



Debt Recovery System
Mobile Application Development Document

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1. Introduction

1.1 Purpose

The purpose of developing the Debt Recovery System (DebtX) is to streamline and enhance the efficiency of arrears collection and equipment collection processes at SLT. This approach plans to reduce financial losses from unpaid arrears and unreturned equipment. DebtX improves accountability, tracking, and communication between Debt Recovery Companies (DRCs) and Recovery Officers (ROs) to ensure quick case resolution while following legal and organizational policies. Also, commission calculations for Debt Recovery Companies (DRCs) based on resolved cases are planning to be processed through the DebtX system.

1.2 Scope

The Debt Recovery System (DebtX) is designed to automate and optimize the debt recovery process, addressing inefficiencies in manual workflows while ensuring compliance with organizational and legal requirements. It will feature Collecting incident data directly from Data Lake, Individual incident registration and registration of Bulk of incidents, and automated case assignment to distribute cases effectively among Debt Recovery Companies (DRCs). The mobile portal will enable ROs to update case details, track progress of cases, and record negotiations and update the progress of CPE collecting process in real time, ensuring transparency and reducing delays. The system will include real-time notifications and alerts to keep stakeholders informed of critical updates and deadlines. Integration with existing systems (BSS, OSS, and CRM, SMS, and Email platforms) will ensure streamlined data flow, while the system's mediation board workflows will simplify case escalations. Successful cases will be closed at the final stage.

1.3 Audience

The Debt Recovery System Mobile App (DebtX App) caters to specifically Recovery Officers as they directly negotiate with customers

RO Officers

- Viewing the Active cases from the app
- Viewing the Negotiation cases from the app
- Viewing the Mediation Board cases from the app
- Proceeding with all the necessary actions related to negotiation cases.
- Proceeding with all the necessary actions related to Mediation Board Cases.

2. Project Overview

2.1 Background

The existing process for debt recovery in the Recovery Section of SLT is entirely manual. Data for collecting arrears and customer-provided equipment (CPE) is manually retrieved from internal datasets maintained in systems such as BSS, OSS, and CRM. The Recovery Section officers at SLT manage this process in collaboration with Debt Recovery Companies (DRCs) and Recovery Officers (ROs).

The process begins with the SLT officer collecting input in the form of the customer's account number and specifying the required action, which may be one of the following,

- Collect arrears
- Collect CPE only
- Collect arrears and CPE

Based on the action entered relevant details are provided from the BSS, OSS, and CRM systems. The case is then handed over to the ROs through the DRCs.

- Cases meeting specific criteria are directed to the negotiation process (Arrears and CPE).

A negotiating procedure is started with the customer, and the relevant information is sent to the RO through the system. Unless the CPE collection is unsuccessful, the case is considered successful after the unit is gathered and approved by the RCMP. The negotiation phase occurs between the RO and the client if the action entails collecting arrears. After successful negotiation, the settlement procedure begins, during which the RO's commissions are determined by the amount of money settled by customer. The matter is sent to the mediation board if negotiation is unsuccessful. Depending on the customer's reaction, cases may go through the dispute resolution path. Significant issues with the existing manual technique include data redundancy, inefficiency, and the possibility of human mistakes. In order to handle client accounts, Recovery Section officers mostly rely on manual involvement, retrieving inputs from systems such as CRM, BSS, and OSS. This leads to a laborious process that is prone to errors and delays, underscoring the necessity of automation.

2.2 Objectives

- Optimize Recovery Operations

Enable Recovery Officers (ROs) to update case negotiations through a mobile portal in real time, increasing process transparency and reducing delays. And also, improve the efficiency of arrears and equipment recovery.

- Enhance Monitoring Capabilities

SLT officers can monitor DRC, and RO activities through the integrated system and Recovery Officers can easily request necessary information such as request mediation board letters, and extended validity period.

- Facilitate Mediation Board Activities

Streamline the escalation of unresolved cases to the mediation board.

- Leverage Insights for Performance Optimization

Provide interactive dashboards and reports for RO to evaluate recovery activities, enabling data-driven decisions to improve operational strategies.

2.3 Assumptions and Constraints

Assumptions

1. **Stakeholder Adoption:** All stakeholders (SLT officers, DRCs, ROs) will adopt the DebtX system and use it as intended.
2. **Data Availability:** Existing data from BSS, OSS, and CRM systems is accurate, complete, and ready for integration.
3. **Infrastructure:** SLT's IT infrastructure will support smooth implementation and operation of the DebtX system.
4. **Training and Support:** All users will receive adequate training and ongoing support to effectively utilize the system.
5. **Compliance:** The system will meet all regulatory and legal requirements for debt recovery processes.
6. **Funding:** Adequate funding will be available for the development, implementation, and maintenance of the system.
7. **Security:** Robust security measures will be implemented to protect sensitive customer and financial data.

