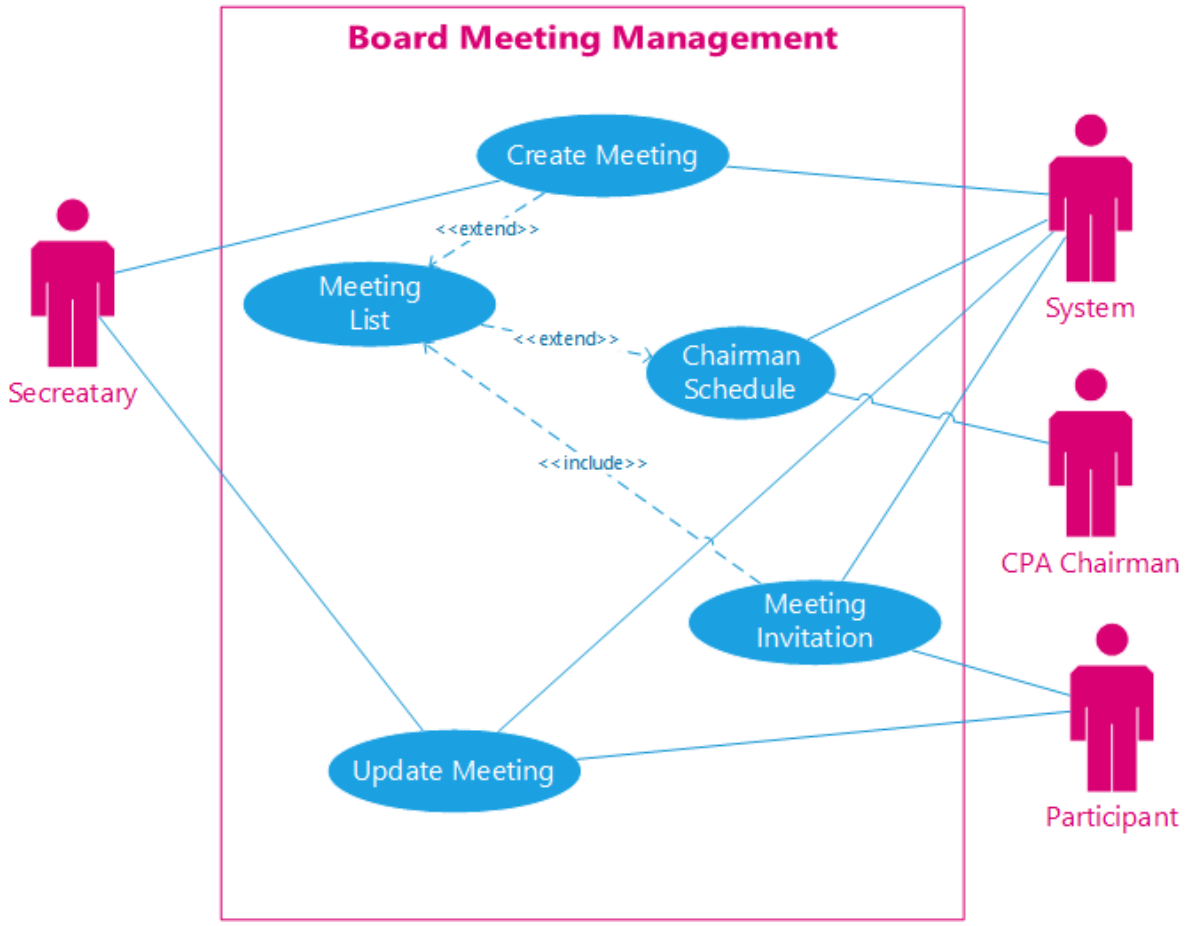


Figure 41: Use Case for Board Meeting

Use Case ID:	**UC-BM-001**
Use Case Name:	**Board Meeting**
Actors:	• Secretary • System • CPA Chairman • Participant
Trigger:	When secretary intends to create or update a board meeting information to the system.
Description:	The functionality “Board Meeting” facilitates to create a new board meeting and update meeting decision to the system.
Preconditions:	• User must have landed on CPA system • Board Meeting should be approved by CPA Chairman
Assumption:	• Provided valid inputs.
Goal:	To create and update board meeting with decision.
Normal Flow:	• Insert Meeting with subject, locatin, schdule and participoants information. • Verify the information. • Submit information to the system.
Alternate Flow:	N/A
Failure:	• Connection Lost. • Mandatory field missing.

Post conditions:	• Notifications about successful board meeting create or update. • Configured board meeting will be available to register. • Participants will get notification about board meeting.
Frequency of Use:	Occasionally
Business Rules/Constraints	• Board Meeting must be approved by CPA Chairman.
Non Functional Requirements:	N/A
Reference:	N/A

5.2.1.1 Board Meeting Setup

It needs to setup a board meeting to the system to track the meeting information. Also, the meeting information will also be available to the calendar of CPA chairman.

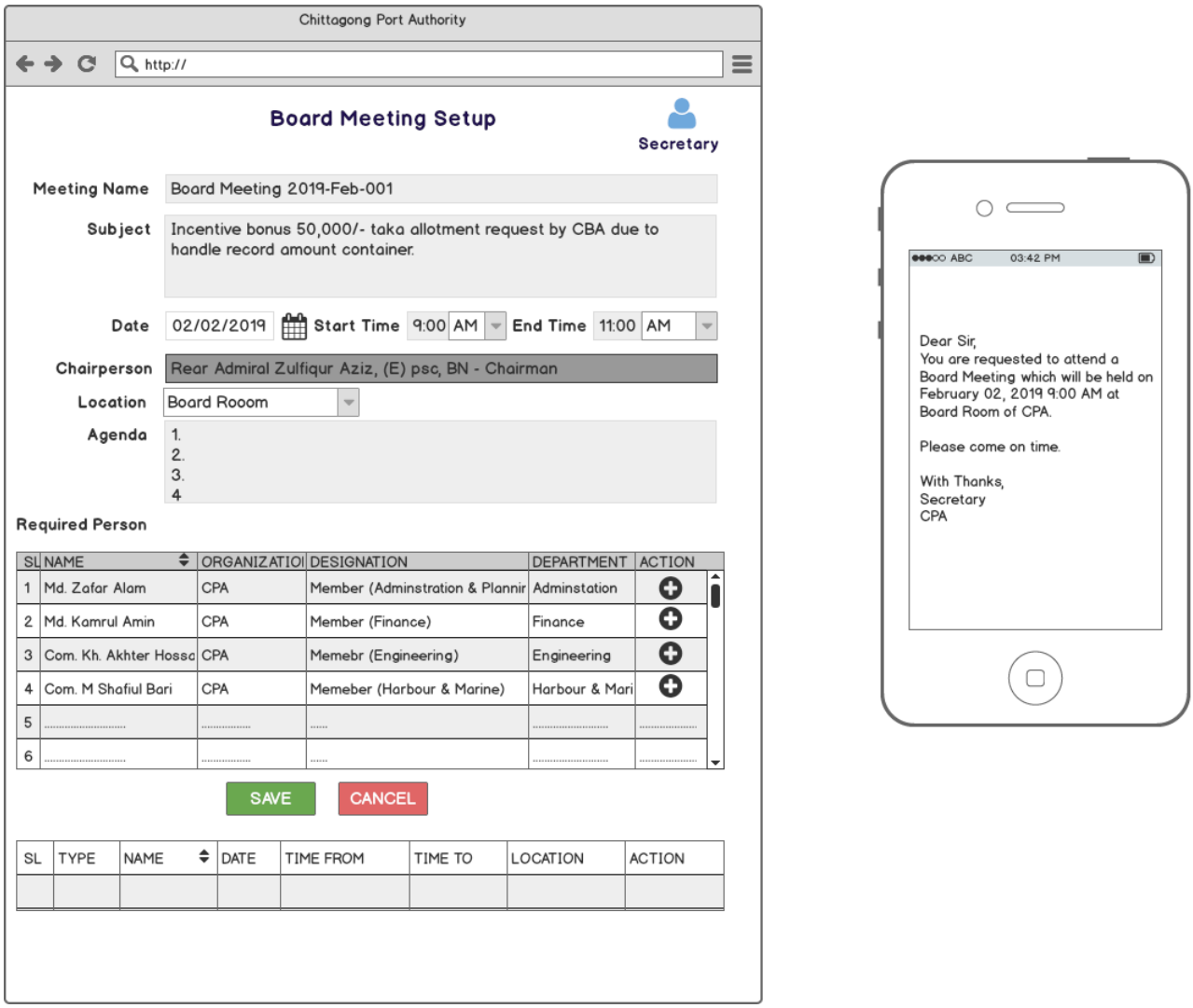


Figure 42: Mockup for Board Meeting Setup

- Meeting name & subject should insert to the system.
- Meeting venue and schedule should be defined; it will update the appointment/schedule of CPA Chairman.
- System will send a SMS/Email to selected participants.

5.2.1.2 CPA Chairman Appointment/Schedule Calendar

System will generate update the generated board meeting to the appointment/schedule calendar of CPA Chairman.

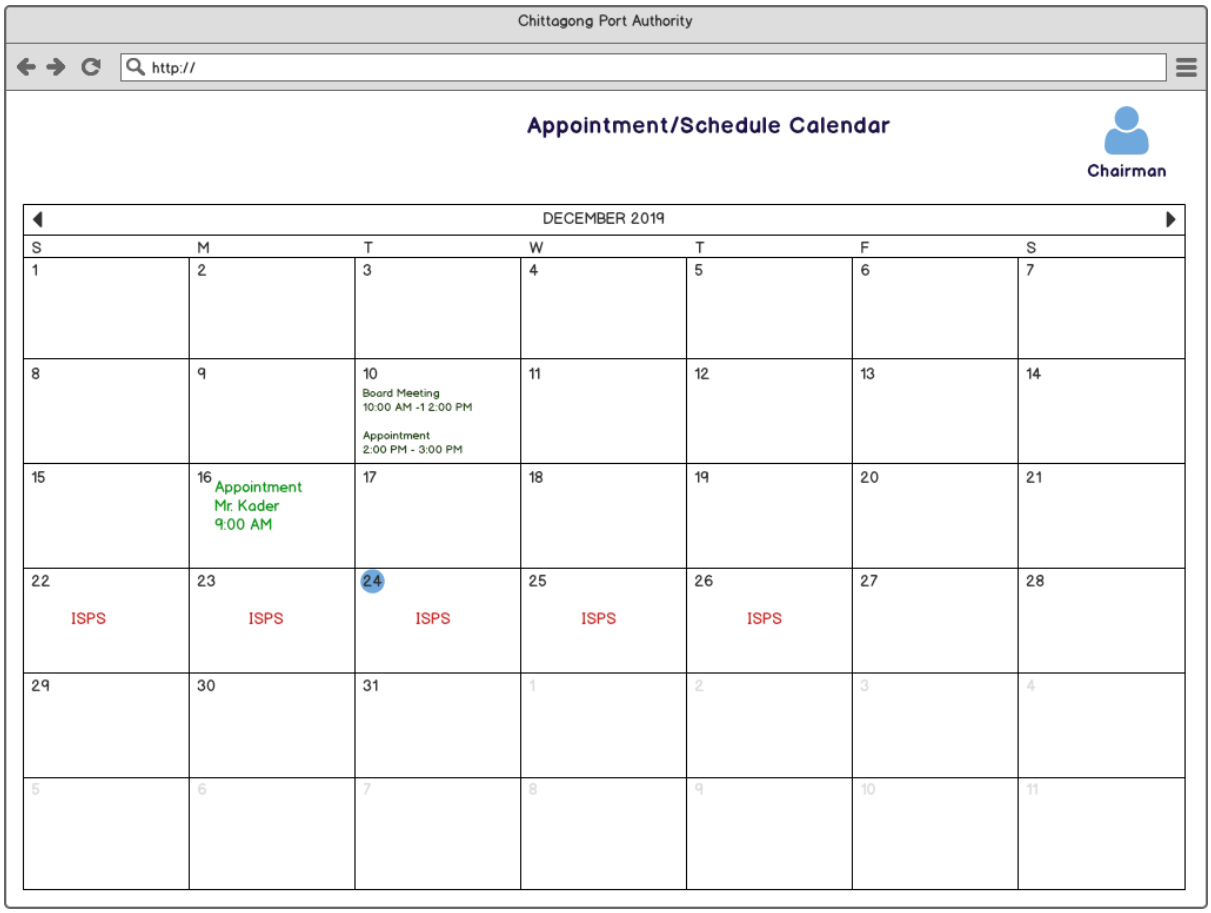


Figure 43: Mockup for CPA Chairman Appointment/Schedule Calendar

5.2.1.3 Board Meeting Decision

After completion of a meeting, it needs to update the meeting status with meeting discussion and decisions for future reference.

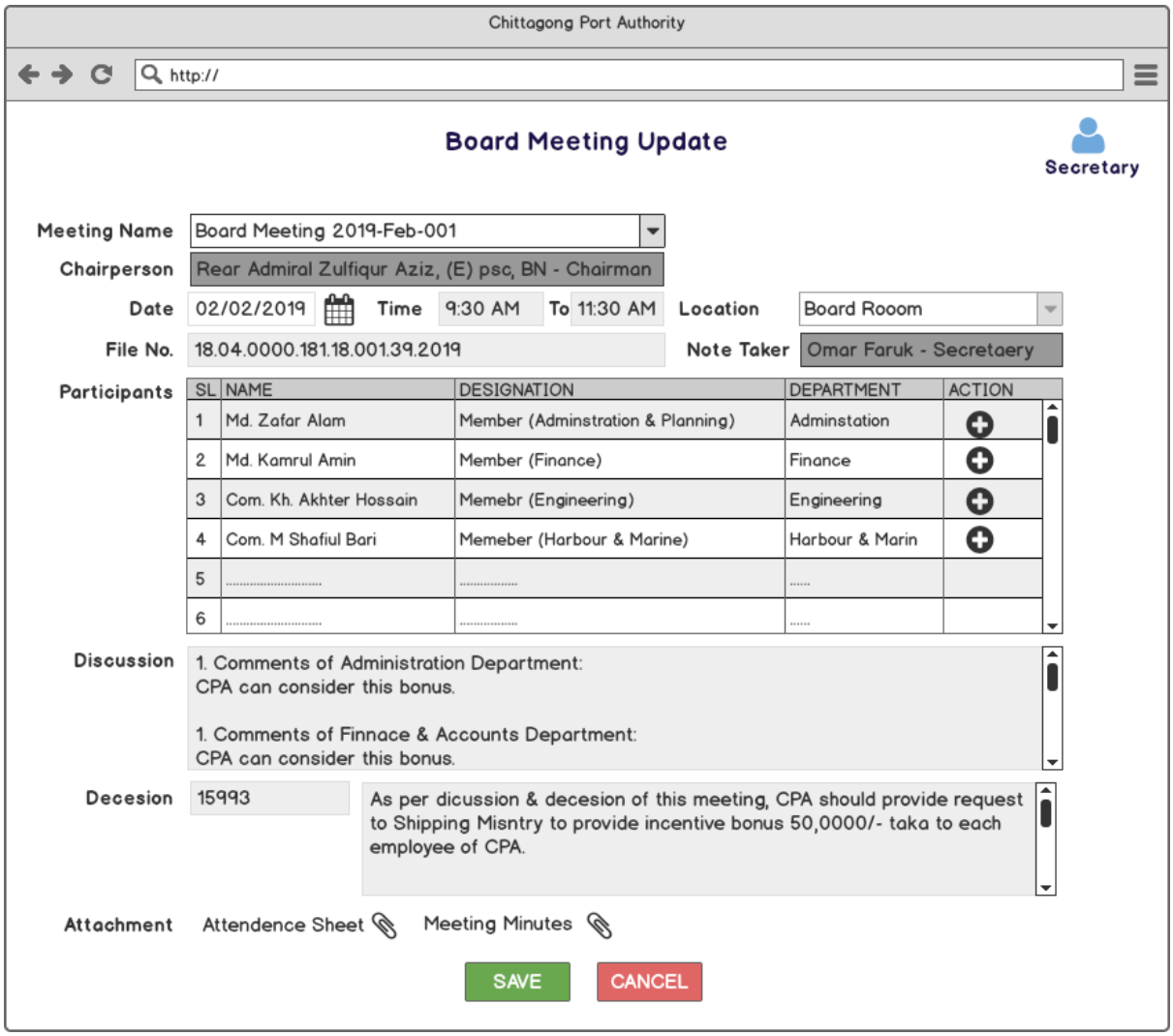


Figure 44: Mockup for Board Meeting Decision

- File Number and Note taker information should insert here
- Attendance list should be updated here.
- Decision number and decision details should insert here.
- User will upload the attendance sheet and meeting minutes here for future reference.

5.2.2 Board Decision Module Reports

We have listed some reports for Board Decision module.

5.2.2.1 Board Meeting List Report

System will provide facility to generate board meeting list based on multiple criterion. These are:

- Meeting Subject & Schedule

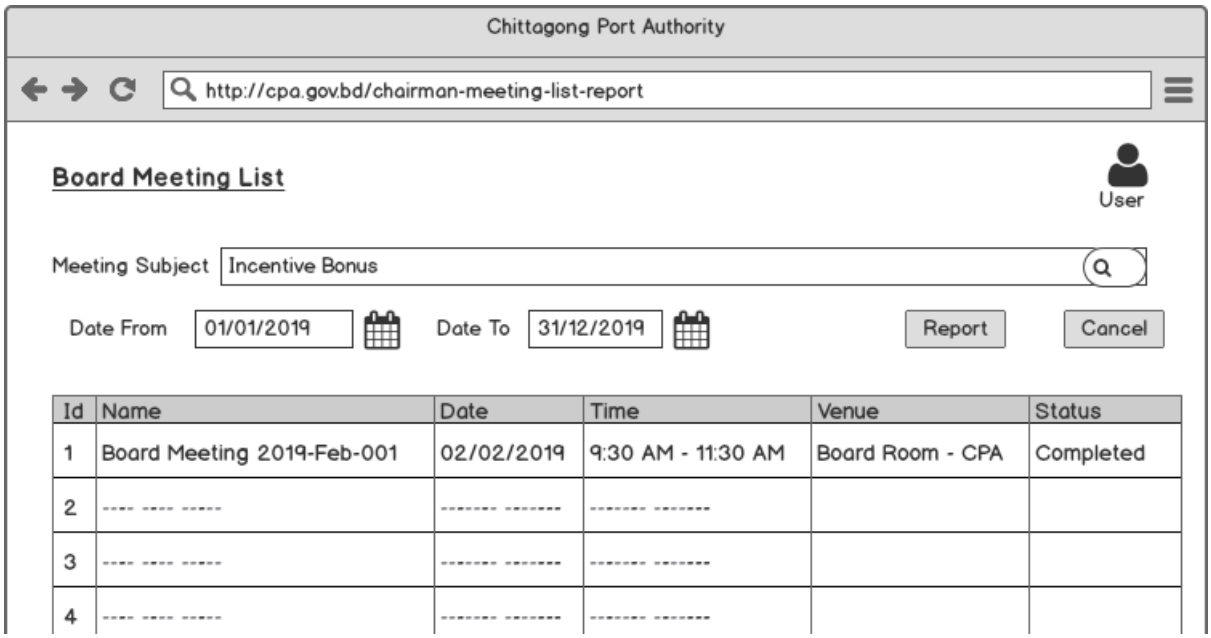


Figure 45: Mockup for Board Meeting List Report

5.2.2.2 Board Meeting Decision Report

System will provide facility to generate board meeting decision list based on criterion. These are:

- Meeting Name

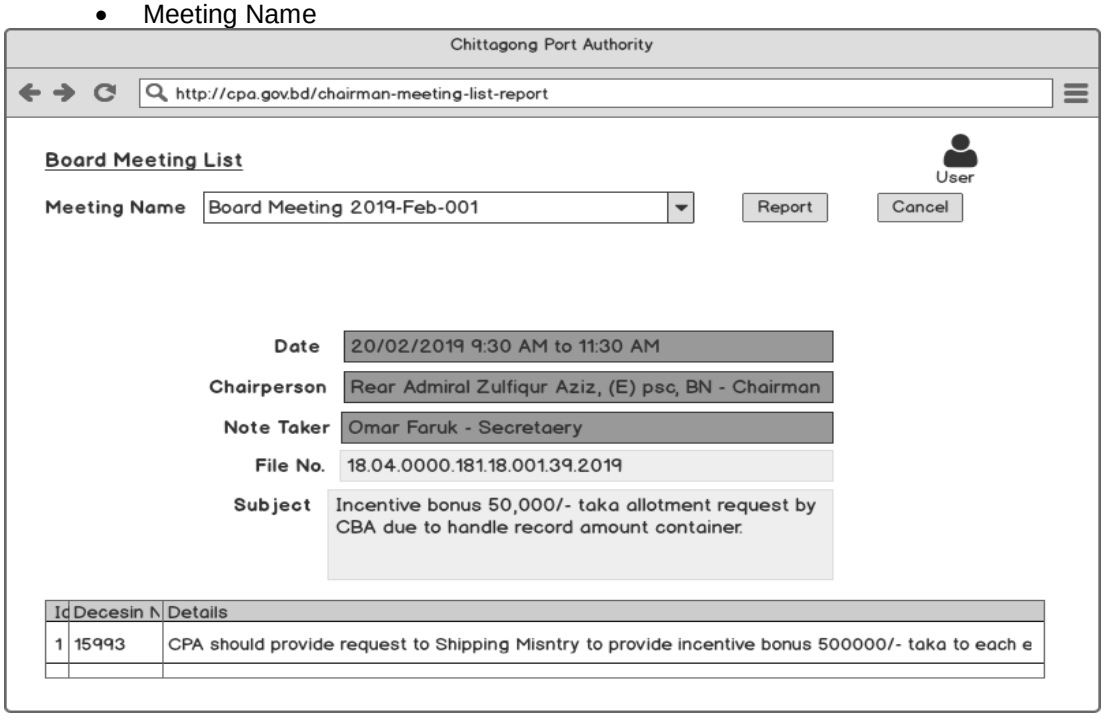


Figure 46: Mockup for Board Meeting List Report

6 Module: Appointment/Schedule Management System

We, CNS develop a proposed design for Appointment/Schedule Management module of CPA system.

The proposed module will be work on below listed ways;

- Secretary generates schedule for predefined appointments/Meetings/Visits of CPA chairman.
- High official and stakeholders list will be available to the system
- Type wise Meeting list will be available to the system
- CPA Officials can send appointment/meeting request from their own dashboard
- Stakeholders will send appointment/meeting request to secretary.
- Secretary can review the requested items.
- Secretary will confirm the appointment/meeting after taking approval from CPA Chairman
- Requester will get notification via email and SMS with meeting venue and schedule
- System will update the appointment/meeting/visit schedule
- Schedule will also be available to Chairman and PA to Chairman
- CPA Chairman will be notified via Dashboard, SMS, and email before the appointment.
- CPA Chairman and Secretary can change the appointment (as like reschedule, cancel etc.) based on priority work.
- Requester will get notification via SMS/email for any change.
- System will update the schedule list based on completion.

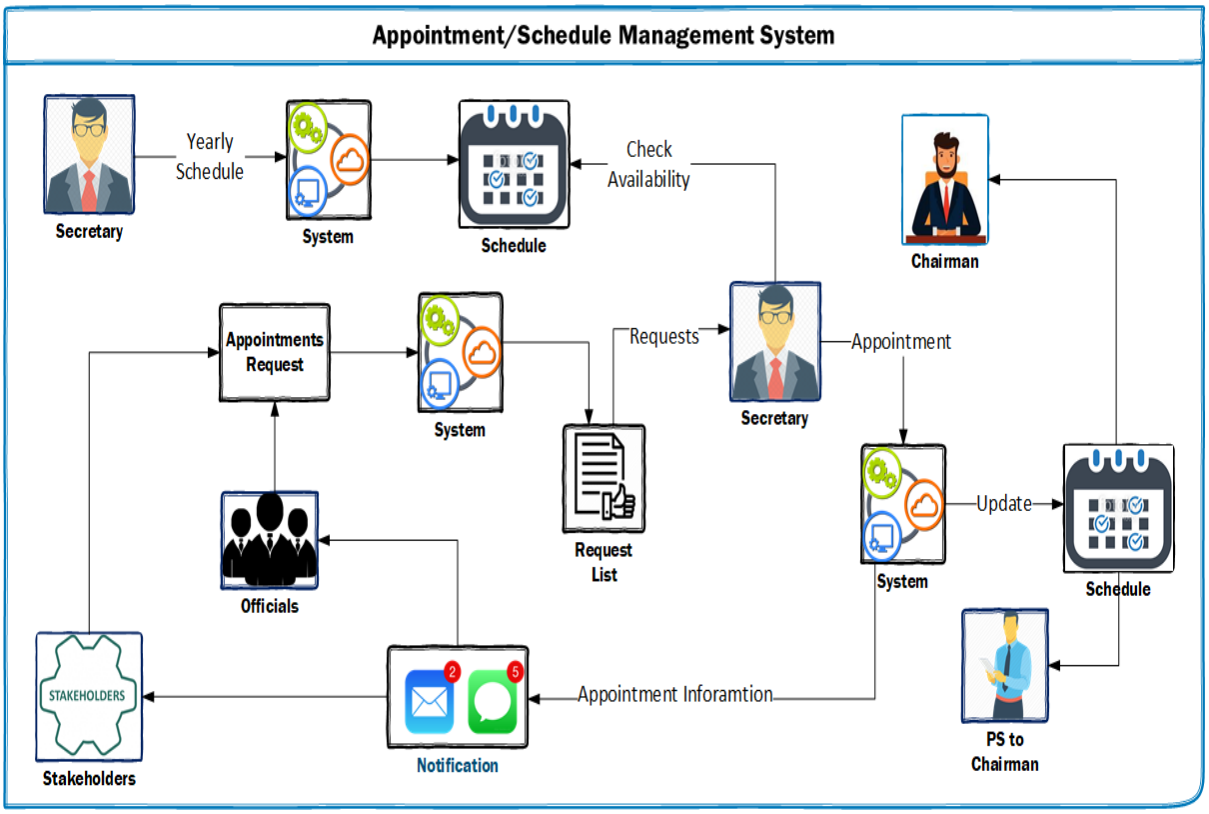


Figure 47: Appointment/Schedule Management System

6.1 Module Relationship of Appointment/Schedule Management

We CNS, develop an integrated system for CPA. Appointment/Schedule Management module will use data from other modules and also provide data to another module for process.

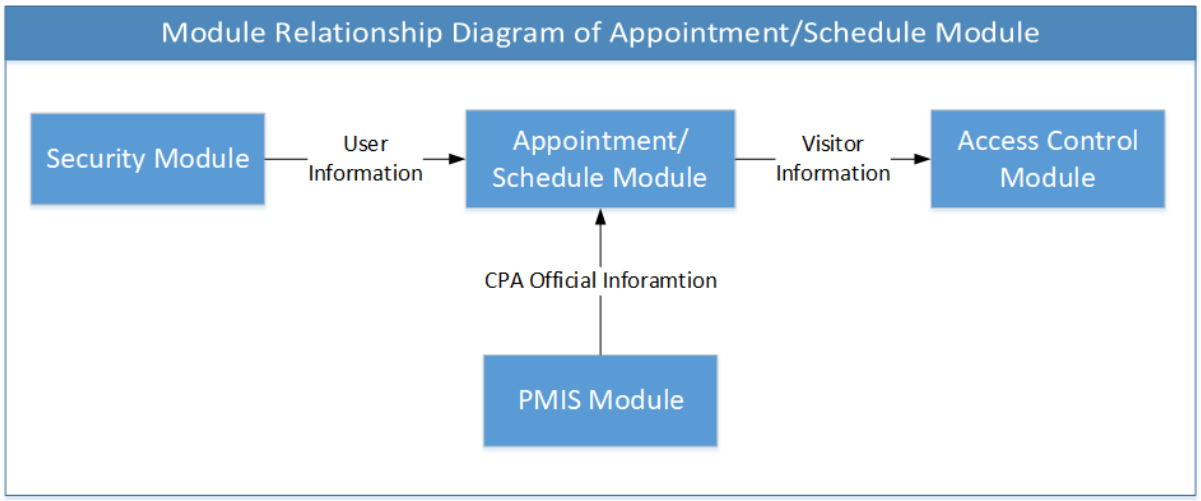


Figure 48: Module Relationship of Appointment/Schedule Management

- Appointment/Schedule module will use user related data from Security module
- Appointment/Schedule module will use CPA official related information from PMIS Module
- This module will provide visitor information to Access Control module to generate visitor card

6.2 Business Process of Appointment/Schedule Management

Appointment/Schedule Management System consist with multiple business processes. These are:

- Stakeholder Register
- Schedule Management
- Appointment Management

6.2.1 Stakeholder Register Process

Due to digitalization of Appointment/Schedule Management System, CPA needs to register entire stakeholders. Stakeholders agency also need to register to the system.

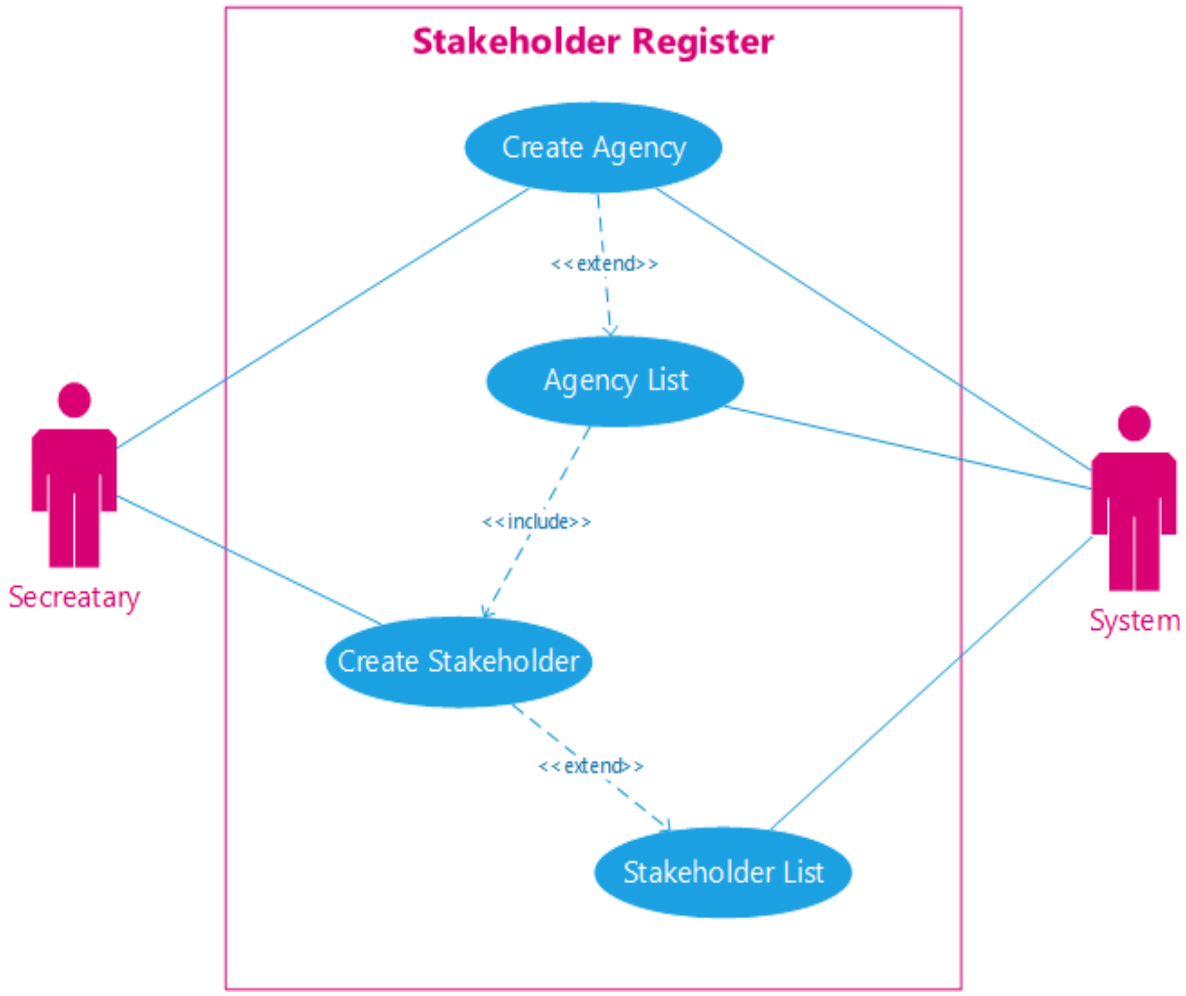


Figure 49: Use Case for Stakeholder Register

Use Case ID:	UC-AS-001
Use Case Name:	**Stakeholder Register**
Actors:	• Secretary • System
Trigger:	When secretary intends to insert or update any stakeholder information to the system.
Description:	The functionality “Stakeholder Register” facilitates to insert a new shareholder the system with agency, organization, and stakeholder designation; also update existing stakeholder information.
Preconditions:	● User must have landed on CPA system ● Equipment categories must be defined ● Vendor list must be available to the system
Assumption:	● Provided valid inputs.
Goal:	To insert an equipment information and update the equipment register.
Normal Flow:	• Insert eqipment id, order number and other relevant information. • Select equipment category and vendor. • Upload equipment related documents. • Verify the information. • Submit information to the system.
Alternate Flow:	N/A
Failure:	● Connection Lost. ● Mandatory field missing.
Post conditions:	● Notifications about successful equipment insert. ● Configured equipmemnt will be available to equipment register.
Frequency of Use:	Occasionally
Business Rules/Constraints	● Equipment must be arrived physically at CPA.
Non Functional Requirements:	N/A
Reference:	N/A

6.2.1.1 Agency Register

Appointment/Schedule management system will manage the agency information of stakeholders which managed by this mockup. It is possible to insert & update agency information from here.

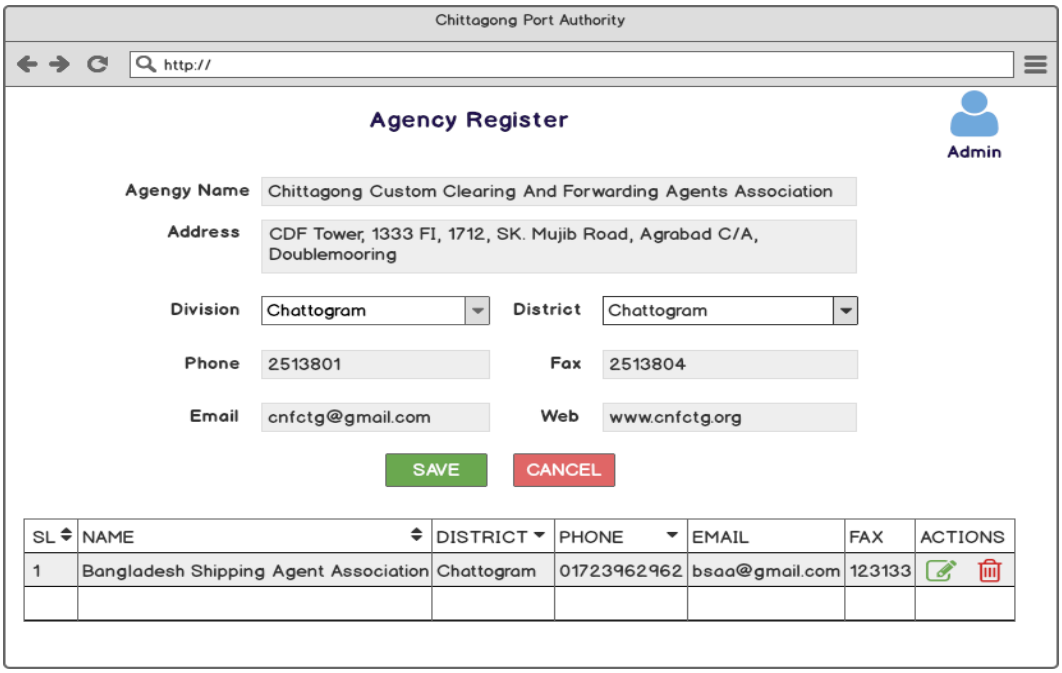


Figure 50: Mockup of Agency Information

6.2.1.2 Stakeholder Information

Stakeholder information will be managed by this mockup. It is possible to insert & update stakeholder information from here.

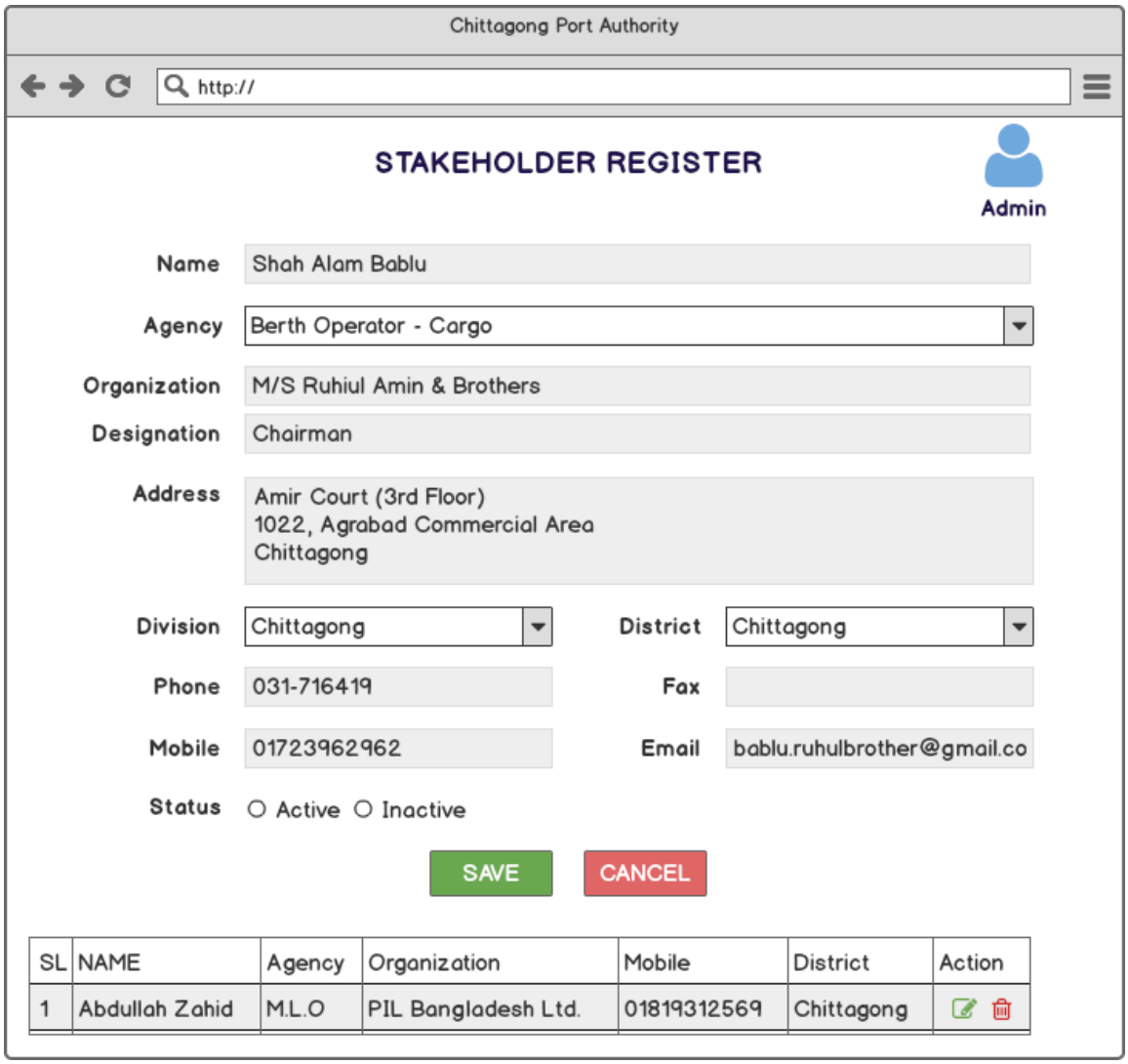


Figure 51: Mockup of Stakeholder Information

- Stakeholder status should be defined.

6.2.2 Schedule Management Process

CPA Chairman has some predefined visit and meeting schedule as like ISPS conference, Board Meeting etc. Secretary will prepare the predefined schedule to the system.

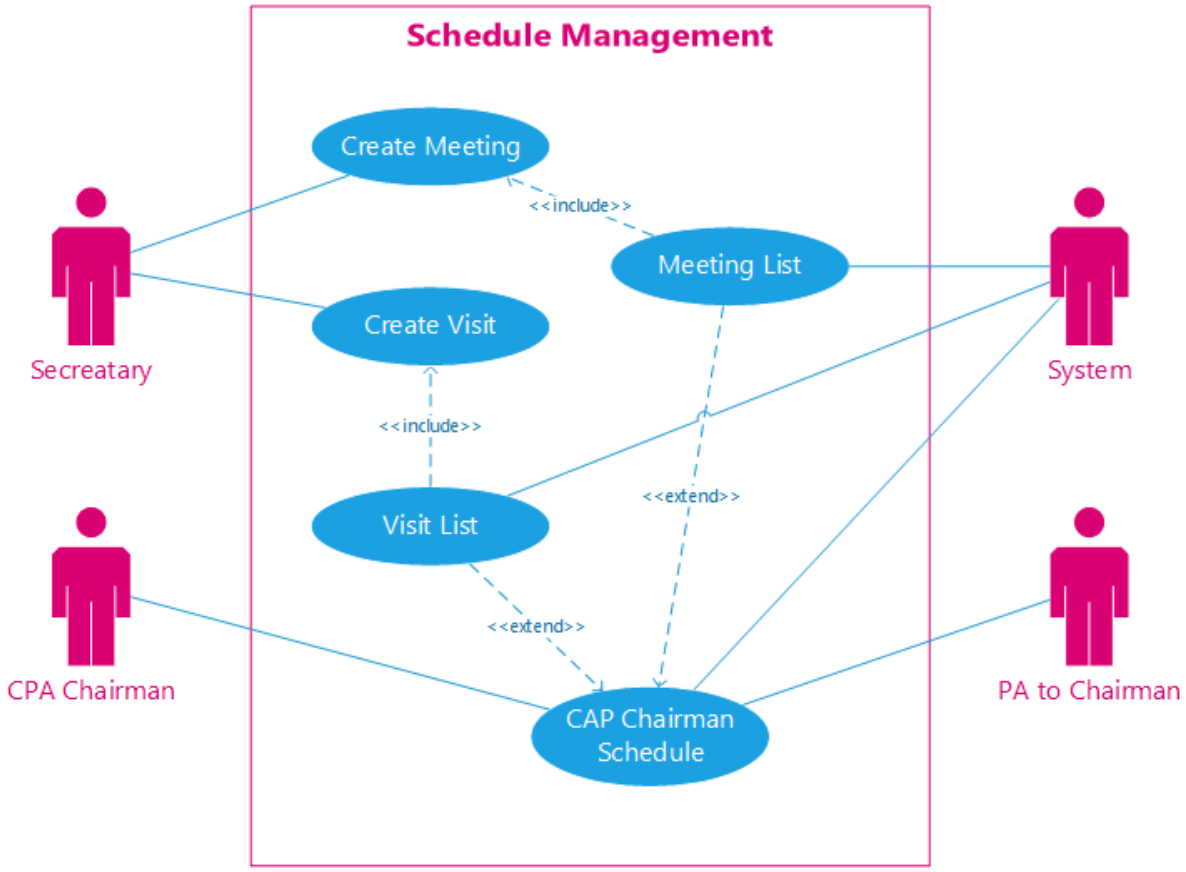


Figure 52: Use Case for Schedule Management

Use Case ID:	**UC-AS-002**
Use Case Name:	**Schedule Management**
Actors:	• Secretary • CPA Chairman • PS to Chairman • System
Trigger:	When Secretary intends to create schedule for CPA Chairman.
Description:	The functionality “Schedule Management” facilitates to insert/update predefined visit and meeting; also create new meeting for CPA chairman.
Preconditions:	• User must have landed on CPA system • Predefined visit and meeting list should be available. • New meeting request.
Assumption:	• Provided valid inputs.
Goal:	To insert or update a CPA Chairman visit and Meeting information.
Normal Flow:	• Insert Visit and Meeting information. • Select schdule and participants. • Verify the information. • Submit information to the system.
Alternate Flow:	N/A
Failure:	• Connection Lost. • Broken pages.

	• Mandatory field missing.
Post conditions:	• Meeting and Visit information will be available to the system.
Frequency of Use:	Occasionally
Business Rules/Constraints	• Requested meeting schedule should be empty.
Non Functional Requirements:	N/A
Reference:	N/A

6.2.2.1 Meeting Type Information

Meeting type needs to define to the system. The meeting types may be:

- General Meeting
- Board Meeting
- Visit
- Appointment etc.

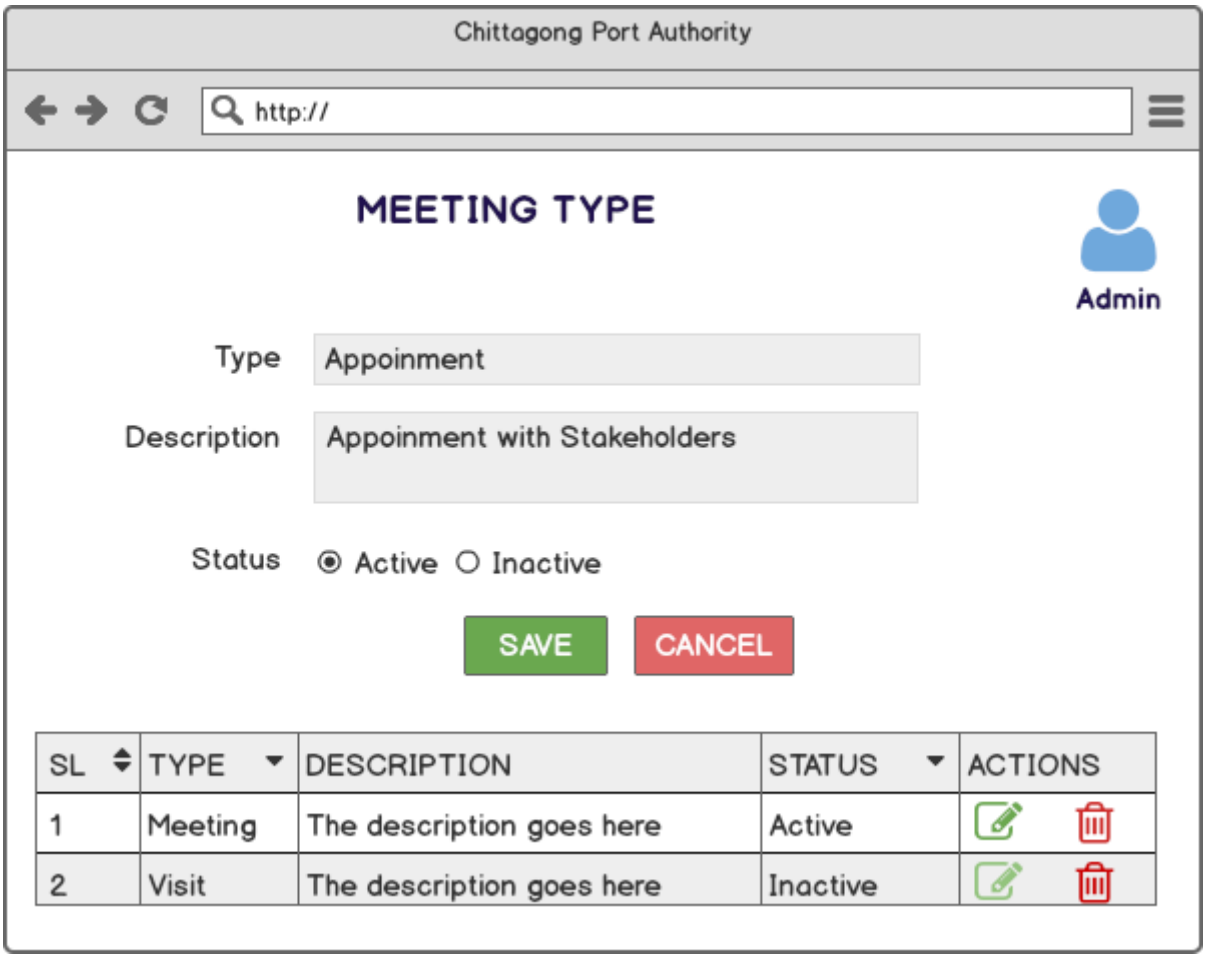


Figure 53: Mockup for Meeting Type Information

6.2.2.2 Chairman Visit Information

System will manage the visit information of CPA Chairman. Visit information will be available to the calendar of CPA Chairman.

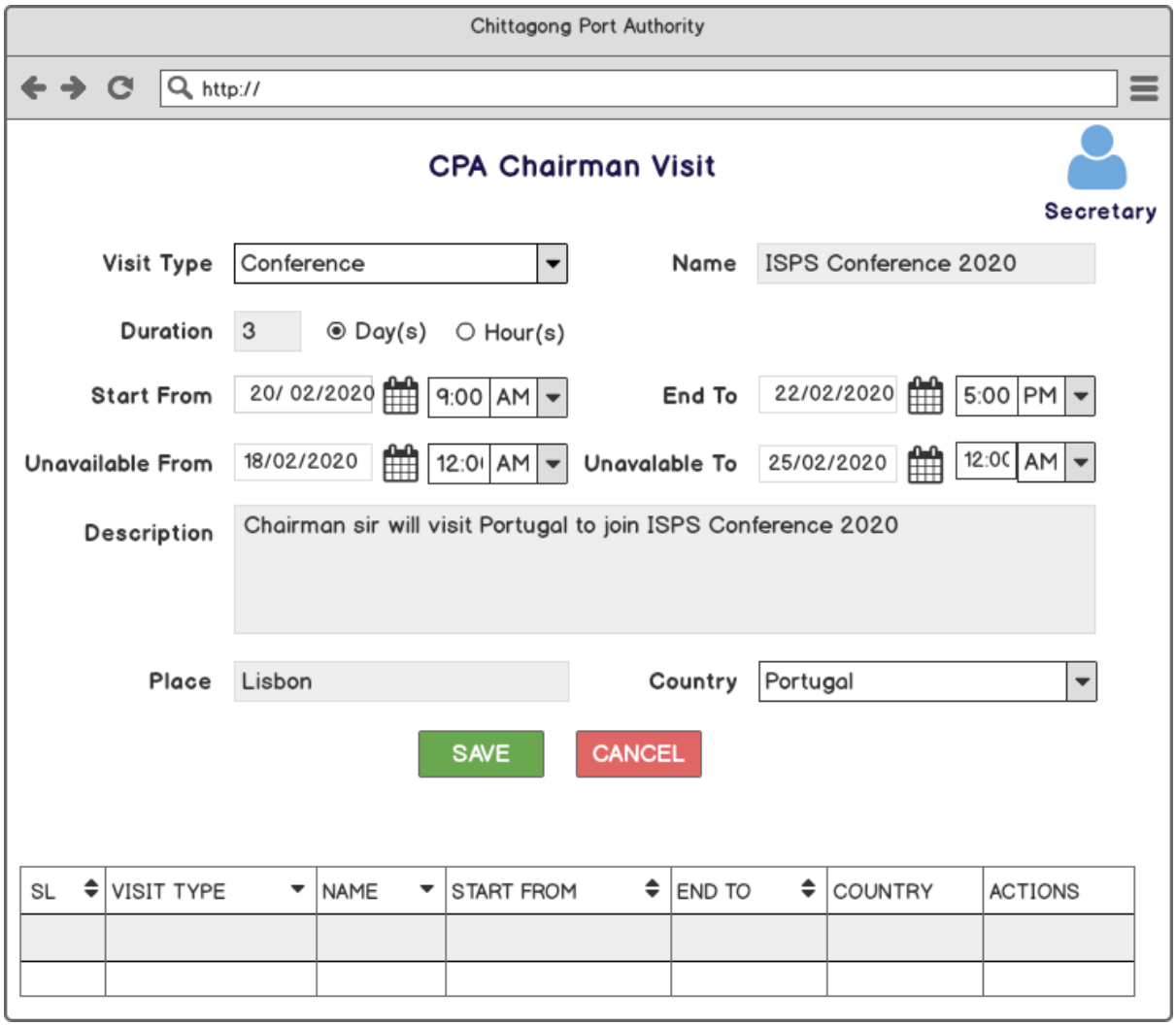


Figure 54: Mockup for CPA Chairman Visit Information

- Visit purpose should be inserted
- Visit date should be within range of Unavailable date
- Visit description, place and Country information need to insert.

6.2.2.3 Meeting Setup

It needs to setup a meeting to the system to track the meeting information. Also, the meeting information will also be available to the calendar of CPA chairman.

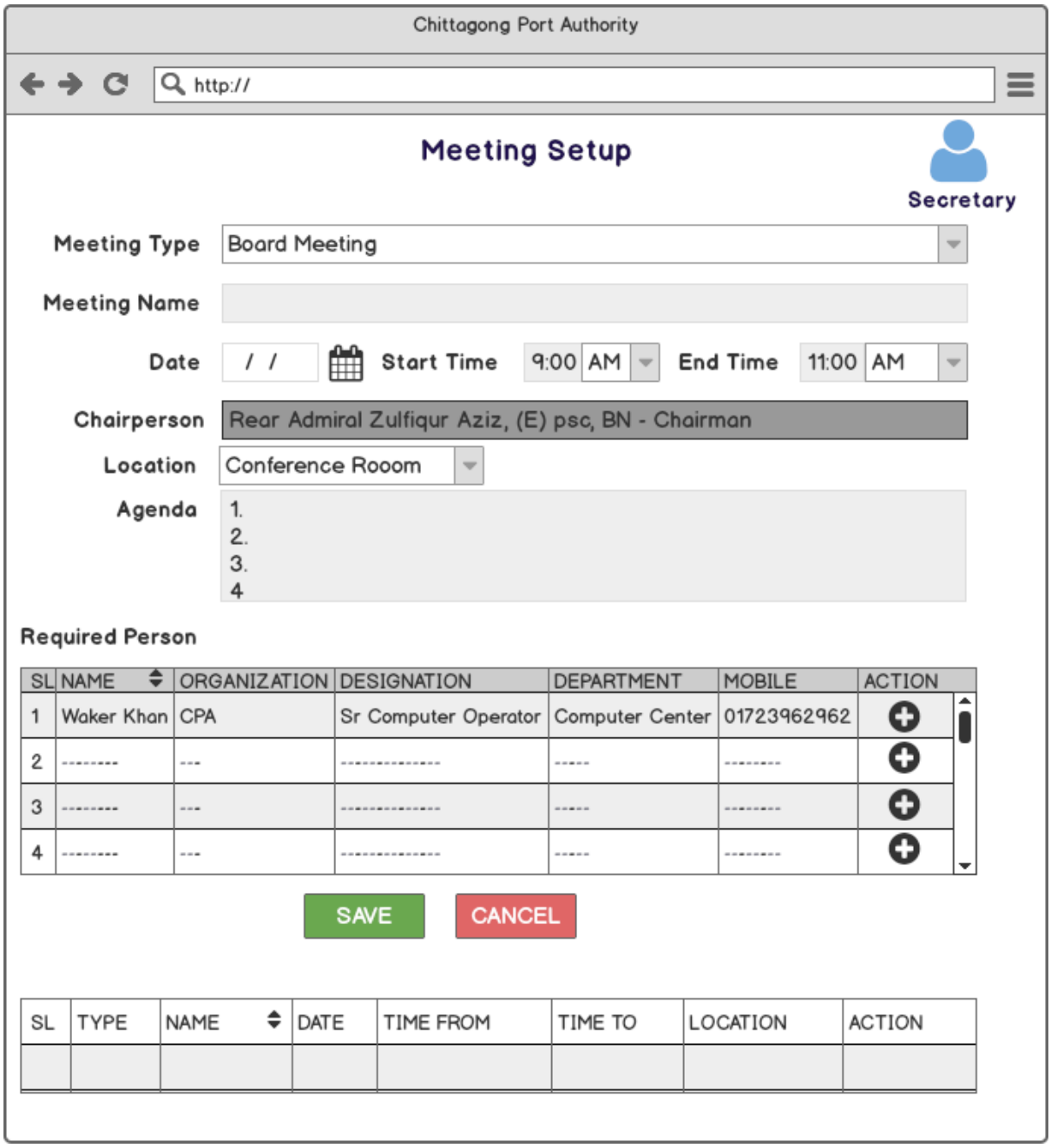


Figure 55: Mockup for Meeting Setup

- Meeting type should be selected here
- User will insert the meeting name schedule, location, and agenda
- Stakeholder and CPA official list will be available to select the meeting participants.
- System will send SMS/email notification to the participants about the meeting.

6.2.2.4 Meeting Update

After completion of a meeting, it needs to update the meeting status with meeting discussion and decisions for future reference.

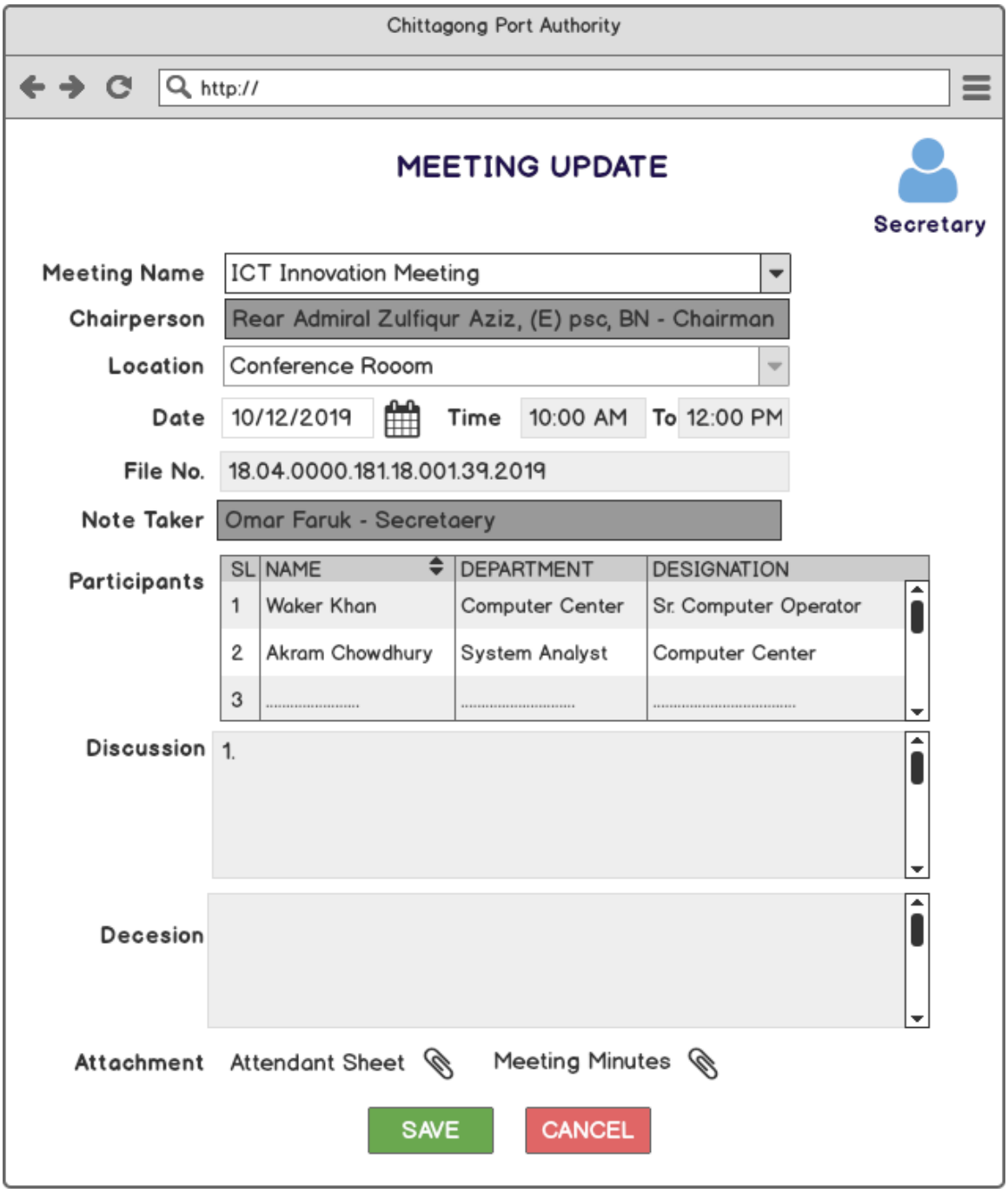


Figure 56: Mockup for Meeting update

- Meeting will be selected from meeting list.
- User will insert File Number, Discussion and decision details here.
- Attendance list will be updated here.
- Attendance sheet and meeting Minutes (Signed copy of meeting chairperson) should be attached to the system.

6.2.3 Appointment Management Process

It need to create appointment of CPA Chairman with Stakeholders & high officials CPA. Appointment will be managed by this system. Appointment requested will get notification about the confirmation of appointment.

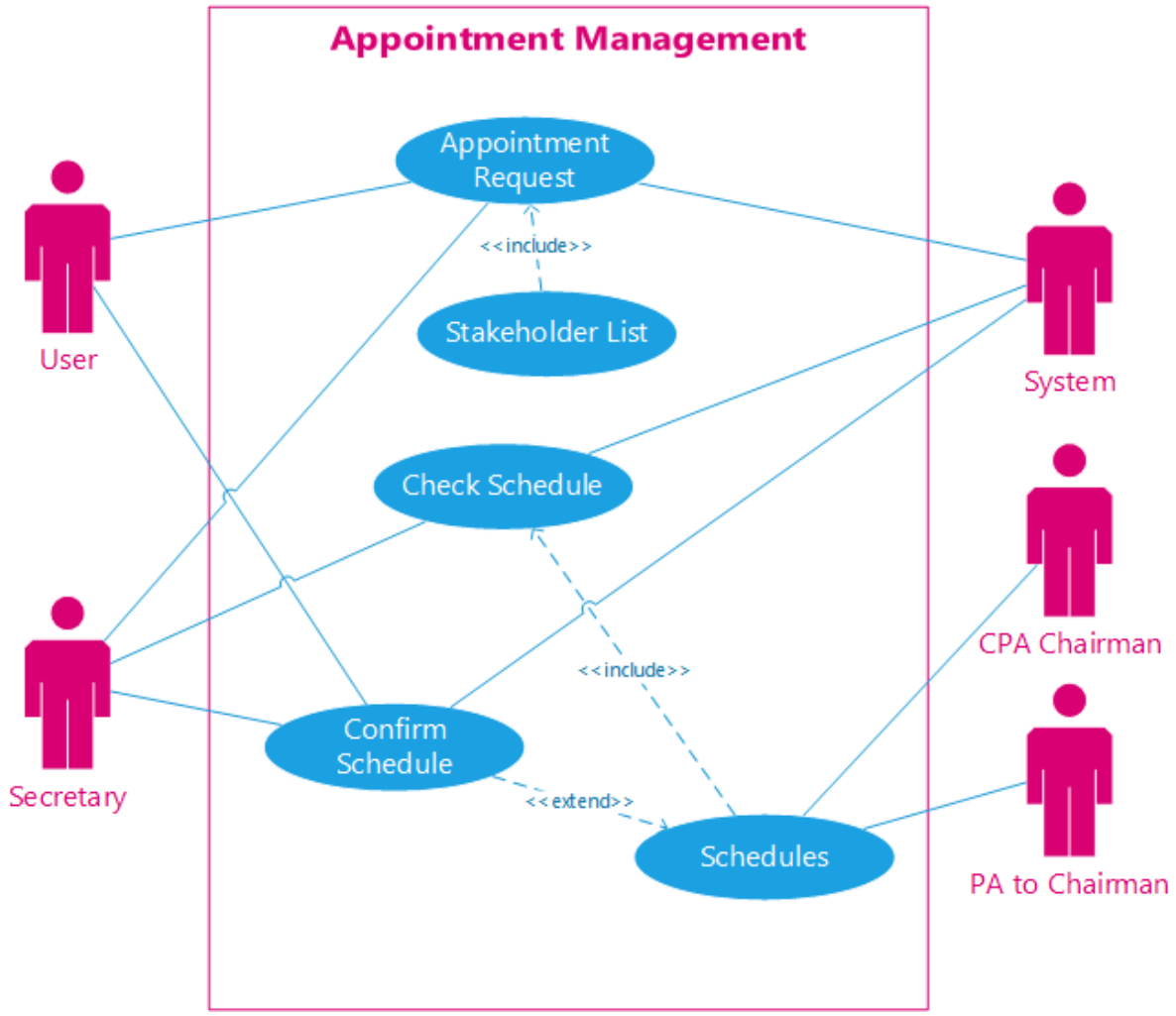


Figure 57: Use Case for Appointment Management

Use Case ID:	**UC-AS-003**
Use Case Name:	**Appointment Management**
Actors:	• User • Secretary • CPA Chairman • PA to Chairman • System
Trigger:	When user intends to make an appointment with CPA Chairman.
Description:	The functionality “Appointment Management” facilitates to request for an appointment with CPA Chairman; and confirmation of the appointment, also update the schedule calendar of CPA Chairman.
Preconditions:	● User must have landed on CPA system. ● Stakeholder list should be available to the system.
Assumption:	● Provided valid inputs.
Goal:	To prepare the schedule.
Normal Flow:	• Select a requester with request type. • Provide proposed date and approximat duration. • Insert the agenda of appointment. • Verify the information. • Submit information to the system.
Alternate Flow:	● Secretary can create an appointment to the system.
Failure:	● Connection Lost. ● Broken pages. ● Mandatory field missing.
Post conditions:	● Appointment Request should be stored to the system ● Appointment status will be updated ● Appointment requester will get update by SMS/email about status ● Appointment will be available to CPA Chairman appointment calendar ● CPA Chairman appointment will be available to PA to CPA Chairman
Frequency of Use:	Frequently
Business Rules/Constraints	● Proposed appointment time slot should be available.
Non Functional Requirements:	N/A
Reference:	**UC-AS-001, UC-AS-002**

6.2.3.1 Appointment/Meeting Request

CPA official can request appointment from their own dashboard. Otherwise stakeholders can request appointment via Secretary. This functionality will be managed by this mockup.

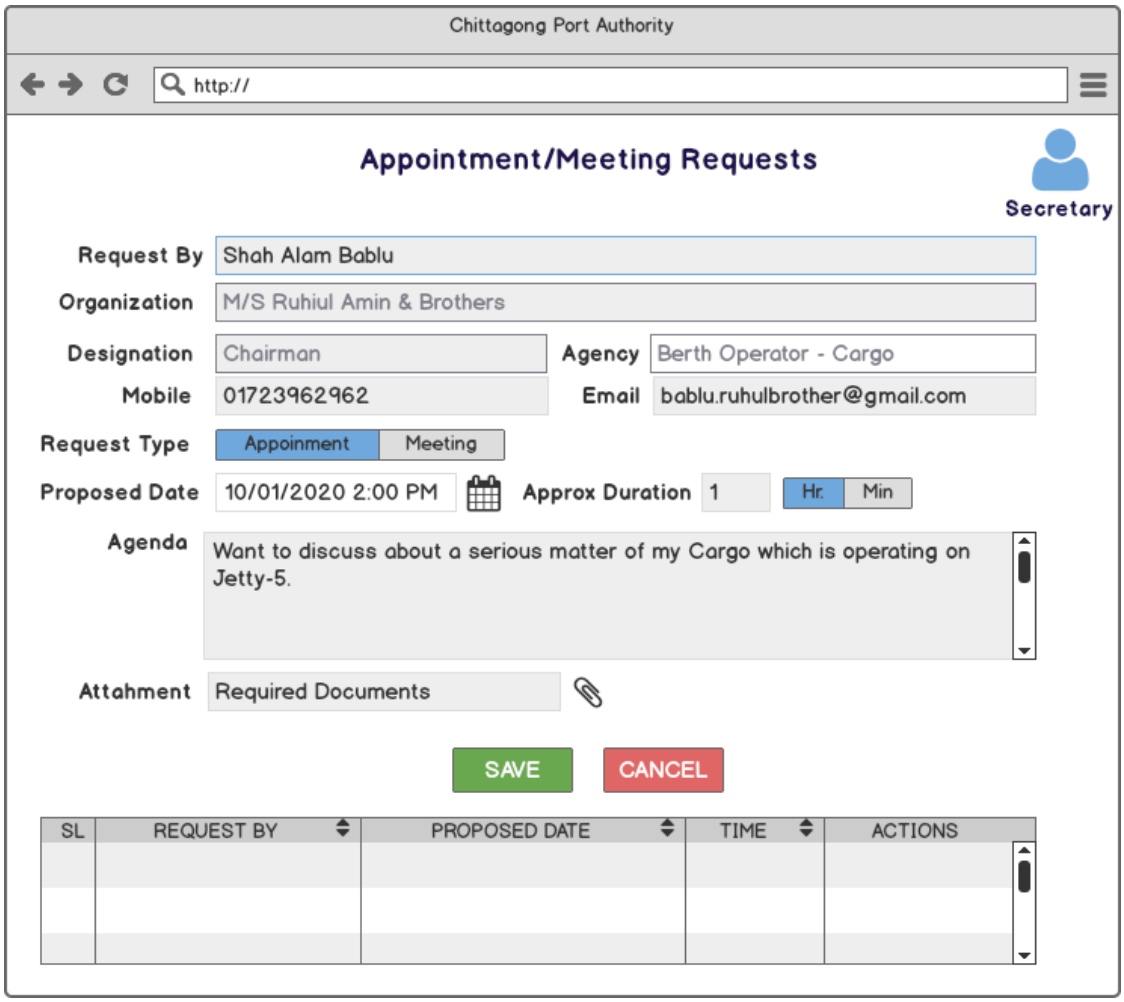


Figure 58: Mockup for Appointment/Meeting Request

6.2.3.2 Appointment/Meeting Approval

Secretary will check the current schedule of CPA Chairman and proposed a schedule for the requested appointment. After that secretary get permission from CPA Chairman to fix up an appointment. System will send a SMS/email notification to requested about the appointment. These functionalities will be managed by this mockup.

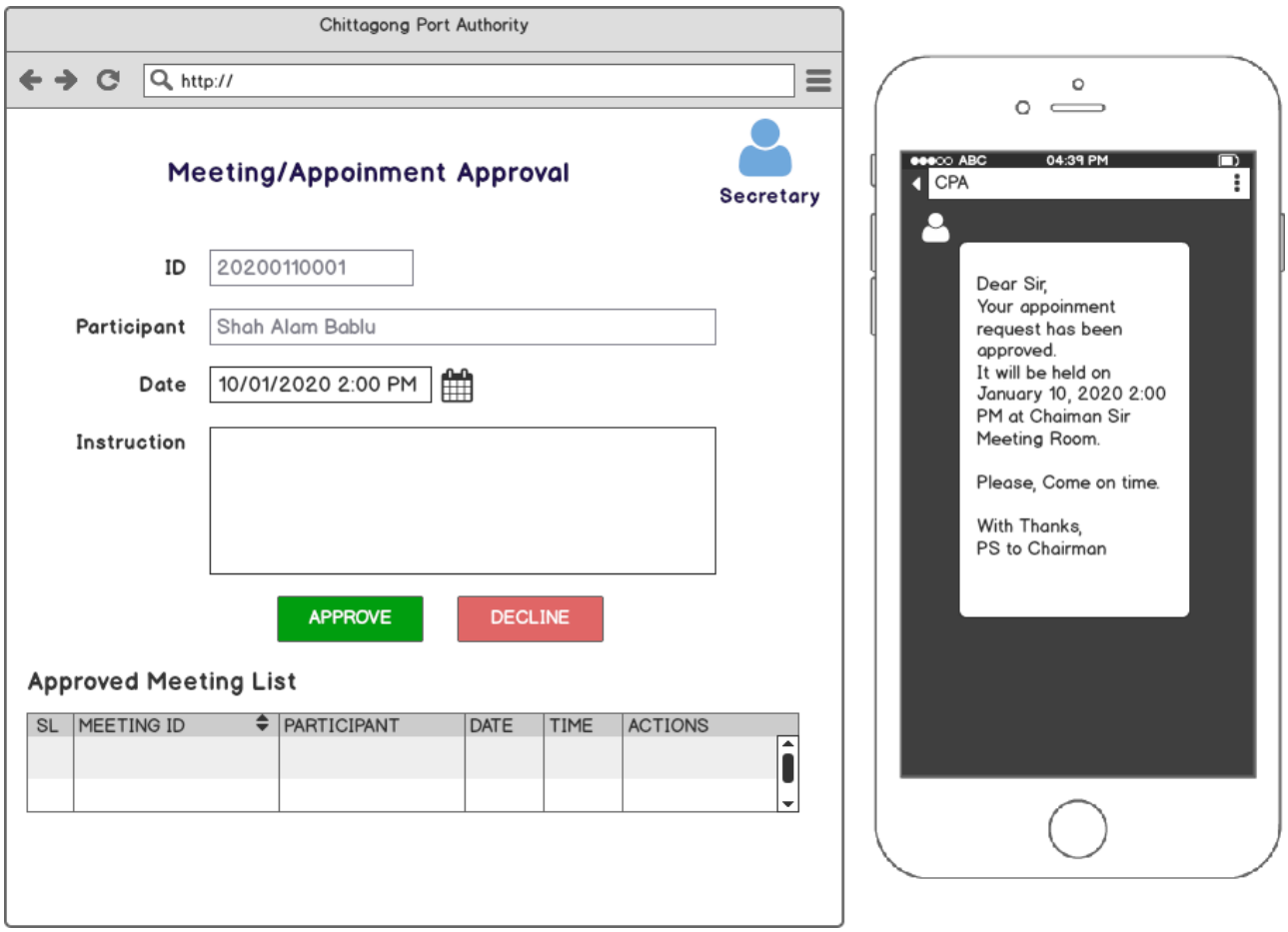


Figure 59: Mockup for Appointment/Meeting Approval

6.2.3.3 CPA Chairman Appointment/Schedule Calendar

System will generate an appointment/schedule calendar for CPA Chairman based on appointment, meeting, visit etc.

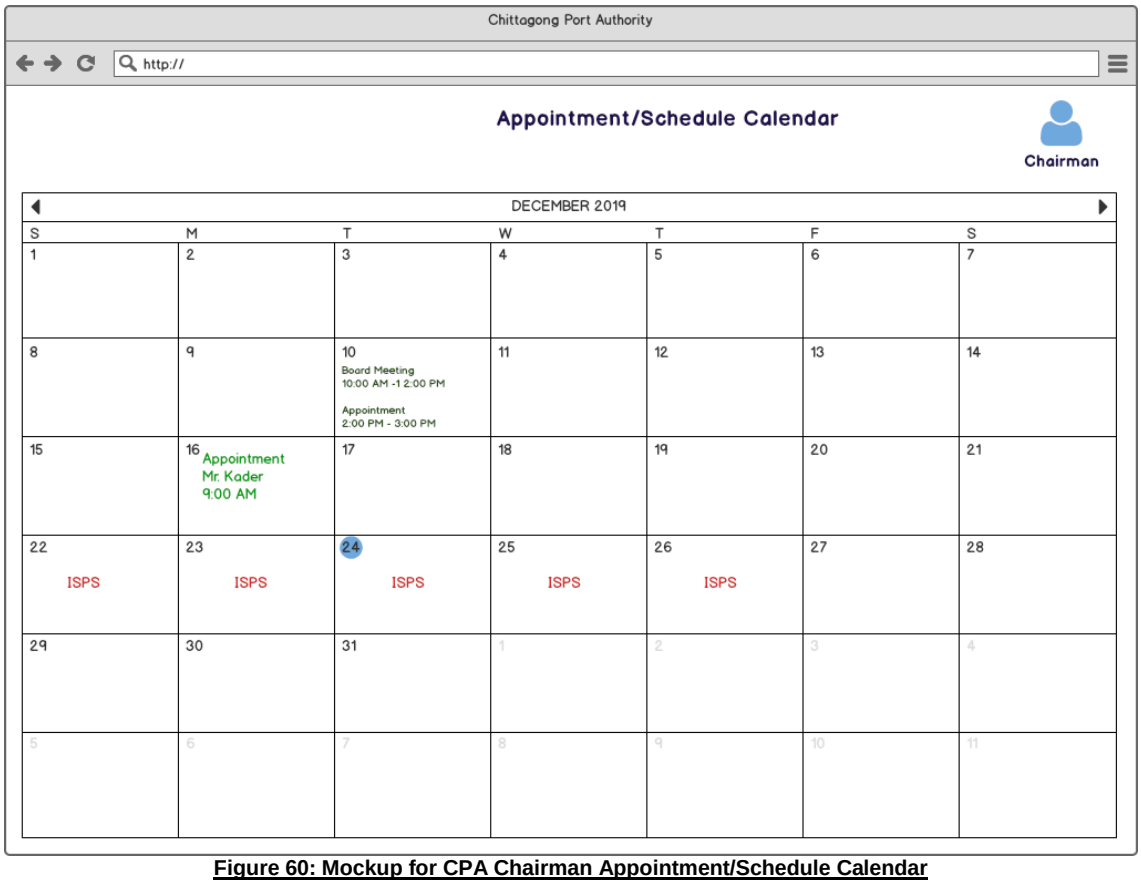


Figure 60: Mockup for CPA Chairman Appointment/Schedule Calendar

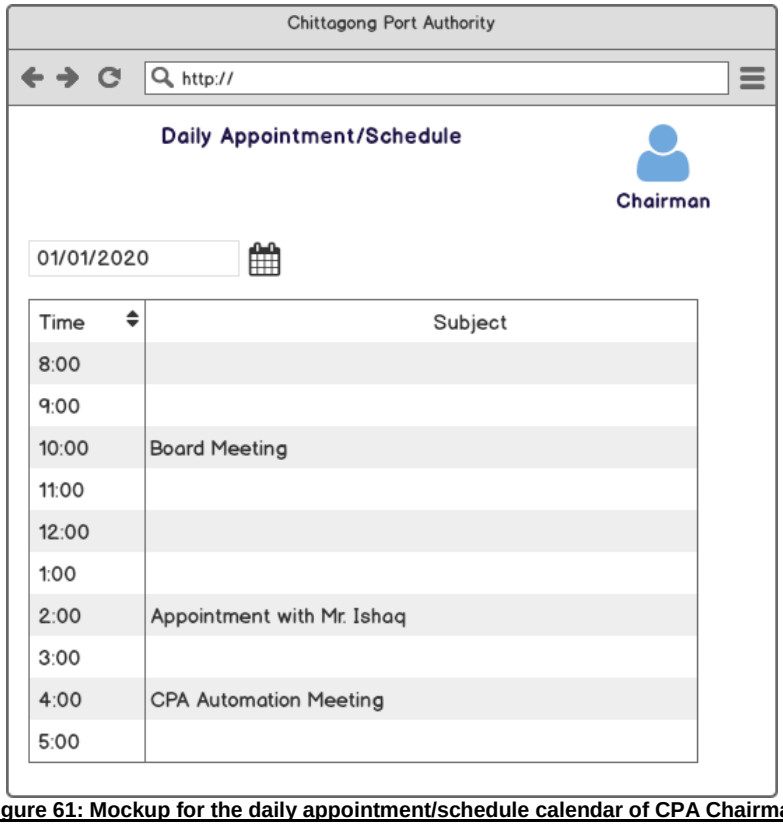


Figure 61: Mockup for the daily appointment/schedule calendar of CPA Chairman

6.2.4 Appointment/Schedule Module Reports

We have listed some reports for Appointment/Schedule module.

6.2.4.1 Agency list Report

System will provide facility to generate Agency list based on multiple criterion. These are:

- Agency Name
- Agency Location

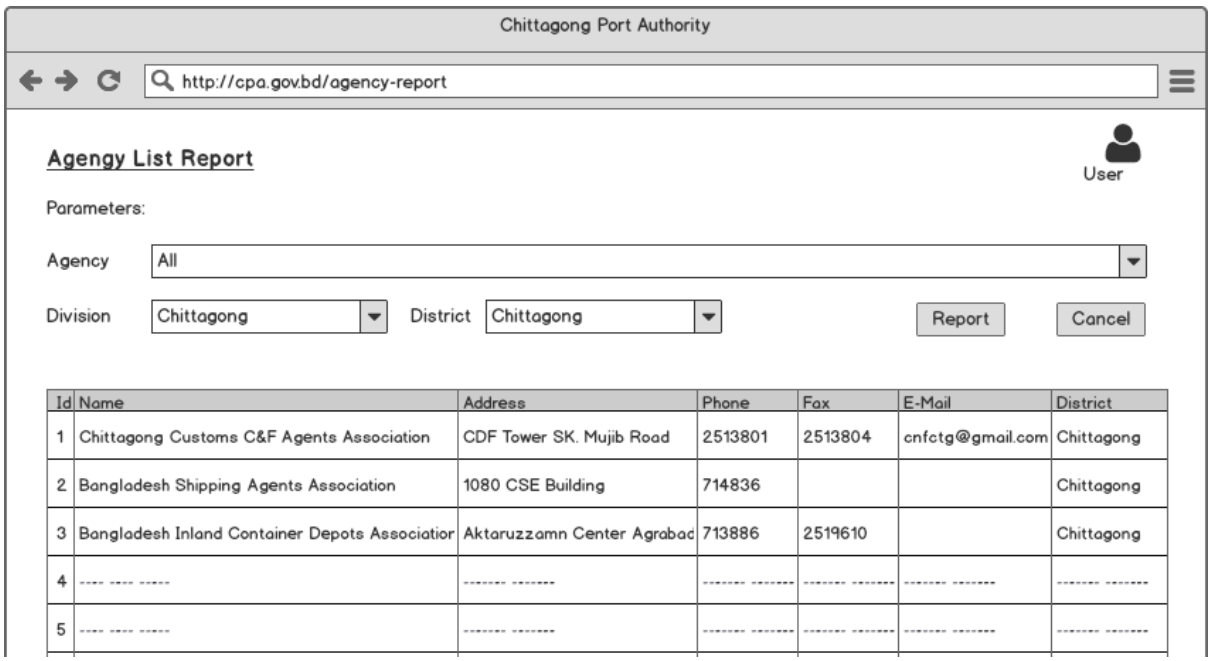


Figure 62: Mockup for Agency List Report

6.2.4.2 Stakeholder list Report

System will provide facility to generate stakeholder list based on multiple criterion. These are:

- Agency
- Stakeholder Location

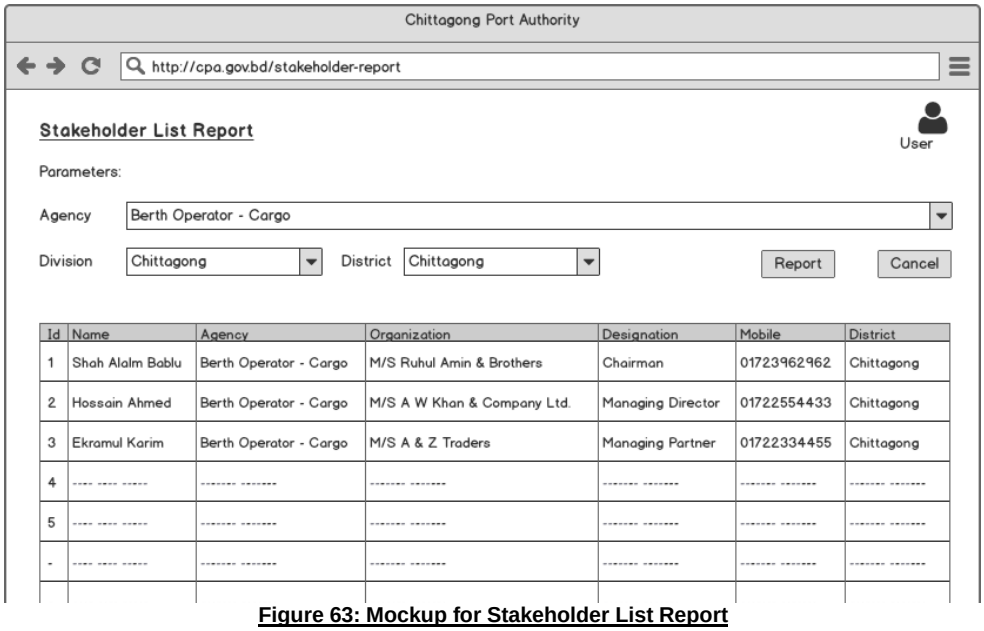


Figure 63: Mockup for Stakeholder List Report

6.2.4.3 CPA Chairman Visit Report

System will provide facility to generate CPA Chairman visit list based on multiple criterion. These are:

- Visit Type
- Country
- Visit Schedule

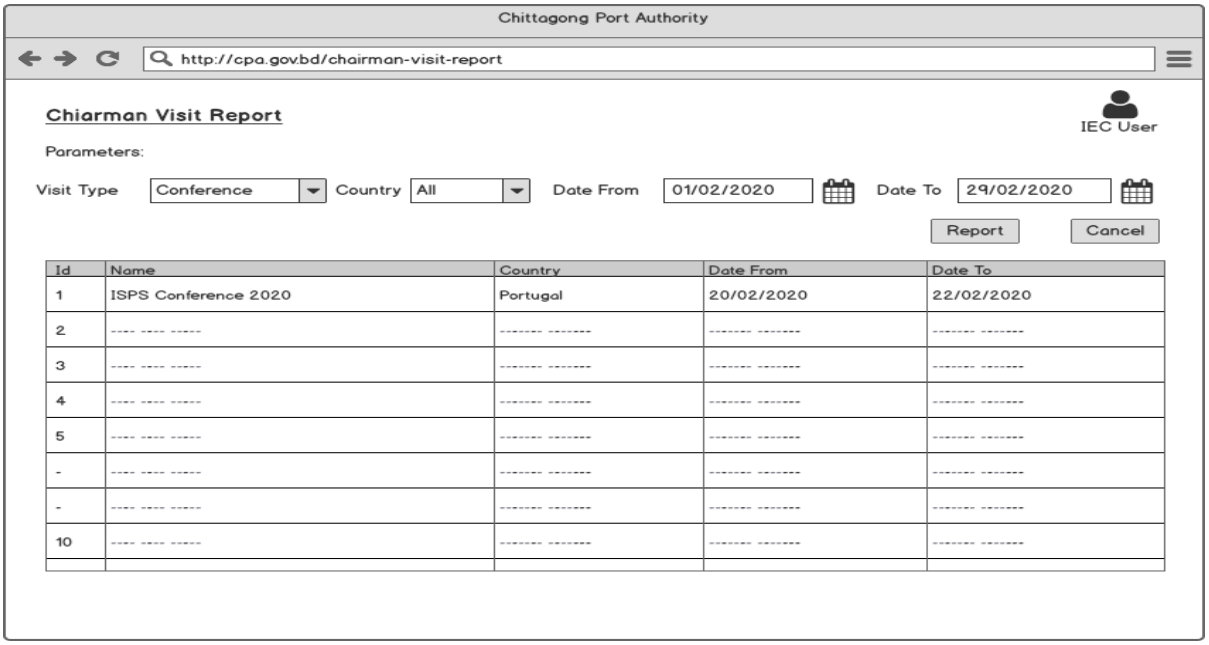


Figure 64: Mockup for Chairman Visit Report

6.2.4.4 Meeting Type Report

System will provide facility to generate Meeting type list.

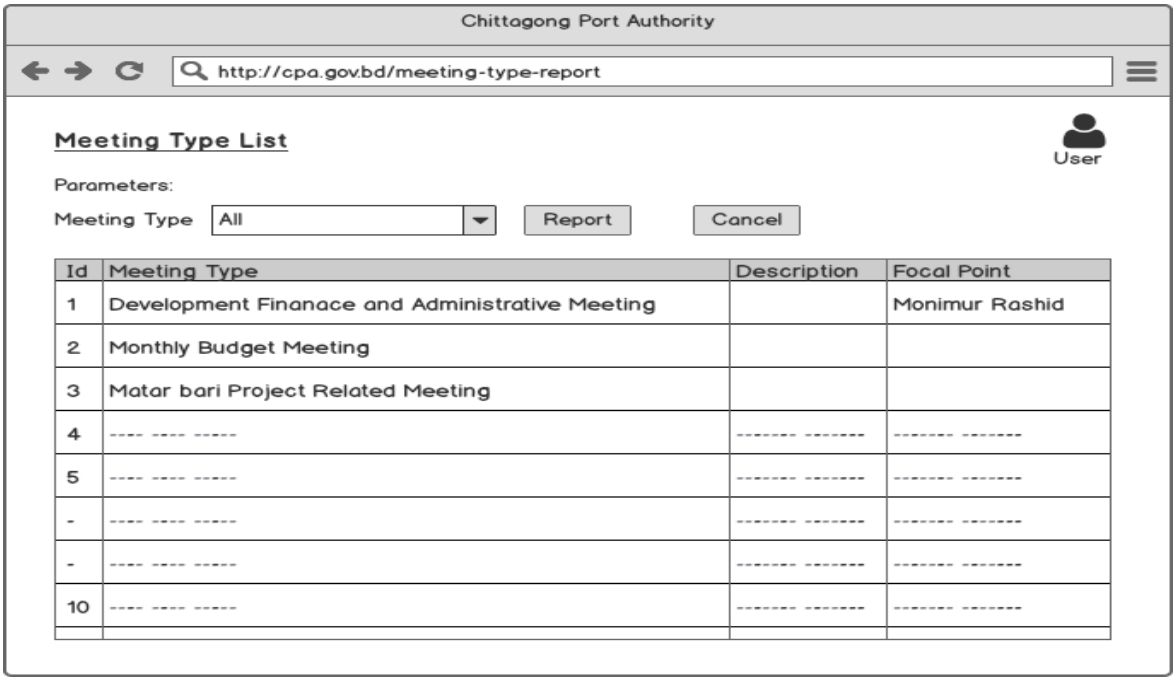


Figure 65: Mockup for Meeting type List Report

6.2.4.5 CPA Chairman Meeting Report

System will provide facility to generate CPA Chairman Meeting list based on multiple criterion. These are:

- Meeting Type
- Meeting Schedule

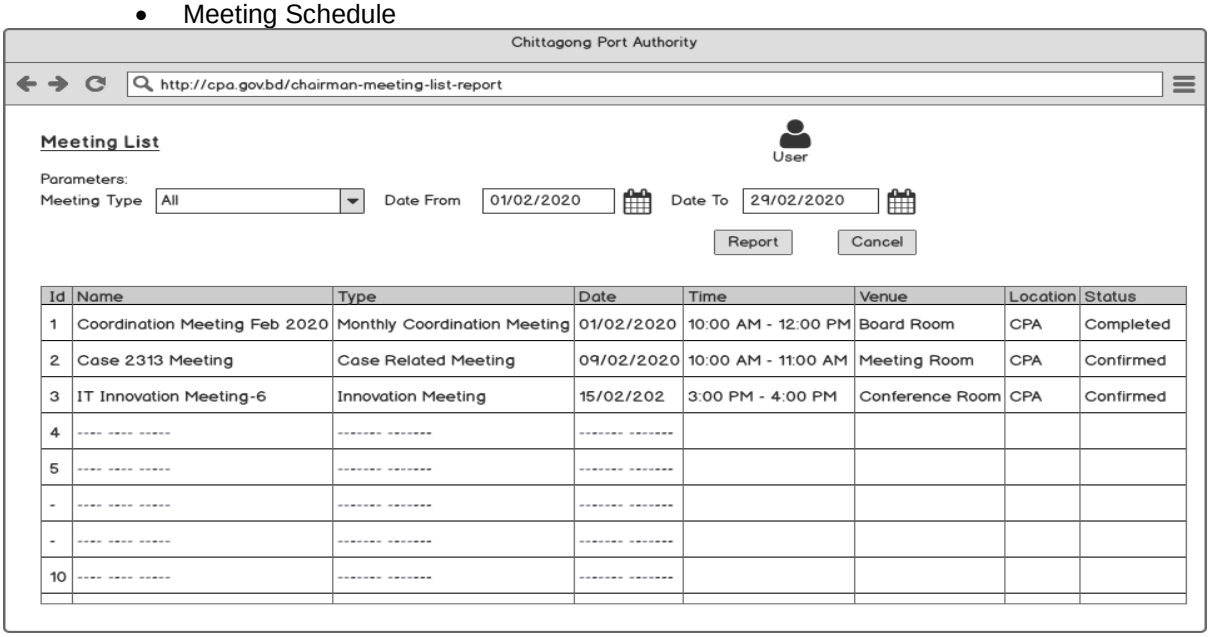


Figure 66: Mockup for CPA Chairman Meeting

6.2.4.6 CPA Chairman Appointment Report

System will provide facility to generate CPA Chairman Appointment list based on multiple criterion. These are:

- Requested Person
- Meeting Schedule

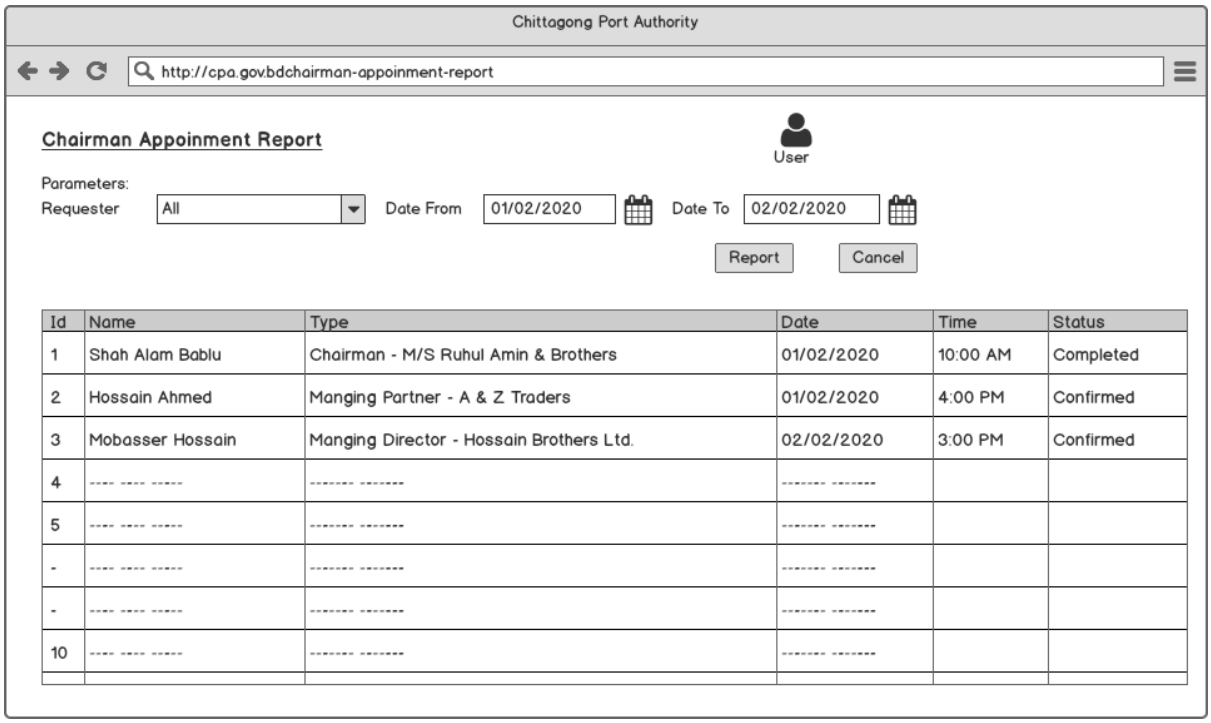


Figure 67: Mockup for CPA Chairman Appointment

7 Module: Access Control System in CPA

We, CNS develop a proposed design for Access Control System for CPA module of CPA system.

The proposed module will be work for Gate pass/Licence issue and renew on below listed ways;

- User will insert gate pass information to system.
- System will check the CPA Chairman if request come for appointment.
- Also, system will calculate the entry fee for jetty access and check the payment option.
- System will generate a SMS/email notification to applicant for card collection.
- It need finger print, Retina data, and Photo for jetty access card.
- Card will deliver to applicant.
- Card will be automatically inactive when expire date arrived.
- System will send and SMS/Email to card holder for card renewal (if required)
- Applicant can make payment via online payment gateway or security cash counter.

Some required information for gate pass:

- Two kinds of security mechanisms are being using;
  - Licensing: Applicable for C&F Agents
  - Access Control: Maintained by issuing Gate Pass.

- There are two (2) infrastructures for Gate Passes issue process;
  - Port Authority Building
  - Jetty Gates

- There are two types of Gate Passes for Visitors;
  - Temporary: Issue for 1 to 28 days, which is renewable.
  - Permanent: Issue for 1 year, which is also renewable.

- There are two types of Vehicle Passes;
  - Truck/Lorry/Covered Van
    - Only for one (1) day
    - Issued only at Jetty gate
  - Motor Cycle/Private Car/ CNG Auto rickshaw
    - issued for 1 to 28 days
    - Special case it may be one year (based on need)
    - Issued at Gate pass section of Security building

- Different fees structure is followed-
  - For Visitor-
    - Temporary Gate Pass charge: Tk.10.004 per day
    - Permanent Gate Pass charge: Tk. 300 per Year
  - For Vehicle -
    - Truck/Lorry/Covered Van Pass charge: Tk. 50.00 per day
    - Motor Cycle/CNG Pass charge: Tk. 20.00 per day
    - Private Car Pass Charge: Tk. 30.00 per day

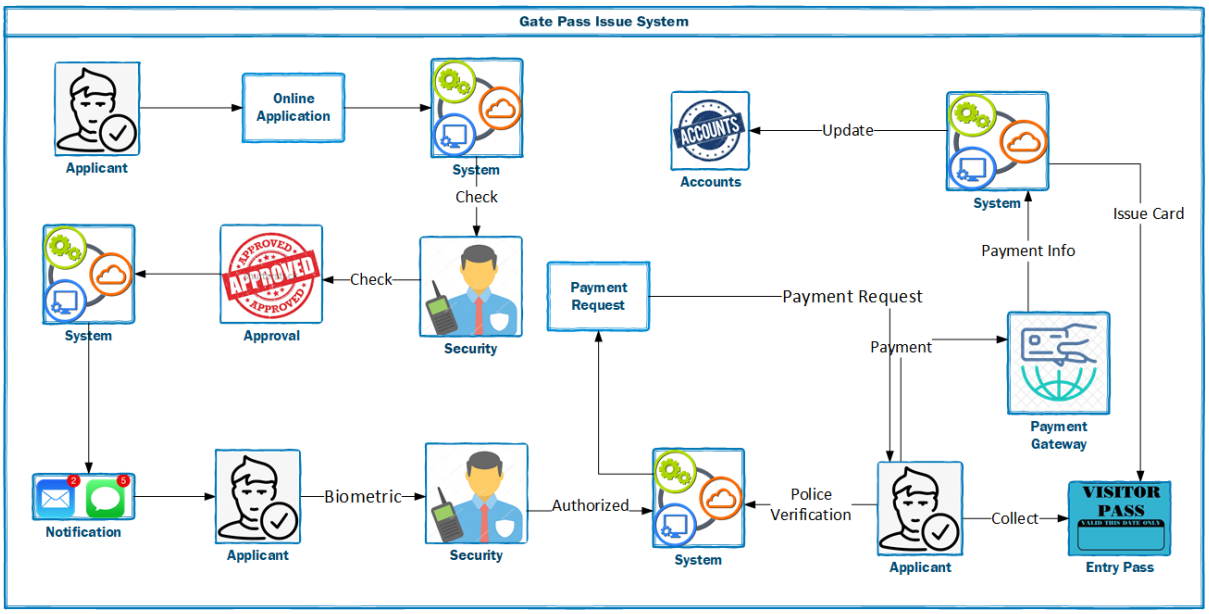


Figure 68: Gate Pass Issue Process

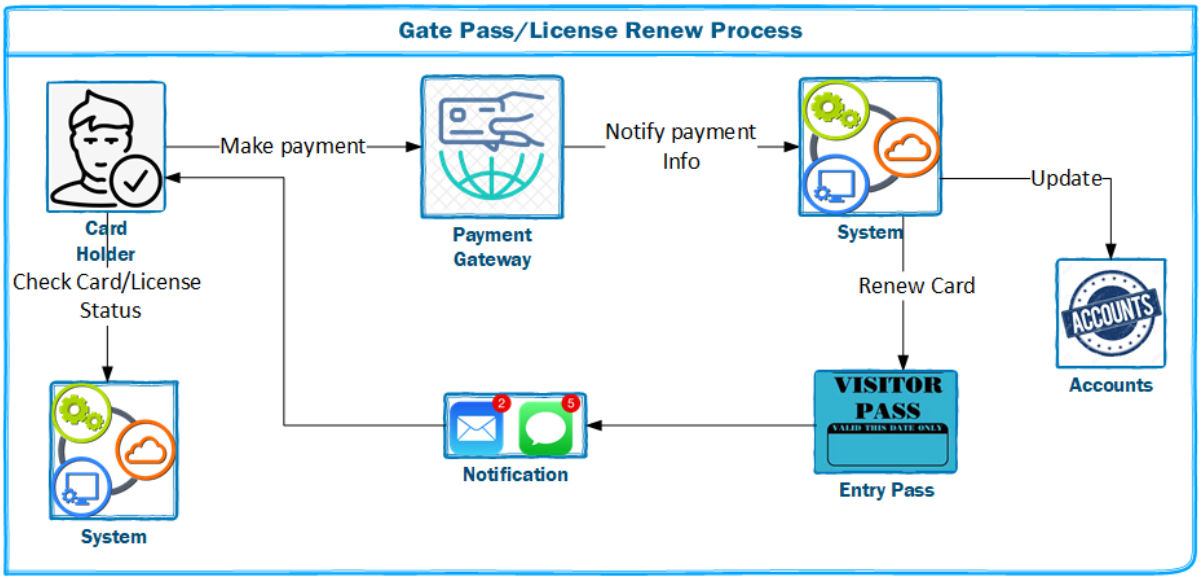


Figure 69: Gate Pass Renewal Process

7.1 Module Relationship of Access Control System in CPA

We CNS, develop an integrated system for CPA. Access control system module will use data from other modules and also provide data to another module for process.

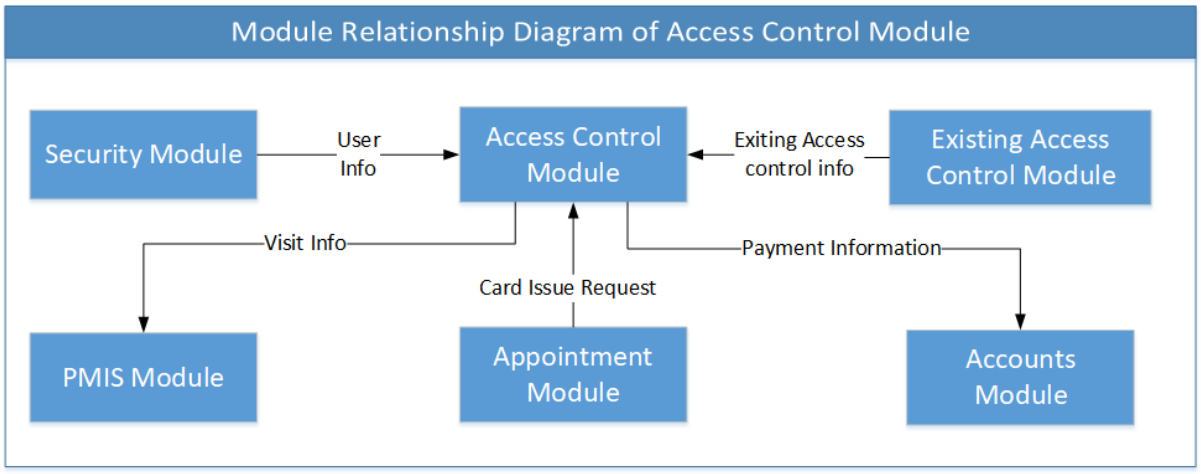


Figure 70: Module Relationship of Access Control System

- Access control module will use user related data from Security module.
- It will use existing access control data.
- It will use data from Appointment/Schedule module to generate temporary access card for appointment.
- This module will provide visitors attendance data to PMIS module.
- Access Control will provide payment related information to Accounts module

7.2 Business Process of Access Control

Access control System consist some business processes; these are:

- Gate pass/License Application Process
- Gate Pass/License Application Verify & payment Process
- Gate Pass Rate Chard
- Gate Pass Issue & Delivery
- Gate Pass Renewal

7.2.1 Gate Pass/License Application Process

Due to digitalization of CPA, it need to digitalize the gate pass/license application issue process.