Constraints

1. **Timeline:** The project must meet the defined deadlines for design, development, testing, and deployment.
2. **Budget:** Costs must remain within the allocated project budget.
3. **Quality:** The system must meet quality benchmarks, ensuring reliability, scalability and usability.
4. **Scope:** Feature development is limited to the agreed-upon requirements. Scope changes may delay implementation or increase costs.
5. **Team Experience:** The project team's limited technical expertise requires focused training and resource management.

3. Functional requirements

3.1 High-Level Requirements

Case Entry:

- Automatically validate and link multiple products associated with a single customer account.

Data Flow and Integration:

- Automate data retrieval and synchronization from systems like BSS, OSS, CRM, and the Data Lake.
- Ensure real-time updates for case status and actions.

Legal Support:

- Escalations to mediation boards or legal teams based on predefined workflows.

Recovery Insights:

- Provide dashboards to monitor case progress and performance metrics.

Negotiation Management:

- Allow ROs to update negotiation outcomes and track settlements in real time.
- Automate reminders for overdue cases and maintain logs for compliance.

4. Non-Functional Requirements

- Performance

The system should handle 100 concurrent requests with a response time of less than 2 seconds, even during peak usage with up to 95% increased traffic.

- Scalability

Support future growth in users, cases, and data sources without performance degradation.

- Availability

Ensure 85% uptime for continuous access to all stakeholders.

- Usability

Provide an intuitive interface that minimizes training needs and supports multi-language functionality if required.

- Maintainability

Use modular architecture to enable updates and upgrades with minimal downtime.

- Compliance

Adhere to legal and regulatory standards, ensuring generated documents meet compliance requirements.

- Reliability

Prevent data loss with automated backups and recovery mechanisms while maintaining data integrity.

- Compatibility

Integrate seamlessly with existing systems like BSS, OSS, CRM, and commonly used devices and browsers.

- Auditability

Maintain a detailed log of all system activities for accountability and compliance.

- Extensibility

Allow future enhancements, such as integrating new tools or workflows, without major reengineering.

- Accessibility

Ensure compliance with accessibility standards.

- Response Time

Maintain a consistent response time of under 2 seconds for standard operations.

- System Visibility

Provide stakeholders with role-based access to real-time system status, activity logs, and case progress via dashboards and notifications.

5. System Requirements

5.1 Hardware Requirements (Servers, Storage)

1. Servers

- **Application Server:**
A high-performance server is required to host the application and manage user requests efficiently.
- **Database Server:**
A dedicated server to store and manage sensitive customer and financial data securely.

2. Storage Devices

- **Centralized Storage:**
A Network Attached Storage (NAS) or Storage Area Network (SAN) device for handling large volumes of data, logs, and archives.

3. Network Equipment

- **Routers and Switches:**
Enterprise-grade routers and Layer-3 switches for efficient data transmission and low latency.
- **Firewalls:**
Next-generation firewalls to ensure secure communication and protect against cyber threats.

4. Workstations

- **Employee Workstations:**
Systems for staff handling debt recovery operations, reporting, and customer interactions.

5. Backup Systems

- **Data Backup Servers:**
Dedicated backup hardware for regular data backups to prevent loss during hardware failures or cyberattacks.

6. Power Supply and UPS

- **Power Backup Systems:**
Uninterruptible Power Supply (UPS) units for critical hardware to ensure continuous operations during power outages.

7. Additional Requirements

- **Cooling Systems:**
Proper air-conditioning systems to maintain optimal operating temperatures for hardware in server rooms.
- **Rack and Mounting Equipment:**
Standard server racks with cable management systems for efficient organization.