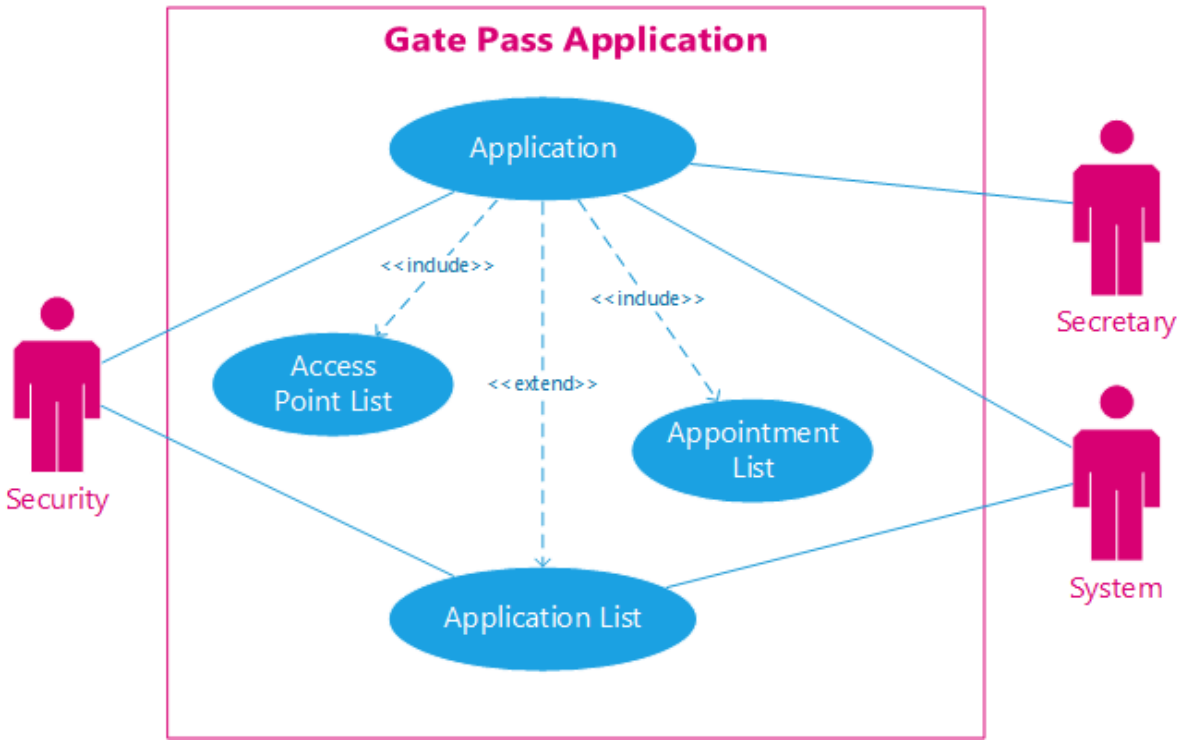


Figure 71: Use Case for Gate Pass Application

Use Case ID:	**UC-CAC-001**
Use Case Name:	**Gate Pass Application**
Actors:	• Security • Secretary • User • System
Trigger:	When user intends to provide gate pass application.
Description:	The functionality “Gate Pass Application” facilitates to provide gate pass to access CPA Building & Jetty area; and vehicle to access jetty area.
Preconditions:	• User must have landed on CPA system • Existing access control data should be available to storage.
Assumption:	• API is ready.
Goal:	To submit the gate pass application to the system.
Normal Flow:	• Insert application data • NID integration to verify applicants. • BRTA integration to verify vehicle information. • System will save the information.
Alternate Flow:	N/A
Failure:	• Connection Lost. • API is not working.
Post conditions:	• Access Card application should be receive by the system.
Frequency of Use:	Frequently
Business Rules/Constraints	N/A
Non Functional Requirements:	N/A
Reference:	N/A

7.2.1.1 CPA Building Gate Pass – Bangladeshi

Sometimes it need to issue visitor card to Bangladeshi citizen to access CPA Building; it may happen due to appointment with CPA Chairman, CPA Vendors etc.

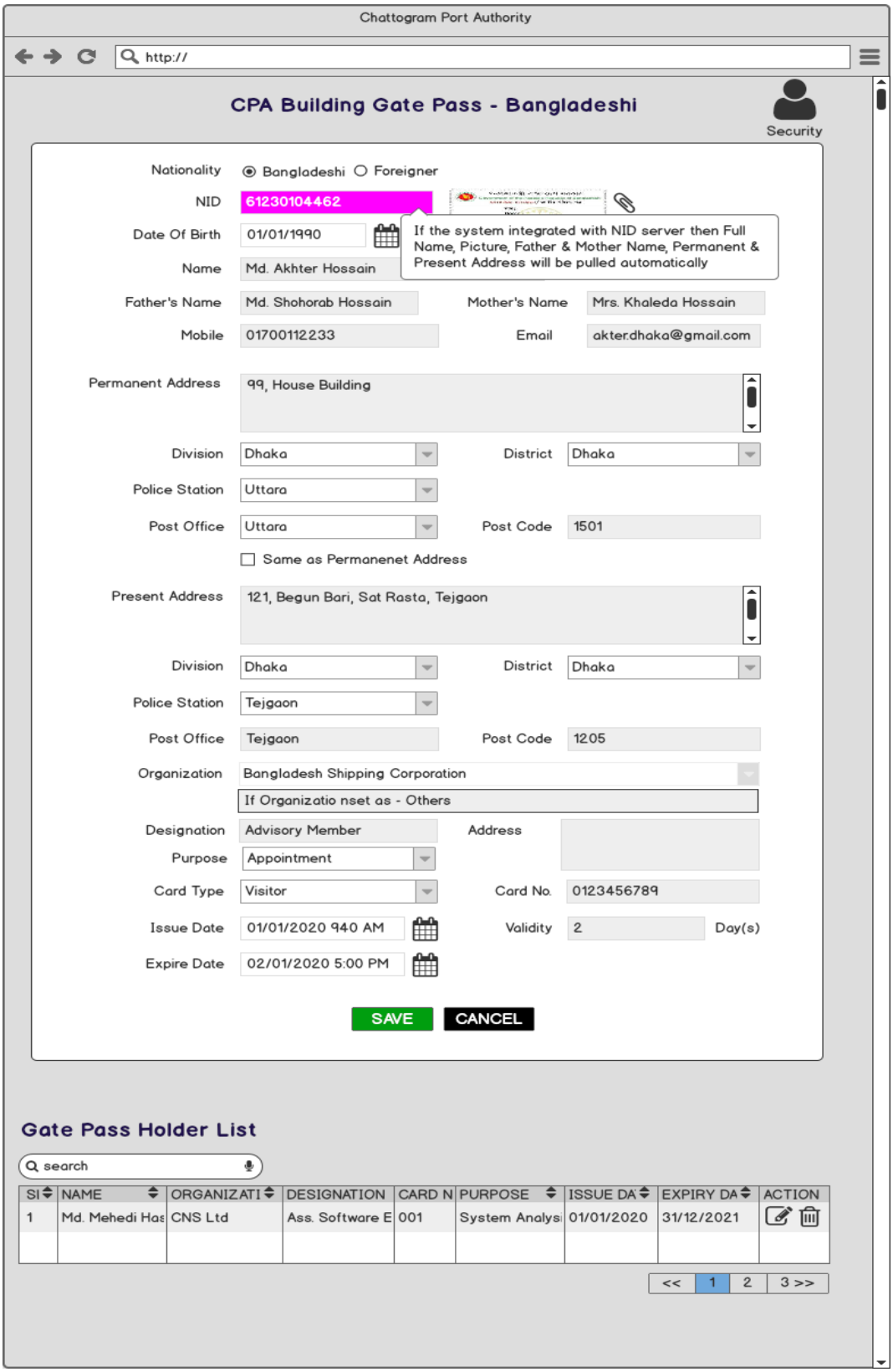


Figure 72: Mockup of CPA Building Gate Pass Application – Bangladeshi

7.2.1.2 CPA Building Gate Pass – Foreigner

Foreign delegates, shipping agency related foreigner, and other foreigner need to visit CPA Building for meeting, appointment or other relevant task.

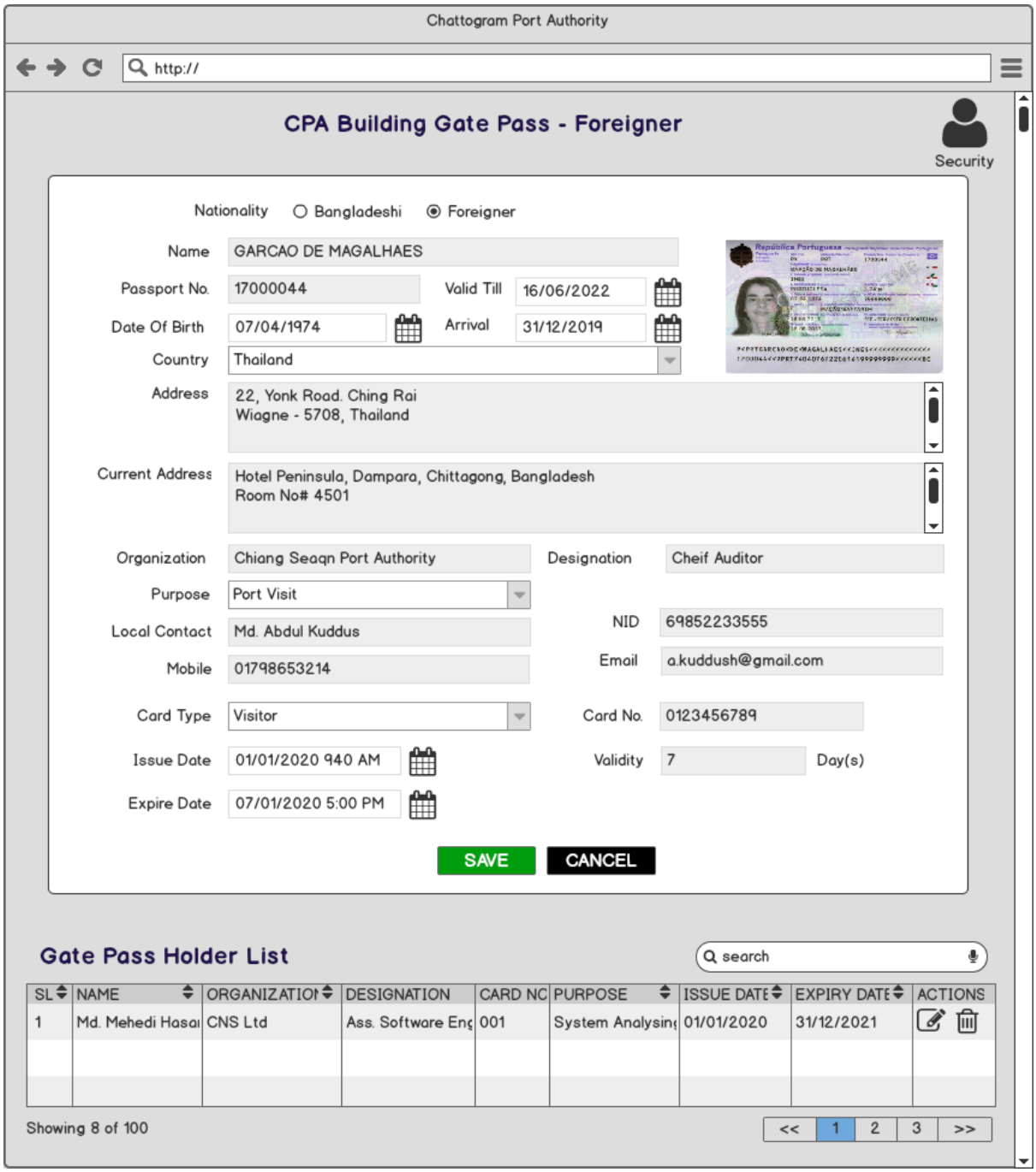


Figure 73: Mockup of CPA Building Gate Pass – Foreigner

7.2.1.3 Jetty Gate Pass – Bangladeshi

It needs to access jetty areas for Bangladeshi citizens.

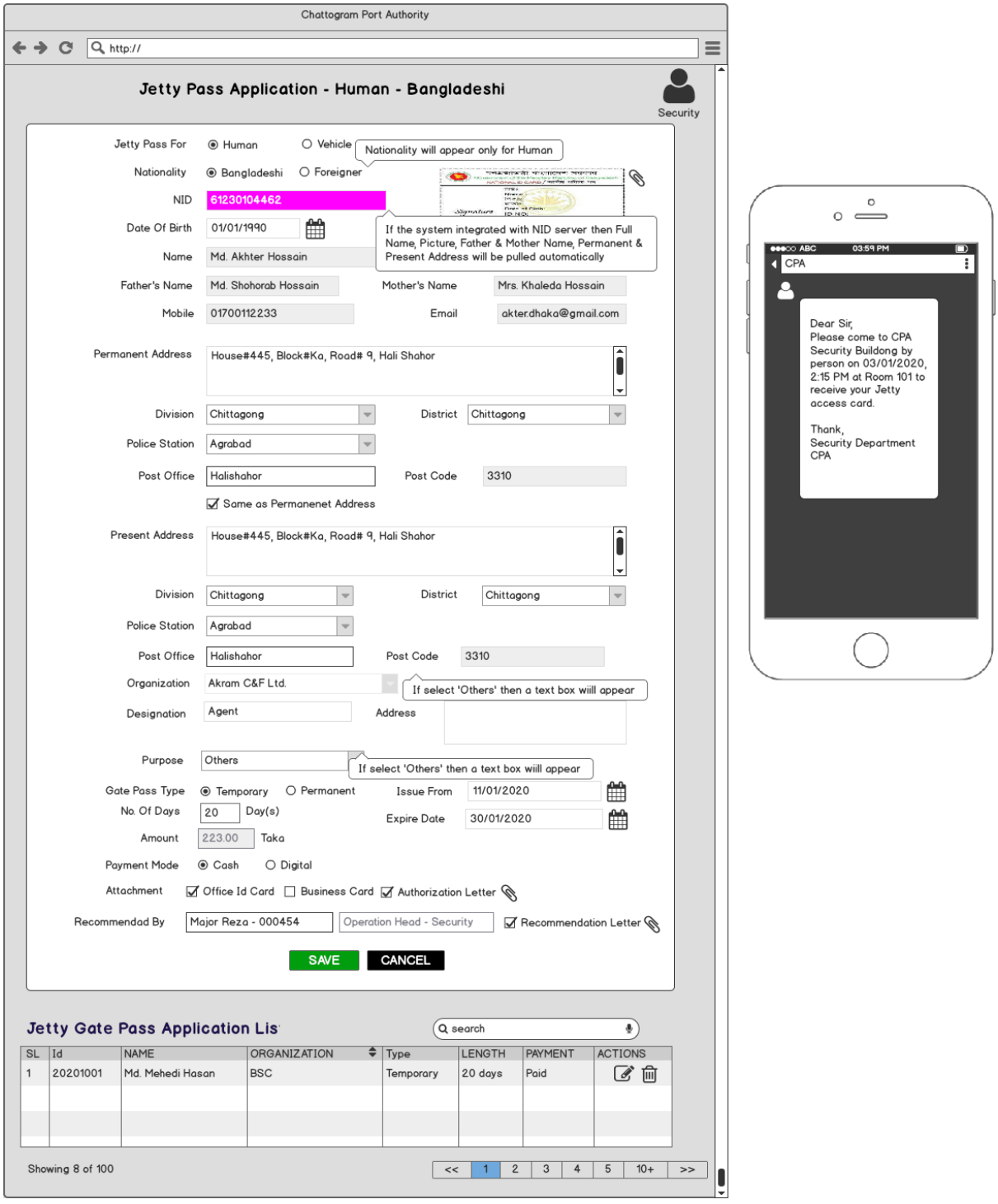


Figure 74: Mock up for Jetty Gate Pass - Bangladeshi

7.2.1.4 Jetty Gate Pass – Foreigner

It needs to access jetty areas for foreigners.

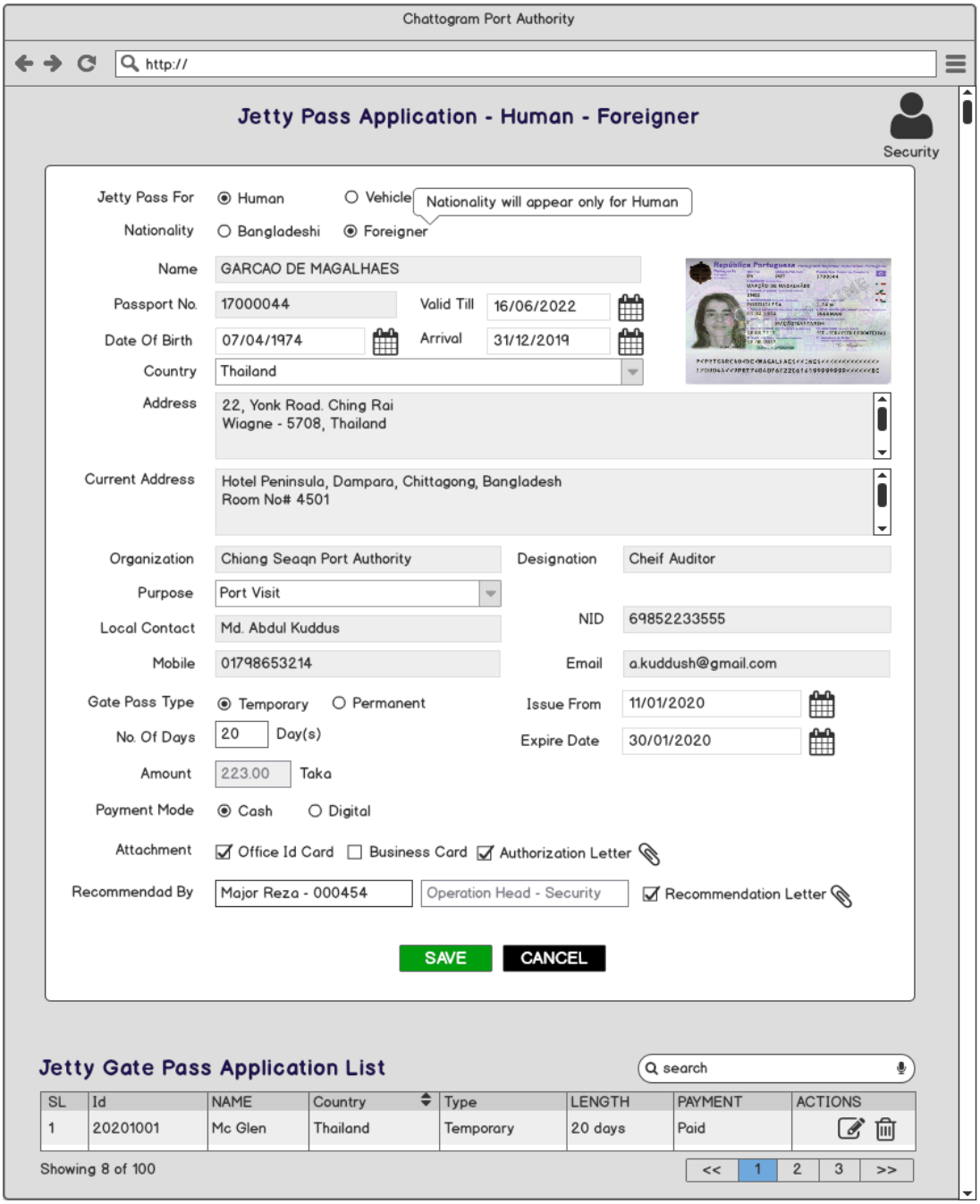
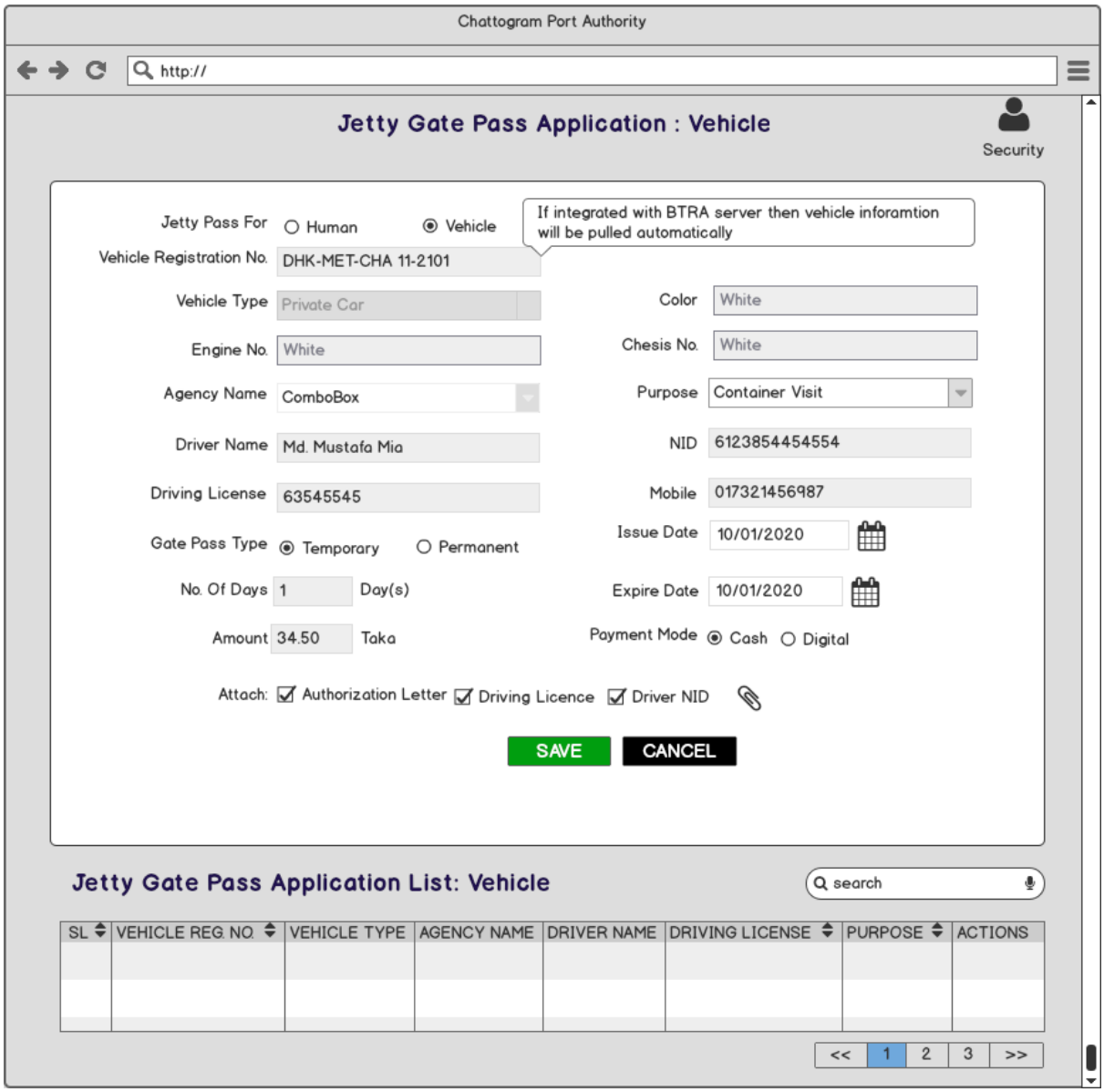


Figure 75: Mock up Jetty Gate Pass - Foreigner

7.2.1.5 Jetty Gate Pass – Vehicle

Vehicles need to move around jetty area due some activities like container loading – unloading, meeting, inspection etc.



7.2.2 Gate Pass Application Verification & Payment process

Due to digitalization of CPA access control, it need to digitalize the verification & payment system of gate pass issue & renewal.

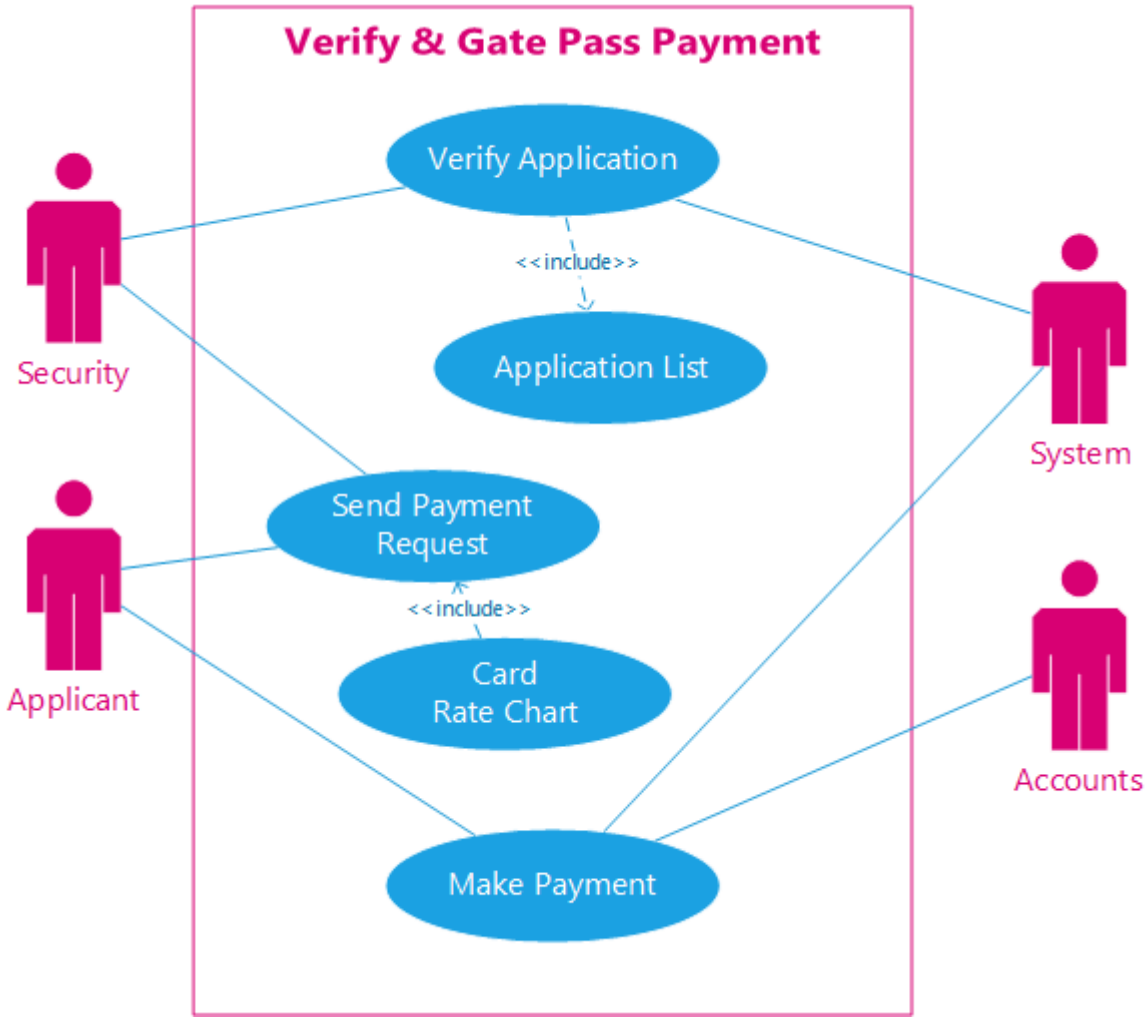


Figure 76: Use Case for Gate Pass Application Verify & Payment

Use Case ID:	**UC-CAC-002**
Use Case Name:	**Gate Pass Application Verify & Payment**
Actors:	• Security • Applicant • Accounts • System
Trigger:	• When user intends to verify gate pass application • When applicant intent to make payment for gate pass.
Description:	The functionality “Gate Pass Application verify & payment” facilitates to verify gate pass application information and complete the payment process.
Preconditions:	● User must have landed on CPA system ● Gate Pass application must be submitted to the system.
Assumption:	● Application is valid.
Goal:	To submit verify the application and complete the payment.
Normal Flow:	• Select an application to verify • Security marked application as certified. • System provide SMS/email to applicant to complete the payment • Applicant made the payment (direct to CPA or payment gateway) • System get payment notification. • System will save the information.
Alternate Flow:	N/A
Failure:	● Connection Lost. ● API is not working.
Post conditions:	● Access Card application should be receive by the system.
Frequency of Use:	Frequently
Business Rules/Constraints	• Visitor Temporary Jetty Gate pass duration: 1 to 28 days • Visitor Permanent Jetty Gate pass duration: 1-year max • Vehicle: Category – I i.e. Truck, Lorry, Covered Van duration: only 1 day • Vehicle: Category – II i.e. Private Car duration: 1 – 28 days • Vehicle : Category – III i.e. Moto Cycle, CNG Auto Riksaw etc. duration : 1 – 28 days
Non Functional Requirements:	N/A
Reference:	**UC-CAC-003**

7.2.3 Gate Pass Rate Chart process

CPA has a predefined rate chart for visitor and vehicle, which need to move on jetty area.

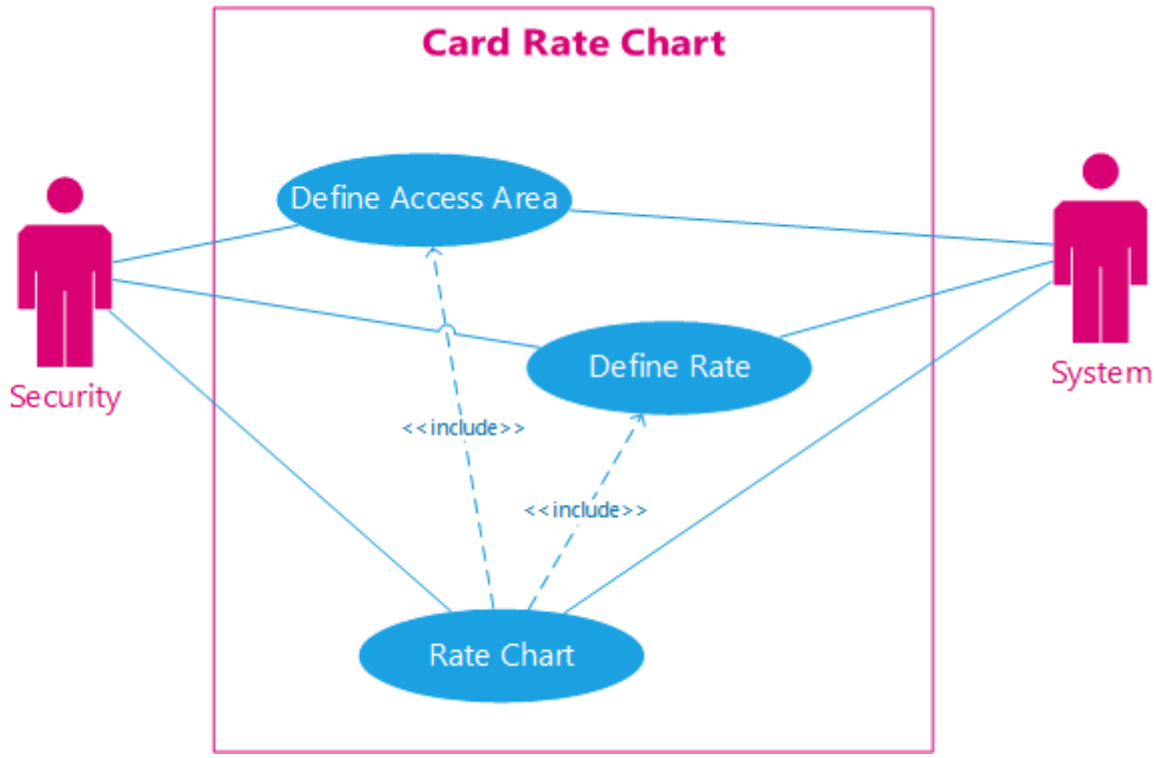


Figure 77: Use Case for Gate Pass Rate Chart

Use Case ID:	**UC-CAC-003**
Use Case Name:	**Gate Pass Rate Chart**
Actors:	• Security • System
Trigger:	• When user intends define rate chart.
Description:	The functionality “Gate Pass Rate Chart” facilitates to insert rate information.
Preconditions:	• User must have landed on CPA system • Gate Pass area should be defined.
Assumption:	• NA.
Goal:	To define the gate pass rate chart.
Normal Flow:	• Select visitor/vehicle • Define Rate • System will save the information.
Alternate Flow:	N/A
Failure:	• Connection Lost.
Post conditions:	• Access Card rate chart should be ready for use.
Frequency of Use:	Occasionally
Business Rules/Constraints	• Visitor Temporary Jetty Gate pass: 10 taka per day • Visitor Permanent Jetty Gate pass: 300 taka per year • Vehicle: Category – I i.e. Truck, Lorry, Covered Van: 5o taka per day • Vehicle: Category – II i.e. Private Car: 30 taka per day • Vehicle : Category – II i.e. Moto Cycle, CNG Auto Riksaw: 20 taka per day
Non Functional Requirements:	N/A
Reference:	N/A

7.2.4 Gate Pass Issue & Delivery process

After verification & payment. CPA security department issue and deliver gate pas to the applicant.

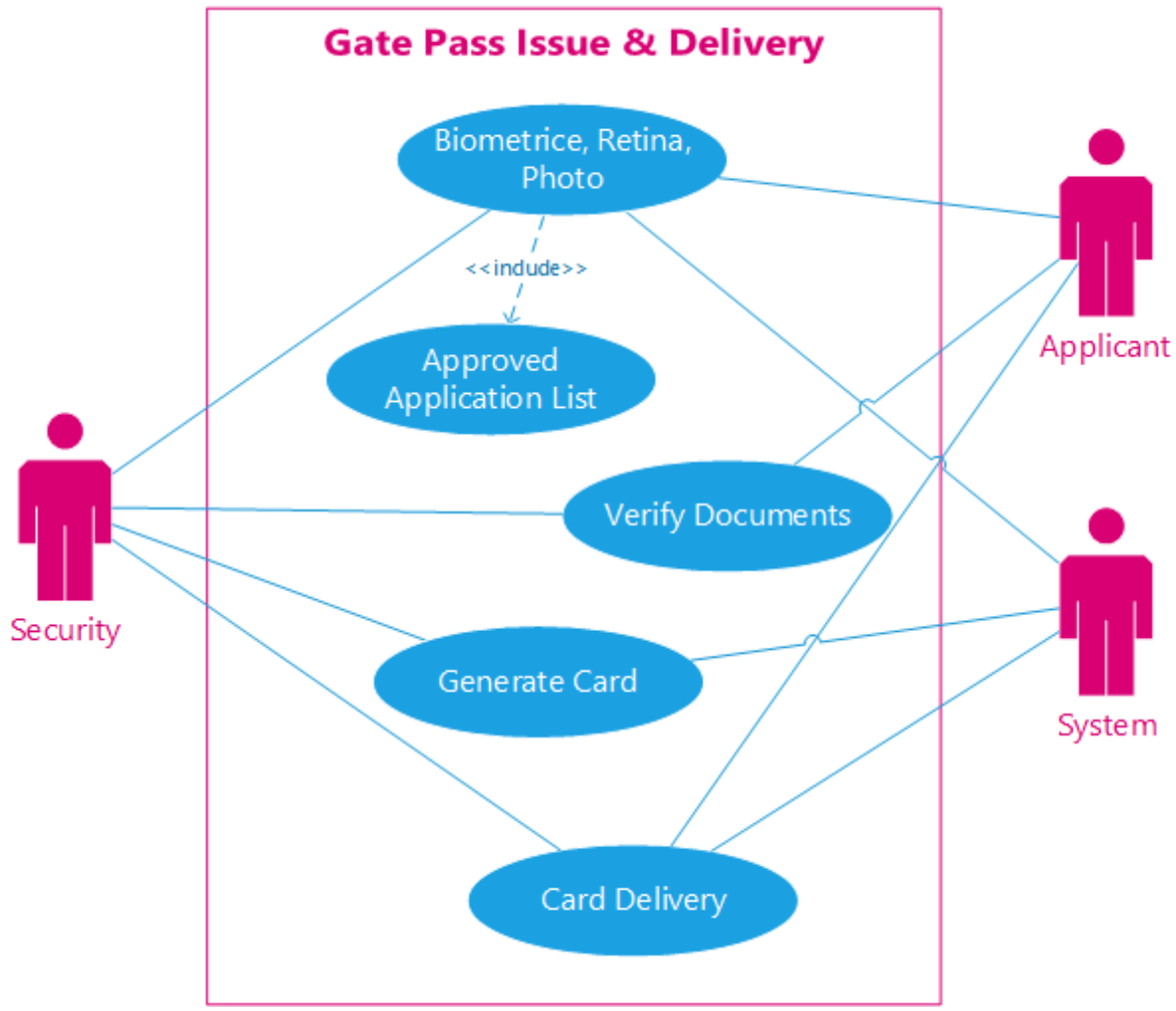


Figure 78: Use Case for Gate Pass Rate Chart

Use Case ID:	**UC-CAC-004**
Use Case Name:	**Gate Pass Issue & Delivery**
Actors:	• Security • System • Applicant
Trigger:	• When user intends generate gate pass. • When user intend to deliver gate pass
Description:	The functionality “Gate Pass Issue & Delivery” facilitates to insert/update gate pass issue and delivery information.
Preconditions:	• User must have landed on CPA system • Gate Pass should have approved. • Payment should be confirmed.
Assumption:	• Payment completed with approval
Goal:	To generate gate pass & delivery
Normal Flow:	• Select approved application • Receive Biometric, retina, and image • Generate card • Deliver Card • System will save the information.
Alternate Flow:	N/A

Failure:	• Connection Lost.
Post conditions:	• Access Card should be generated & delivered.
Frequency of Use:	Frequently
Business Rules/Constraints	• Delivery information should be updated. • Card will be inactive when over the expire date
Non Functional Requirements:	N/A
Reference:	**UC-CAC-001, UC-CAC-002, UC-CAC-003**

7.2.4.1 Jetty Gate Pass Authorization - Human

Applicant need to visit CPA security department to authorize a card by providing finger prints, retina, and photo.

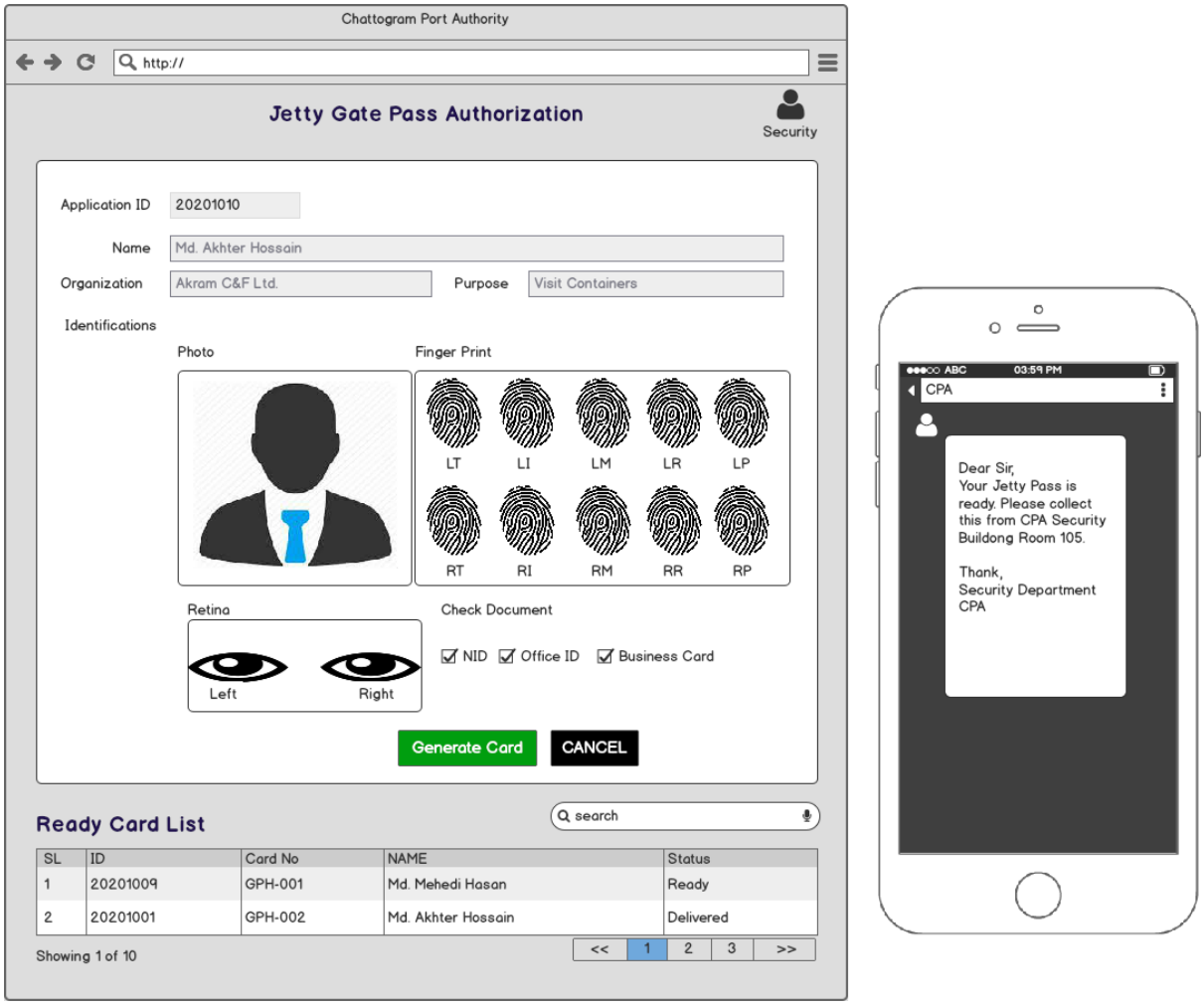


Figure 79: Mock up for Jetty Gate Pass Authorization

- System will generate a SMS/email to applicant about card information

7.2.4.2 Access Card Delivery

Applicant need to receive the access card from CPA security.

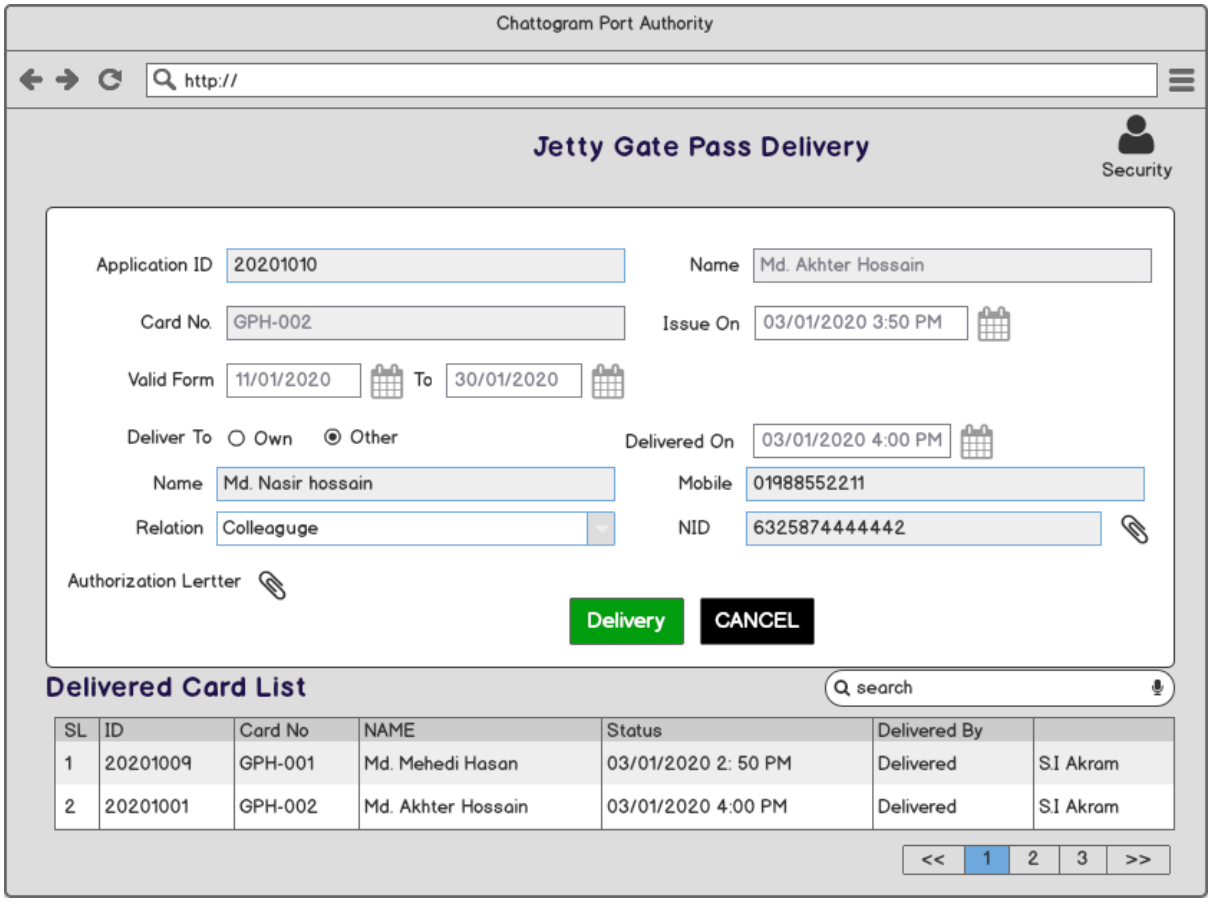


Figure 80: Gate Access Card Delivery

- It is possible to receive access card by nominated person with an authorized letter.

7.2.5 Gate Pass Renew Process

After expiration of jetty gate pass, it need to renew the card for next time access

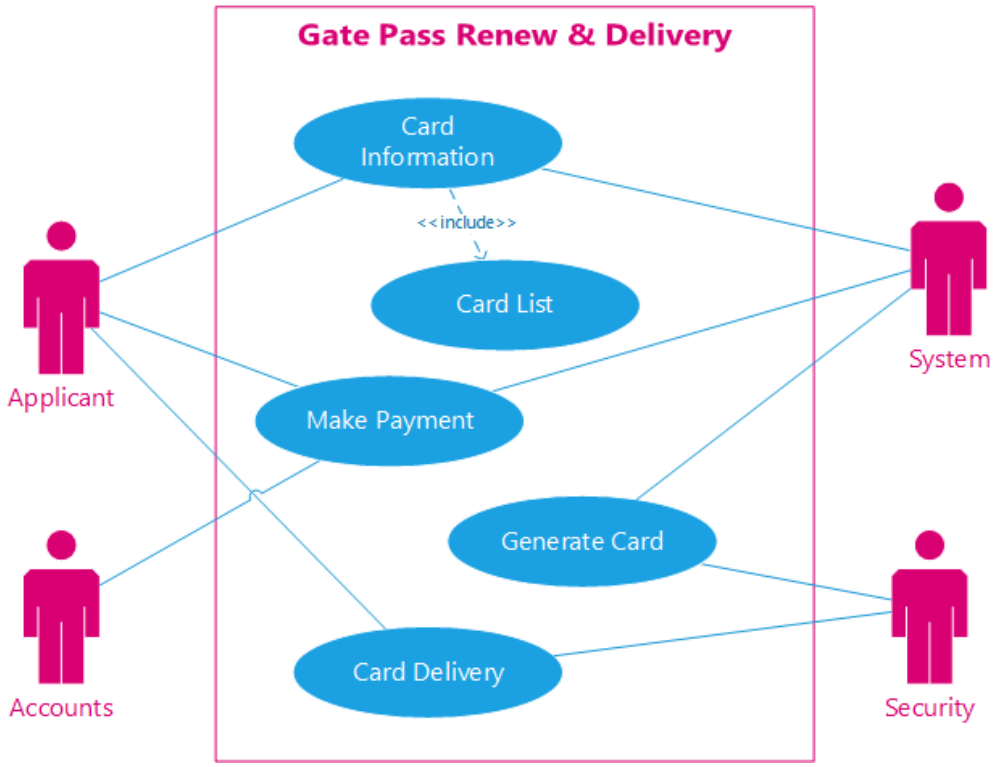


Figure 81: Use Case for Gate Pass Renew

Use Case ID:	**UC-CAC-005**
Use Case Name:	**Gate Pass Issue & Delivery**
Actors:	• Security • System • Applicant • Account
Trigger:	• When user intends renew a gate pass.
Description:	The functionality “Gate Pass Renew” facilitates to renew gate pass.
Preconditions:	• User must have landed on CPA system • Gate Pass should be expired. • Payment should be confirmed.
Assumption:	• Payment completed with approval
Goal:	To generate renewal of gate pass & delivery
Normal Flow:	• Select payment completed application • Update card validity • System will save the information.
Alternate Flow:	N/A
Failure:	• Connection Lost.
Post conditions:	• Access Card should be renewal.
Frequency of Use:	Frequently
Business Rules/Constraints	• Renewal information should be updated
Non Functional Requirements:	N/A
Reference:	**UC-CAC-001, UC-CAC-002, UC-CAC-003, UC-CAC-004**

7.2.6 Access Control Module Reports

We have listed some reports for Access Control module.

7.2.6.1 CPA Building Visitor Report

System will provide facility to generate data share report based on multiple criterion. These are:

- Card Holder Type
- Duration

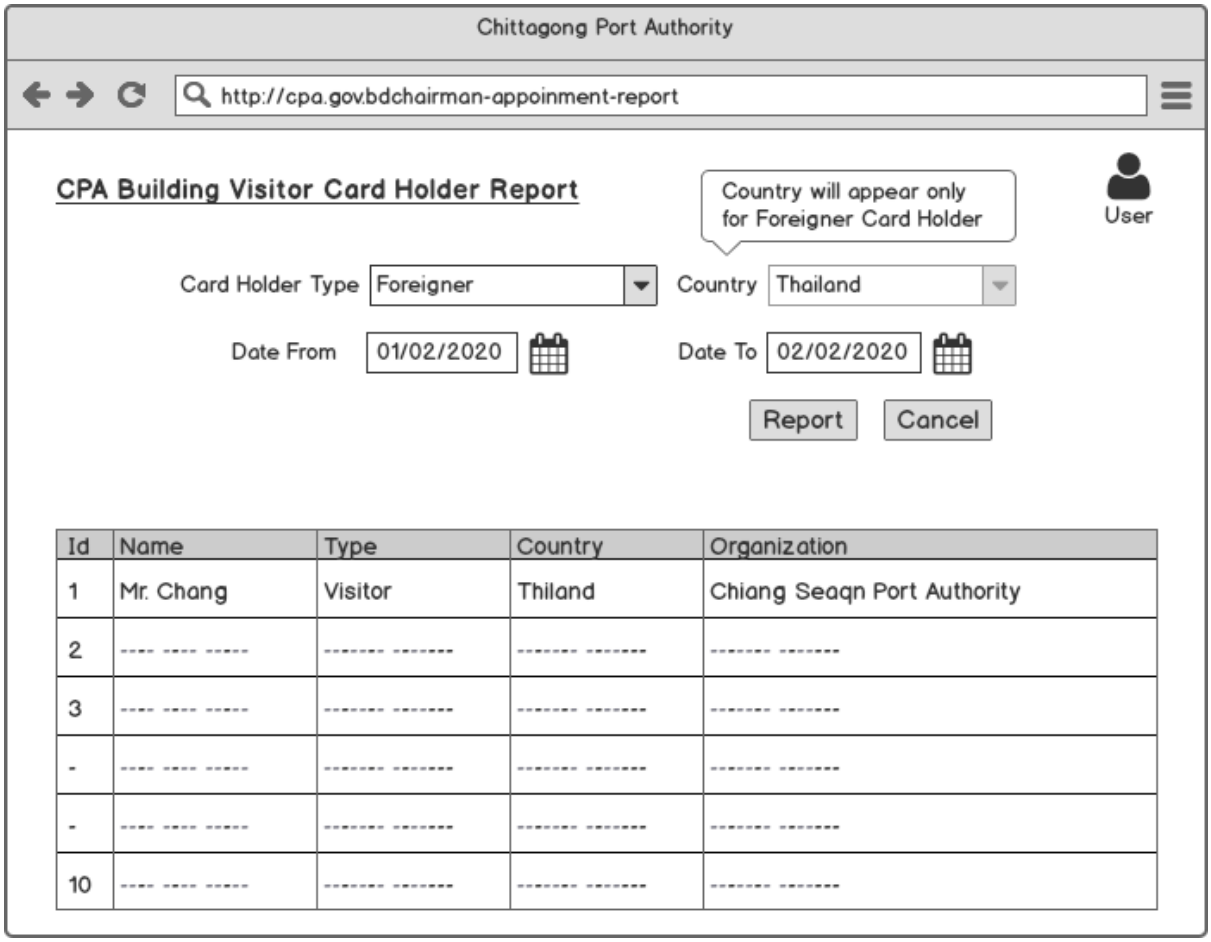


Figure 82: Mockup for CPA Building Visitor Report

7.2.6.2 Jetty Gate Pass Holder Report

System will provide facility to generate data share report based on multiple criterion. These are:

- Card Holder Type
- Duration

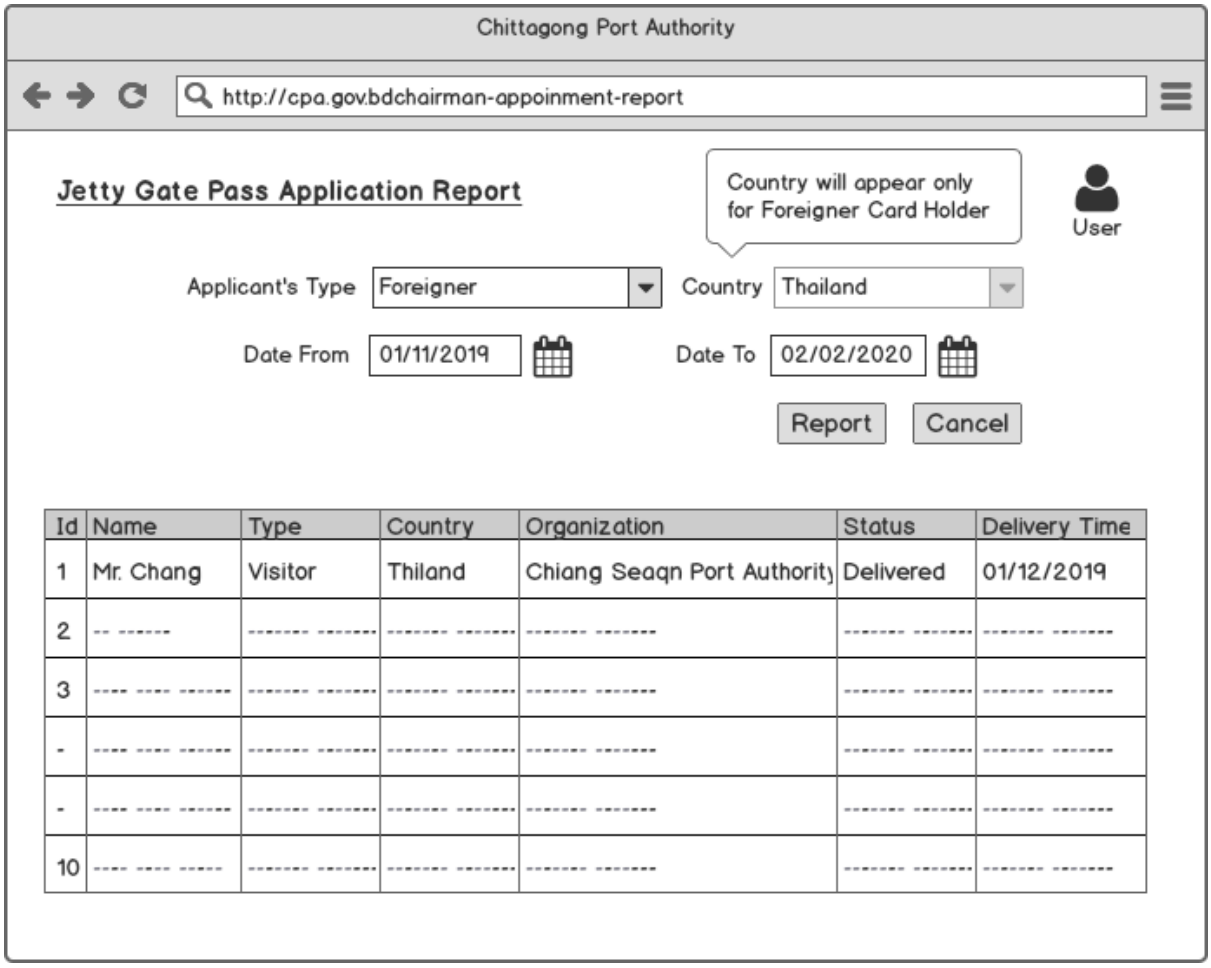


Figure 83: Mockup for Jetty Card Visitor Report

7.2.6.3 Jetty Gate Pass Vehicle Report

System will provide facility to generate data share report based on multiple criterion. These are:

- Vehicle Type
- Duration

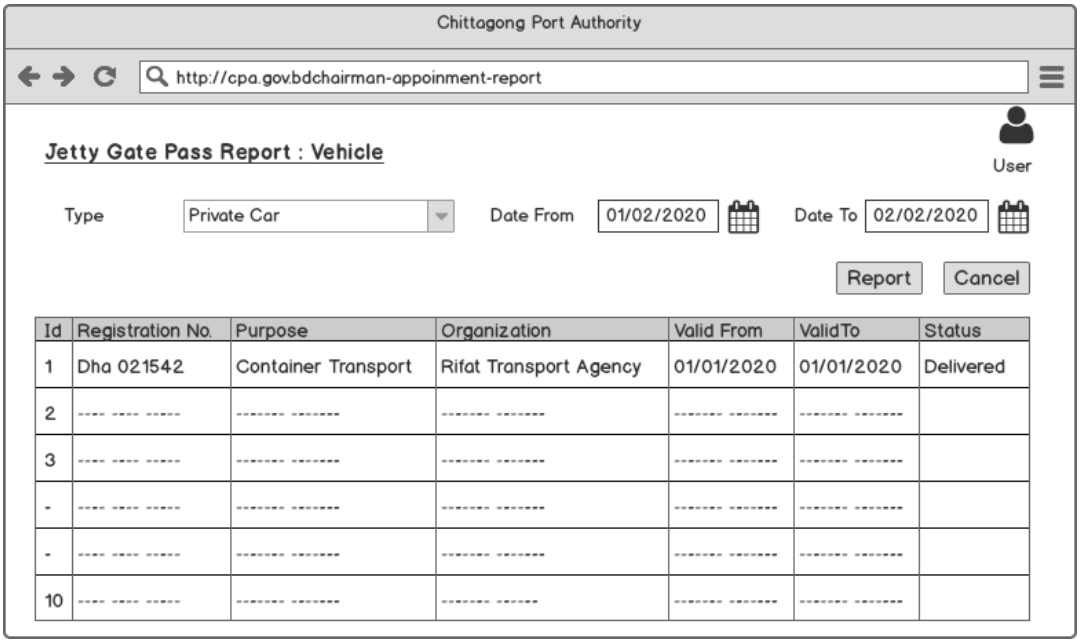


Figure 84: Mockup for Jetty Gate Pass Vehicle Report

7.2.6.4 Jetty Access – Visitor Report

System will provide facility to generate data share report based on multiple criterion. These are:

- Visitor Type
- Duration

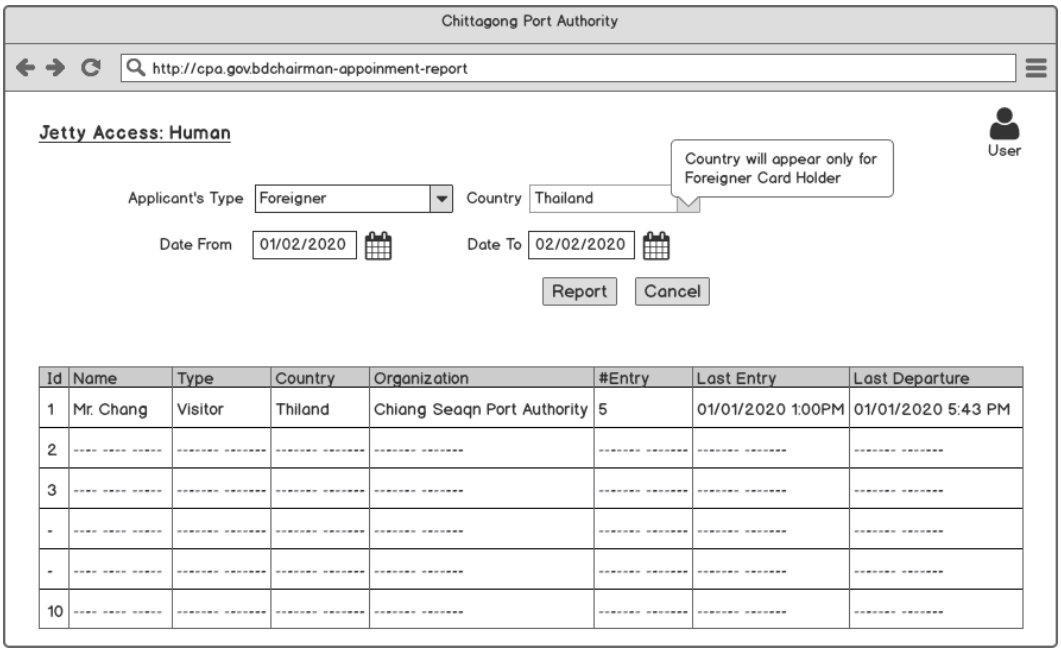


Figure 85: Mockup for Jetty Access - Visitor Report

7.2.6.5 Jetty Access – Vehicle Report

System will provide facility to generate data share report based on multiple criterion. These are:

- Vehicle Type
- Duration

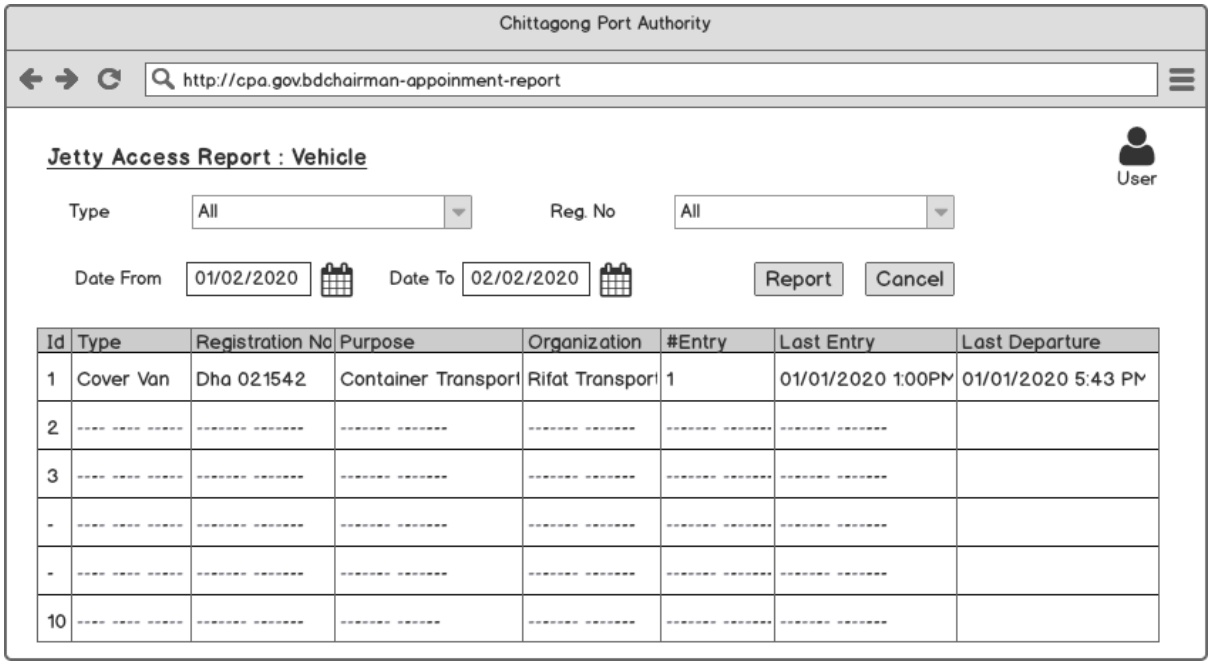


Figure 86: Mockup for Jetty Access – Vehicle Report

8 Module: CCTV in CPA Area

We, CNS develop a proposed design for CCTV in CPA area module of CPA system.

The proposed module will be work on below listed ways;

- CCTV area will be defined
- CCTV installation details will be defined
- CCTV Storage information
- CCTV Status should be updated
- Storage should be available for review

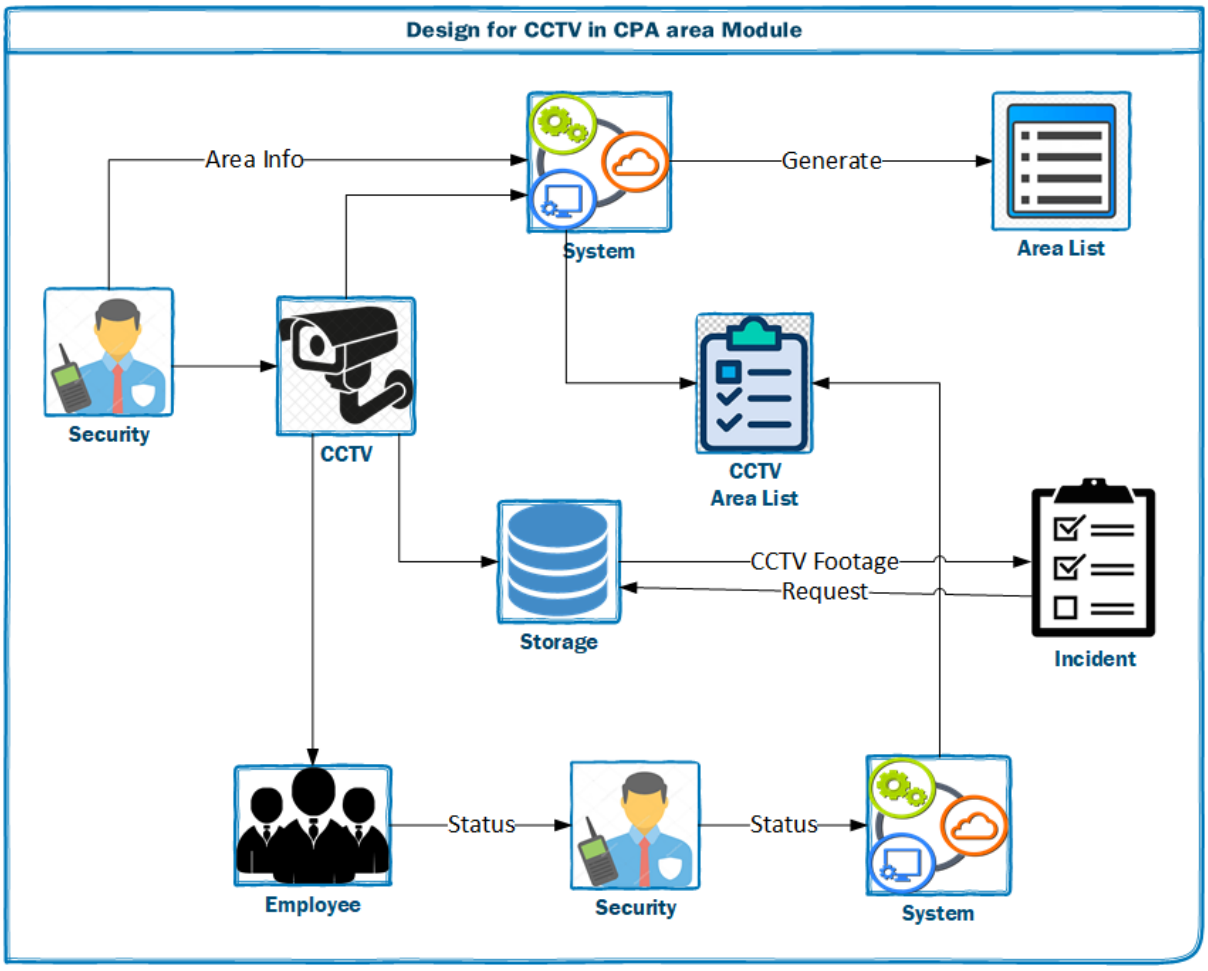


Figure 87: CCTV in CPA area System

8.1 Module Relationship of CCTV Module

We CNS, develop an integrated system for CPA. CCTV module will use data from other modules and also provide data to another module for process.

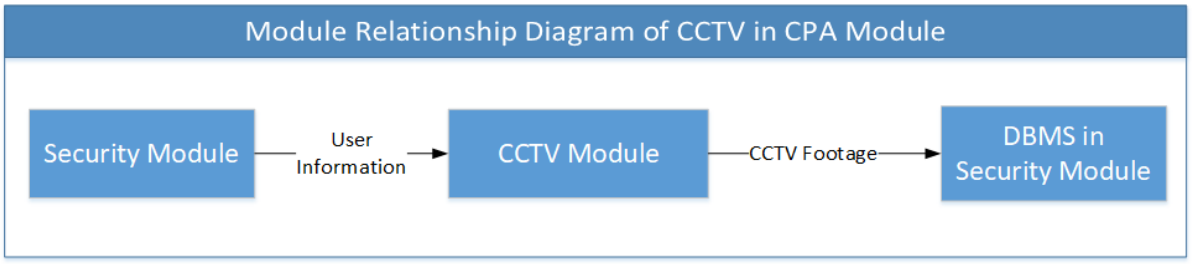


Figure 88: Module Relationship of Board Meeting System

- CCTV module will use user related data from Security module
- This module will provide CCTV footage to DBMS in Security module due to incident management and other relevant task.

8.2 Business Process of CCTV in CPA area

CCTV in CPA area module consist a multiple business processes, these are:

- CCTV Point Management
- CCTV Management

8.2.1 CCTV Point Management Process

Due to digitalization of CCTV module, CPA needs to log the CCTV point to define CCTV covered area information. This list will be update day by day.

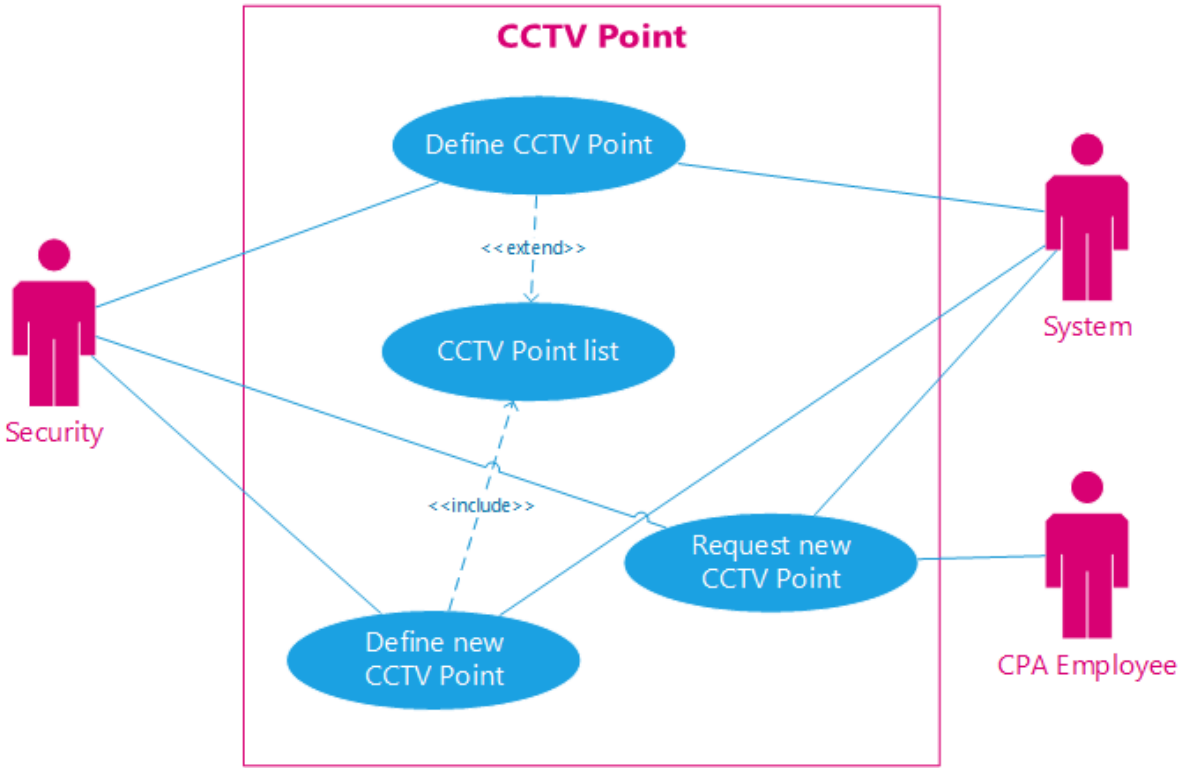


Figure 89: Use Case for CCTV Point

Use Case ID:	**UC-CC-001**
Use Case Name:	**CCTV Point**
Actors:	• Security • System • CPA Employee
Trigger:	When Security department intends to create or update a CCTV point information to the system.
Description:	The functionality “CCTV points” facilitates to create or update a new CCTV point with CCTV coverage area.
Preconditions:	● User must have landed on CPA system
Assumption:	● Provided valid inputs.
Goal:	To create and update CCTV point area.
Normal Flow:	• Insert CCTV point name. • Define the area • Verify the information. • Submit information to the system.
Alternate Flow:	N/A
Failure:	● Connection Lost. ● Mandatory field missing.
Post conditions:	● Notifications about successful CCTV point create or update,
Frequency of Use:	Occasionally
Business Rules/Constraints	● CCTV points must be located within CPA area.
Non Functional Requirements:	N/A
Reference:	N/A

8.2.1.1 CCTV Point Setup

It needs to setup the required points of CCTV where those will be installed.

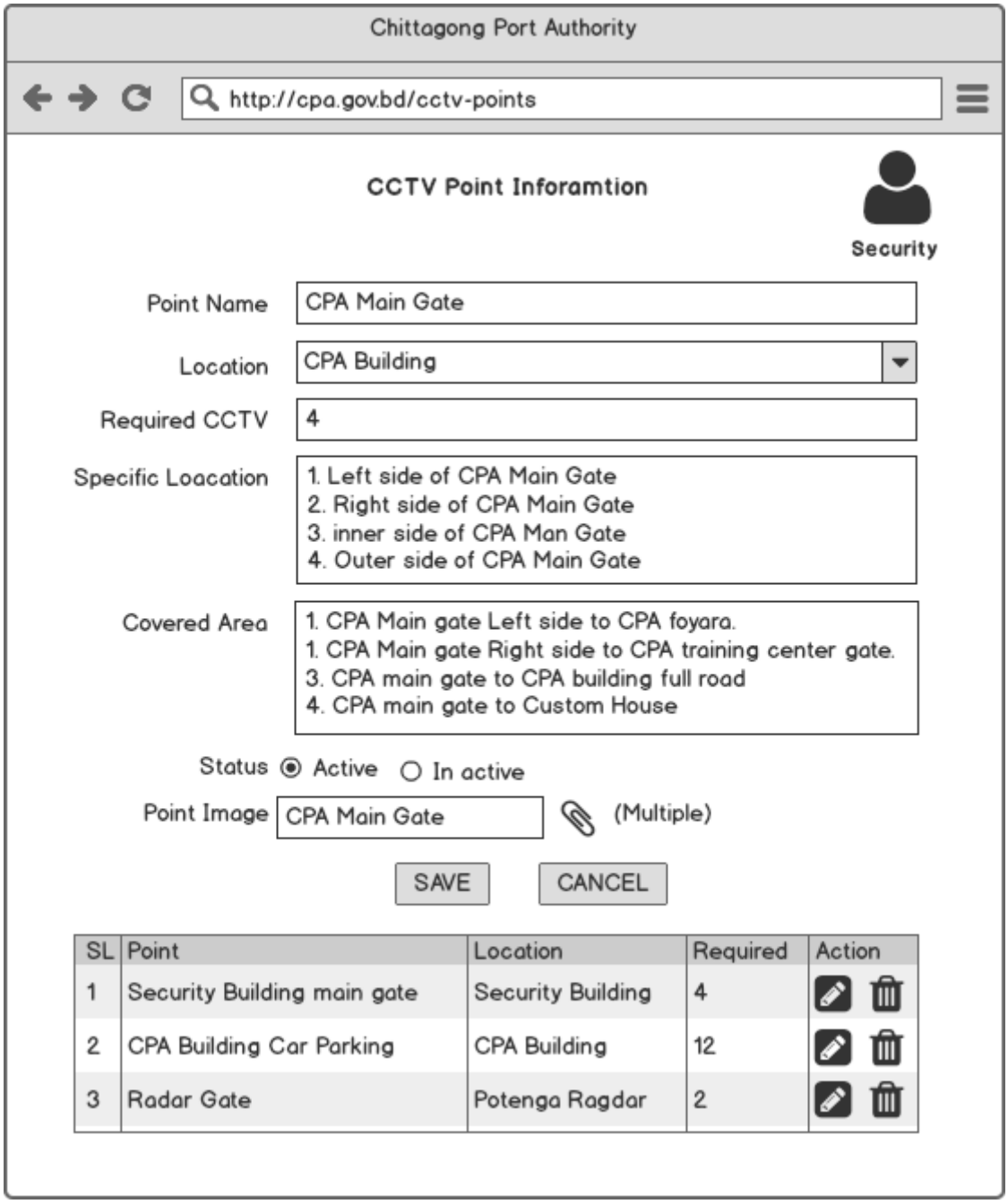


Figure 90: Mockup for CCTV Point Setup

8.2.2 CCTV Management Process

Due to digitalization of CCTV module, CPA needs to manage the CCTVs with purchase, installation, maintenance information.

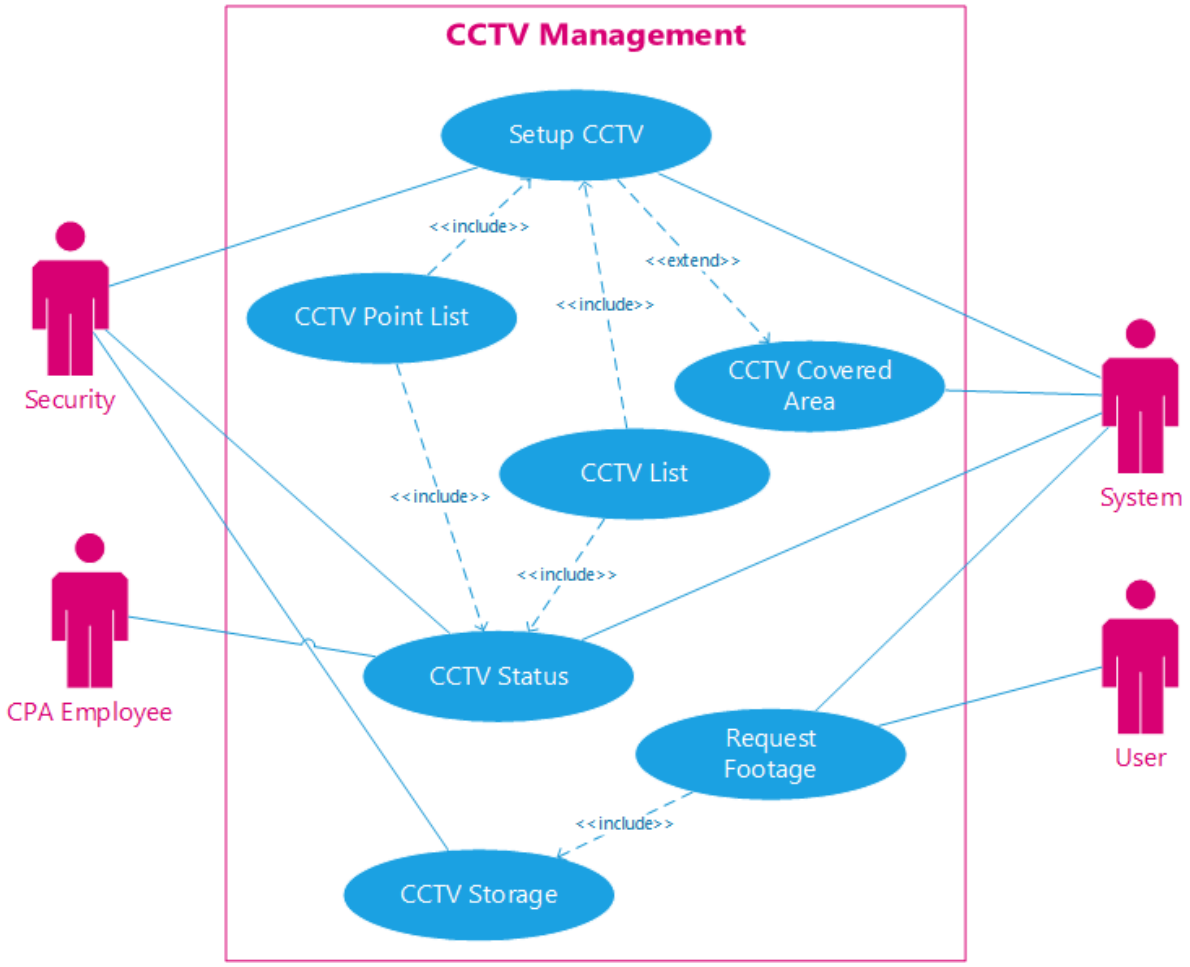


Figure 91: Use Case for CCTV Point

Use Case ID:	**UC-CC-002**
Use Case Name:	**CCTV Management**
Actors:	• Security • System • CPA Employee • User
Trigger:	When Security department intends to install a CCTV to a CCTV point.
Description:	The functionality “CCTV Management” facilitates to create or update record about CCTV installation.
Preconditions:	• User must have landed on CPA system
Assumption:	• Provided valid inputs.
Goal:	To install a CCTV to a CCTV point area.
Normal Flow:	• Select CCTV. • Select CCTV Point • Define the Coverage area and other relevant inforamtion • Verify the information. • Submit information to the system.
Alternate Flow:	N/A
Failure:	• Connection Lost. • Mandatory field missing.
Post conditions:	• Notifications about successful CCTV installation

Frequency of Use:	Occasionally
Business Rules/Constraints	• CCTV points must be located within CPA area.
Non Functional Requirements:	N/A
Reference:	N/A

8.2.2.1 CCTV Register

It needs to maintain a register about CCTV.

Figure 92: Mockup for CCTV Register

8.2.2.2 CCTV Allotment

Purchased and repaired CCTV should be installed in CCCTV points. CPA need to track CCTV information as per points.

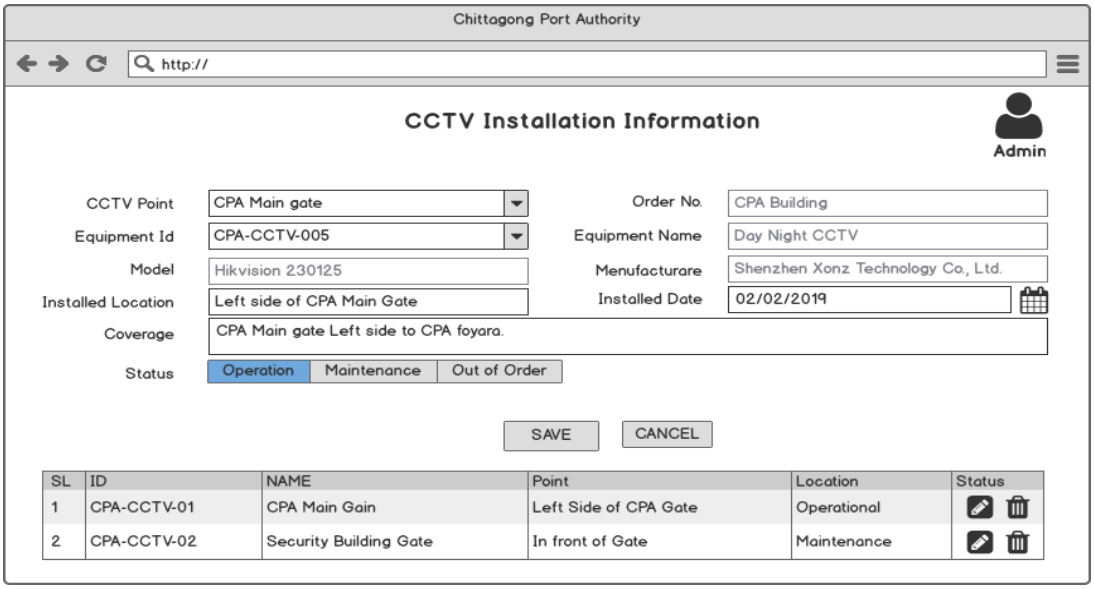


Figure 93: Mockup for CCTV Installation

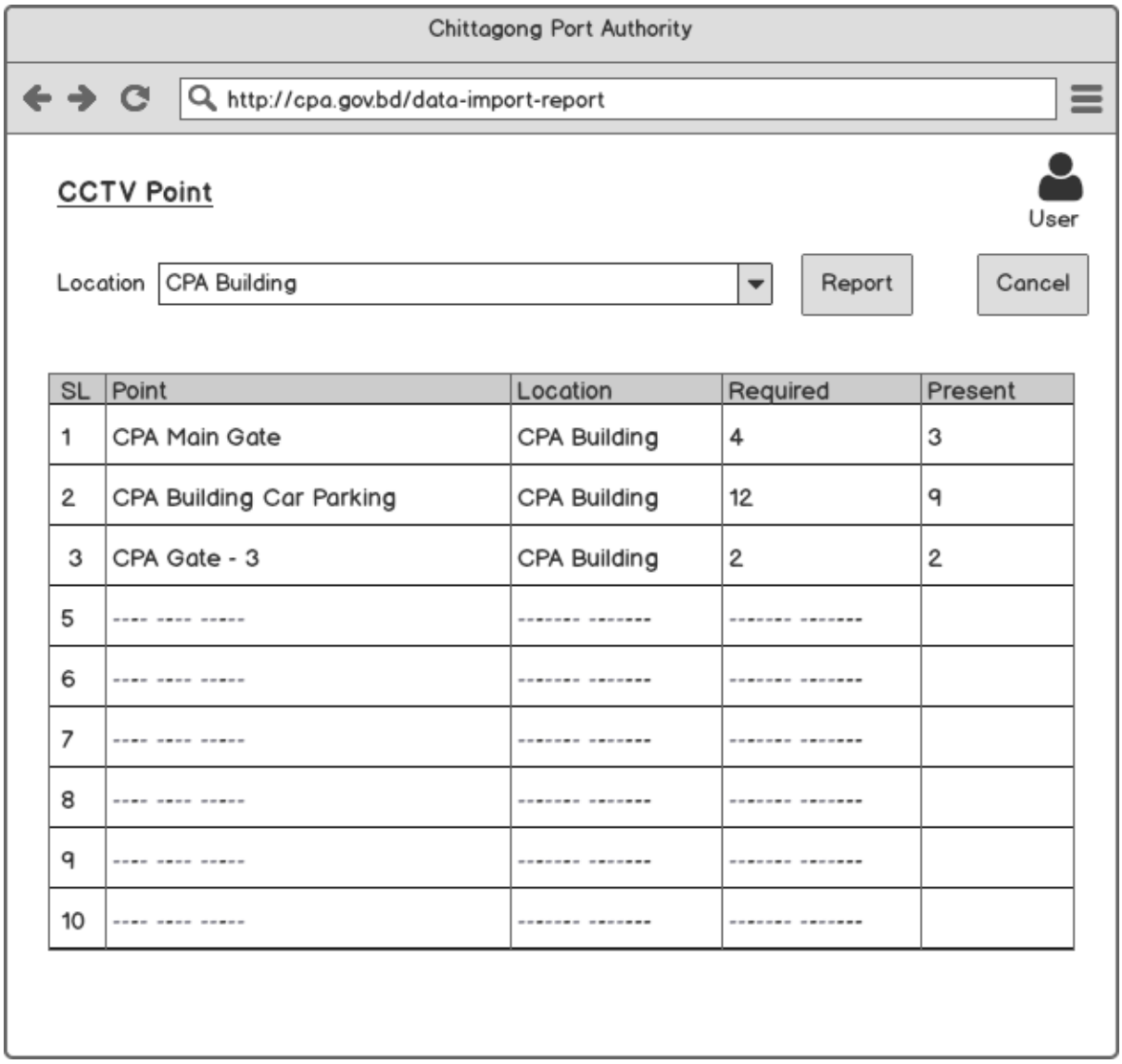
8.2.3 CCTV in CPA Module Reports

We have listed some reports for Board Decision module.

8.2.3.1 CCTV Point Report

System will provide facility to generate CCTV point list based a criterion which is:

- Location



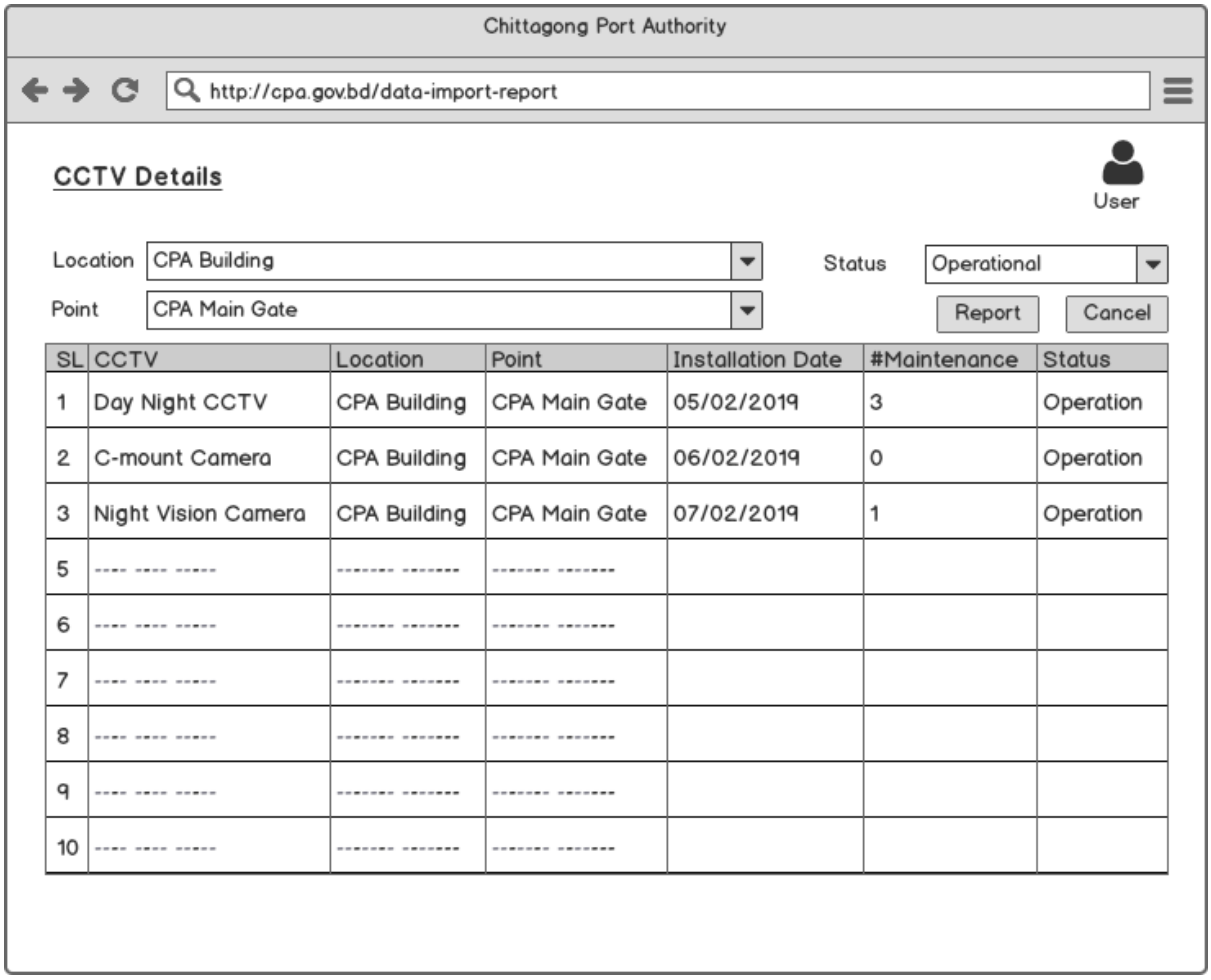
SL	Point	Location	Required	Present
1	CPA Main Gate	CPA Building	4	3
2	CPA Building Car Parking	CPA Building	12	9
3	CPA Gate - 3	CPA Building	2	2
5	---- ---- -----	------- -------	------- -------	
6	---- ---- -----	------- -------	------- -------	
7	---- ---- -----	------- -------	------- -------	
8	---- ---- -----	------- -------	------- -------	
9	---- ---- -----	------- -------	------- -------	
10	---- ---- -----	------- -------	------- -------	

Figure 94: Mockup for CCTV Point List Report

8.2.3.2 CCTV Allotment Report

System will provide facility to generate CCTV allotment report list based on criterion. These are:

- Location
- CCTV Point
- Status



SL	CCTV	Location	Point	Installation Date	#Maintenance	Status
1	Day Night CCTV	CPA Building	CPA Main Gate	05/02/2019	3	Operation
2	C-mount Camera	CPA Building	CPA Main Gate	06/02/2019	0	Operation
3	Night Vision Camera	CPA Building	CPA Main Gate	07/02/2019	1	Operation
5	---- ---- -----	------- -------	------- -------			
6	---- ---- -----	------- -------	------- -------			
7	---- ---- -----	------- -------	------- -------			
8	---- ---- -----	------- -------	------- -------			
9	---- ---- -----	------- -------	------- -------			
10	---- ---- -----	------- -------	------- -------			

Figure 95: Mockup for CCTV Details Report

9 Module: Integration of existing access control & surveillance system for CPA

We, CNS develop a proposed design for integration of existing access control & surveillance system for CPA module of CPA system.

The proposed module will be work on below listed ways;

- Integrate entire access control & surveillance system together.
- Access controlled data should be controlled from a single point.
- Biometric, retina, and access card system control will work together for salary and over-time calculation.
- Current status of human location will be generated from this module.

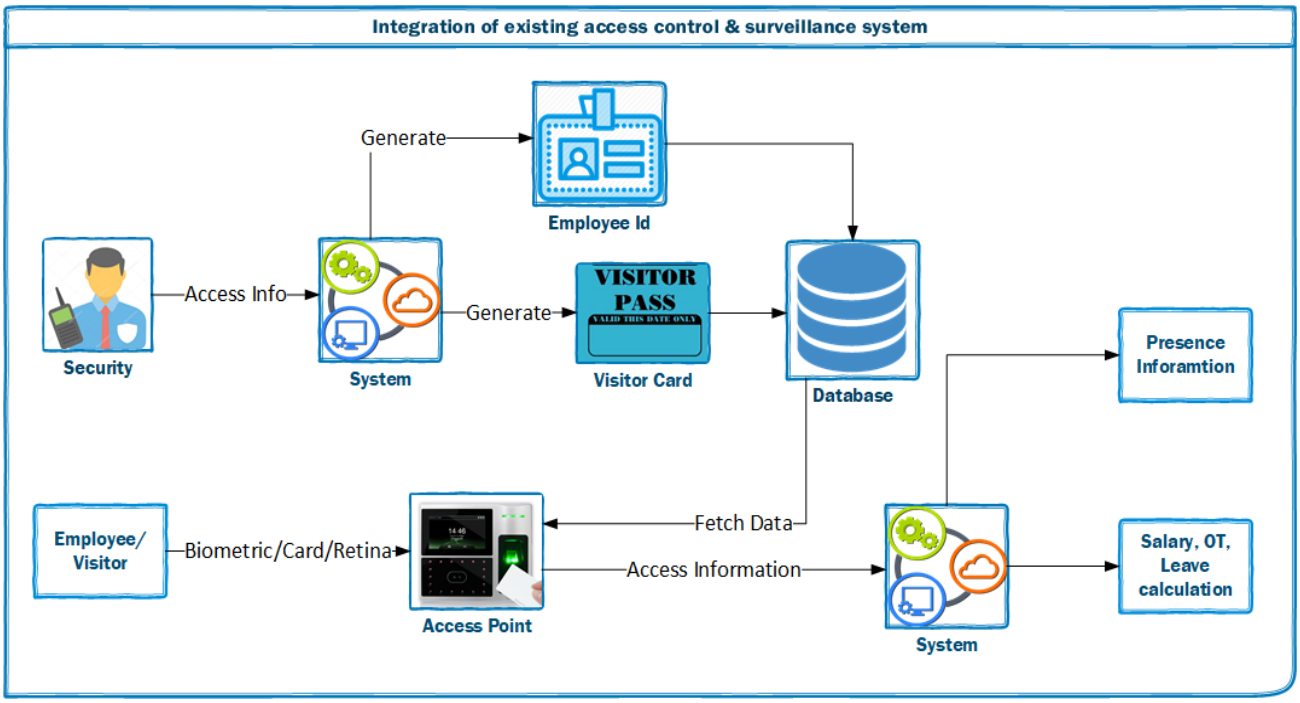


Figure 96: Access control integration System

9.1 Module Relationship of Access Control Integration System

We CNS, develop an integrated system for CPA. Existing access control system module will use data from other modules and also provide data to another module for process.

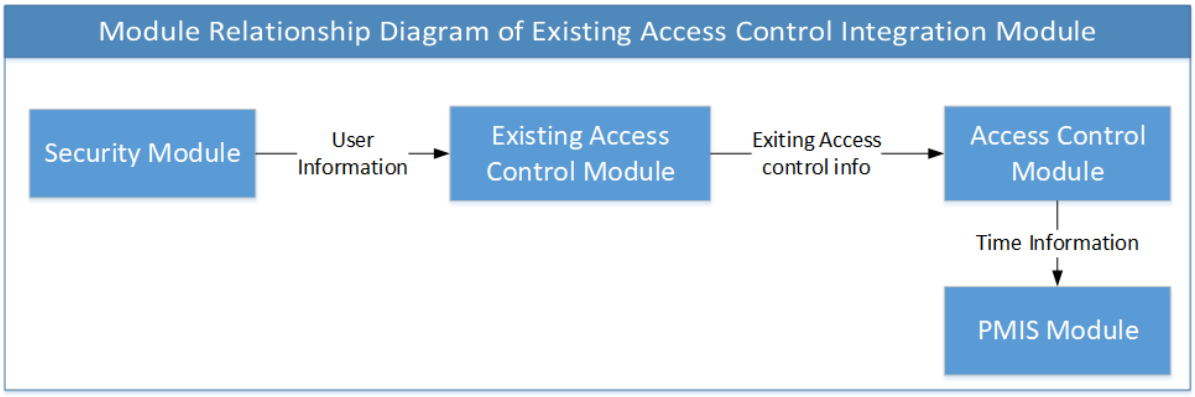


Figure 97: Module Relationship of existing access control integration Management

- Existing access control module will use user related data from Security module
- This module will provide existing information to Access Control module to process Salary, OT, and Leave.

9.2 Business Process of Integration of existing access control

Integration of existing access control System consist a business processes which is:

- Existing Data Sharing

9.2.1 Existing Data Sharing Process

Due to digitalization of CPA, it need to access existing access control data to new system.

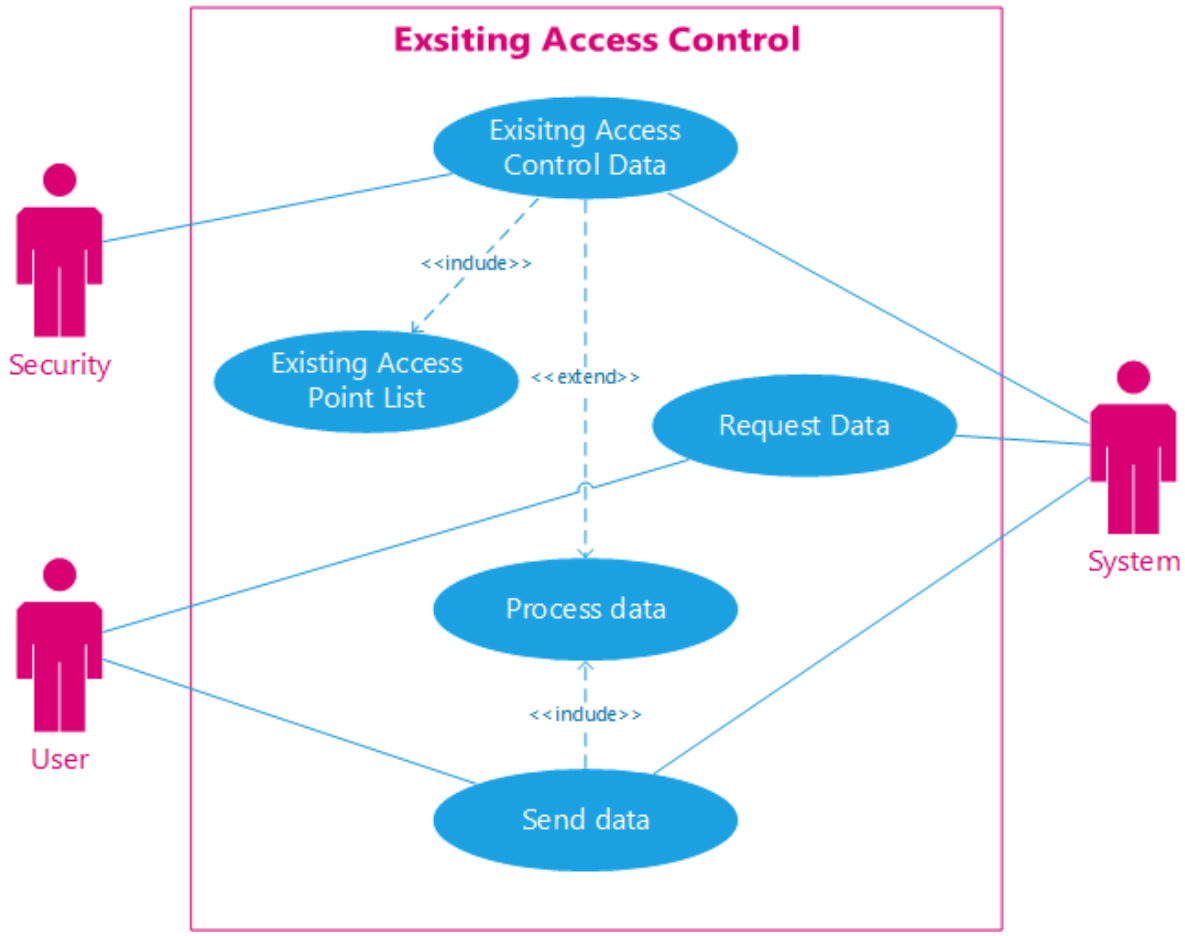


Figure 98: Use Case for Stakeholder Register

Use Case ID:	**UC-AC-001**
Use Case Name:	**Existing Data Sharing**
Actors:	• Security • User • System
Trigger:	When user intends to receive existing access control data.
Description:	The functionality “Existing Data Sharing” facilitates to provide existing access control data to new access control module to generate salary, OT, and leave.
Preconditions:	• User must have landed on CPA system • Existing access control data should be available to storage.
Assumption:	• API is ready.
Goal:	To insert existing access control data to new access control system.
Normal Flow:	• Send request for data. • System will validate the request. • Data will be processed • Data will be shared. • New system data will be updated.

Alternate Flow:	N/A
Failure:	• Connection Lost. • API is not working.
Post conditions:	• Existing access control data should be available to new system.
Frequency of Use:	Occasionally
Business Rules/Constraints	N/A
Non Functional Requirements:	N/A
Reference:	N/A

9.2.1.1 Data Request

User will request data from existing access control by using this mockup.

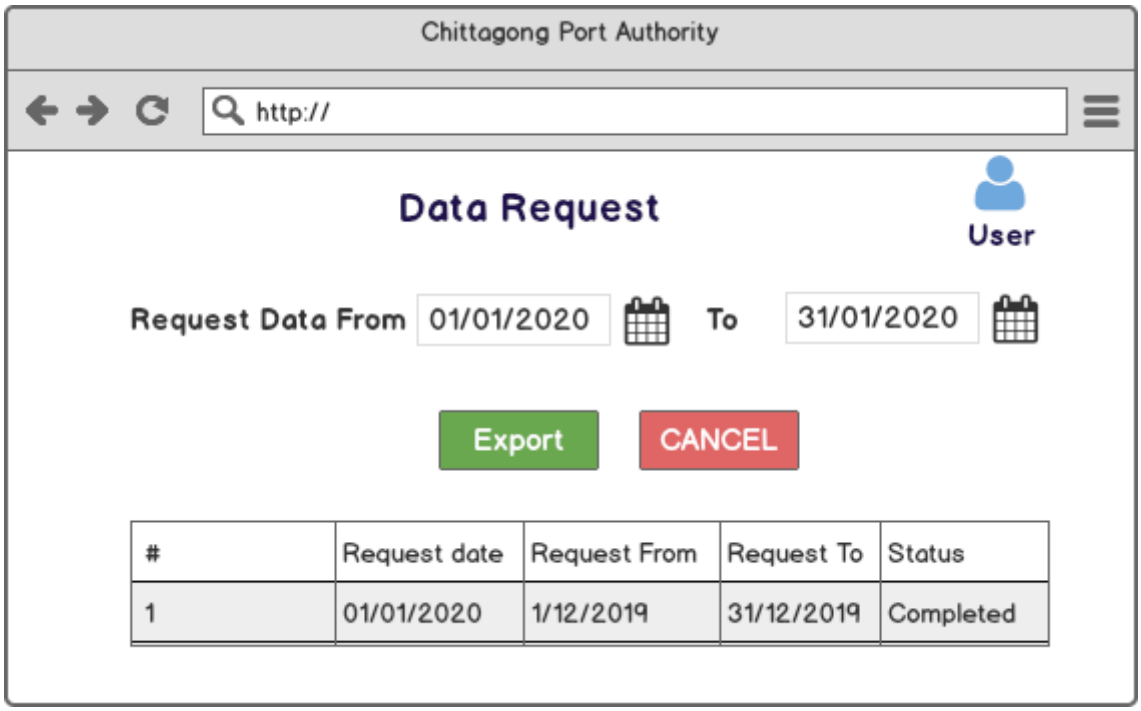


Figure 99: Mockup of Existing Data Request

9.2.1.2 Data Import

Exported data should be import to new system by this mockup. It will delete previously imported data from system, if user request same data several times.

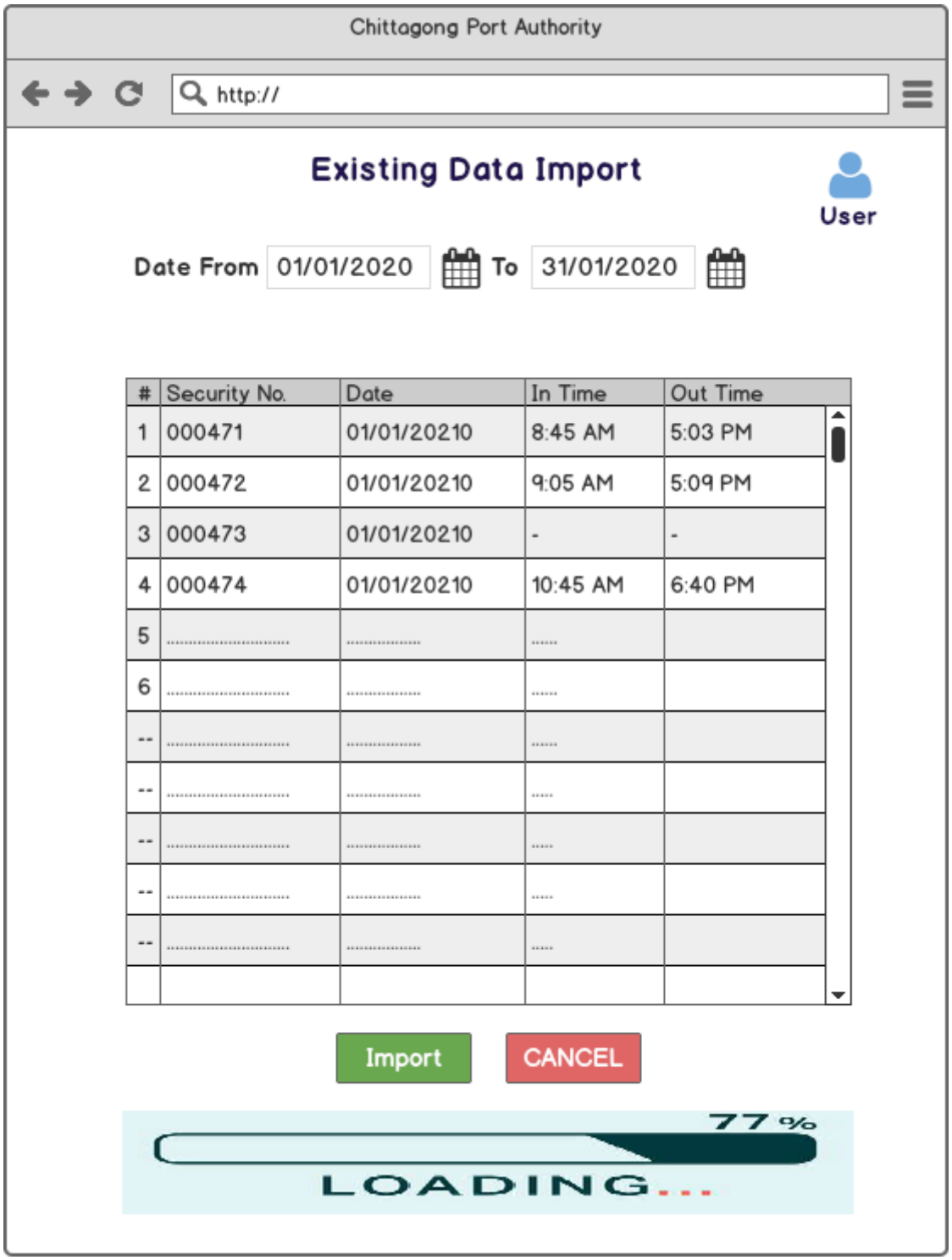


Figure 100: Mockup of Data Import

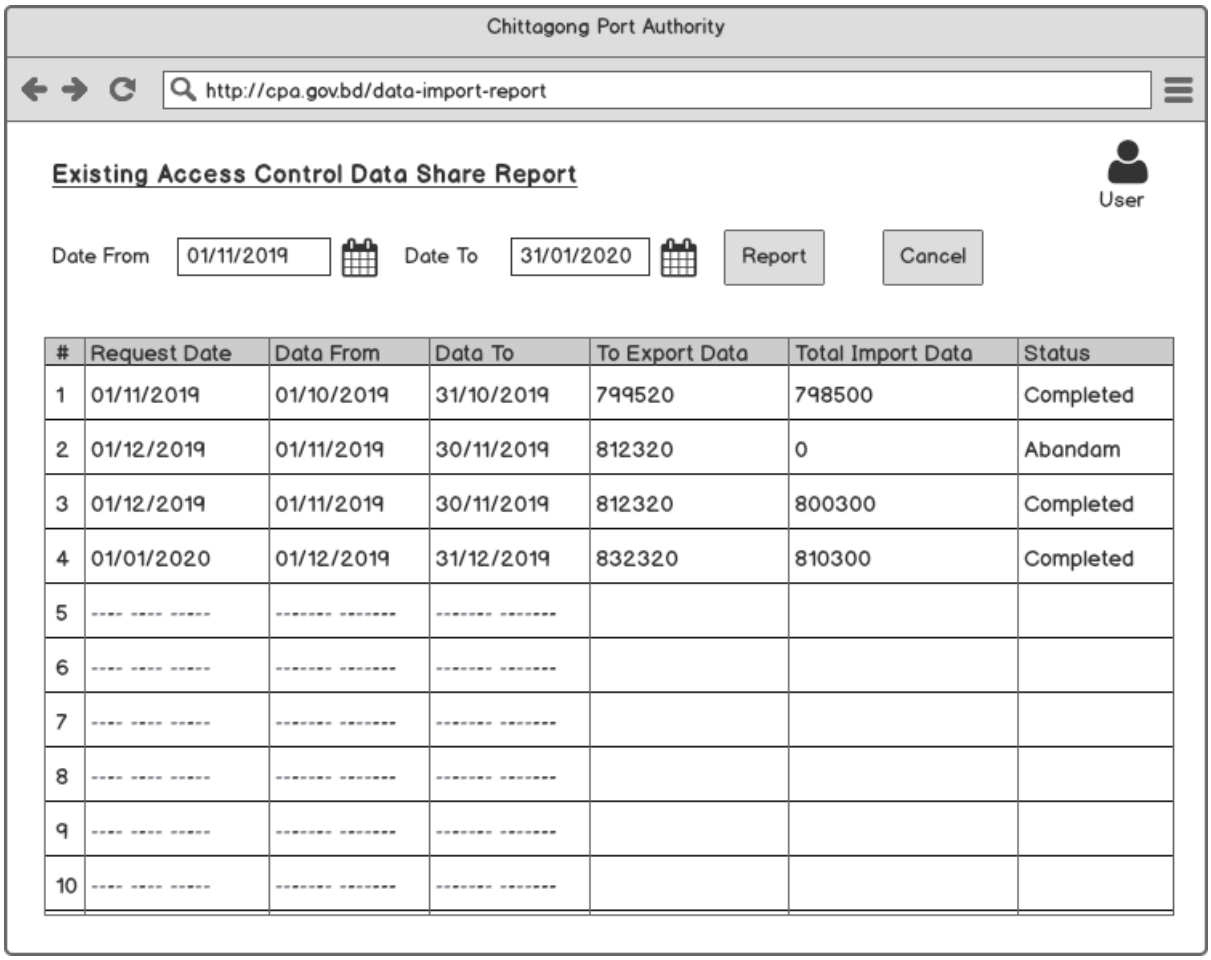
9.2.2 Existing Access Control Module Reports

We have listed some reports for Appointment/Schedule module.

9.2.2.1 Existing access control data share report

System will provide facility to generate data share report based on multiple criterion. These are:

- Data Schedule



#	Request Date	Data From	Data To	To Export Data	Total Import Data	Status
1	01/11/2019	01/10/2019	31/10/2019	799520	798500	Completed
2	01/12/2019	01/11/2019	30/11/2019	812320	0	Abandam
3	01/12/2019	01/11/2019	30/11/2019	812320	800300	Completed
4	01/01/2020	01/12/2019	31/12/2019	832320	810300	Completed
5	---- ---- -----	------- -------	------- -------			
6	---- ---- -----	------- -------	------- -------			
7	---- ---- -----	------- -------	------- -------			
8	---- ---- -----	------- -------	------- -------			
9	---- ---- -----	------- -------	------- -------			
10	---- ---- -----	------- -------	------- -------			

Figure 101: Mockup for Data Share Report

10 Module: Computer related equipment and peripherals maintenance Management System

We, CNS develop a proposed design for Computer related equipment and peripherals maintenance Management module of CPA system.

The proposed module will be work on below listed ways;

- Computer center will create the equipment and peripheral list.
- They also generate employee/section wise assigned equipment list.
- User will create service ticket to the system with specific issue.
- Created service ticket will be updated the service log book
- Service supervisor will assign a ticket to a service engineer
- Assigned Service engineer will visit the ticket provider premises
- Service engineer will request for equipment movement (if required)
- Concern employee will send the equipment to service room
- After that Service engineer will start investigation of the equipment; it may resolve issue here.
- Service engineer send requisition to System Analyst if it need any parts or peripheral to resolve the equipment.
- System Analyst will inspect the equipment and forward the requisition to Member Finance for purchase approval
- After approval of Member Finance, system will send the purchase request to purchase section
- Service room will notify when the required parts or peripheral available to CPA
- Service Engineer will update the ticket when s/he completed his/her job; System will automatically notify the concern person about the readiness of his/her equipment.
- Concern person will receive the equipment and update letter status.

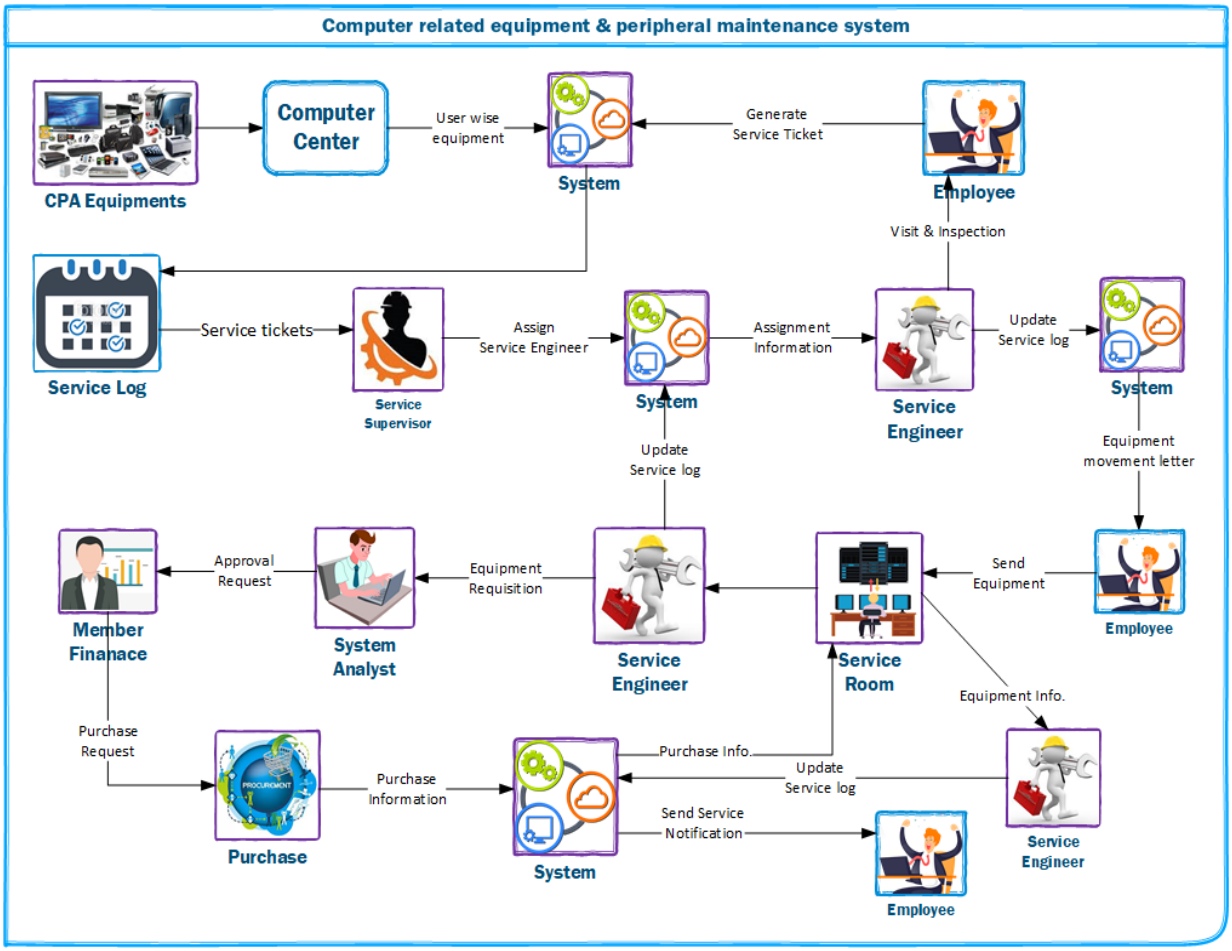


Figure 102: Computer Equipment Maintenance System

10.1 Module Relationship of Case Management

We CNS, develop an integrated system for CPA. Computer maintenance module will use data from other modules and also provide data to another module for process.

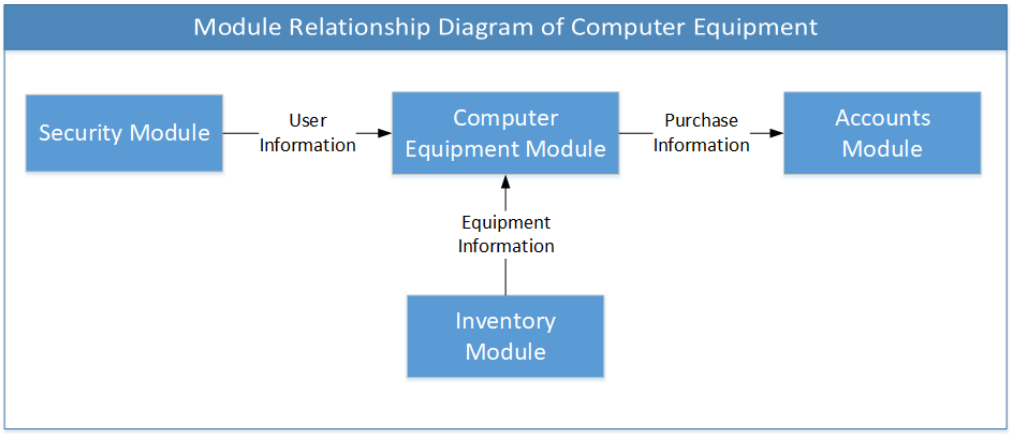


Figure 103: Module Relationship of Computer Equipment Maintenance System

- Computer equipment module will use user related data from Security module
- Computer equipment module will use equipment related information from Inventory Module
- This module will provide purchase related data to Accounts module

10.2 Business Process of Computer Equipment Maintenance System

Case Management System consist with multiple business processes. These are:

- Computer Equipment Register
- Computer Equipment Assignment
- Computer Equipment Service ticket generation
- Ticket Assignment
- Computer Equipment Servicing

10.2.1 Computer Equipment Register Process

Due to digitalization of computer equipment maintenance process, Computer center needs to track entire computer related equipment. CPA purchase the equipment from vendors who may be enlisted or not.

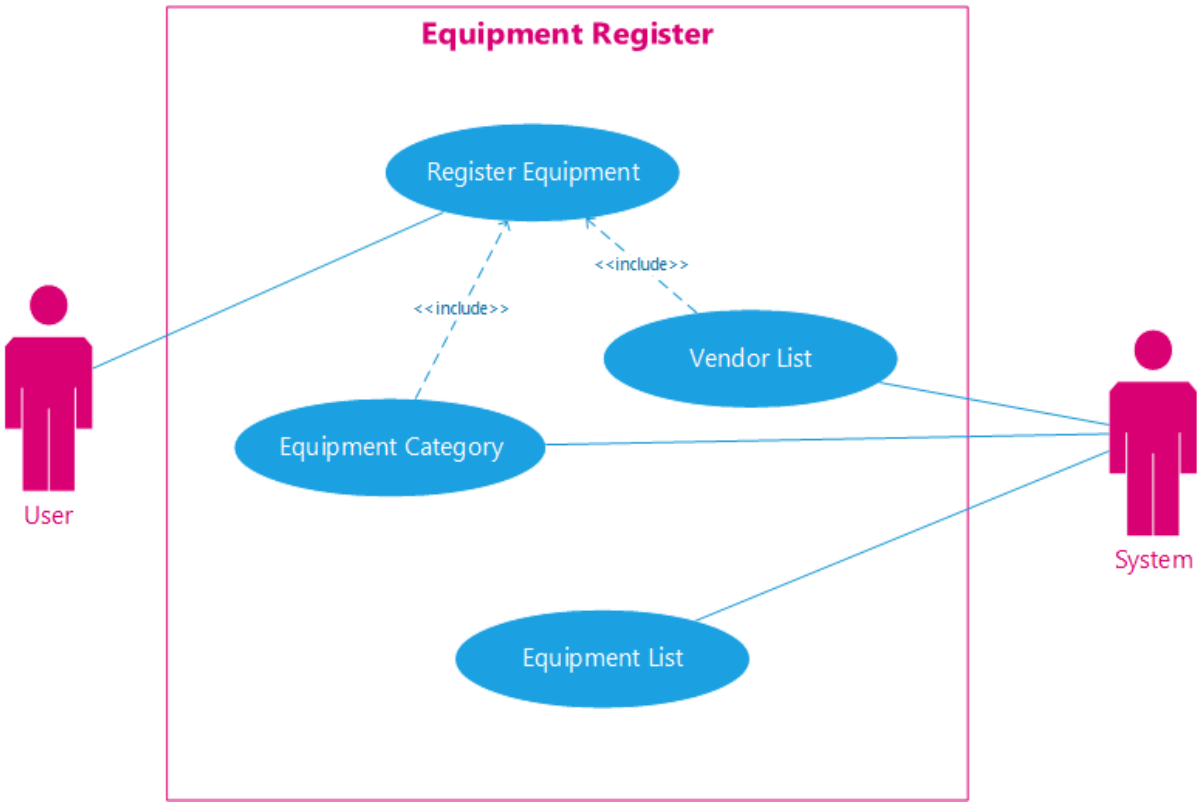


Figure 104: Use Case for Equipment Register

Use Case ID:	**UC-CE-001**
Use Case Name:	**Equipment Register**
Actors:	• User • System
Trigger:	When user intends to insert an equipment information to the system.
Description:	The functionality “Equipment Register” facilitates to insert a new equipment to the system with definition of equipment category and vendor information.
Preconditions:	• User must have landed on CPA system • Equipment categories must be defined • Vendor list must be available to the system
Assumption:	• Provided valid inputs.
Goal:	To insert an equipment information and update the equipment register.
Normal Flow:	• Insert eqipment id, order number and other relevant information. • Select equipment category and vendor. • Upload equipment related documents.

	• Verify the information. • Submit information to the system.
Alternate Flow:	N/A
Failure:	• Connection Lost. • Mandatory field missing.
Post conditions:	• Notifications about successful equipment insert. • Configured equipmemnt will be available to equipment register.
Frequency of Use:	Occasionally
Business Rules/Constraints	• Equipment must be arrived physically at CPA.
Non Functional Requirements:	N/A
Reference:	N/A

10.2.1.1 Computer Equipment Category

Computer equipment categories will be managed by this mockup. It is possible to insert & update computer equipment category from here.

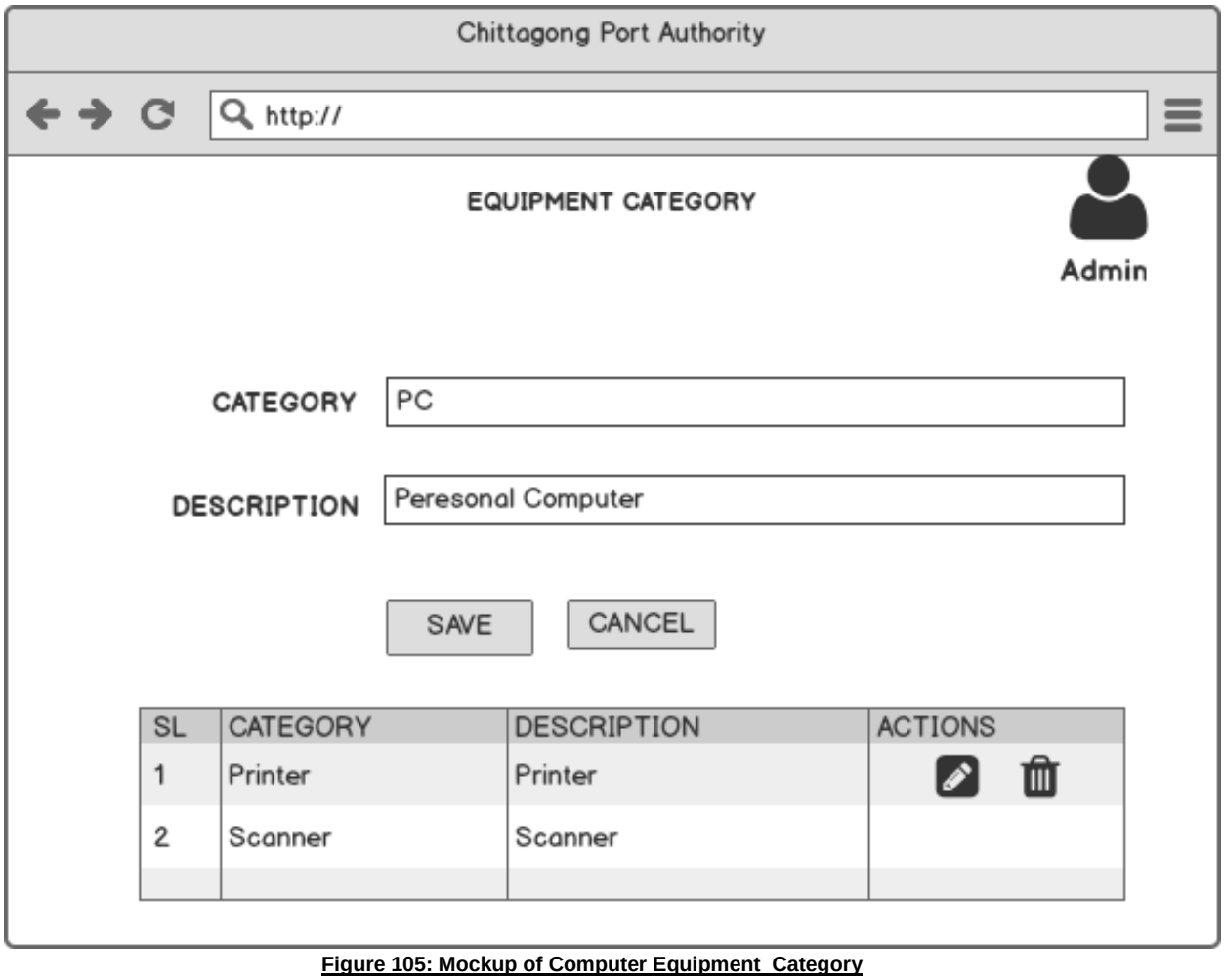


Figure 105: Mockup of Computer Equipment Category

10.2.1.2 Computer Equipment Vendor Information

Enlisted Computer Equipment Vendor information will be managed by this mockup. It is possible to insert & update computer equipment vendor from here.

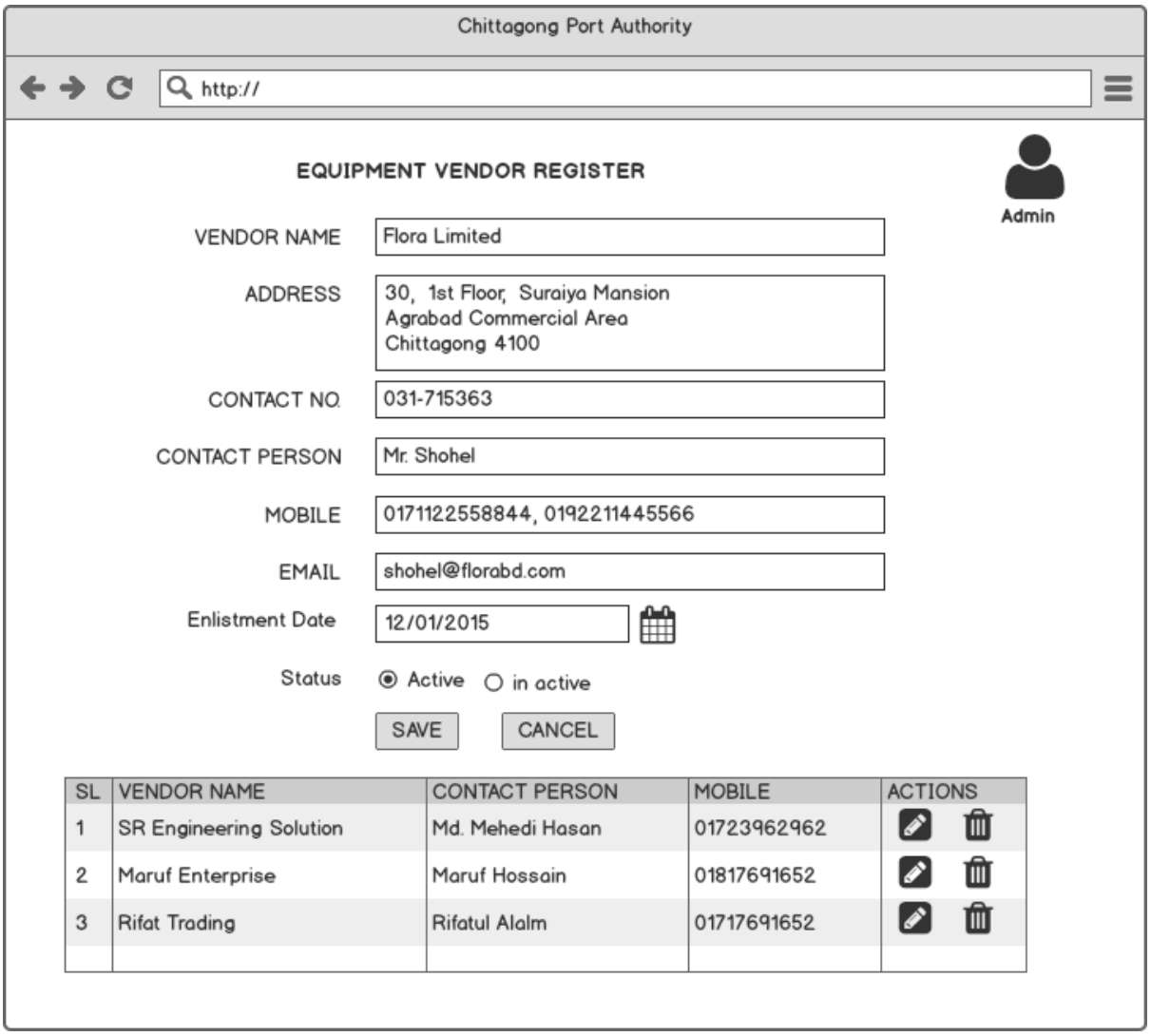


Figure 106: Mockup of Vendor Information

10.2.1.3 Computer Equipment Register

Computer equipment information will be managed by this mockup.

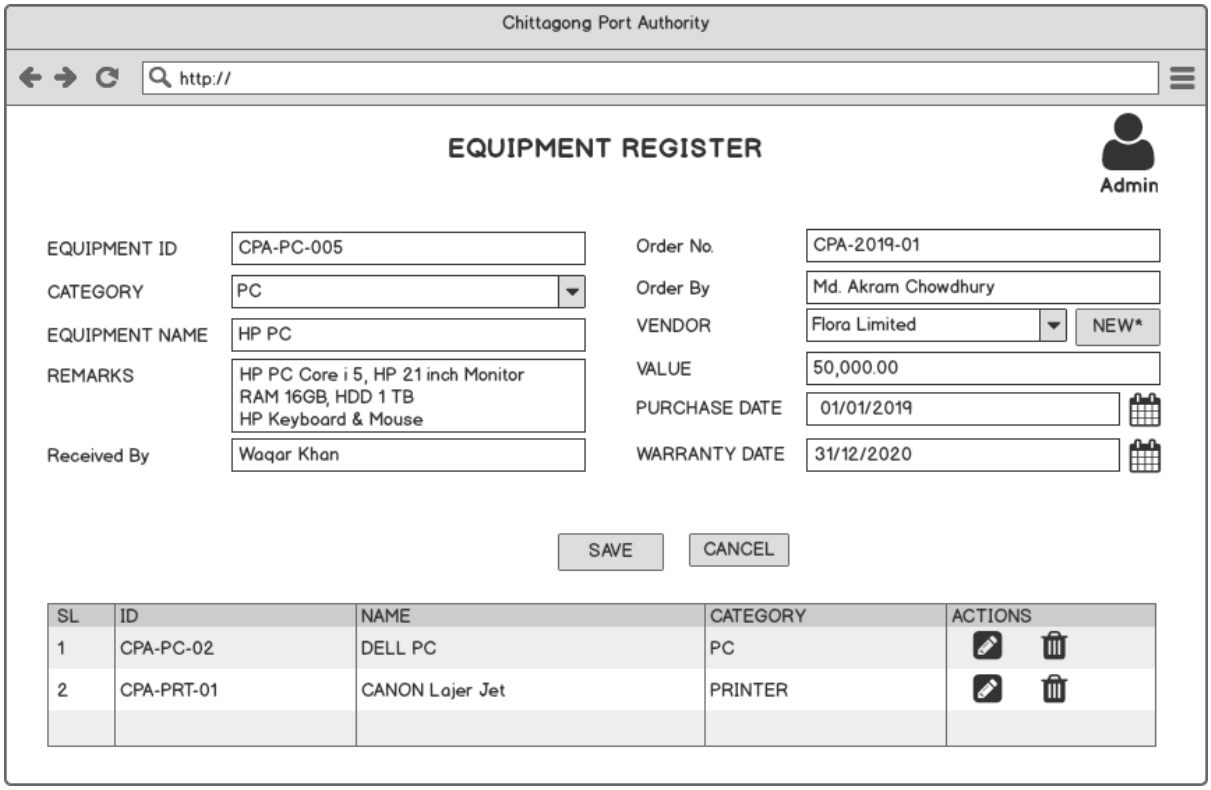


Figure 107: Mockup for Case Information

- Equipment ID should be unique.
- Equipment should have a category.
- Only active vendors list is populated here.
- Value & purchase date should be defined.
- Purchase Date should not be more that warranty date.

10.2.2 Computer Equipment Assignment Process

CPA records their computer equipment and assign user. Assigned user will be responsible to back the equipment to CPA.

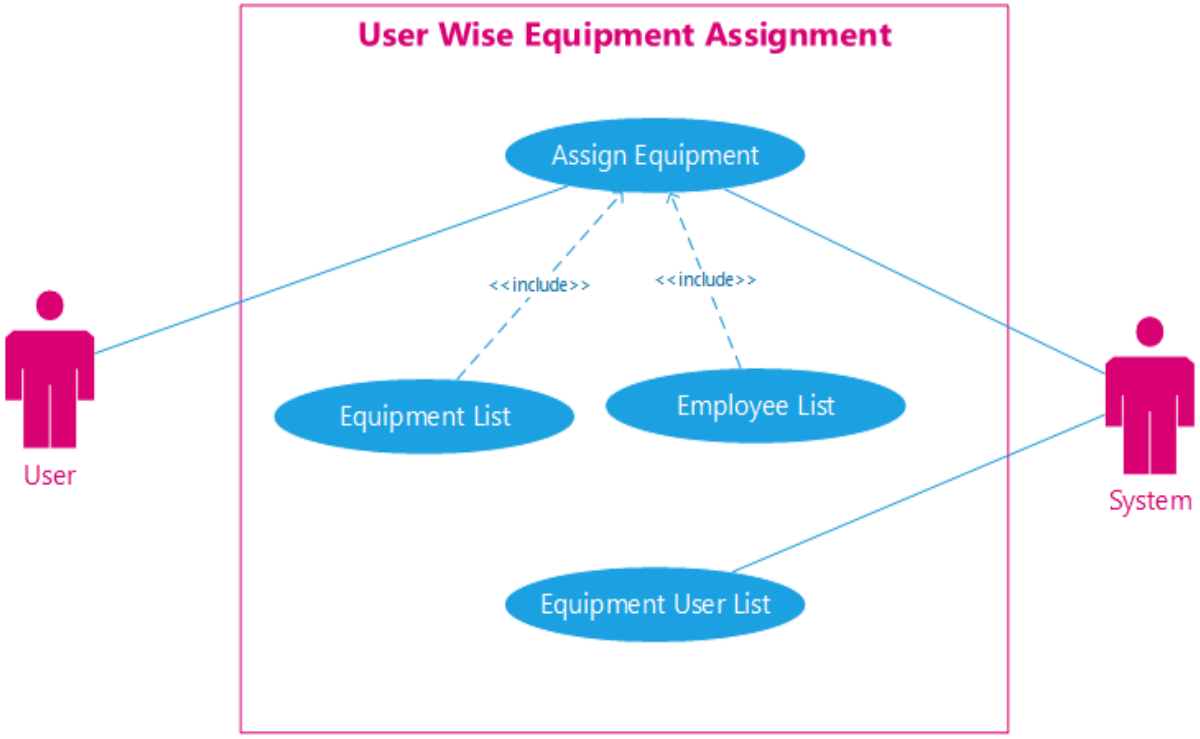


Figure 108: Use Case for Lawyer Assignment

Use Case ID:	**UC-CE-002**
Use Case Name:	**User wise equipment assignment**
Actors:	• User • System
Trigger:	When user intends to assign an equipment to an employee or section.
Description:	The functionality "User wise equipment assignment" facilitates to assign a user to operate an equipment.
Preconditions:	• User must have landed on CPA system. • Equipment should be recorded. • Employee should be entitled.
Assumption:	• Provided valid inputs.
Goal:	To assign an equipment to a user.
Normal Flow:	• Select equipment from equipment register. • Assign equipment to an employee or section. • Verify the information. • Submit information to the system.
Alternate Flow:	• NA
Failure:	• Connection Lost. • Broken pages. • Mandatory field missing.
Post conditions:	• Equipment assignment listing.
Frequency of Use:	Frequently
Business Rules/Constraints	• Equipment should be registered. • Employee should be on-roll status.
Non Functional Requirements:	N/A
Reference:	**UC-CE-001**

10.2.2.1 Computer Equipment Assignment

Computer equipment assignment related information will be managed by this mockup.

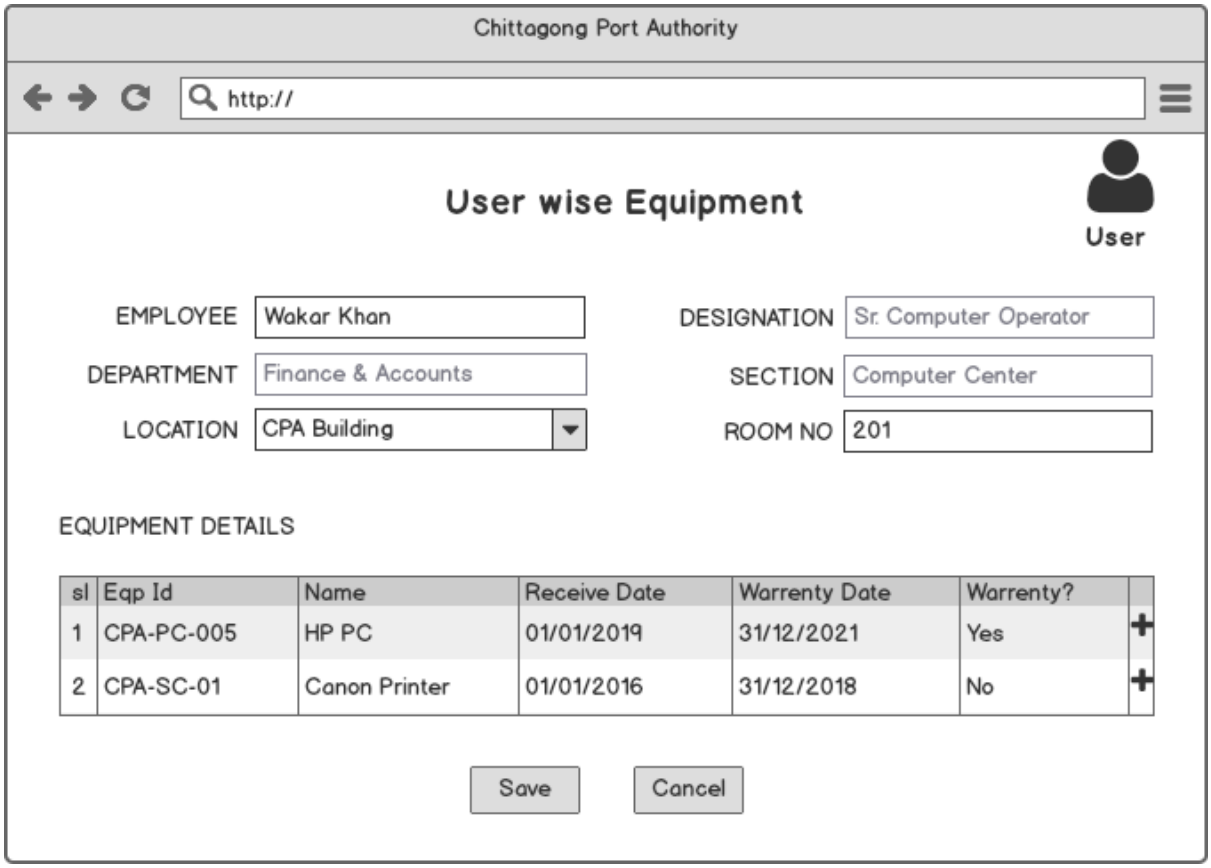


Figure 109: Mockup for Computer Equipment Assignment

- Equipment wise user should be assigned.
- Equipment user list will be updated.

10.2.3 Computer Equipment Service ticket generation Process

Computer equipment user will generate service ticket to the system for any type of equipment maintenance. Also, user will generate service ticket for the support of internet and conference room service. Based on the user request, system will generate a service log.

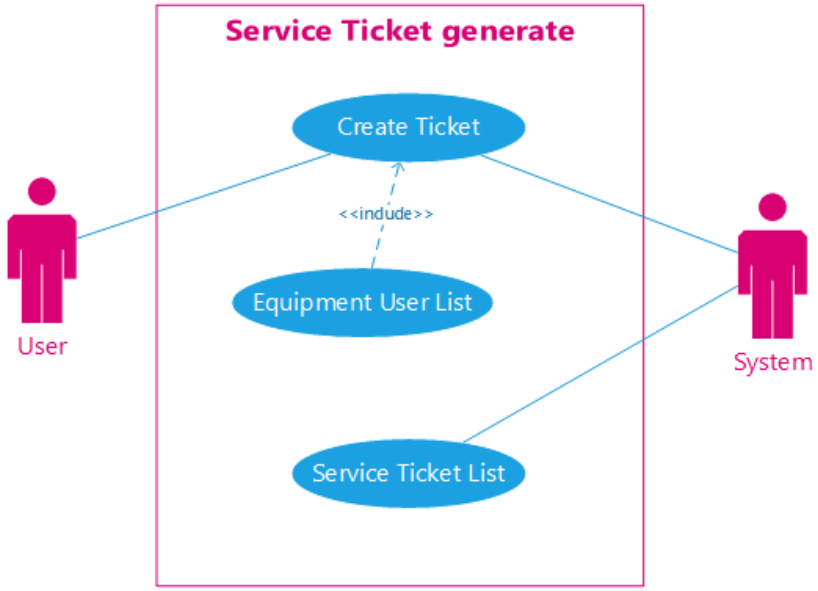


Figure 110: Use Case for Generate Service Ticket

Use Case ID:	**UC-CE-003**
Use Case Name:	**Generate Service Ticket**
Actors:	• User • System
Trigger:	When user intends to create a service ticket.
Description:	The functionality “Generate Service ticket” facilitates to generate a service ticket for equipment maintenance, internet related issues, and conference room related task.
Preconditions:	• User must have landed on CPA system. • Equipment wise user shoulod be defined.
Assumption:	• Provided valid inputs.
Goal:	To generate a service ticket.
Normal Flow:	• User will select the employee. • Equipment location with room detials will be provided. • User will define the problem type from list • User will select the equipment • User need to provide detail about required service. • Verify the information. • Submit information to the system.
Alternate Flow:	• N/A
Failure:	• Connection Lost. • Broken pages. • Mandatory field missing.
Post conditions:	• Service ticket will be genrated and update to the service log.
Frequency of Use:	Frequently
Business Rules/Constraints	• Equipment should be registered. • User should be associate with equipment.
Non Functional Requirements:	N/A
Reference:	**UC-CE-001, UC-CE-002**

10.2.3.1 Maintenance request

User will submit the form to the system to get computer equipment related service.

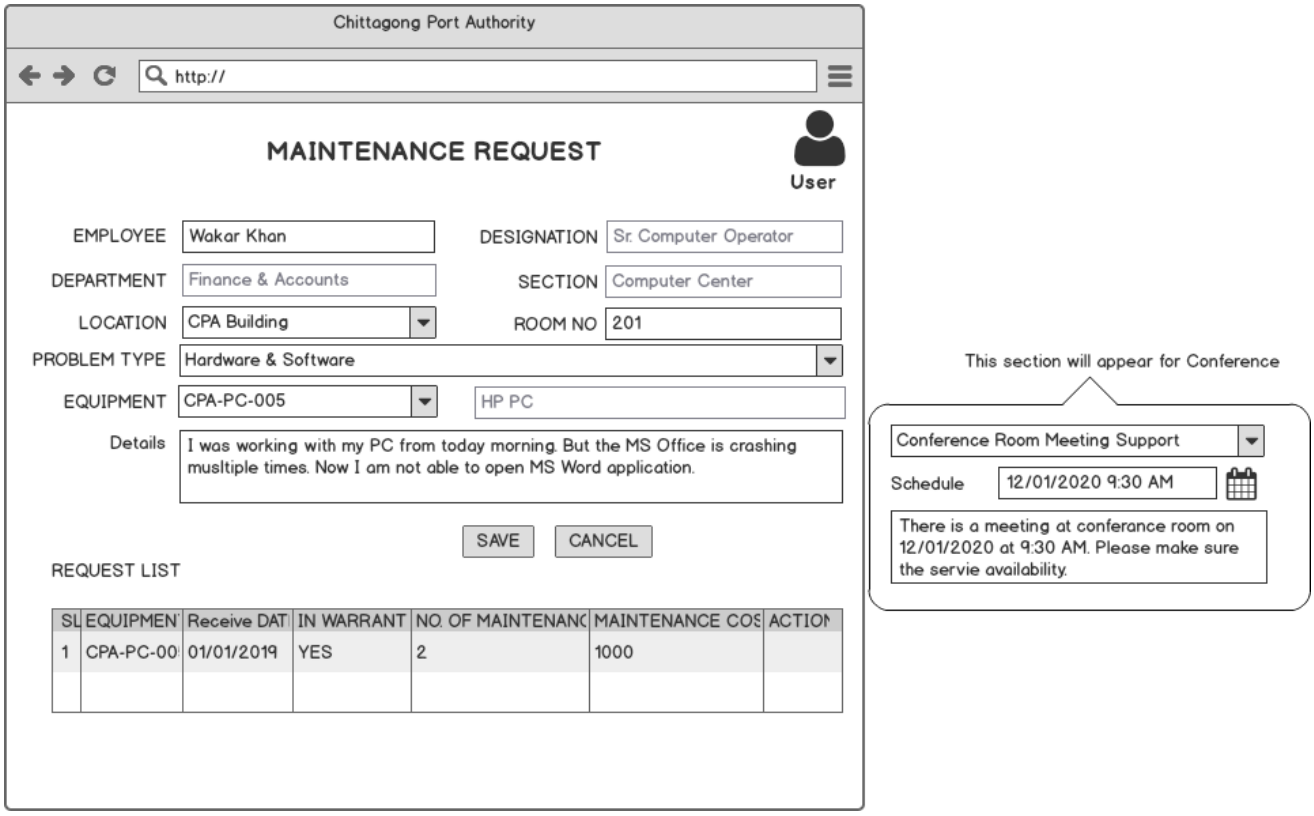


Figure 111: Mockup for Maintenance Request

- Equipment user with his/her location should be define here.
- Problem type must be selected.
- User should insert problem details.

10.2.3.2 Maintenance Log

Maintenance log will be generated based on service ticket.

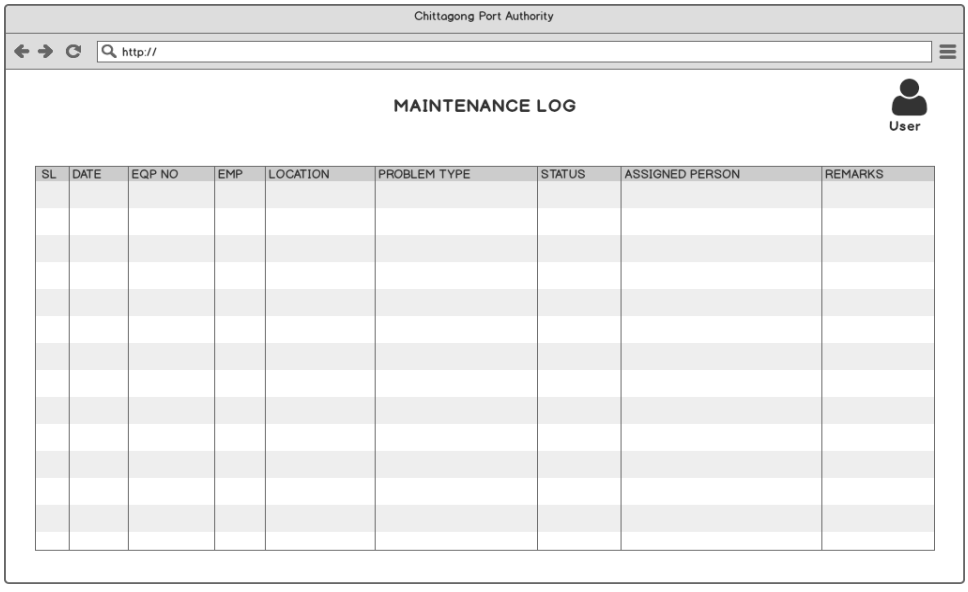


Figure 112: Mock up for Maintenance Log

10.2.4 Service Ticket Assignment Process

Chief Service engineer assign service ticket to enlisted service engineers. Assigned service tickets will be available on the system portal of service engineer. Based on assignment, service engineer starts work with the specific item.

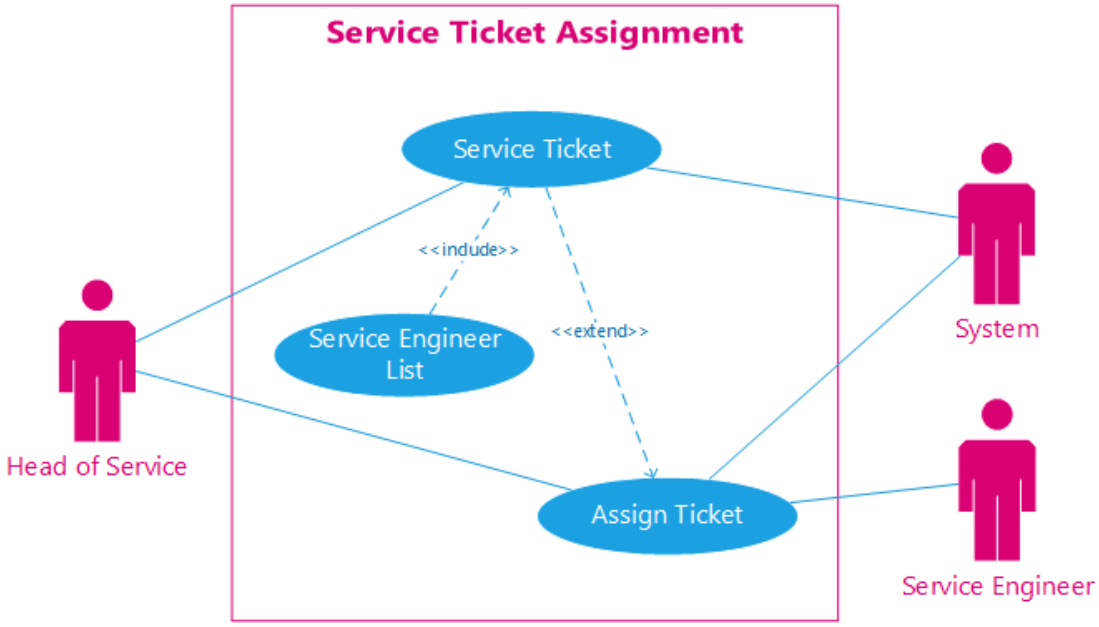


Figure 113: Use Case for Service ticket assignment

Use Case ID:	**UC-CE-004**
Use Case Name:	**Service Ticket Assignment**
Actors:	• Head of Service • Service Engineer • System
Trigger:	When Head of Service user intends to assign a service ticket to any service engineer.
Description:	The functionality “Service Engineer Assignment” facilitates to assign a service ticket to a service engineer.
Preconditions:	• User must have landed on CPA system. • Service engineer must be listed.
Assumption:	• Provided valid inputs.
Goal:	To prepare and disburse lawyer bills.
Normal Flow:	• Open a service ticket from service log. • Select a service engineer to complete the task. • Assign the service ticket to the selected service engineer. • Submit information to the system.
Alternate Flow:	• N/A
Failure:	• Connection Lost. • Broken pages. • Mandatory field missing.
Post conditions:	• Service ticket will be assigned to a service engineer.
Frequency of Use:	Frequently
Business Rules/Constraints	• Service engineer should be enlisted. • Service ticket should be in Open or In Progress status.
Non Functional Requirements:	N/A
Reference:	**UC-CE-001, UC-CE-002, UC-CE-003**

10.2.4.1 Service Engineer Information

Service Engineer will be enlisted by using this mockup.

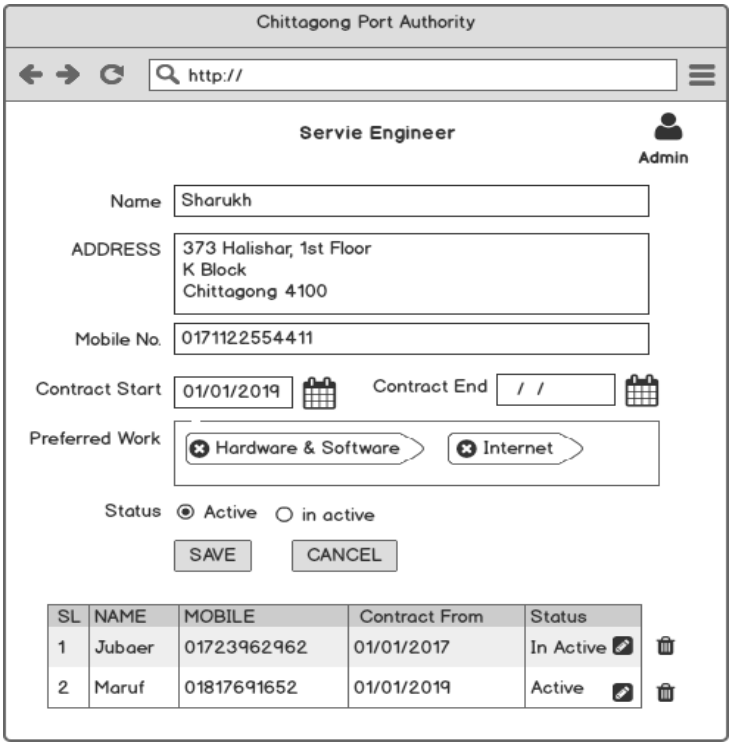


Figure 114: Mockup for Service Engineer Information

10.2.4.2 Service Engineer Assignment

Service Engineer will be enlisted by using this mockup.

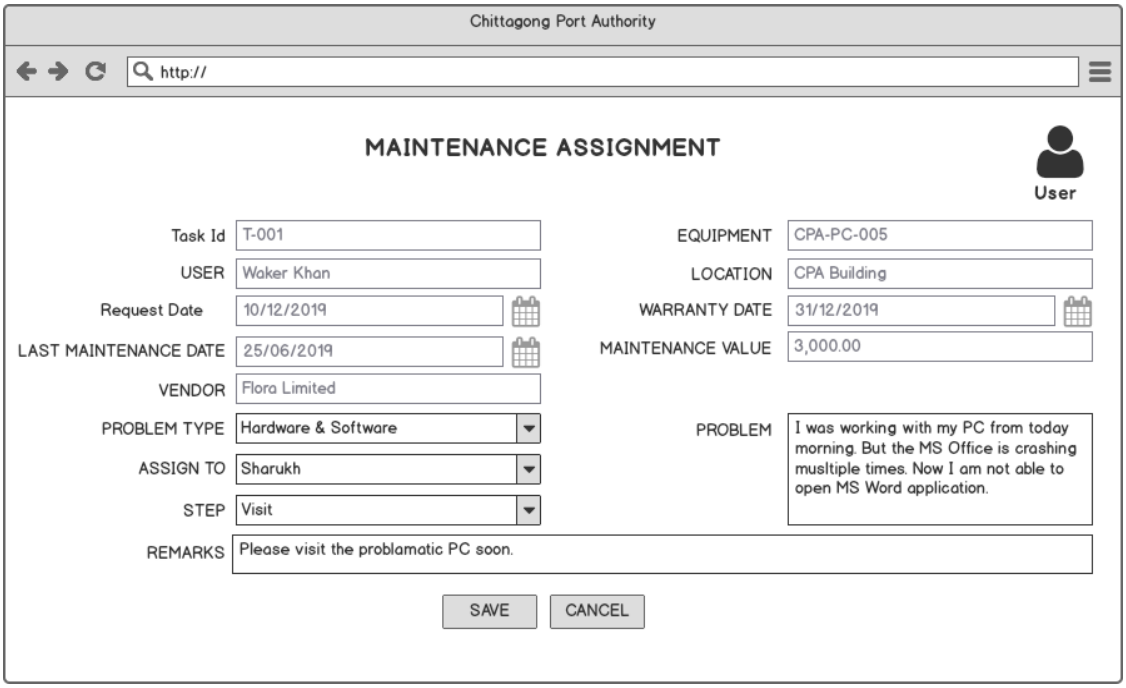


Figure 115: Mock up for Service Ticket Assignment

- Head of Service assign an enlisted service engineer
- Also, select next step of work & put a remark.

10.2.4.3 Service Engineer Work Log

Assigned service ticket will be available on Service Engineer work log which will be using this mockup.

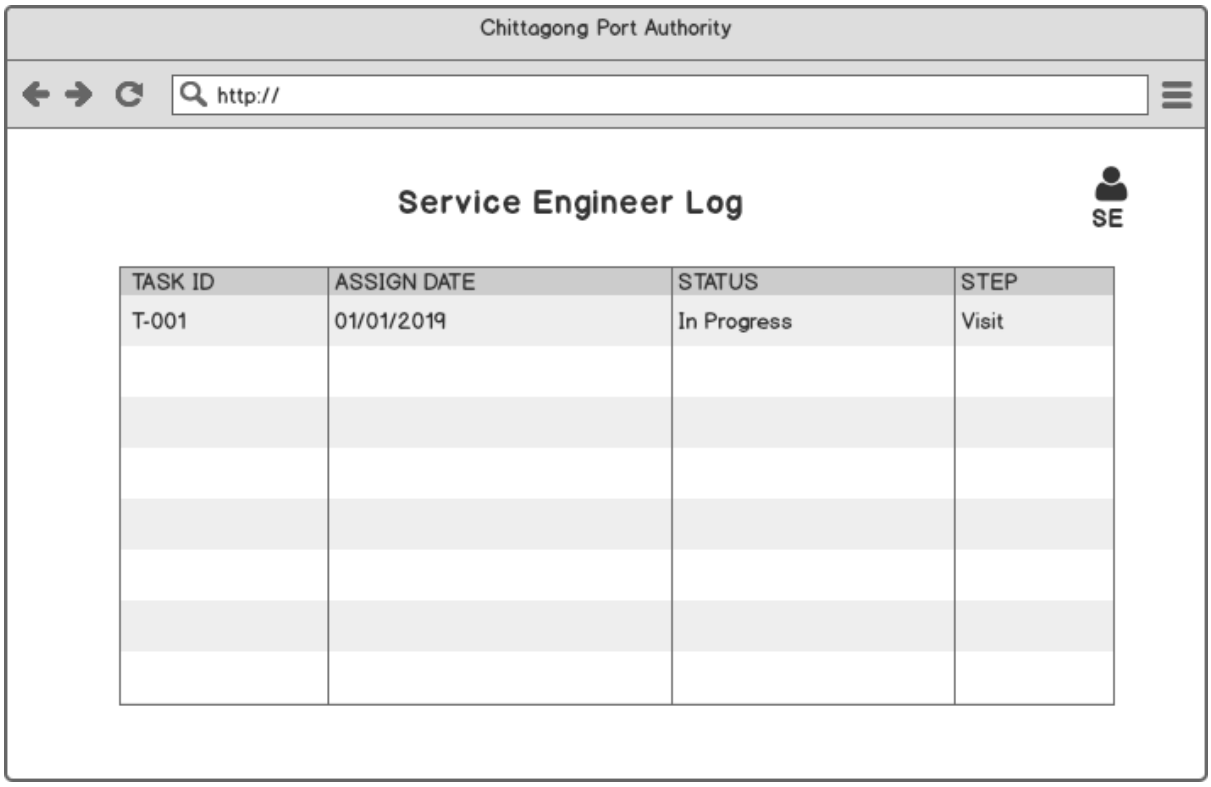


Figure 116: Mock up for Service Engineer work log

10.2.5 Computer Equipment Servicing Process

Service engineer need to work with assign ticket. S/he need to visit the equipment and try to resolve this issue. If required, then they request to equipment owner to transfer the equipment to service room. Sometime it needs some parts to resolve equipment problem then service engineer send requisition for new parts/equipment to system analyst. System analyst verify the request and send a purchase approval to Member Finance. Based on Member approval purchase department buy the parts/equipment and provide to the service room. Finally, service engineer resolves the problem and send the equipment to owner.

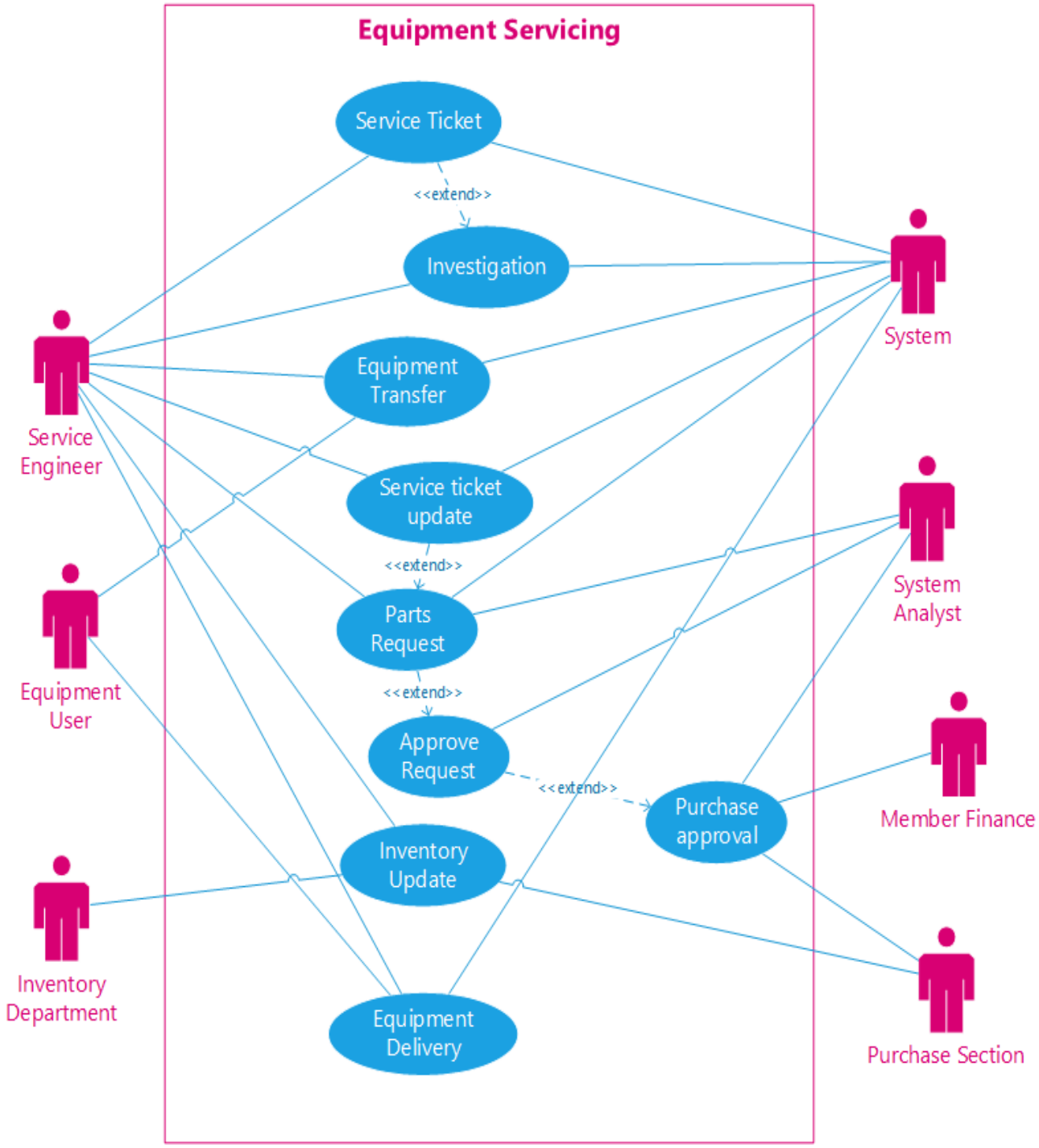


Figure 117: Use Case for Computer Equipment Servicing

Use Case ID:	**UC-CE-005**
Use Case Name:	**Computer Equipment Servicing**
Actors:	• Service Engineer • System • Equipment User • System Analyst • Member Finanace • Purchase Section • Inventory Department
Trigger:	When user intends to provide service to any computer equipment.
Description:	The functionality “Computer Equipment Servicing” facilitates to provide service against any service ticket.
Preconditions:	• User must have landed on CPA system. • Service ticket must be assigned.
Assumption:	• Provided valid inputs.
Goal:	To prepare and disburse lawyer bills.
Normal Flow:	• Open a service ticket from service engineer work log. • Visit the equipment. • Request to send equipment to service room, if required. • Investigate the equipment • Send requisition for new parts/equipment • System analyst review the requisition • System analyst send request to Member Finance for purchase approval. • Purchase section buy the equipment/parts and send it to service team after enlistment of Inventory • Service engineer complete the maintenance and deliver the system to user.
Alternate Flow:	• N/A
Failure:	• Connection Lost. • Broken pages. • Mandatory field missing.
Post conditions:	• Service ticket will be resolved.
Frequency of Use:	Frequently
Business Rules/Constraints	• Service engineer should be enlisted. • Service ticket should be assigned. • Equipment/parts need should be authorised • Purchase request should be approved • New equipments/parts should be enlisted • Service ticket should be Resolved status.
Non Functional Requirements:	N/A
Reference:	**UC-CE-001, UC-CE-002, UC-CE-003, UC-CE-004**

10.2.5.1 Service Engineer Visit Result

Service Engineer will be update the service ticket as per his/her visit.

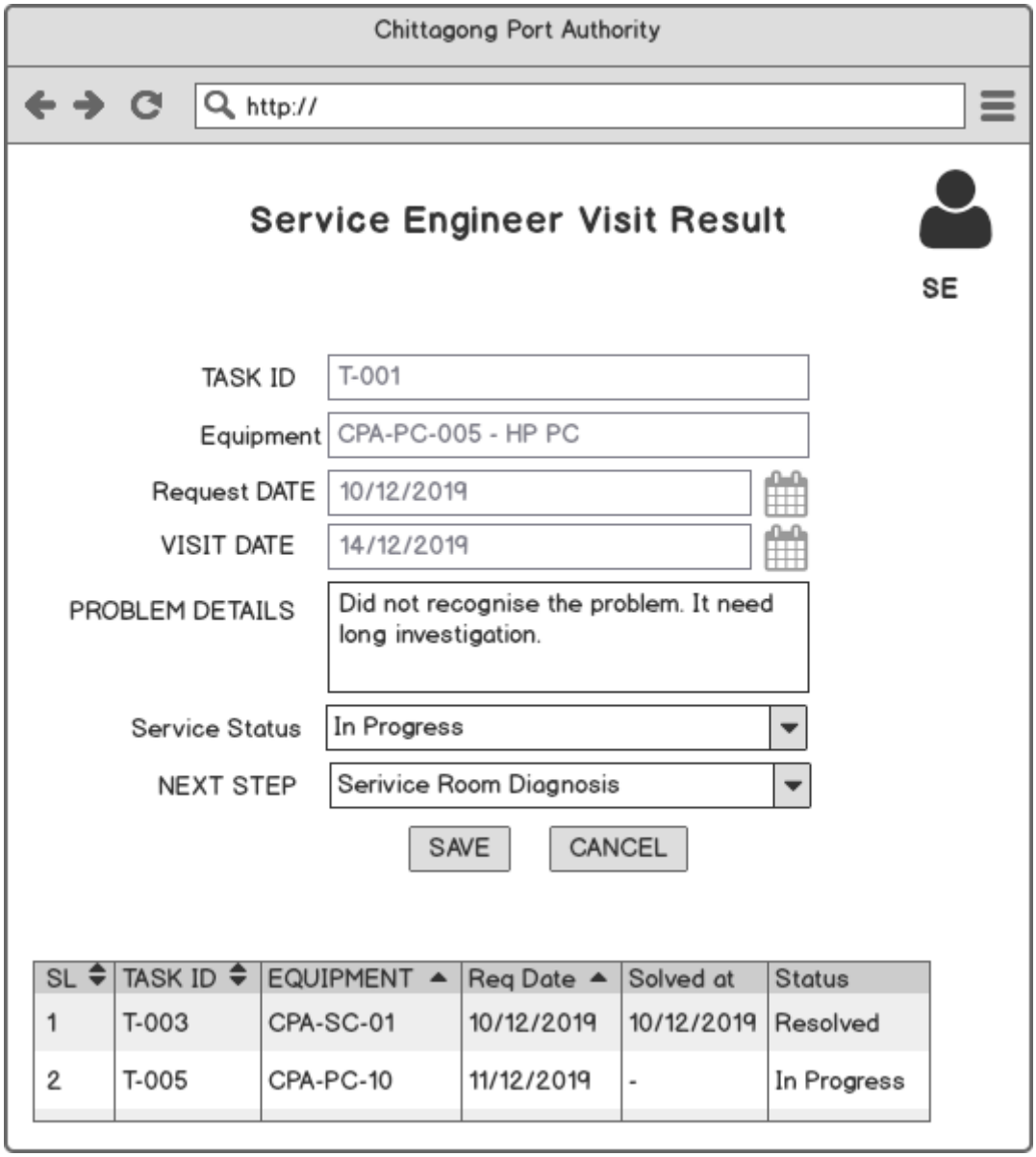


Figure 118: Mockup for Service Engineer Information

- Service engineer update service status after visit. It will be resolved if the equipment issue has been completed by visit.
- Service engineer will update next step of service, if s/he required.

10.2.5.2 Equipment Receive

It needs to track the equipment movement record. So, service room will receive the equipment and update the system by using this mockup.

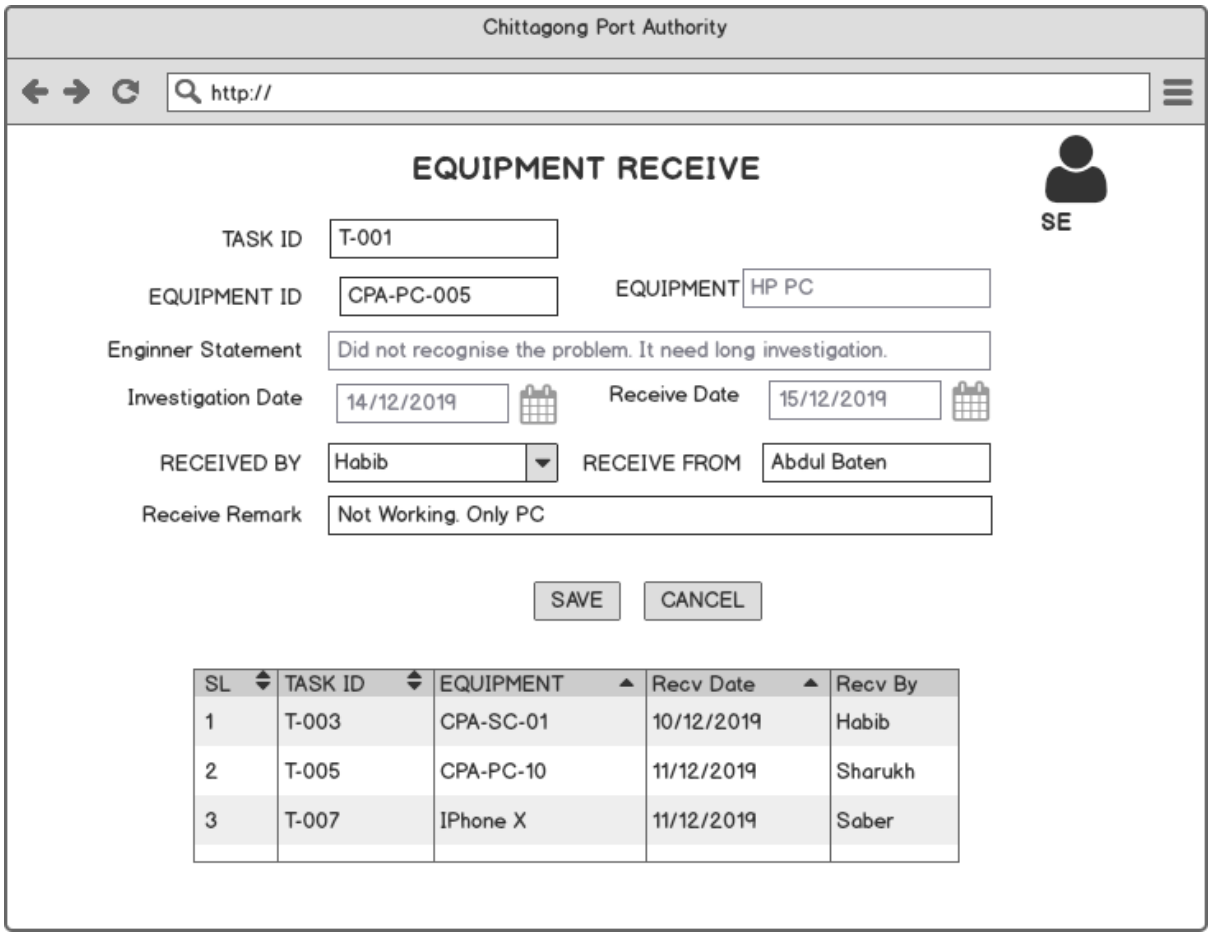


Figure 119: Mockup for Service Engineer Information

- Equipment receive date should be automatically pulled from system based on system entry.

10.2.5.3 New Equipment/Parts Request

Sometimes it need new items to complete the service. The requisition will be available to System Analyst panel.

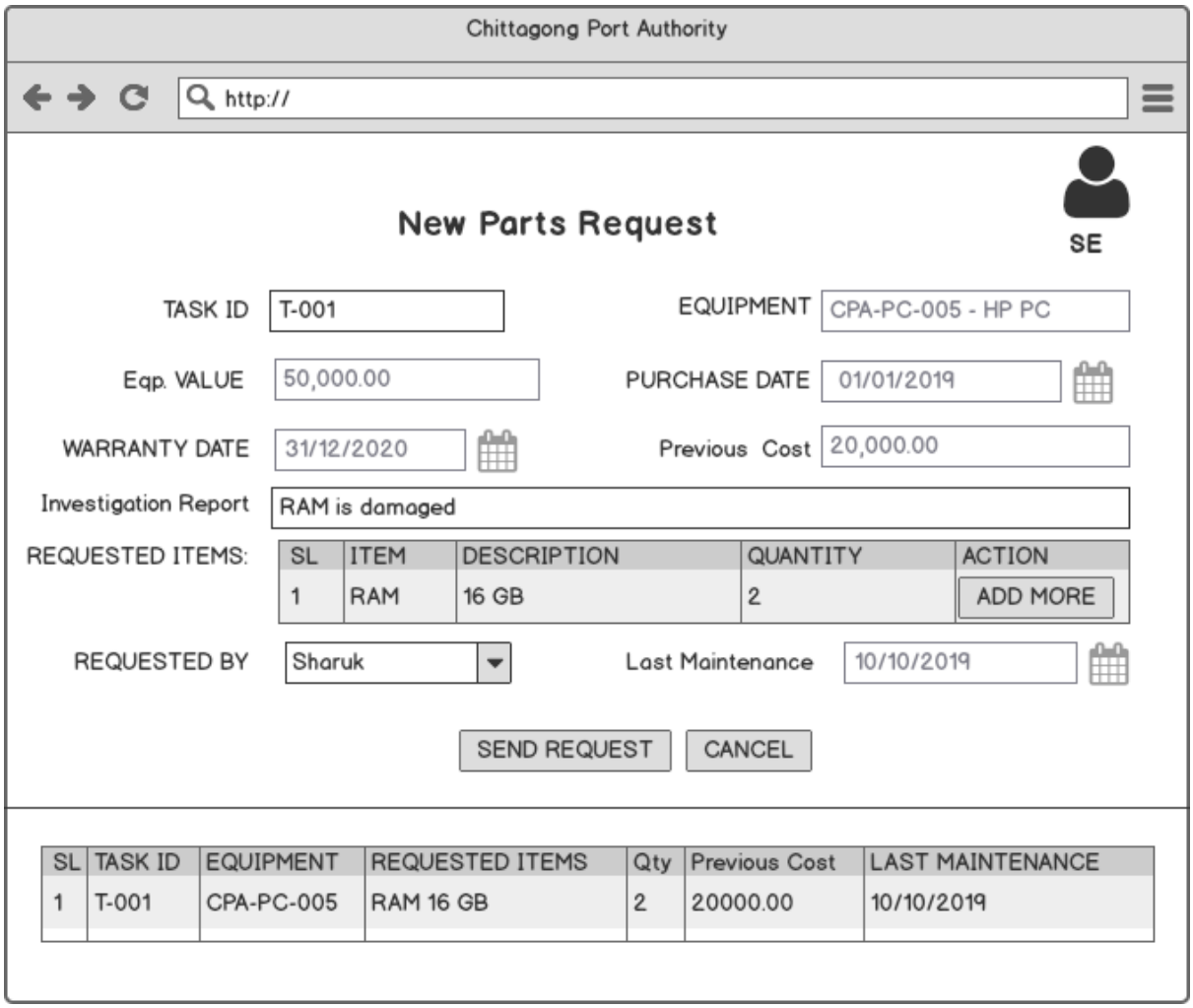


Figure 120: Mockup for Equipment/parts Requisition

- Service engineer will provide investigation report here.
- Required item should be listed here with description and quantity.

10.2.5.4 Requisition log and Verification

System Analyst will verify the requisition. If required, then s/her send a purchase request to Member Finance.

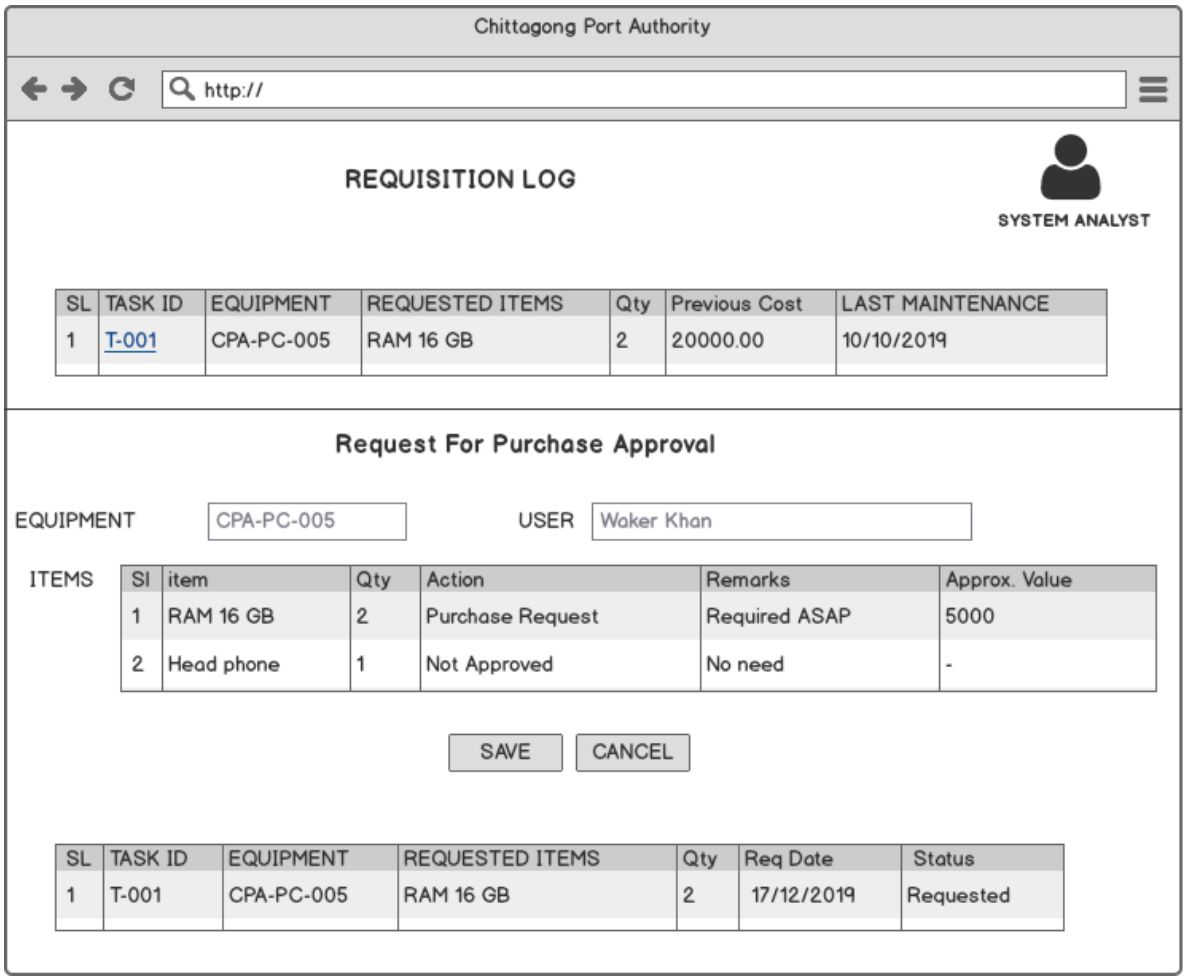


Figure 121: Mockup for Requisition Verification

- System Analyst provide approximate value of the required item.

10.2.5.5 New Equipment/Parts Purchase Approval

Member Finance provide the purchase order of computer equipment. After that purchase section procure the item and provide to service section.

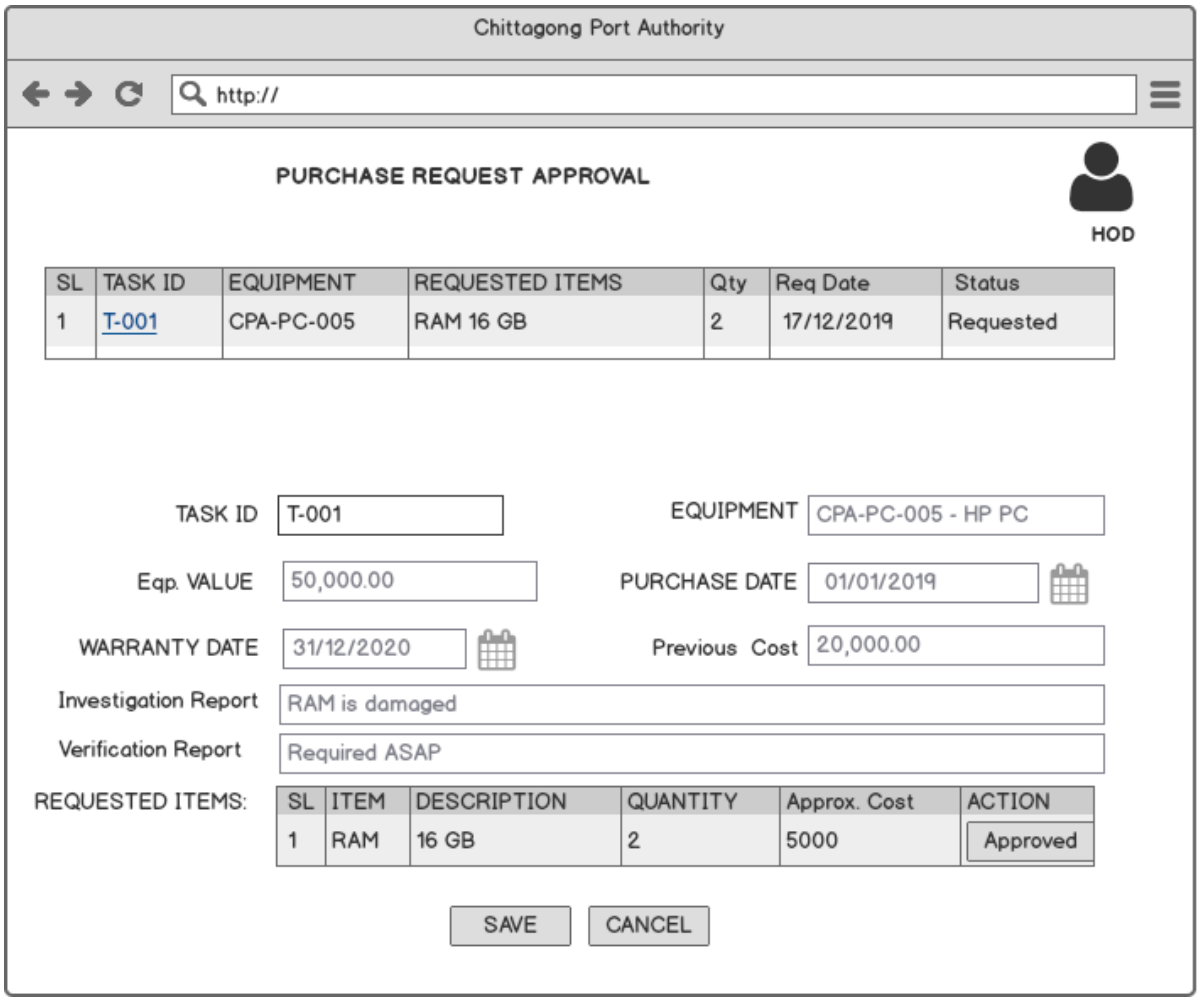


Figure 122: Mockup for Equipment/parts Purchase Approval

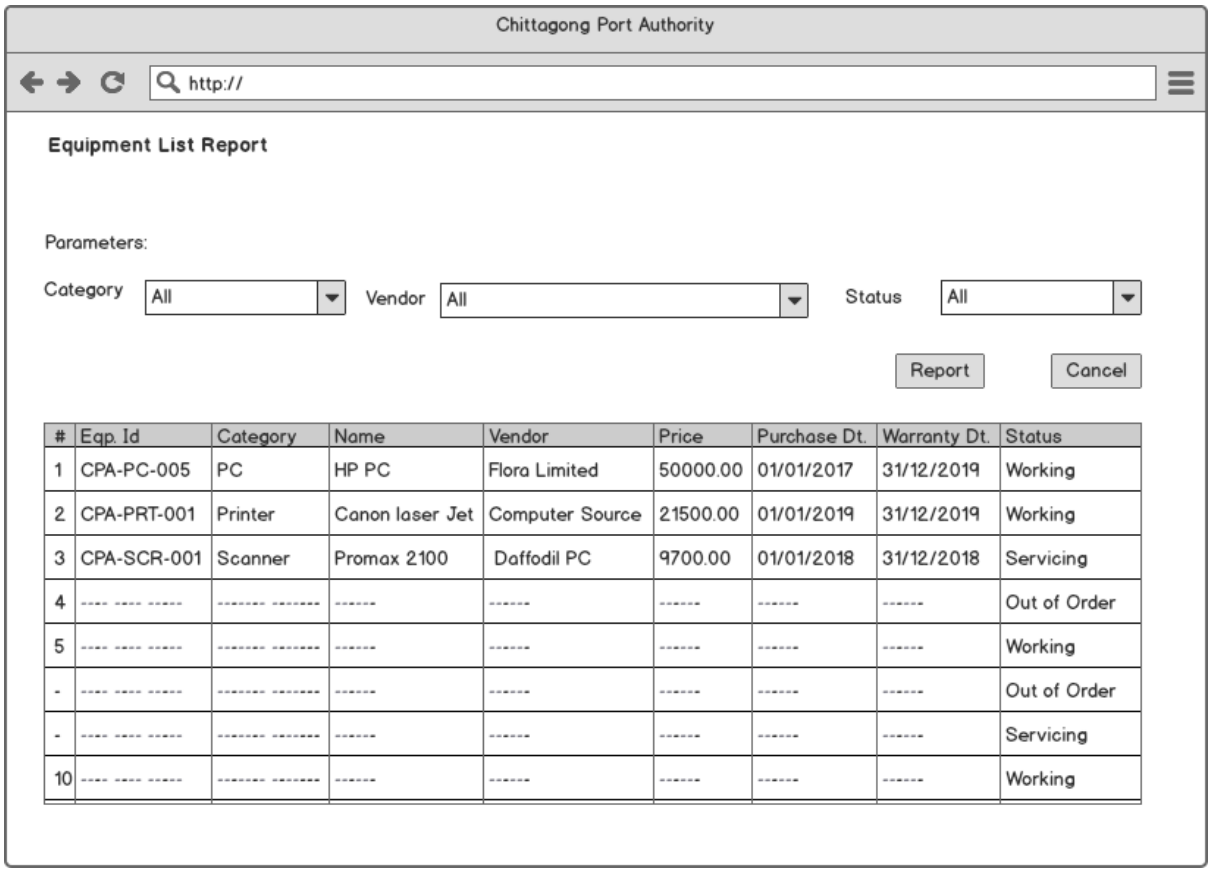
10.2.6 Computer Equipment Maintenance Module Reports

We have listed some reports for Case module.

10.2.6.1 Equipment list Report

System will provide facility to generate equipment list based on multiple criterion. These are:

- Category
- Vendor
- Status



#	Eqp. Id	Category	Name	Vendor	Price	Purchase Dt.	Warranty Dt.	Status
1	CPA-PC-005	PC	HP PC	Flora Limited	50000.00	01/01/2017	31/12/2019	Working
2	CPA-PRT-001	Printer	Canon laser Jet	Computer Source	21500.00	01/01/2019	31/12/2019	Working
3	CPA-SCR-001	Scanner	Promax 2100	Daffodil PC	9700.00	01/01/2018	31/12/2018	Servicing
4	---- ---- -----	------- -------	------	------	------	------	------	Out of Order
5	---- ---- -----	------- -------	------	------	------	------	------	Working
-	---- ---- -----	------- -------	------	------	------	------	------	Out of Order
-	---- ---- -----	------- -------	------	------	------	------	------	Servicing
10	---- ---- -----	------- -------	------	------	------	------	------	Working

Figure 123: Mockup for Equipment List Report

10.2.6.2 Equipment wise maintenance Report

System will provide facility to generate equipment wise maintenance report. These are:

- Category
- Equipment
- Status

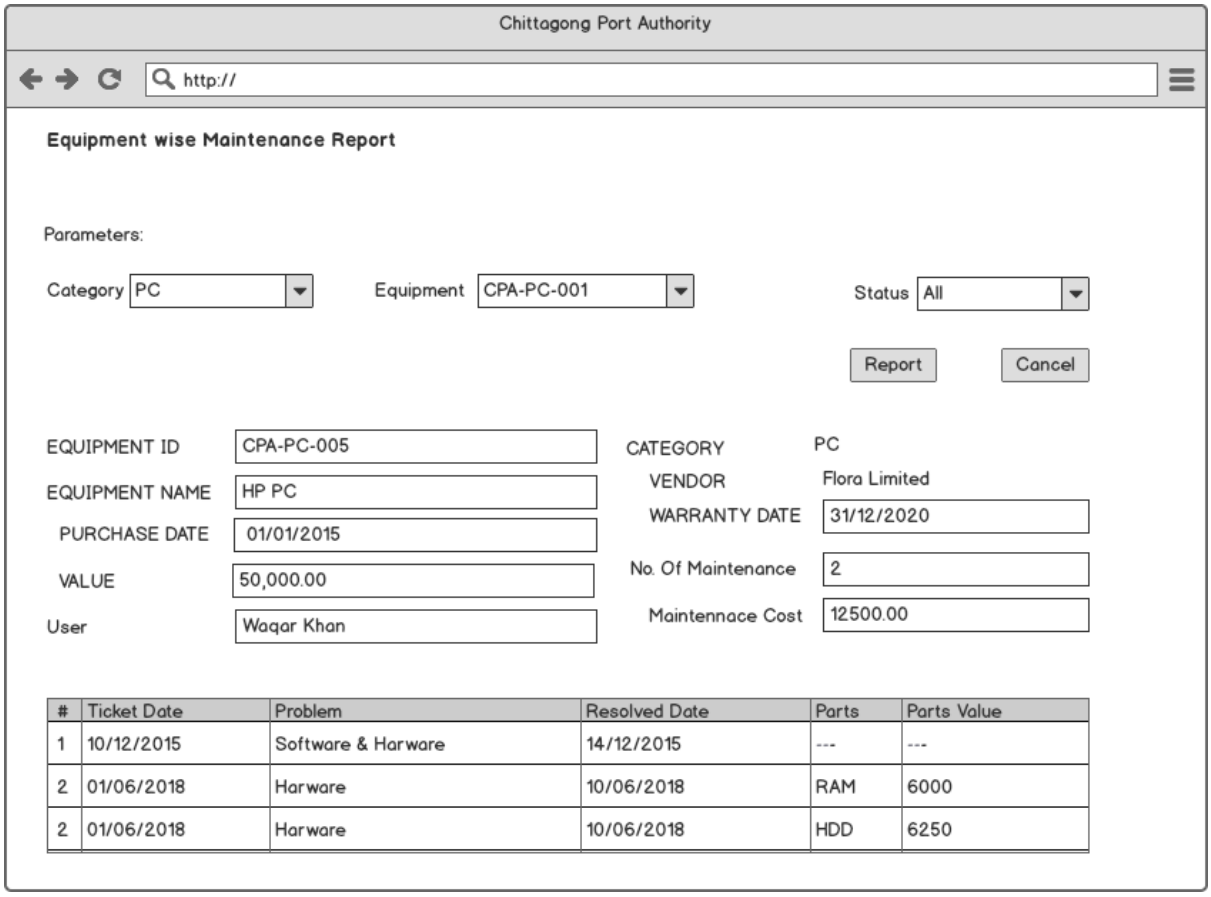
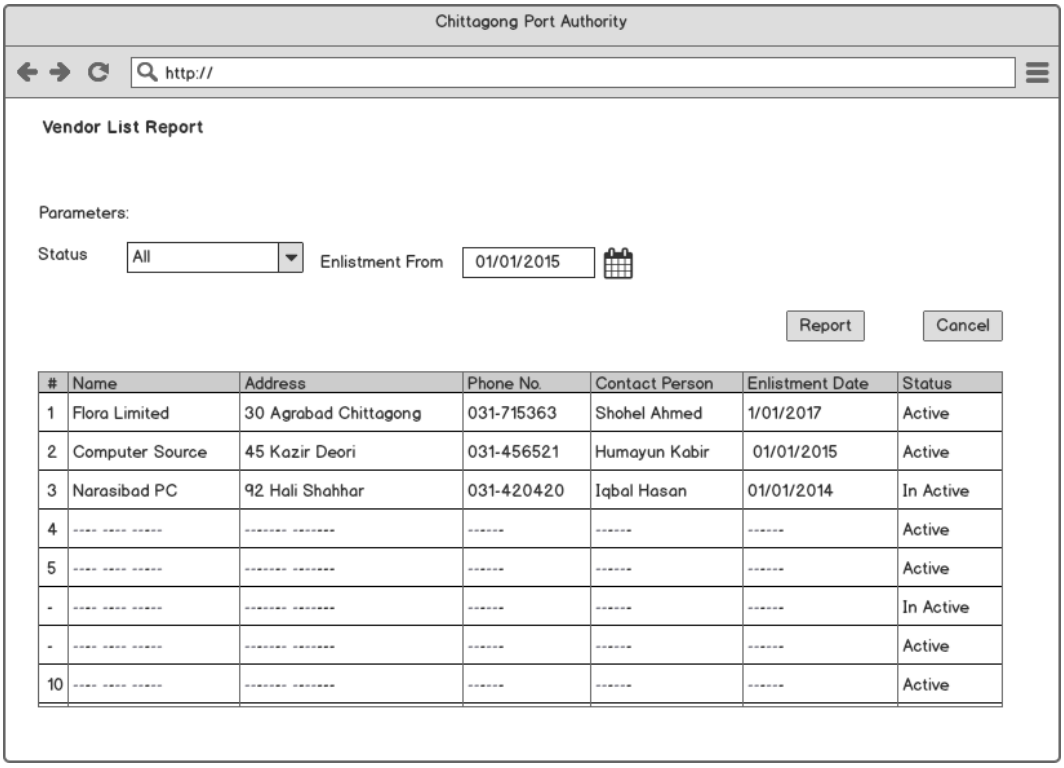


Figure 124: Mockup for Equipment wise maintenance List Report

10.2.6.3 Vendor List Report

System will provide facility to generate vendor list based on multiple criterion. These are:

- Status
- Enlistment Date



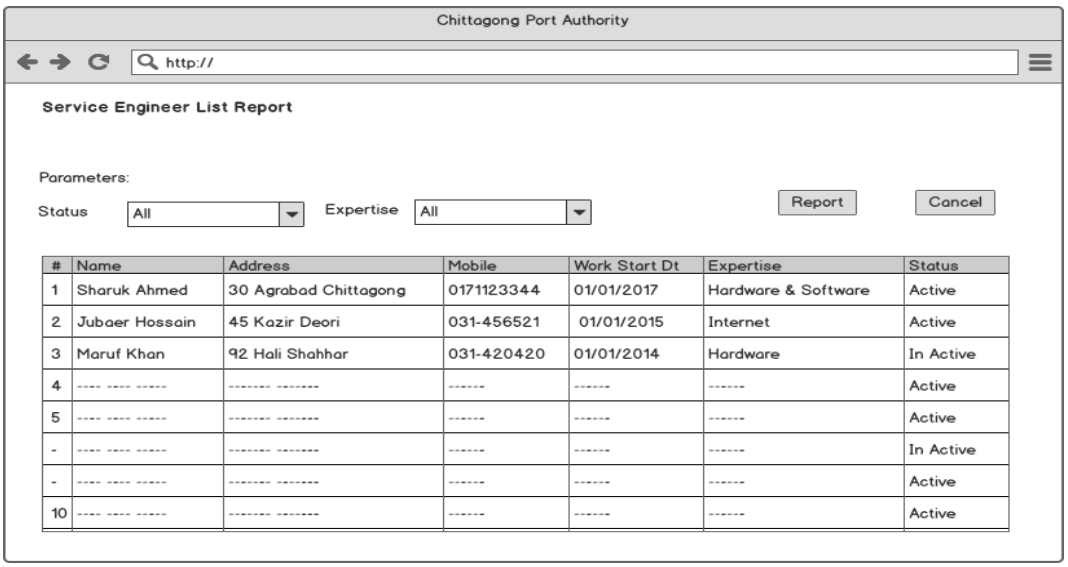
#	Name	Address	Phone No.	Contact Person	Enlistment Date	Status
1	Flora Limited	30 Agrabad Chittagong	031-715363	Shohel Ahmed	1/01/2017	Active
2	Computer Source	45 Kazir Deori	031-456521	Humayun Kabir	01/01/2015	Active
3	Narasibad PC	92 Hali Shahhar	031-420420	Iqbal Hasan	01/01/2014	In Active
4	---- ---- -----	------- -------	------	------	------	Active
5	---- ---- -----	------- -------	------	------	------	Active
-	---- ---- -----	------- -------	------	------	------	In Active
-	---- ---- -----	------- -------	------	------	------	Active
10	---- ---- -----	------- -------	------	------	------	Active

Figure 125: Mockup for Vendor List Report

10.2.6.4 Service Engineer List Report

System will provide facility to generate service engineer list based on multiple criterion. These are:

- Status
- Expertise



#	Name	Address	Mobile	Work Start Dt	Expertise	Status
1	Sharuk Ahmed	30 Agrabad Chittagong	0171123344	01/01/2017	Hardware & Software	Active
2	Jubaer Hossain	45 Kazir Deori	031-456521	01/01/2015	Internet	Active
3	Maruf Khan	92 Hali Shahhar	031-420420	01/01/2014	Hardware	In Active
4	---- ---- -----	------- -------	------	------	------	Active
5	---- ---- -----	------- -------	------	------	------	Active
-	---- ---- -----	------- -------	------	------	------	In Active
-	---- ---- -----	------- -------	------	------	------	Active
10	---- ---- -----	------- -------	------	------	------	Active

Figure 126: Mockup for Service Engineer List Report

10.2.6.5 Maintenance Service Ticket Report

System will provide facility to generate maintenance service ticket list based on multiple criterion. These are:

- Category
- Problem
- Status

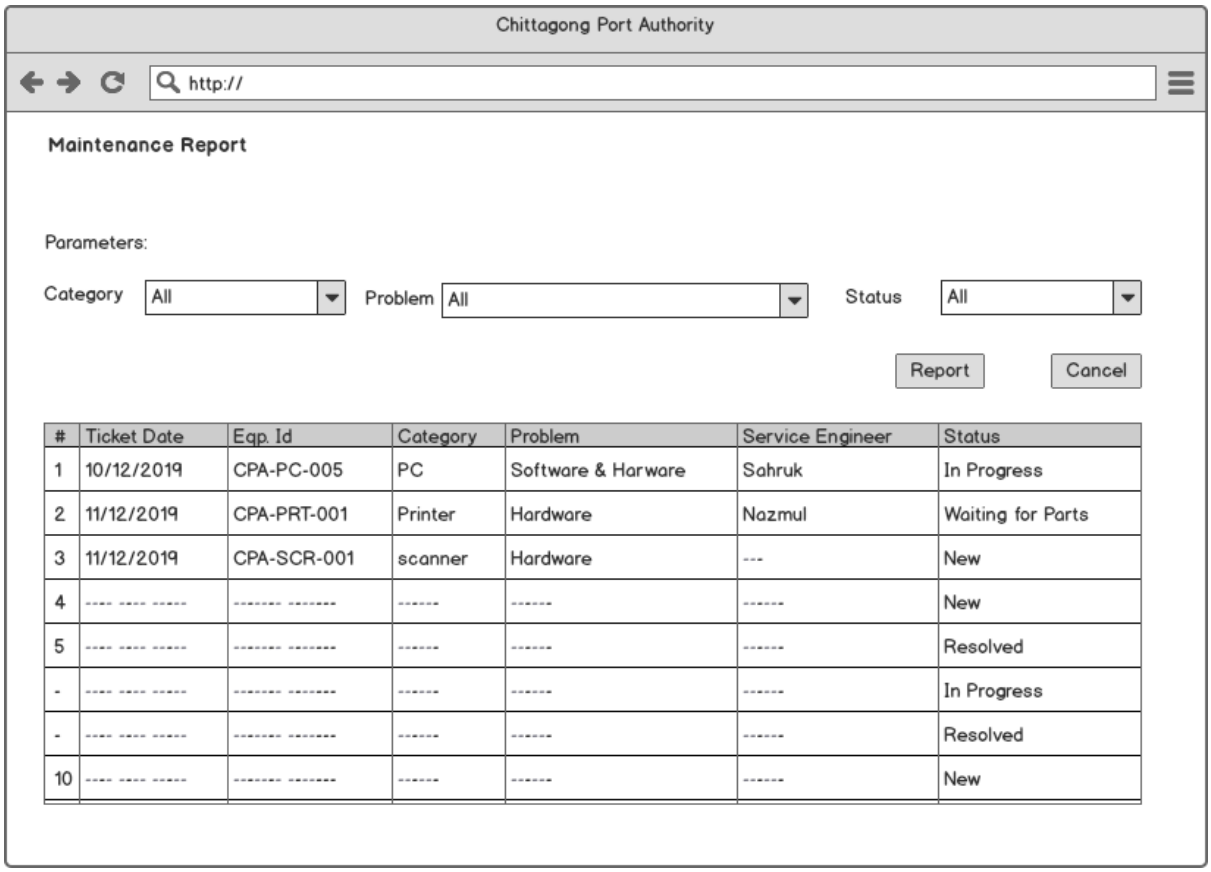
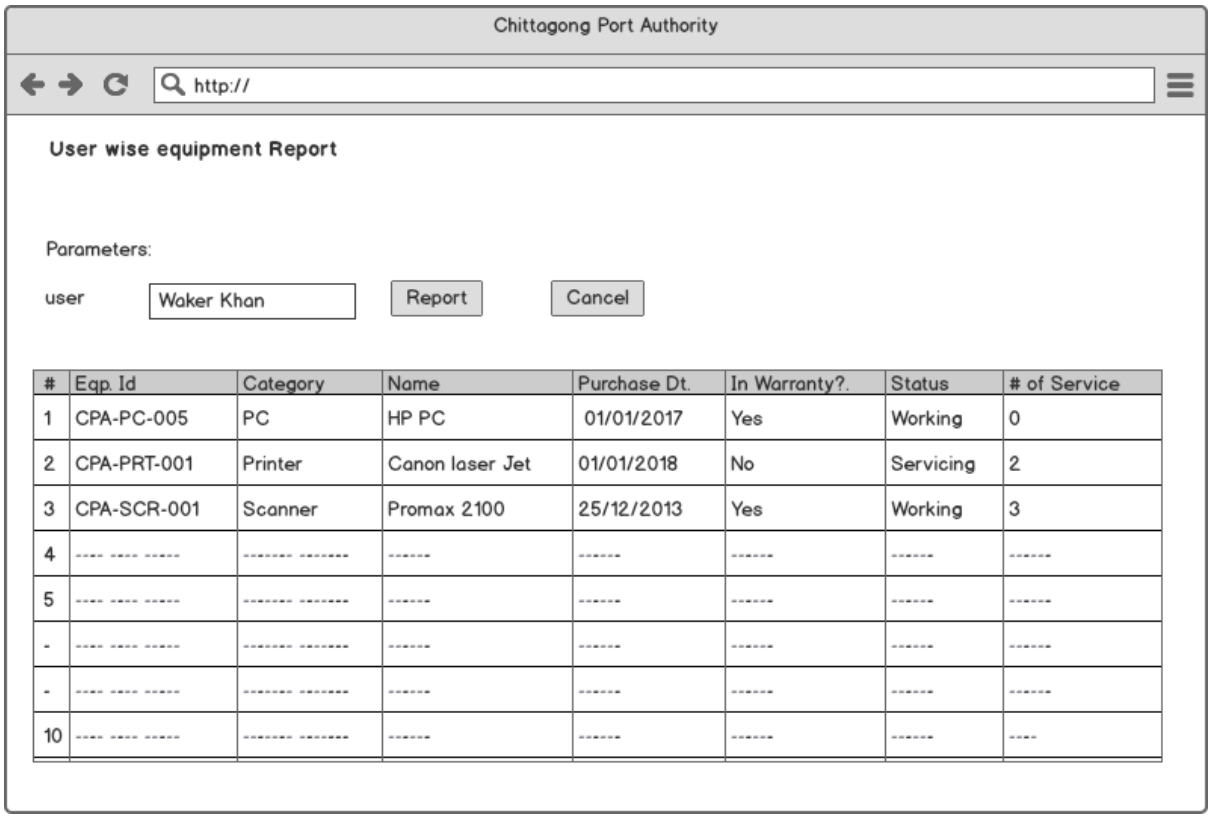


Figure 127: Mockup for ticket List Report

10.2.6.6 User wise equipment Report

System will provide facility to generate user wise equipment report based on multiple criterion. These are:

- User



#	Eqp. Id	Category	Name	Purchase Dt.	In Warranty?.	Status	# of Service
1	CPA-PC-005	PC	HP PC	01/01/2017	Yes	Working	0
2	CPA-PRT-001	Printer	Canon laser Jet	01/01/2018	No	Servicing	2
3	CPA-SCR-001	Scanner	Promax 2100	25/12/2013	Yes	Working	3
4	---- ---- -----	------- -------	------	------	------	------	------
5	---- ---- -----	------- -------	------	------	------	------	------
-	---- ---- -----	------- -------	------	------	------	------	------
-	---- ---- -----	------- -------	------	------	------	------	------
10	---- ---- -----	------- -------	------	------	------	------	----

Figure 128: Mockup for User wise equipment Report

11 Module: E-GP

National e-Government Procurement (e-GP) portal i.e. https://www.eprocure.gov.bd of the Government of the People's Republic of Bangladesh is developed, owned and being operated by the Central Procurement Technical Unit (CPTU), IME Division of Ministry of Planning. The e-GP system provides an on-line platform to carry out the procurement activities by the Public Agencies - Procuring Agencies (PAs) and Procuring Entities (PEs).

The e-GP system is a single web portal from where and through which PAs and PEs will be able to perform their procurement related activities using a dedicated secured web based dashboard. The e-GP system is hosted in e-GP Data Center at CPTU, and the e-GP web portal is accessible by the PAs and PEs through internet for their use.

11.1 Proposed System of E-GP (E-Tendering System)

CNS can implement eProcurement either in two ways:

a. e-GP integration (if CPA can arrange)
b. Manual Input

The designs of E-GP Module are illustrated below with proper justifications.

11.1.1 Contract Details

The purpose of Training Details is to enter detail information regarding contracts,

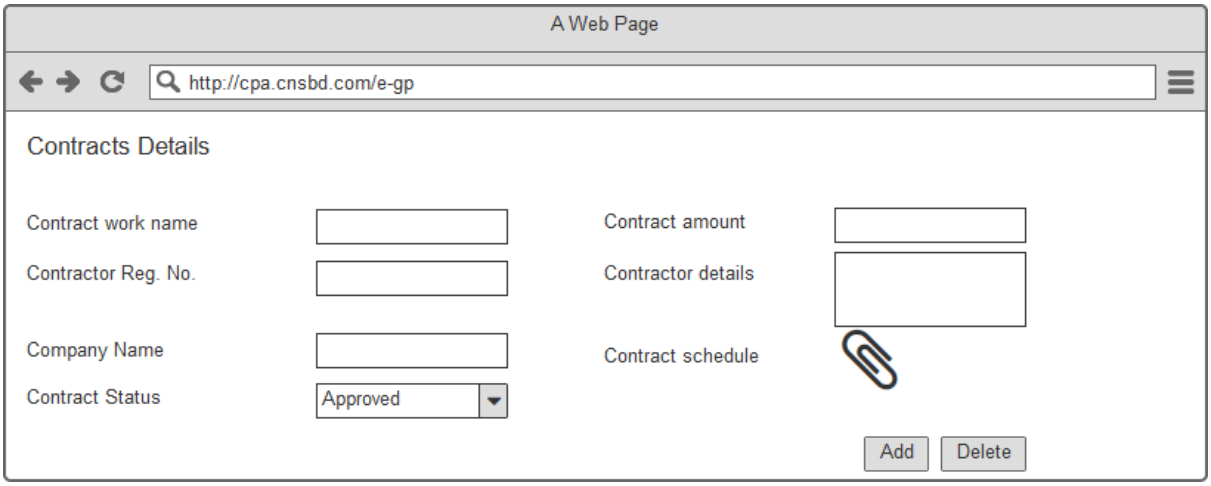


Figure 129: Mockup for Contract Detail

11.1.2 Reports of E-GP

- Department wise No. of Tenders/ Proposals Invited
- Department wise No. of Tenders/ Proposals being processed
- Department wise No. of Contracts Awarded
- Total No. of Tenders/ Proposals Invited for CPA
- Total No. of Tenders/ Proposals being processed for CPA
- Total No. of Contracts Awarded for CPA

12 Module: E-Filing System

Uses of e-Filing in CPA is in a remarkable stage. Every employee has his/her own dashboard in e-Filing System. Their dashboards depict summary (in Quantity) of e-Filing.

National e-Filing portal i.e. https://nothi.gov.bd of the Government of the People's Republic of Bangladesh is developed, owned and being operated by the a2i, Prime Minister's Office. This e-Filing system provides an on-line platform to carry out the transactions of file. Filing activities by the CPA (Internal) as well as other public/ private organizations are being carried out by this.

12.1 Proposed System of e-Filing

CNS can implement e-Filing either in two ways:

I. e-Filing integration with the https://nothi.gov.bd (if CPA can arrange)
II. Manual Input

The designs of E-GP Module are illustrated below with proper justifications.

12.1.1 Provision for Subject Rating

The purpose of Subject Rating is to provide points on e-Filing activities.

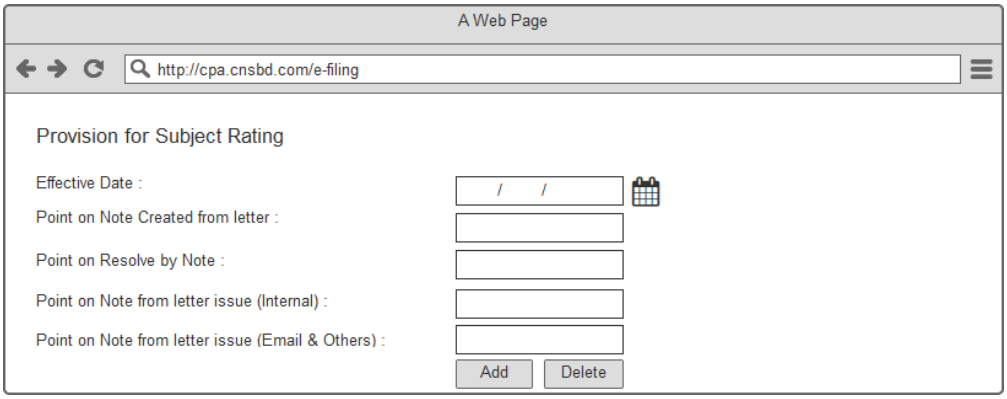


Figure 130: Mockup for Provision of Subject Rating

12.1.2 e-Filing Details

To integrate with the existing system or to input manually, the following input fields are required for Letter as well as Documents respectively.

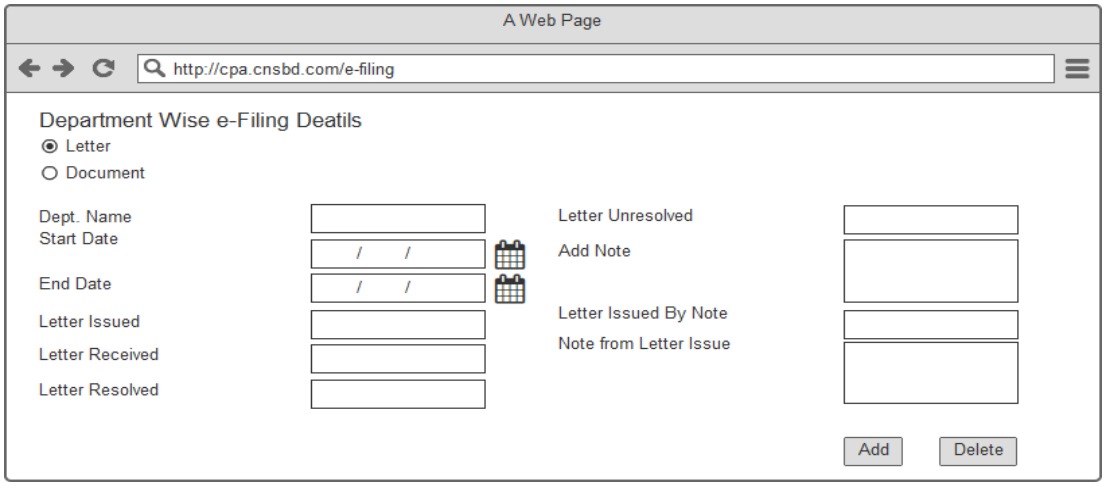


Figure 131: Mockup for Department wise e-File Details

12.1.3 Reports for e-File

System should be able to generate several reports as follows:

Report 1: Department wise e-Filing summary report (in Quantity) should be as below:

Current Activities	Today	Previous	As of Today
Letter Receive			
Letter Resolve			
Letter Unresolved			
Add Note			
Letter Issued By Note			
Note from Letter Issue			
Total Unresolved			
Letter Issued			

Report 2: Department wise pending e-Filing summary report (in Quantity) should be as below:

Pending Activities	5+ Day	10+ Day	15+ Day	30+ Day
Letter				
Document				

Report 3: e-Filing summary (in Quantity) for the whole CPA should be as below:

Description	Today	Previous	As of Today
Letter Receive			
Letter Resolve			
Letter Unresolved			
Self-Explanatory Note			
Note create from letter			
Note from letter issue			
Resolve by Note			
Total Unresolved			
Letter Issued			

Report 4: Dashboard will show the below table.

SL	Department (User)	Note from letter	Letter Issue	Note Resolved	Note Unresolved	Point (Previous Month)	Point (Current Month)	Rank (Previous Month)	Rank (Current Month)
1									
2									
	Total								

13 Module: Automation of Marine Department

The designs of Marine & Hydrography are illustrated below with proper justifications.

Major services provided by Marine department are given below:

- Berthing Service
- Pilotage Service
- Fresh-Water supply
- Swing Mooring Service
- License Service
- Craft Management
- Radio Control Room

13.1 Berthing Service

Vessel berthing service is one of the major service provided by Marine Department. Vessel berthing process started for a ship after formal application submission by Shipping Agent to the Harbour Master. Usually, a berthing meeting is arranged on regular basis around 11:00am with all parties involved in berthing. Conclusion of this meeting results a berthing schedule which is sent to the pilots to provide service.

Software in use	Covered Area	Remark
Digital Berthing System	Berthing related Services • Berth scheduling • Berth • Un-berth • Shifting etc.	**Integration** will be done with the digital berthing software which is currently in use at CPA to collect required data.

13.2 Pilotage Service

Pilotage Services are provided by the pilots of CPA. Pilots are assigned for pilotage service by Harbour master according to the berthing schedule. Pilot guides foreign ships from entering to Karnaphuli River to berth area and return from berth area to Sea area. CPA Pilots are expert about river channel and communicate with local vessels on the way. This is a global practice of ship navigation. Pilot service includes:

- **Inward Service:** Providing Piloting to foreign vessel from Outer Anchorage to Berthing area
- **Outward Service:** Providing Piloting to foreign vessel from Berthing area to Outer Anchorage
- **Shifting Service:** Providing Piloting for shifting of foreign vessel from one berth to another berth
- **Night Navigation Service:** Navigating of foreign vessel at night time
- **Tug Service:** Providing Tug-boat service to foreign vessel to assist while navigation

Software in use	Covered Area	Remark
No	• Pilotage Services (inward) • Pilotage Services(outward) • Shifting service • Night navigation • Tug service	New application will be developed for both Web and Mobile Apps

13.2.1 Pilotage service process

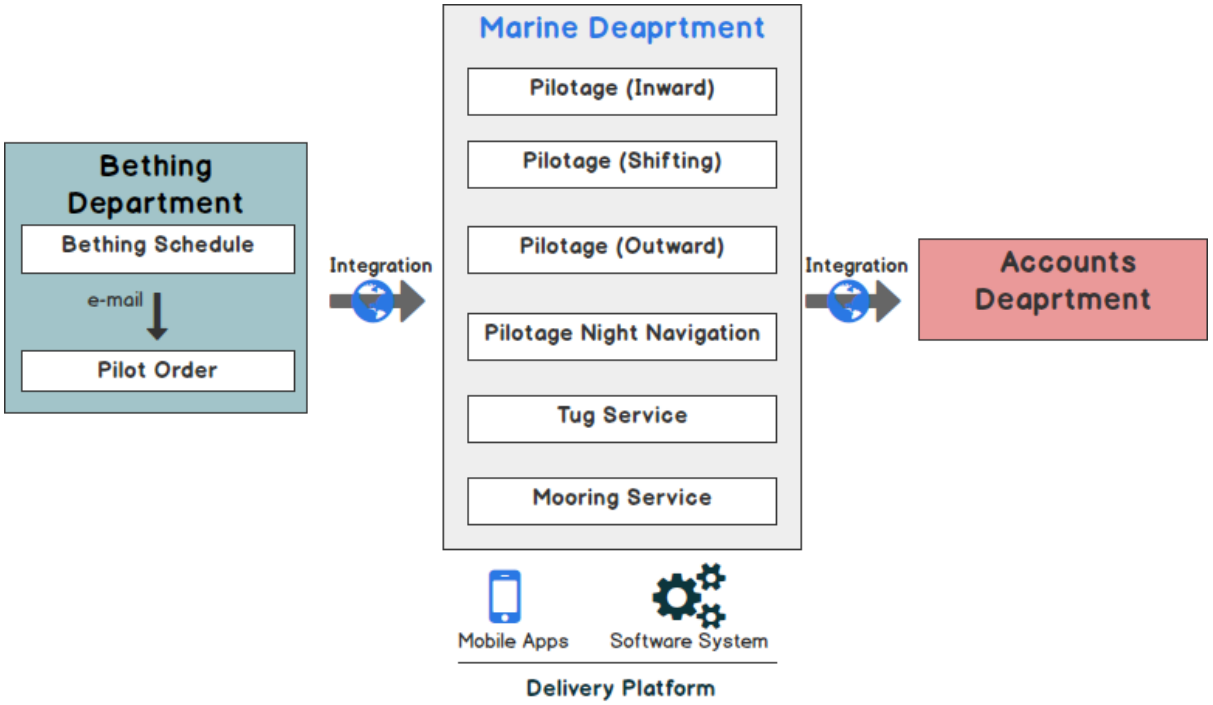


Figure 132: Pilotage Service Process

Berthing Section (Harbour): Berthing department produces a berthing schedule on regular basis by conducting berthing meeting with shipping agents, traffic and other department concern person. Berthing schedule contains the list with time of next berths going to be at the port. Berthing department already uses a software, 'digital berthing' where berthing schedule is maintained. According to the schedule, Harbour master assigns pilots to provide pilotage service. And the assigning is confirmed by a mail to pilots. **Integration** will be done between Digital Berthing & Proposed System.

Marine Department: Pilots are employee of Marine department. After assigning from Harbour master by email, pilots move for pilotage service and they usually carry pilotage forms. After providing pilotage service, forms are filled-up by pilots and signed by the mother vessel master/captain. Pilots submit those forms in marine department for billing purpose. Marine department check those forms and add/edit data if necessary then forwarded to the accounts department.

Pilotage services will be delivered through **Mobile Apps** and **Web-based** system in proposed system.

Accounts Department: Accounts department receives the pilotage forms and required data from marine department then process the bill. Marine Department will communicate with Accounts department in application level in Proposed System.

13.2.1.1 Pilotage Services (inward)

After berthing meeting, assigned pilots move with pilot ship and one tug boat (usually) to outer anchorage area to provide pilotage services to Mother Vessel. Usually, one Tug Boat moves with the pilot ship to assist the navigation. Inward pilotage ranges from outer anchorage area to jetty area.

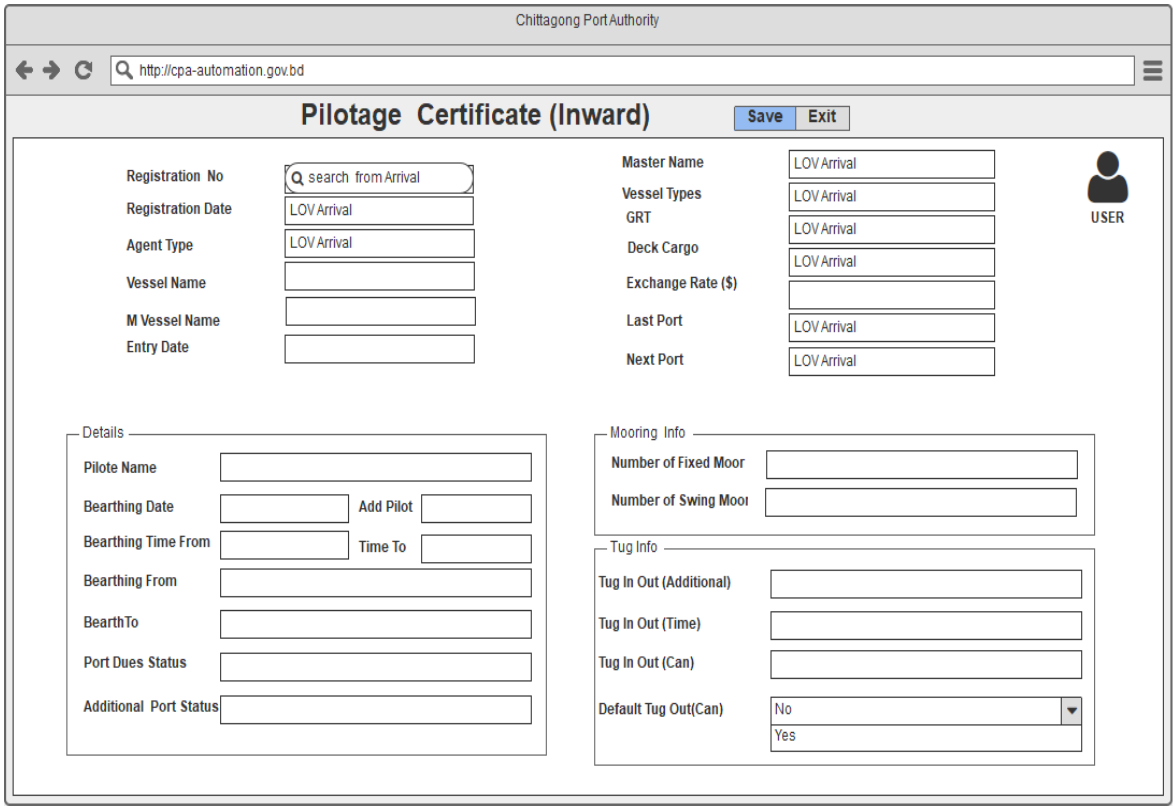


Figure 133: Inward Pilotage Service

Form 01: Marine – Pilotage (Inward)

Input	Process	Output
Pilot fills the berthing status, mooring status and tug usage detail with time. Vessel detail will auto viewed if registration no. inserted	Pilotage, Berthing, mooring and tug usage time is calculated in back-end for bill preparation	Filled-up forms are reviewed by marine department and forwarded to A/C for billing.

Note:

1. Inward pilotage of mother vessel happens when high tides
2. Pilot can use multiple tugs for better movements
3. Pilots take sign from mother vessel captain on pilotage paper as acknowledgement

13.2.1.2 Pilotage Services (outward)

As per berthing meeting, assigned pilots move with pilot ship and one tug boat (usually) to berth area to provide outward pilotage services to Mother Vessel. Usually, one Tug Boat moves with the pilot ship to assist the navigation. Outward pilotage service ranges from jetty area to outer anchorage area.

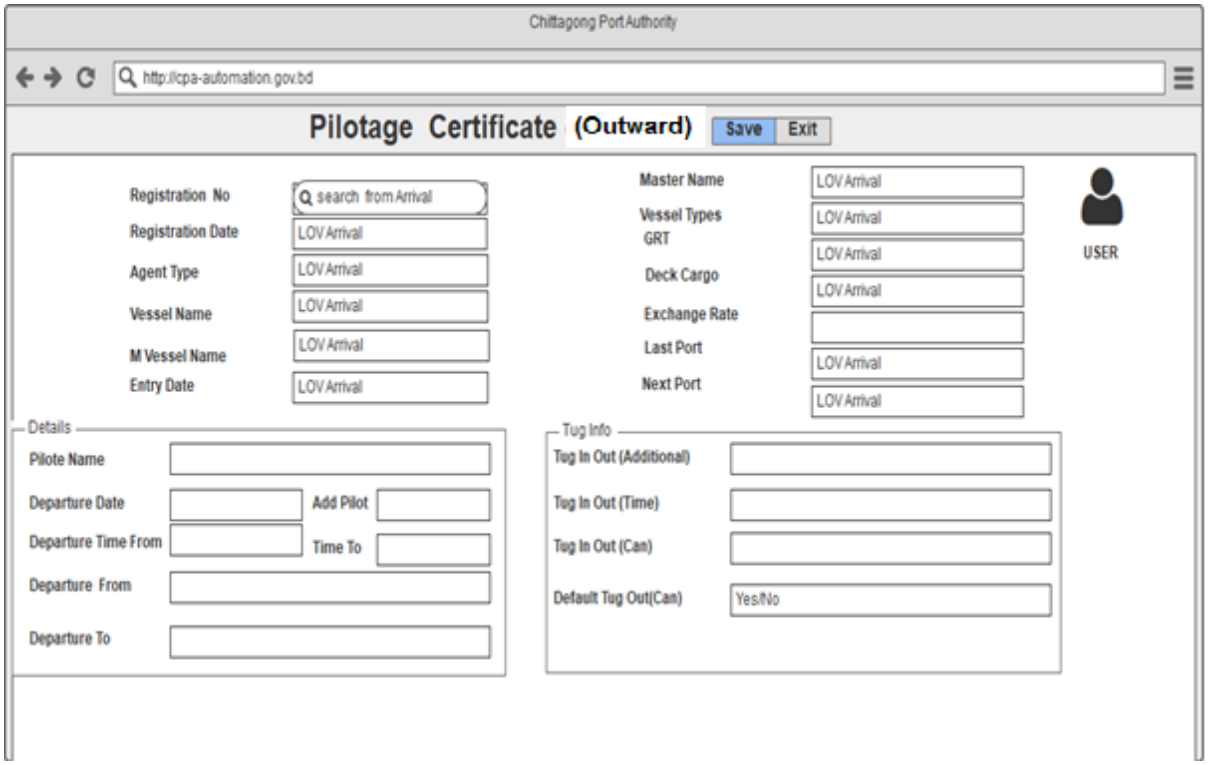


Figure 134: Pilotage Service - Outward

Form 02: Marine – Pilotage (Outward)

Input	Process	Output
Pilot fills departure detail and tug usage info in this form. Vessel detail will auto viewed if registration no. inserted	Pilotage, un-Berthing, and tug usage time is calculated in back-end for bill preparation	Filled-up forms are reviewed by marine department and forwarded to A/C for billing.

Note:

1. Outward pilotage of mother vessel happens when high tides
2. Pilot can use multiple tugs for better movements
3. Pilots take sign from mother vessel captain on pilotage paper as acknowledgement

13.2.1.3 Pilotage Services (Shifting)

As per berthing meeting, assigned pilots move with pilot ship and one tug boat (usually) to berth area to provide shifting pilotage services to Mother Vessel. Usually, one Tug Boat moves with the pilot ship to assist the navigation. Shifting pilotage service ranges from one jetty area to another area.

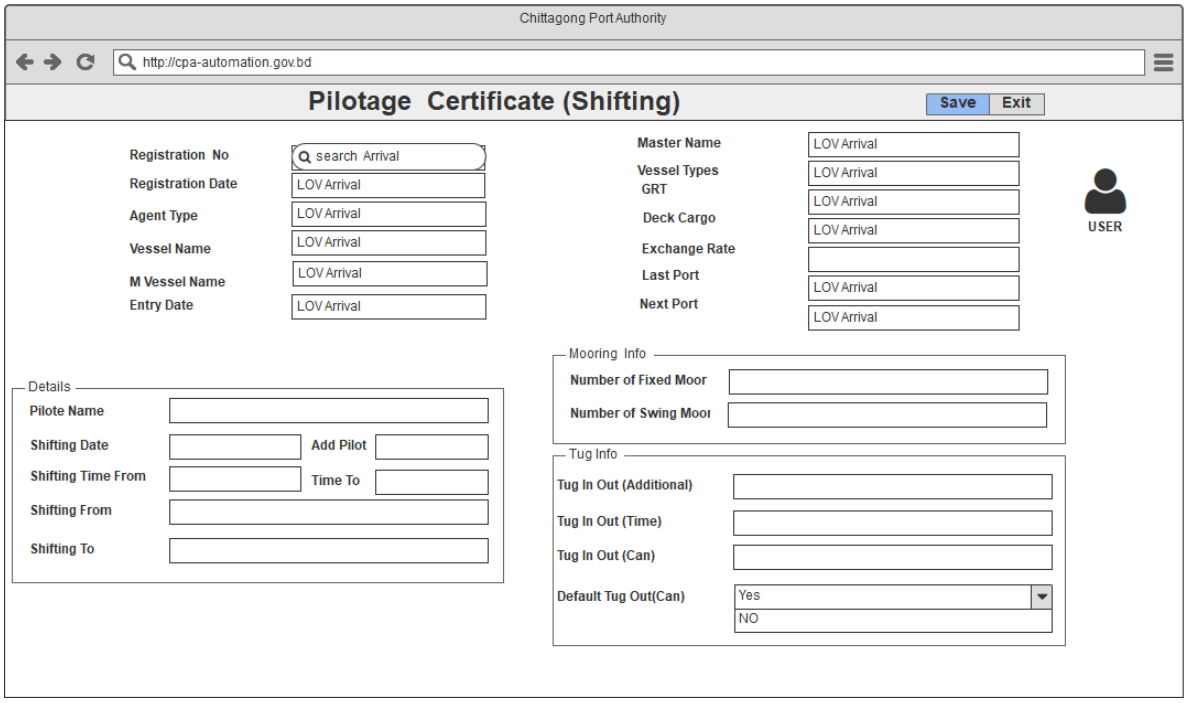


Figure 135: Pilotage Service - Shifting

Form 03: Marine – Pilotage (Shifting)

Input	Process	Output
Pilot fills shifting info, mooring info and tug usage info in this form. Vessel detail will auto viewed if registration no. inserted	Pilotage, shifting, mooring and tug usage time is calculated in back-end for bill preparation	Filled-up forms are reviewed by marine department and forwarded to A/C for billing.

Note:

1. Shifting pilotage of mother vessel happens when high tides
2. Pilot can use multiple tugs for better movements
3. Pilots take sign from mother vessel captain on pilotage paper as acknowledgement

13.2.1.4 Pilotage Services (Night Navigation)

Pilotage service means navigating the vessel. If any navigation of vessel happens in night time (as defined by CPA), pilot keeps the record in pilotage form with acknowledge of the vessel captain. Night time navigation is costlier than day time navigation. 6:00pm to 6:00am is the duration for night navigation.

13.3 Fresh Water Supply

Foreign ships require fresh water supply to keep their generators running all the time. Usually shipping agents submit fresh-water demand through formal application to the Dock Master. Dock Master approves the quantity required and orders Radio Control Room (RCR) to arrange fresh-water supply. RCR assigns water vessel to supply water.

Software in use	Covered Area	Remark
No	Fresh-water supply at outer-anchorage using water vessel	New application will be developed

13.3.1 Fresh Water Supply Process

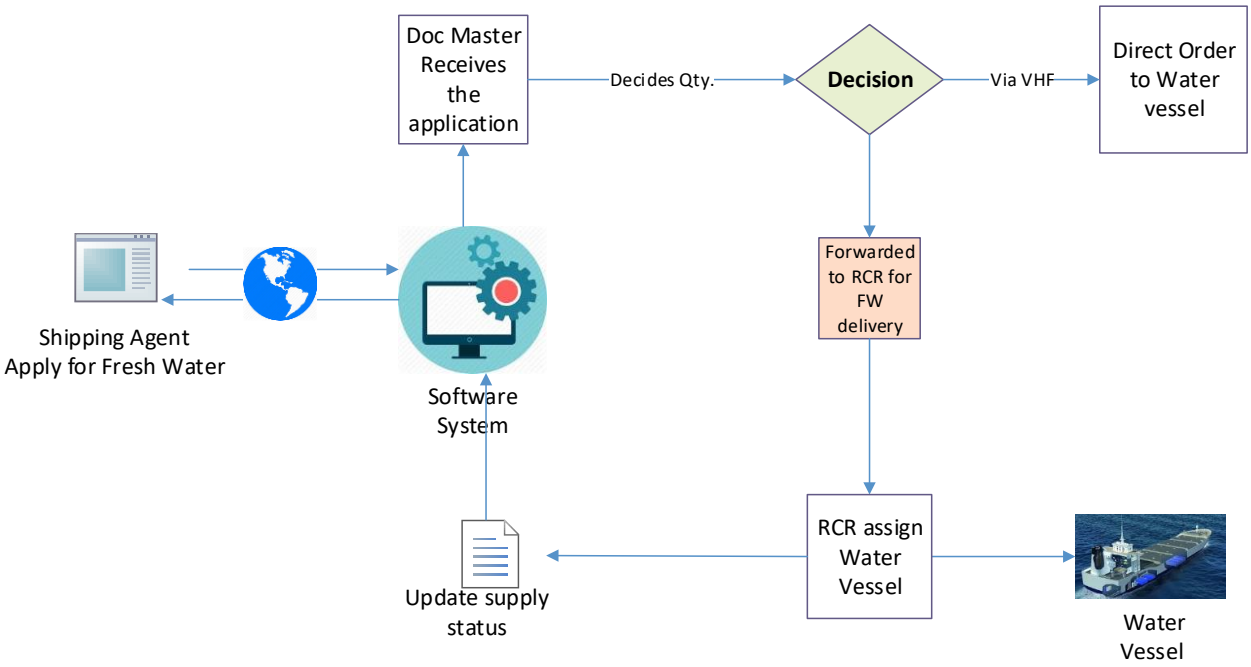


Figure 136: Fresh Water Supply Process

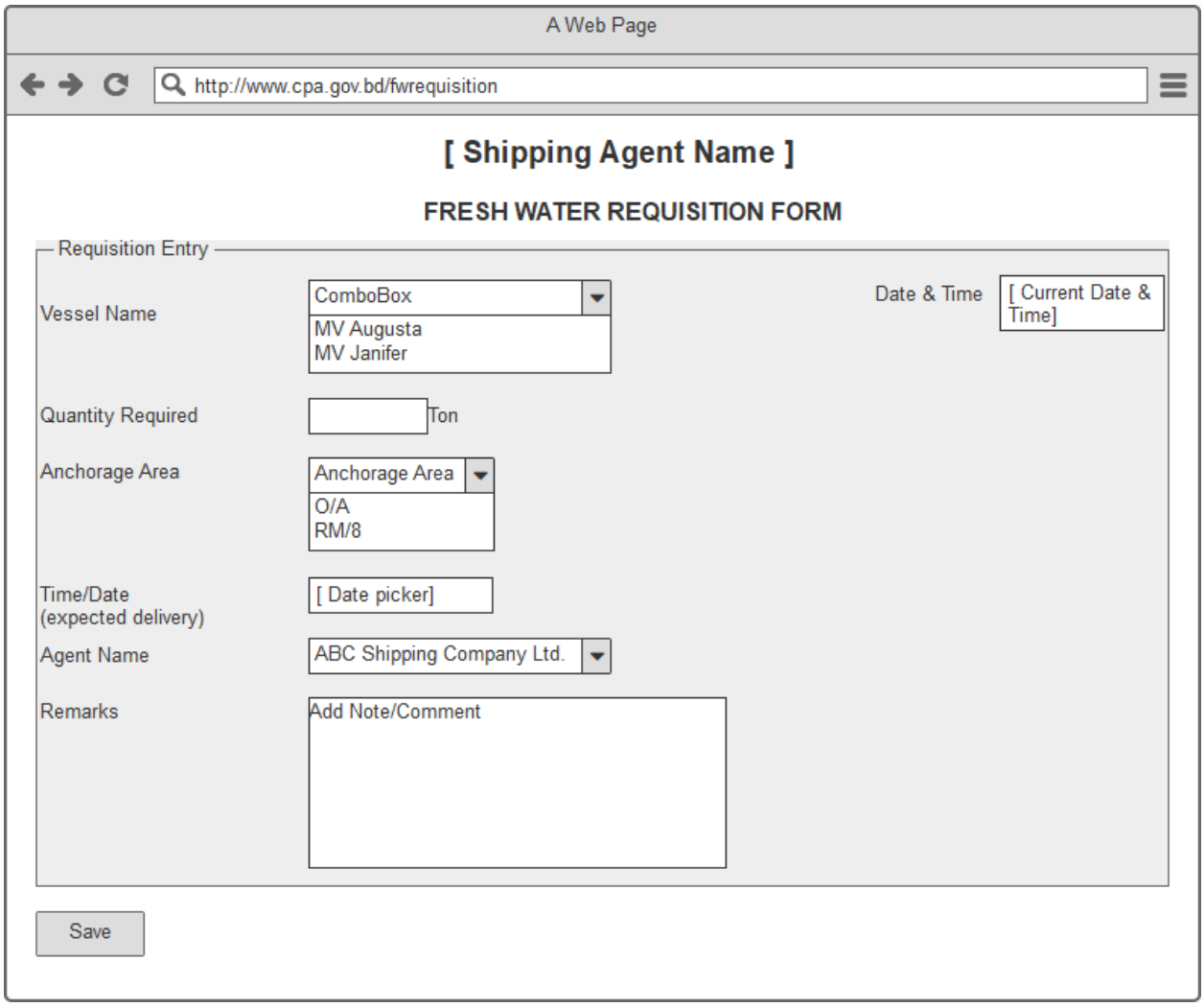


Figure 137: Mockup for Fresh Water Requisition

Form 01: Marine – Fresh-Water Request

Input	Process	Output
Shipping Agent send Fresh-Water requests via website giving below info: Vessel Name, Qty, expected delivery time etc.	Purchase request received with required data processed as a single order (unique order ID)	Received request order will be displayed in row-wise in dock master panel for approval

Note:

1. There will be auto-generated ‘order id’ in process for each order.
2. Shipping agent can give any note for detail

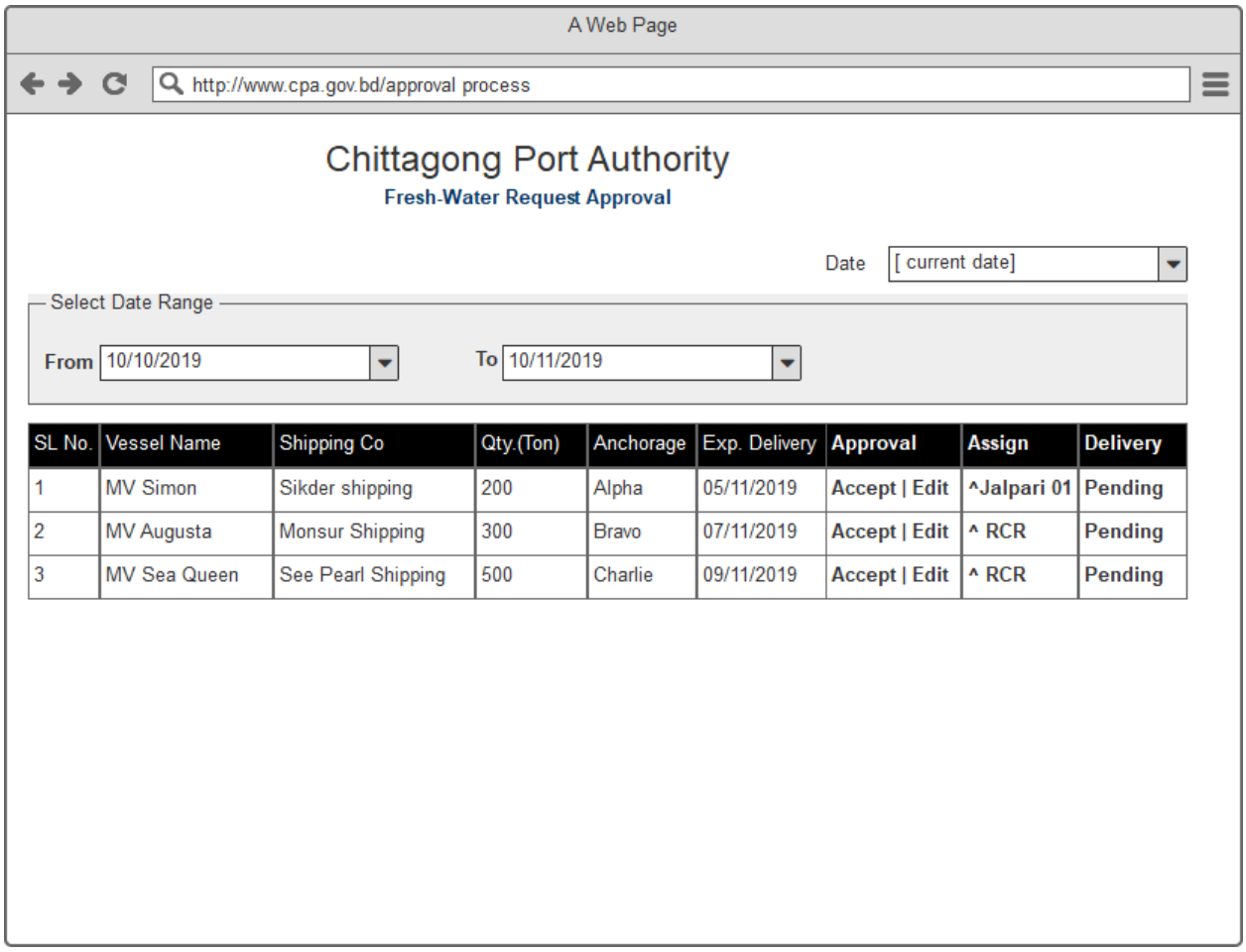


Figure 138: Mockup for Fresh water requisition approval

Form 02: Marine – Fresh-Water Request Approval – Doc Master

Input	Process	Output
Received request will be displayed in row-wise in a table in dock master panel	Dock master can edit the requested quantity. Dock master can assign the water barge via VHF or forwarded to radio control room for water delivery.	Order with approved quantity will be displayed row-wise in RCR panel

Note:
1. Dock master can deny the request, if denied, order will be canceled
2. Dock master decides the quantity considering urgency

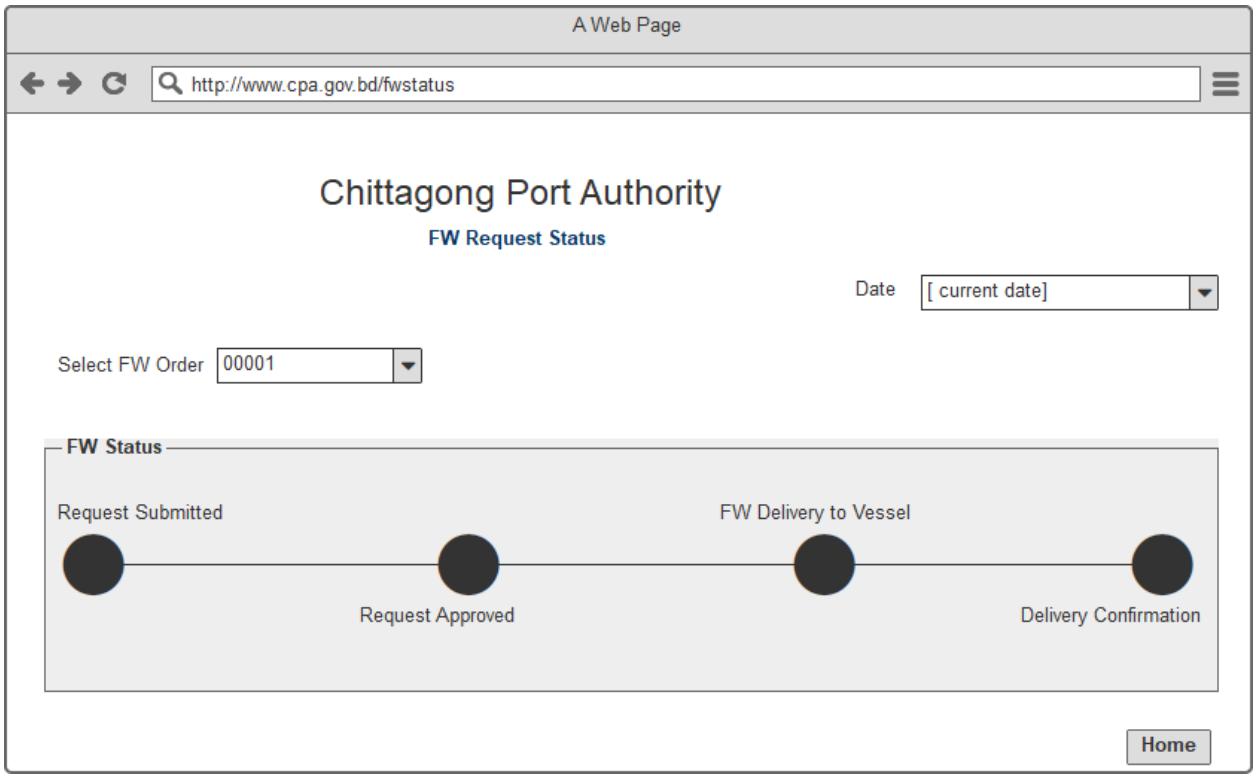


Figure 139: Mockup for Fresh Water Request Status

Form 03: Marine –FW Customer view

Input	Process	Output
Shipping agent select order ID to view order status	Collect order status from other applications	Show the order status visually in customer panel

Note:
1. Customer means the shipping agent
2. Shipping agent can have multiple orders at a time.

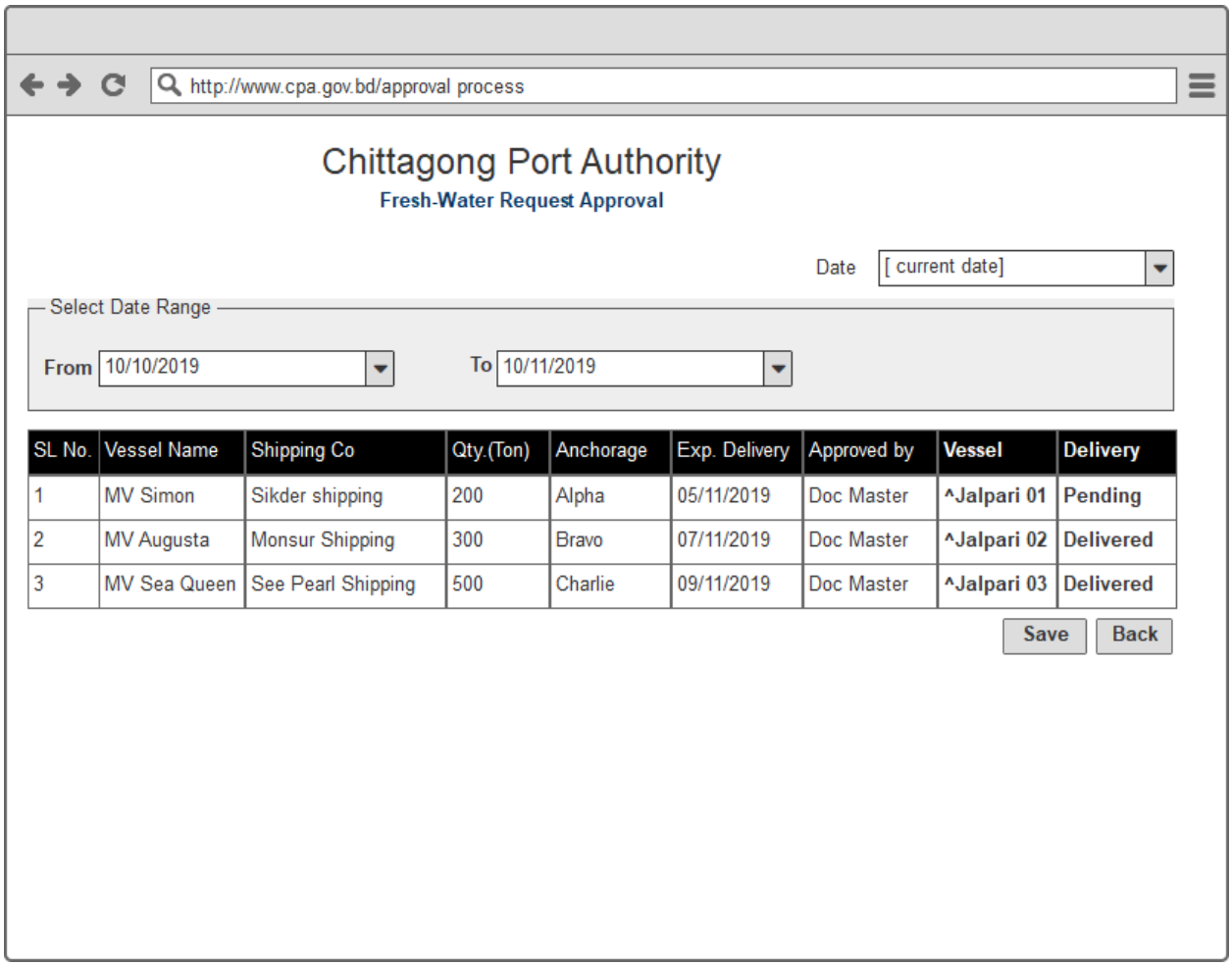


Figure 140: Mockup for Fresh Water Request Approval

Form 04: Marine – FW delivery-RCR

Input	Process	Output
Upon dock master approval, FW order request list is shown in RCR panel	RCR operator assign water vessel for the fresh-water delivery. RCR update the order list with delivery status.	Delivery status is shown in dock master and shipping agent panel

Note:

1. If dock master assign the water vessel via VHF, then he will notify the RCR to update the delivery status

13.4 Swing Mooring Service

CPA provides Swing Mooring services for local vessel. There are specific areas in Karnaphuli River for local vessel parking with safe anchoring facilities. These parking is marked by '**Boya',** and there are few dozens of ship parking facility from which, CPA earns revenue for each day parking. Usually, parked ships are surveyed by CPA officials and listed down for billing. List is verified by an Inspector before sending to accounts department.

Software in Use	Covered Area	Remark
No	Swing Mooring status and billing automation	It will be newly developed

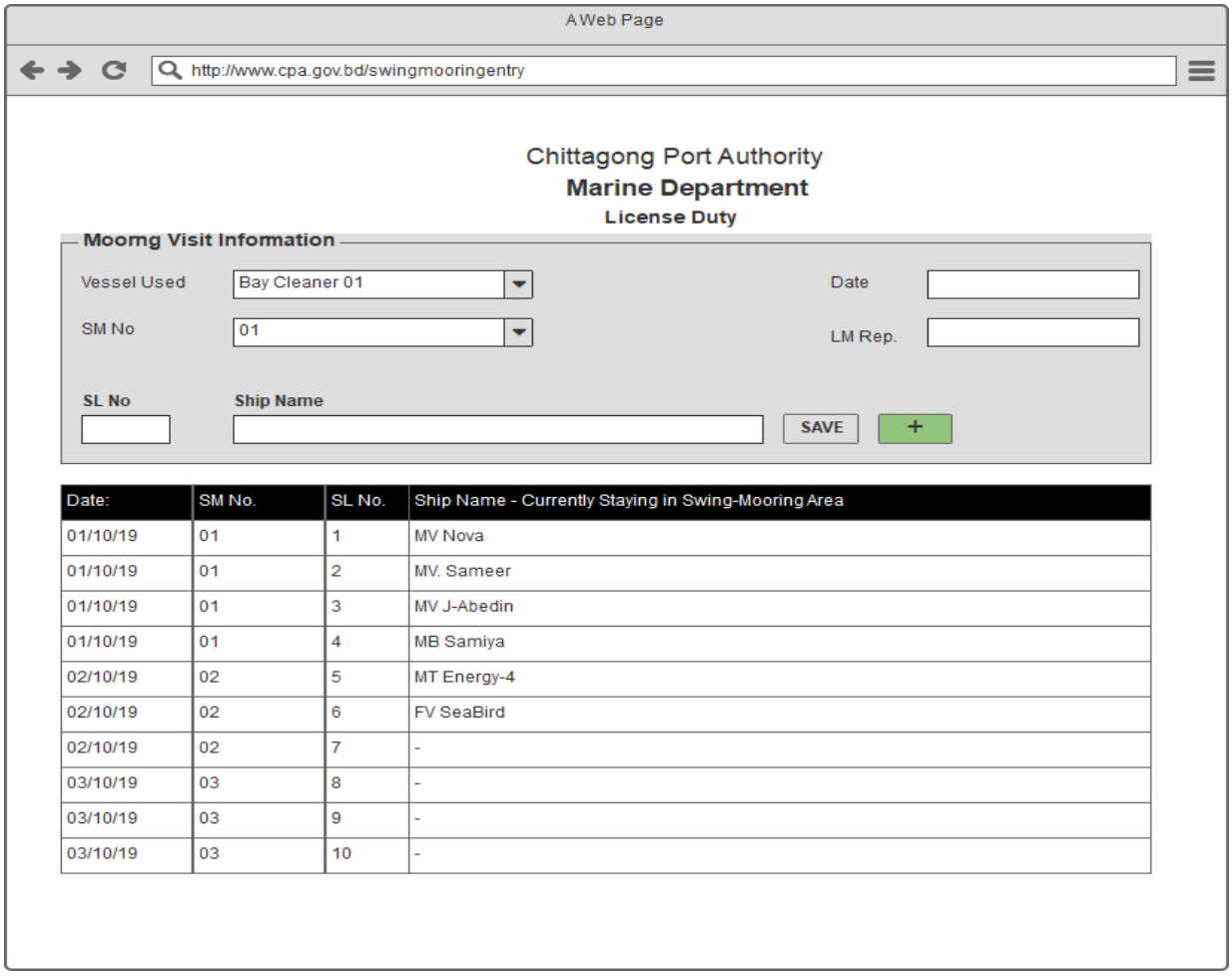


Figure 141: Mockup for Swing Mooring Data Entry

Form 01: Mooring – Swing Mooring data entry

Input	Process	Output
Mooring visit information entry with vessel used for visit, ship found at SM area with date etc.	Data captured from entry are prepared for viewing in inspector panel. Mooring days are counted against per ship	Tabular view of the mooring ship date-wise list shown to the inspector panel for approval

Note:

1. Mooring list is prepared by visit officers and entry at the system by LM operator.
2. Data entry to be done immediate after the visit
3. Mooring list is reviewed by the inspector. Approved list is sent to A/C department

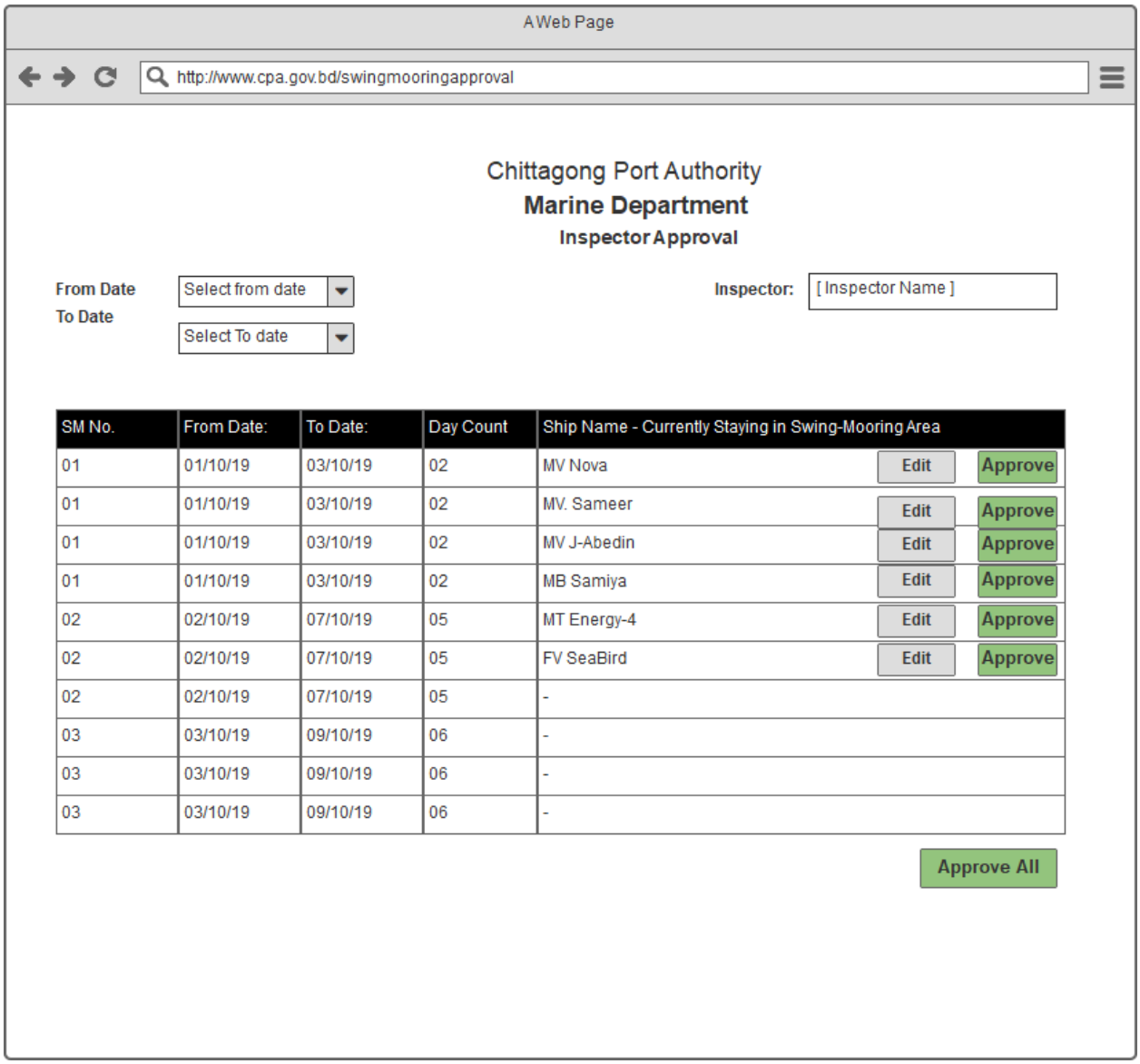


Figure 142: Mockup for Inspector Approval

Form 02: Mooring – Approval process- Inspector

Input	Process	Output
Entered data will be displayed in row-wise in a table in approval panel	Inspector can edit the information and update the list then approve it.	Approved list is forwarded to A/C depart on real-time.

Note:

1. Mooring list is reviewed by the inspector. Inspector must be the different person than data entry operator
2. Ship staying at SM area and days count are calculated at back-end and used for bill preparation

13.5 License Service

CPA provides license services to ship owners to operate shipping services locally in Karnafuli River.

CPA also collects Port Dues & River Dues from local vessels and also collects license renewal fees from ship agents on periodical basis.

There are three license offices in three separate locations to carryout above activities. Usually, collections are made in 'Cash'.

13.5.1 Collection process

Figure 143: License Office Collection Process

Software in Use	Covered Area	Remark
No	License renewal Service, port & river dues collection from local vessels.	It will be newly developed in our system

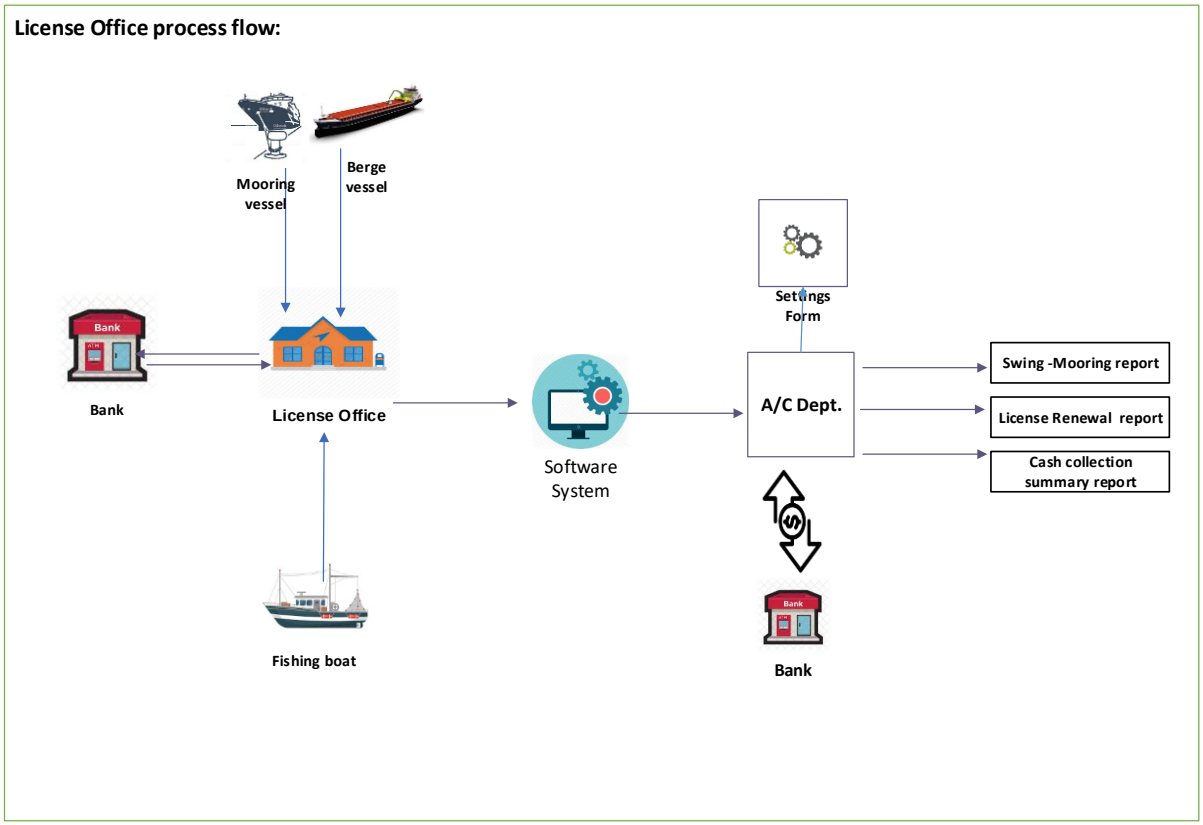


Figure 144: Proposed Process of License Office

All collections of License office can be done using one single form: i.e. **miscellaneous bill collection from. This form will be available from A/C module.**

13.5.1.1 Cash Collection Slip

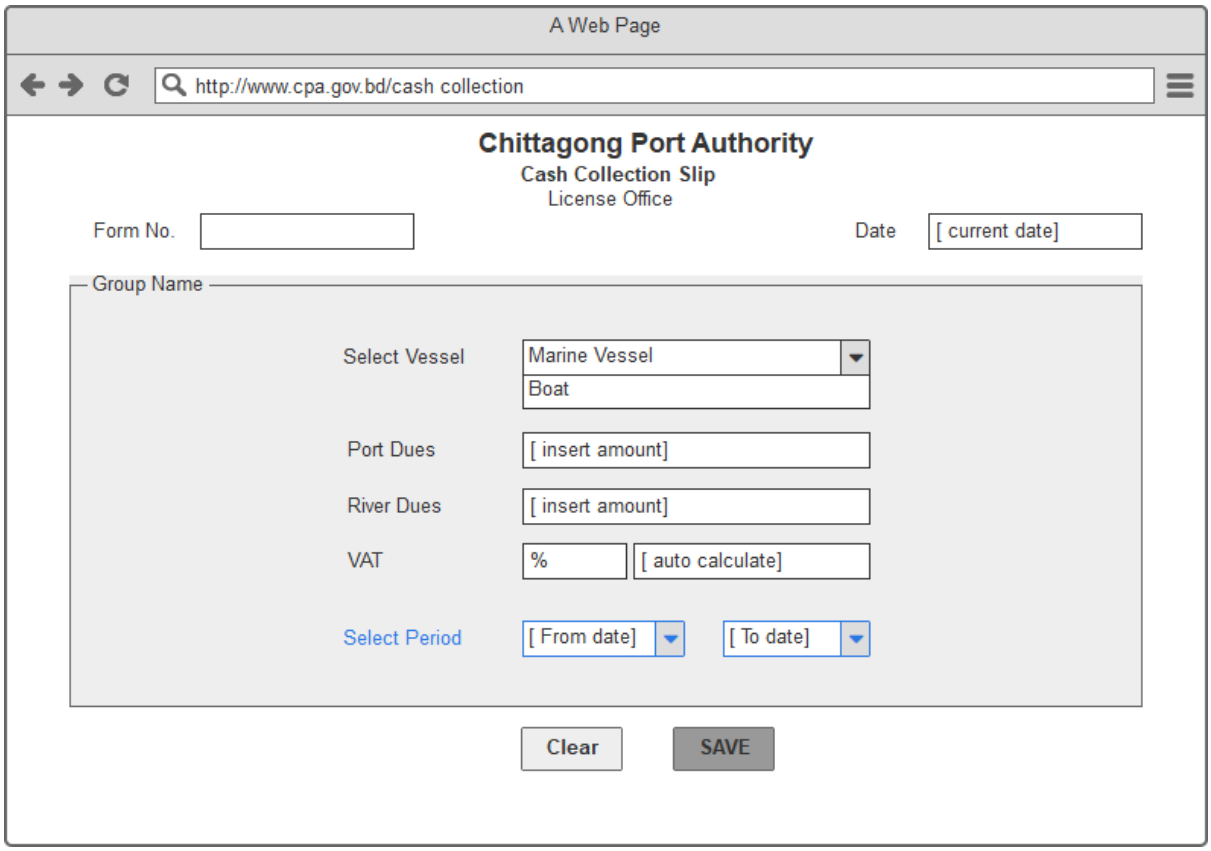


Figure 145: Mockup for Cash Collection Slip

Vessel Selection:
There are two types of vessel who are subjected to pay.

- Marine Vessel
- Boat

Types of Payment:
There are two types of payment collection:

- River Dues
- Port Dues

VAT Calculation:
If VAT (in %) is given, then, VAT amount will be calculated automatically on collected amount.

Period:
'Period' means the approved time for that vessel/boat to operate in port area against this payment.

Approval:
Filled up forms, if saved, forwarded to the Deputy Conservator Panel for further approval. Upon his, approval, this collection slip will be sent to the A/C department module.

Payment Authority:
Vessel or Boat owners are liable to pay to Chittagong Port. They are identified by a license given by Chittagong Port.

13.6 Craft Management

CPA has own vessels both with engines and without engines. Engine vessels include pilot vessels, tug vessels, water supply vessels etc. and without engine vessels include floating pontoon. Vessels with engines mentioned as 'craft' are managed by Dock Master of Marine Department. Categories of craft is given below:

- Tug
- Pilot
- Fresh water
- BLV
- Solid waste collect
- Harbour Security/Petrol
- Dreiser ECRV
- Mooring
- Ambulance
- Container Carrier

Managing these craft requires below functional services. We are showing how these services are covered in our proposed solution.

Table 3: Craft Management System

SL#	Type of Services	Our proposal
1	**Vessel profile** (profile of vessel with detail vessel info/spec, vessel type, job role etc. vessel profile will be created by Marine Department with approval process)	Will be managed in web-based Vessel/vehicle management system module
2	**Manning Service** (vessel operator/pilot & crew assigning procedure and their roaster duty detail information for that vessel. Manning service)	Will be managed in web-based Vessel/vehicle management system module
3	**Fuel Supply** (Regular fuel supply detail with requisition process, approval, fuel load from supplier, usage and billing etc.)	Will be managed in web-based Inventory module
4	**Periodical Maintenance** (vessel repair service, spare parts & lubricants)	Will be managed in web-based Repair/Maintenance/Workshop module

13.7 Radio Control Room (RCR)

Chittagong Port Authority (CPA) has a Radio Control Room (RCR) with latest devices and equipment. Radio Control Room handles all VHF communication between Vessel and Port. There are VHF operators who keep record of all communication for future use. RCR also deals with any incident happen in river or sea area and acts as solution provider between victim and port. According to the nature of communication, we can categorize them into below four type of forms:

- **Vessel Registration**
- **Fresh-Arrival List**
- **VHF Log entry**
- **Any incident information entry**

Below is the framework of Radio Control and our proposed system:

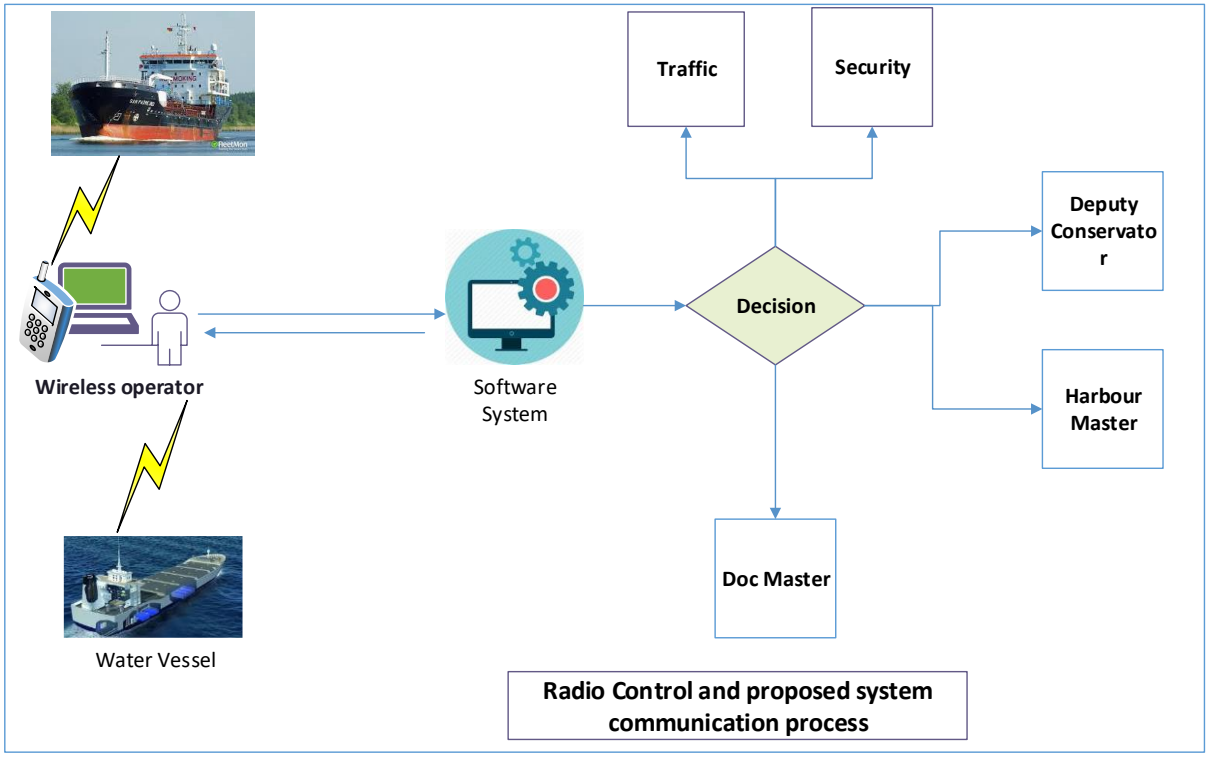


Figure 146: Proposed RCR Work Process

13.7.1 Vessel Registration

Vessel registration is one of the fundamental procedure to record incoming vessel information. Radio Control operator does it under supervision of Harbour Master.

One unique no. is given to a ship which refers to detail information of that ship.

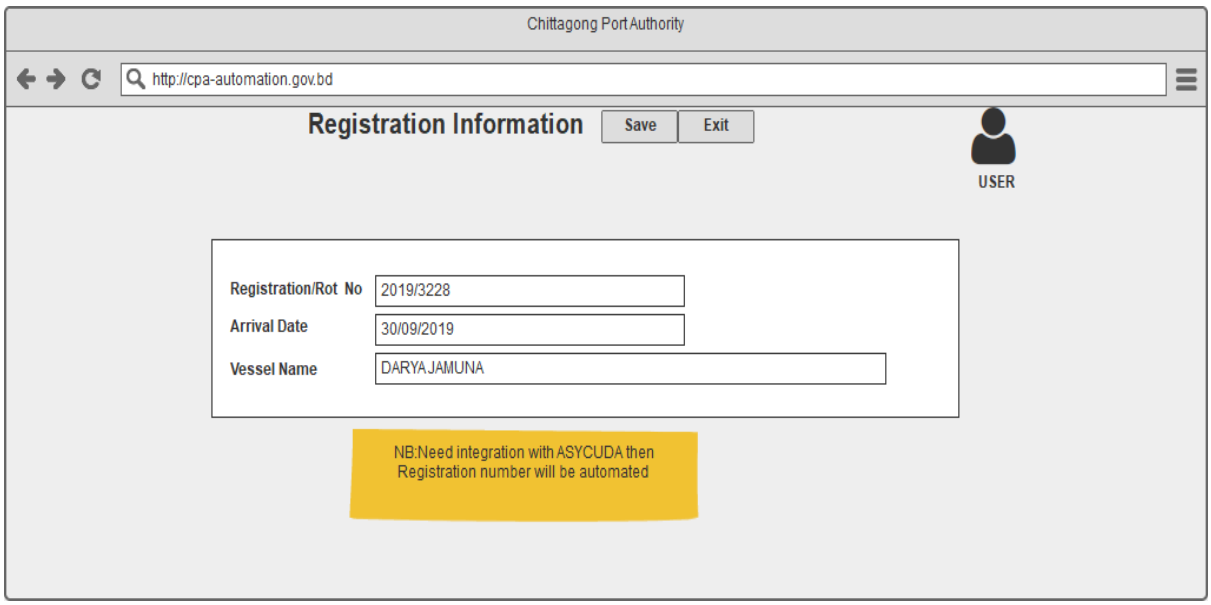


Figure 147: Mockup for Vessel Registration

Form 01: RCR – Vessel Registration

Input	Process	Output
RCR register ship name with a unique No.	Ship name and the registration no. is tagged each other for further use.	Any ship is identified by its registration no.

Note:
Ship registration is one of the primary step in proposed system

13.7.2 Vessel Arrival List

This list shows the daily fresh arrival of new vessel at Chittagong Port Area. This list is prepared for using in further process.

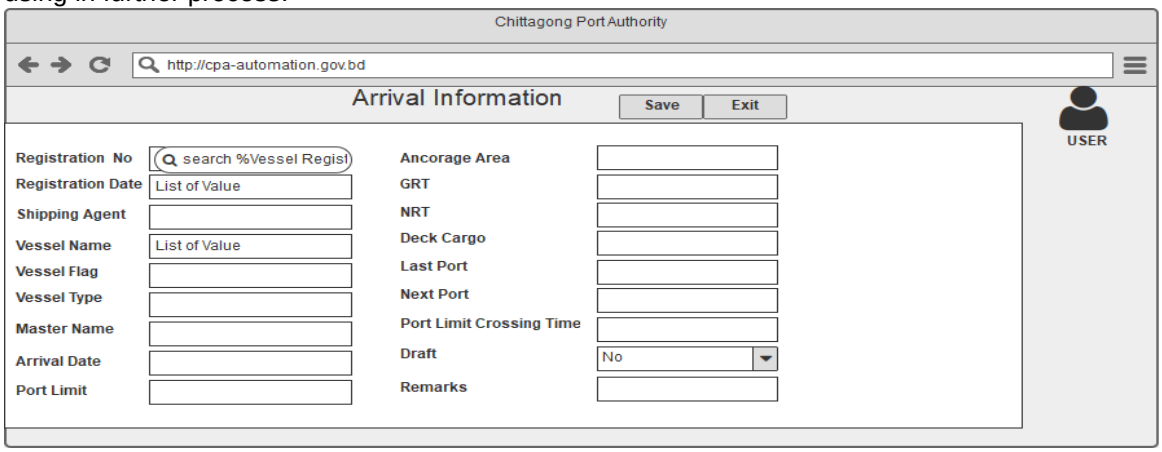


Figure 148: Mockup for Vessel Arrival List

Form 02: RCR – Vessel Arrival List

Input	Process	Output
RCR operator receives VHF calls from mother vessel and collect all required information of that vessel and insert in this form	Vessel detail is identified according to the registration no. and ship profile is formed for further use.	Ship data can be used for fresh arrival list of ship at the port.

Note:
This form generates a 'Fresh arrival list' of the upcoming ship at Chittagong port.

13.7.3 VHF Log Entry

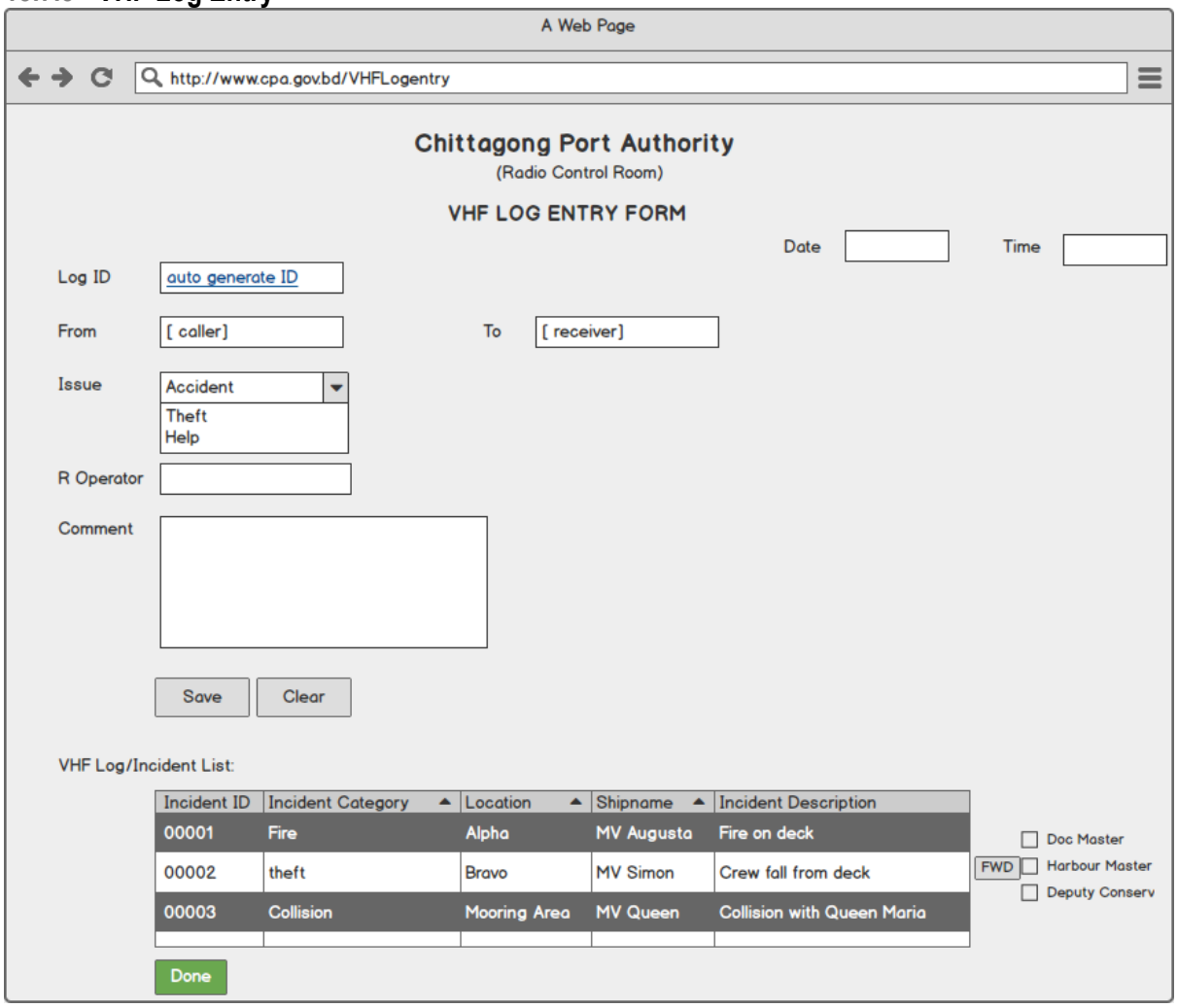


Figure 149: Mockup for VHF Log Entry

Form 03: RCR – VHF Log Entry

Input	Process	Output
RCR operator receives VHF calls and keep records of communication details. Communication are about different incidents, fire & rescue etc	Each communication is an incident and which is solved by taking actions by concern persons. Action history is updated by concern person against each incident.	Incident list with action taken with time should be the output of this form.

Note:
1. Each incident entry will keep RCR operator login info
2. RCR operator will follow up and update actions taken which will be available for report viewing.

13.7.4 Incident Information

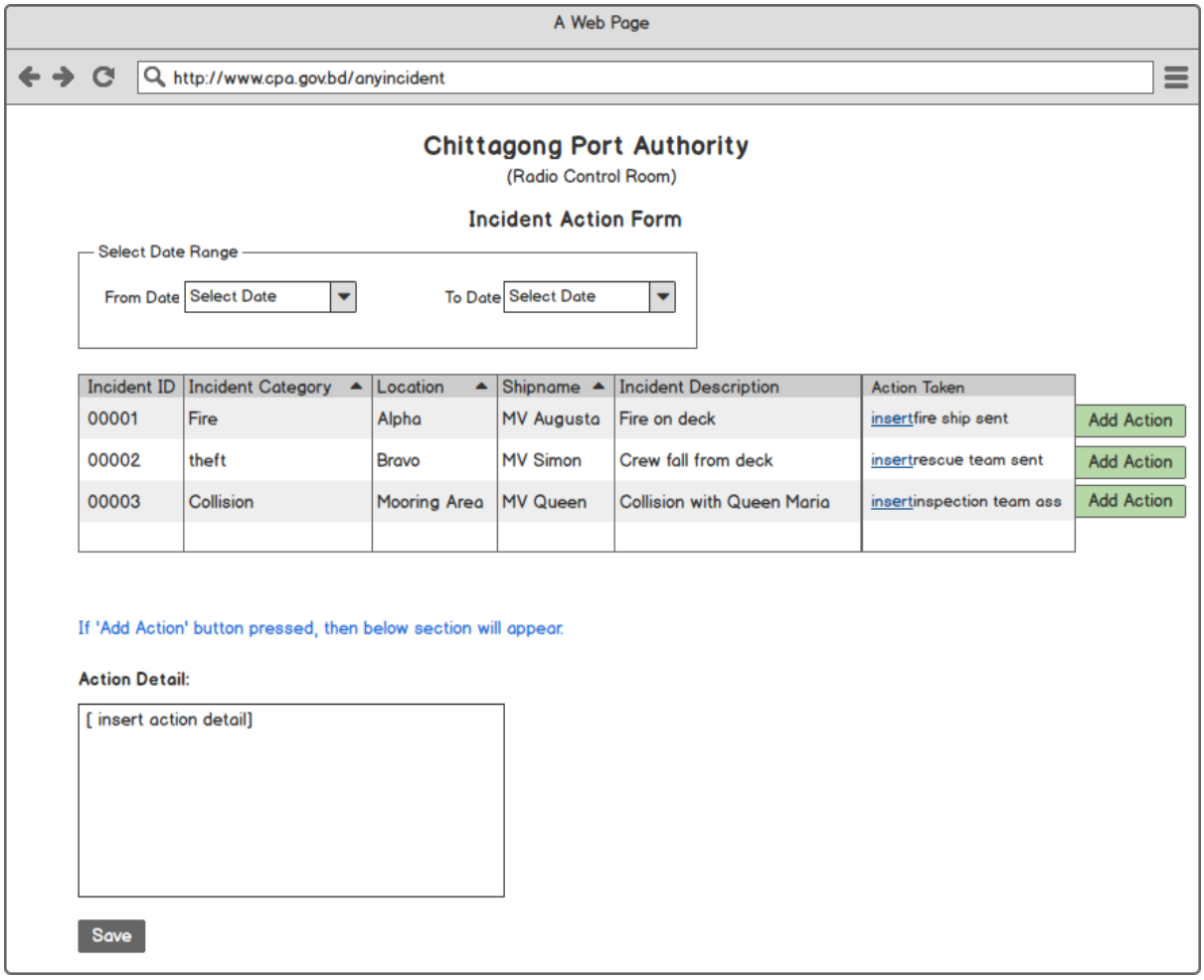


Figure 150: Mockup for Incident Inforamtion

Form 02: RCR – Incident entry

Input	Process	Output
RCR operator receives VHF calls of any incident. Incident details and action taken steps are inserted here.	This form will be available to action takers/other users. They will give action taken status in this form.	Action taken will be displayed column-wise side by side of incident.

Note:

1. Actions are taken by Deputy Conservator, Harbour Master and Dock Master Etc.
2. Action feedback is given by them, data update might be done by RCR or departmental officer
3. Action taken will be used for future reporting.

13.8 Report Requirements of Marine Department

Below is the list of required reports of Marine Department:

Table 4: Report Requirement of Marine Department

SL No	Section Name	Report List
1	**Berthing Section**	We will integrate with the existing digital berthing software and collect required data to show at dashboard.
2	**Pilotage service**	• Monthly Inward service report • Monthly Outward service report • Monthly shifting service report
3	**Fresh-water supply**	• Monthly water-supply to O/A • Monthly water-supply from Dock • Monthly Water-supply vessel-wise report • Fresh-Water Demand List report
4	**Swing Mooring service**	• Monthly swing-mooring report
5	**License service**	• Monthly new license issue report • Monthly license renew report • Daily collection report
6	**Craft management**	• Craft Status Report • Daily/monthly roster report • Daily/monthly fuel demand report • Craft-wise fuel demand report
7	**Radio Control Room (VTMIS)**	• Daily Fresh arrival report • Daily Container list • Monthly Any incident report • Fresh-water delivery report • Vessels staying in O/A & Kutubdia

14 Module: Vessel Traffic Management Information System (VTMIS)

VTMIS is a visually monitoring software used by Radio Control Room (RCR). VTMIS is located in RCR room at CPA. RCR operators use this software to visually track movement of vessels at Karnaphuli River and O/A. VTMIS runs stand-alone and used by senior management of CPA to monitor real-time incoming & outgoing vessels of Chittagong Port.

Software in Use	Covered Area	Remark
VTMIS	Vessel Monitoring & Tacking	Already LIVE. We will do **integration** for reporting.
No	Radio Control Room and our proposed system communication process	It will be newly developed in our web-based system

15 Module: Hydrographic Automation System

Hydrographic department does survey and other related works (dredging & Lease) to ensure smooth movement of the ships within Port Area (2.5 kilo back of Kalurghat bridge to Patenga light-house) of around 29.5 kilometer of river area and 13 kilometer Radius of Sea area from Patenga light-house area. There are nine (9) jorip (survey) boats to do **River side survey** & **Land side survey.**

Survey Software in use: **HyPac, CARIS GIS, Dredge Pack, Geotide.**

Hydrography department has 6 sections:

i. River Survey section
ii. Gauge Reading section
iii. Data Processing section
iv. Dredging work section
v. Survey Vessel section
vi. Dredger 'Khanak'

Objective: Hydrography department requires online chart/map selling system, where electronic payment option will be available: Below are the forms and process which explains our proposed plan regarding online chart/map selling process.

- The request will be coming through online with user authentication.
- There will be hierarchical approval process in the system.
- If approved, then, customer can make payment online and only then deliverables will be prepared
- Customer will be notified and deliverables will be available online for download.
- Customer will be able to track order process online

Software in Use	Covered Area	Remark
No	Survey chart/map selling through online with online payment	It will be newly developed in our web-based system

15.1 Online Chart/Map selling process

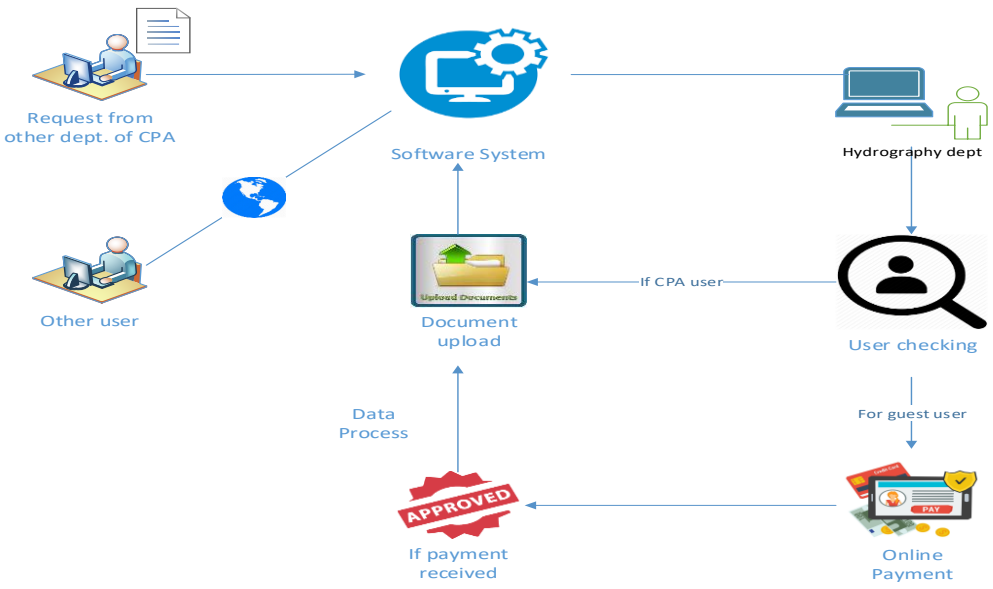


Figure 151: Online Chart/Map Selling Process

15.1.1 Customer Requisition From

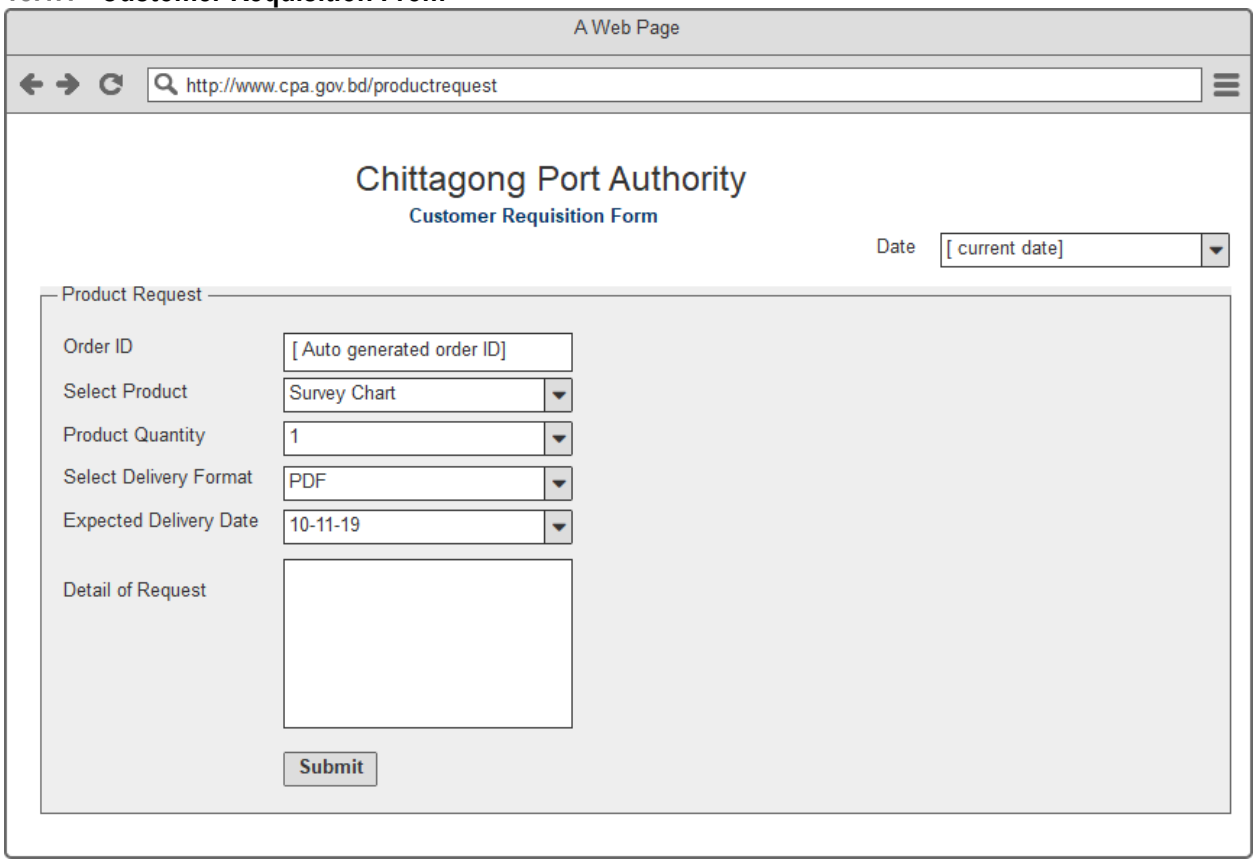


Figure 152: Mockup for Customer Requisition

Form 01: Hydrography – Product Purchase Request

Input	Process	Output
Customer send purchase requests via website for survey chart & map purchase	Purchase request received with type of product, quantity, delivery format etc. and calculated with price already set from settings form	Received request will be displayed in row-wise in a table in hydrography department user

Note:
There will be auto-generated ‘order id’ in process for each order.

15.1.2 Customer Request Approval 01

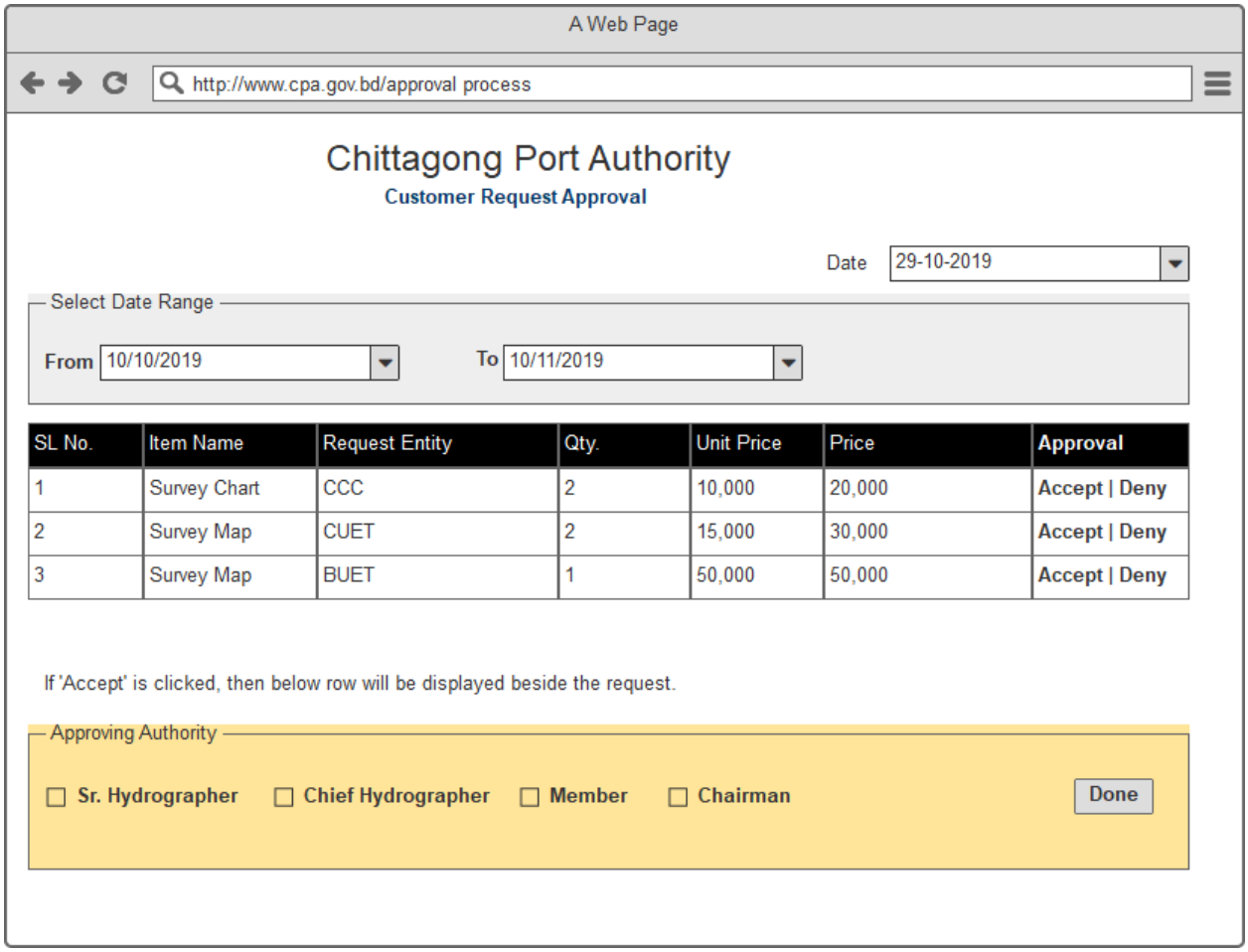


Figure 153: Mockup for Customer Request Approval

Form 02: Hydrography – Approval process

Input	Process	Output
Received request will be displayed in row-wise in a table in hydrography department user	User can accept/deny the request. If accept, then approval entities will be displayed below. Approved request will be forwarded to the checked user.	Forwarder request is displayed in row-wise with edit/Note column in the Assigned user panel

Note:
1. Approval entities are set in settings form.
2. Forwarded step in approval will follow department hierarchy
3. Department user can accept/deny the request with a feedback note

15.1.3 Customer Request Approval 02

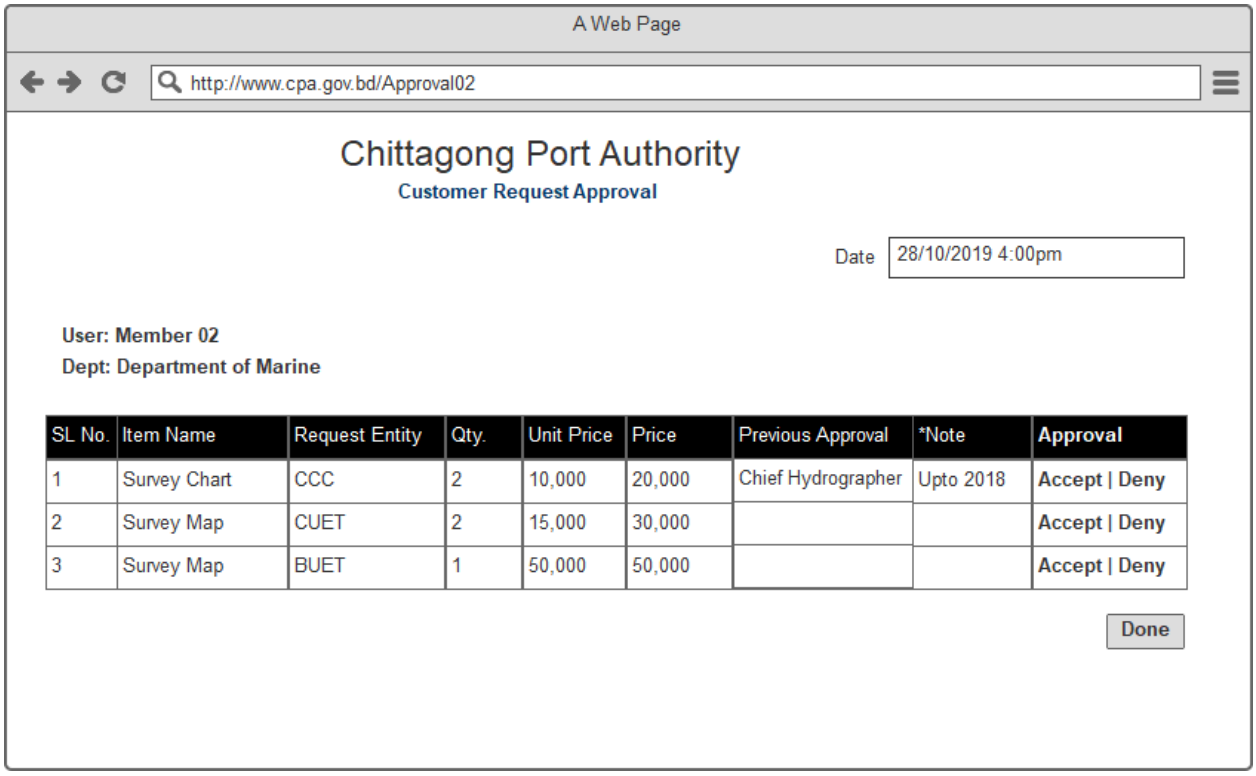


Figure 154: Mockup for Request Approval

Form 03: Hydrography – Approval process – Member

Input	Process	Output
Forwarder request is displayed in row-wise with edit/Note column in the Assigned user panel	Upper-User can accept/deny the request. If accept, then it will be displayed to the next level user panel. If it is denied, then forwarded to the previous level user	Forwarder request is displayed in row-wise with edit/Note column in the Assigned user panel

Note:
1. 2nd/on-ward approval entity will view most previous approval status and comments in a column
2. They can provide feed-back against order request.

15.1.4 Customer Payment

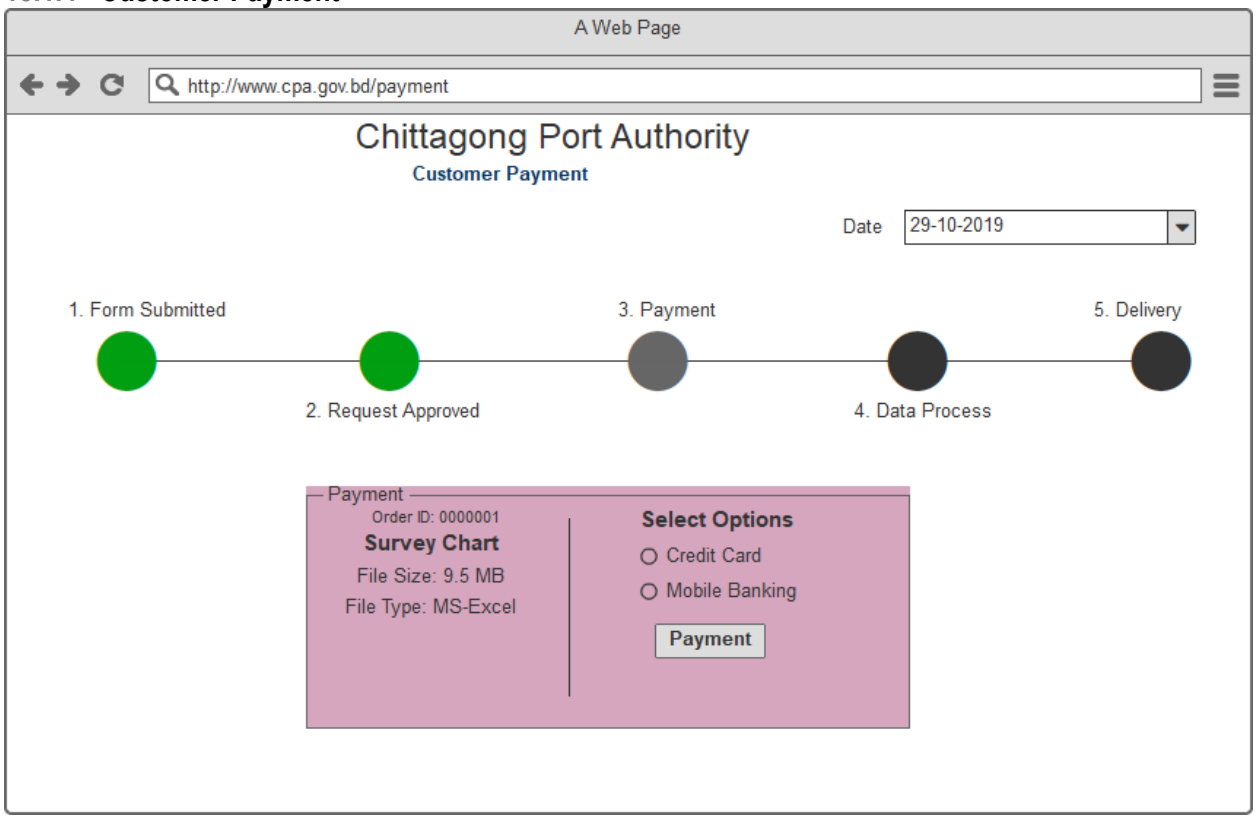


Figure 155: Mockup for Customer Payment

Form 04: Hydrography – Payment

Input	Process	Output
Upon last entity approval, order request list is updated along with customer view status	System will connect third-party payment gateway for customer payment against that ordered product.	Payment form will display showing mode of payments and order info. Payment will be done through third-party payment gateways. Upon confirmation of payment

Note:
1. There will be third-party payment gateway service provider for online payment
2. CPA will provide bank A/C to collect payment

15.1.5 Customer Product Delivery

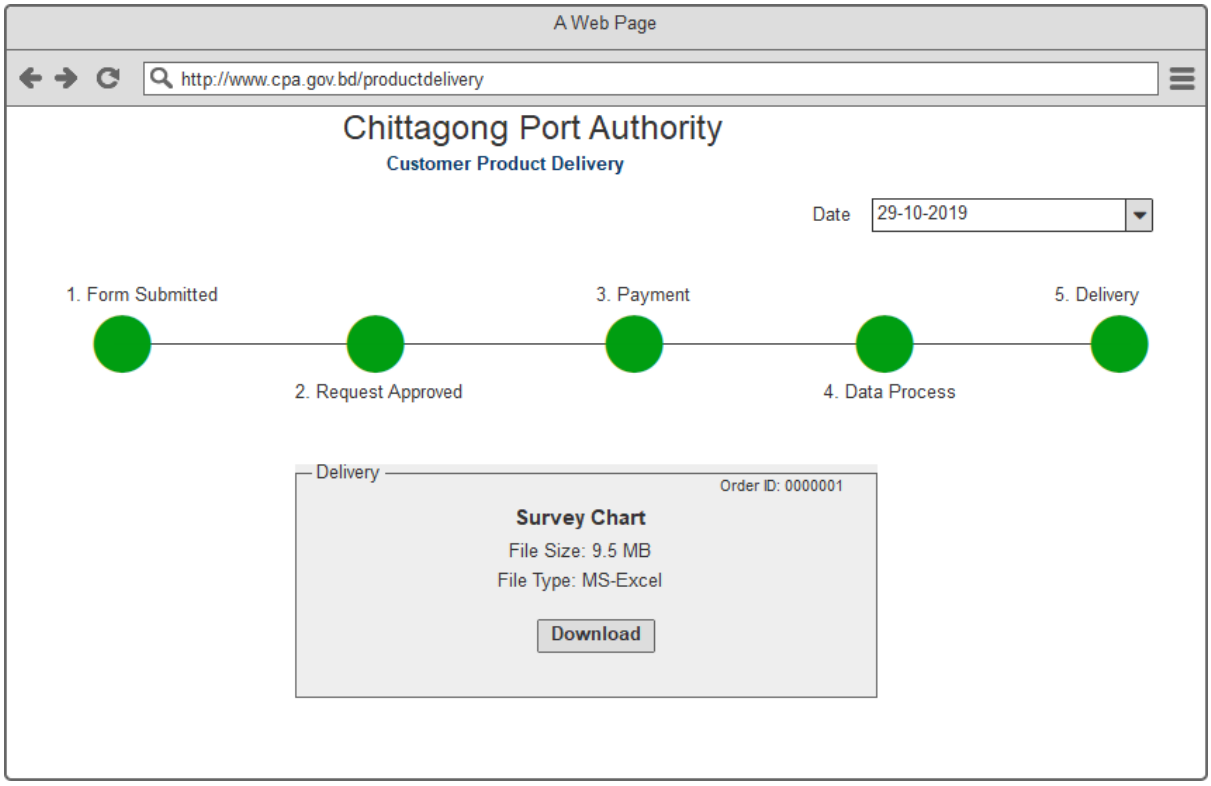


Figure 156: Mockup for Product Delivery

Form 05: Hydrography – Delivery

Input	Process	Output
Successful payment information through API to the system	Ordered data will be processed for delivery in asked format and make available for display in delivery view as well as update customer view panel 'delivery'	Delivery view will show the file detail info and display 'download' option. Customer can download from there

Note:
Customer will be able to download directly from this panel. Download option will be available for a certain period (maybe)

15.1.6 Report Requirements of Hydrography Department

Below is the list of required reports from Hydrography Department:

Table 5: Report Requirement of Hydrography Department

SL No	Section Name	Report List
1	Hydrography Department	- Monthly/yearly Chart or Survey data sale report - Customer-wise Chart or Survey data sale report - Pending Delivery Report (till date)