5.2 Software Requirements (OS, DB, Framework)

1. Operating System (OS) Requirements

Development Environment (For Developers' Workstations):

- Windows 10/11
- macOS (for Mac users)

2. Technology Stack

Frontend:

- Flutter (For a dynamic mobile app UI)

Backend:

- Node.js with Express.js (for server-side logic and APIs)
- Python (for RabbitMQ message queue processing)

Database:

- MongoDB (NoSQL database for structured data storage)
- Firebase Firestore (for real-time data updates and cloud storage)

Message Queue

- RabbitMQ (for asynchronous communication between microservices using Python)

3. Development Tools and Frameworks

- Version Control: GitHub/Bitbucket for source code management
- Code Editor: VS Code
- Package Manager: npm
- API Testing: Swagger/Postman

4. Deployment & Hosting

Database Hosting:

- MongoDB Atlas
- Firebase Firestore

CI/CD Pipeline:

- For automated deployments

5. Security & Authentication

Authentication & Authorization:

- Firebase Authentication (for user login and access control)
- JSON Web Tokens (JWT) (for secure API authentication)

- Role-Based Access Control (RBAC) (for managing user permissions)

6. **Monitoring & Logging**

Error Logging & Monitoring:

- Firebase Analytics (for application usage monitoring)
- LogRocket / Sentry (for error tracking and debugging)
- Prometheus & Grafana (for performance monitoring)

6. API List

| | |
|---|--|
| /RO_CPE_Collection | Getting cpe collection details |
| /List_All_Mediation_Board_Cases_By_DRC_ID_or_RO_ID_Ext_01 | Getting Mediation board cases |
| /Mediation_Board_Submit | To submit Data |
| Count_Mediation_Board_Phase_Cases | Getting the count of mediation board cases |

| | |
|---|--|
| /Case_Details_for_DRC, /list_Active_Customer_Negotiations, /List_Active_RO_Requests | RO/DRC Negotiation with Customer |
| /Customer_Negotiations | To retrieve the negotiation cases |
| List_All_DRC_Negotiation_Cases_ext_1 | Getting negotiation cases |
| Count_Negotiation_Phase_Cases | Getting the count of negotiation cases |
| Update_Customer_Contacts | Update customer contacts |

7. Acceptance Criteria

1. Case Management
 - Necessary inputs should be validated (e.g., required fields, data accuracy) before submission.
 - System distributes open cases to appropriate ROs based on DRC user's preference.
2. Data Integration
 - The system retrieves arrears data from BSS, OSS, CRM, and Data Lake automatically.
 - Updates made in the legacy systems are reflected in DebtX in real time.
 - No data duplication or no error occurs during data retrieval.
3. Notifications and Alerts
 - Real-time alerts are triggered for overdue cases, escalations, and status changes.
 - Users receive notifications via the system dashboard, SMS, or email, based on configured preferences.
 - Notifications are logged in the system with timestamps for audit purposes.
4. Negotiation and Settlement
 - Recovery Officers (ROs) can update negotiation outcomes in real-time via the mobile app.
 - The system tracks settlements, updates case statuses, and confirms payments accurately.
 - Automated reminders are sent to ROs for overdue cases or pending follow-ups.
 - All negotiation logs and updates are maintained for future reference and compliance.
5. Dashboards
 - Dashboards display real-time case progress, and DRC/RO performance.

6. Glossary

| | |
|-----------------------|---|
| DRC | Debt Recovery Company |
| RO | Recovery Officer |
| CPE | Customer Product Equipment |
| RCMP | Return CPE Management Portal |
| BSS | Billing Support System |
| OSS | Operating Support System |
| CRM | Customer Relationship Management |
| SMS | Short Message Service |
| UAT | User Acceptance Test |
| IT | Information Technology |
| CSS | Cascading Style Sheets |
| UI | User Interface |
| NoSQL | Not Only Structured Query Language |
| JWT | Json Web Token |
| npm | Node Package Manager |
| OS | Operating System |
| DB | Database |
| CI/CD pipeline | Continuous Integration and Continuous Deployment Pipeline |

7. Appendices

11:45

Enter your phone number to receive a one-time password

Enter your number below:

0702***32

Send OTP

+

1:1

OTP Page

11:45

Enter OTP

A 4 digit OTP has been sent to your phone number

5 3 3 8

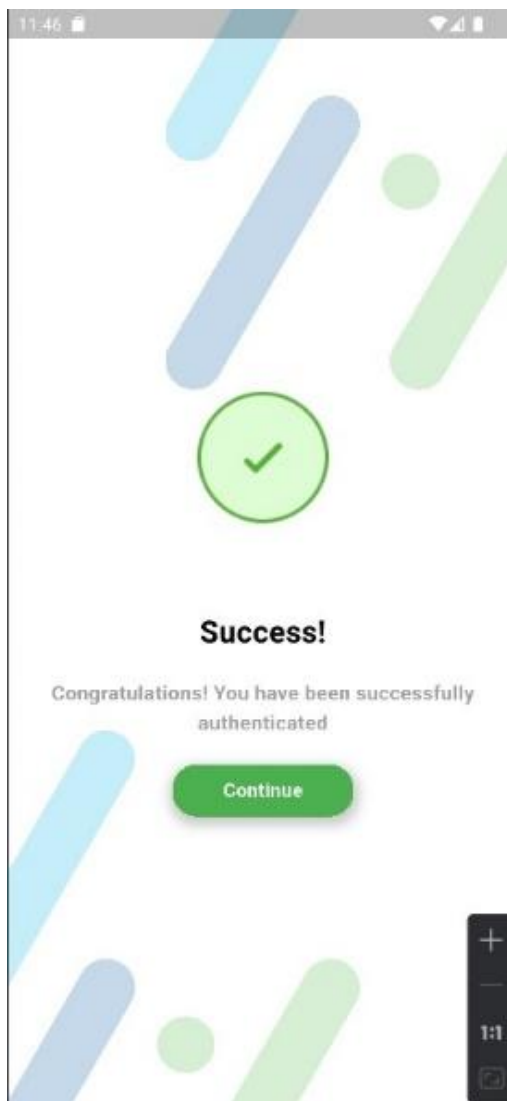
Verify

Resend OTP (00:28)

+

1:1

OTP Page



OTP Succes Page



Negotiation Case Detail Page



NegotiationCaseDetail

Customer Ref: 123456 Status: Pending

Name: ABCD
 Contact: 0112345678
 Address: No. 742, Lotus Rd
 End Date: MM/DD/YYYY

Case Details:
 Case ID: 001
 Account No: ABCD
 Arrears Amount: 10000
 Last Payment Date: MM/DD/YYYY

Edit Profile Negotiation

Field Reason CPE Collect

RCMP Status: Pending Case Withdrawal

Telephone: Label-XYZ
 Account No: 123456789
 Service Type: Broadband
 RTOM: MH

Edit

Negotiation Case Details Page

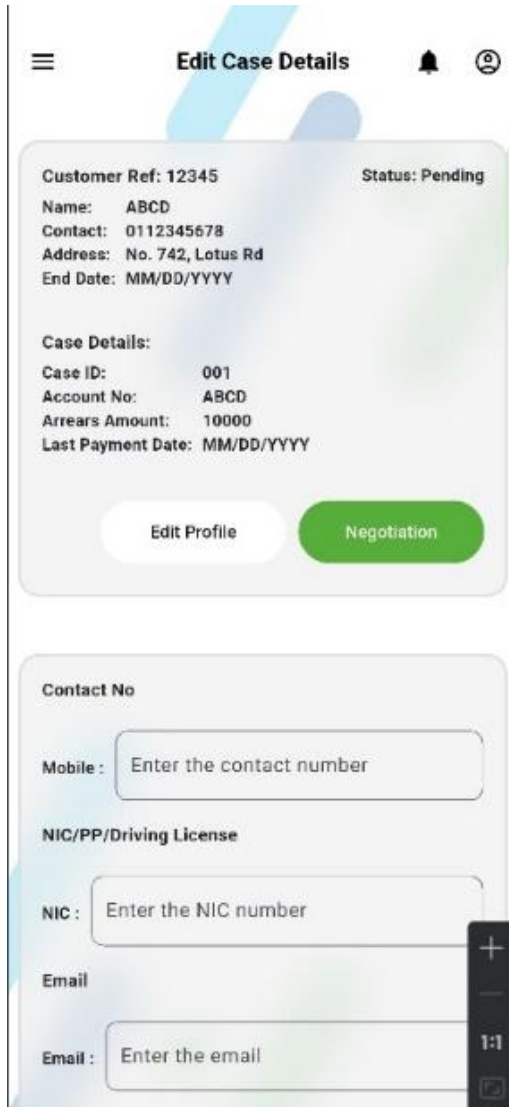


Assigned Case List

Search Case Count 1

| | | |
|-----|---------|------|
| N/A | No Name | null |
|-----|---------|------|

Assigned Case List Page



Edit Case Details

Customer Ref: 12345 Status: Pending

Name: ABCD
 Contact: 0112345678
 Address: No. 742, Lotus Rd
 End Date: MM/DD/YYYY

Case Details:
 Case ID: 001
 Account No: ABCD
 Arrears Amount: 10000
 Last Payment Date: MM/DD/YYYY

Edit Profile Negotiation

Contact No

Mobile : Enter the contact number

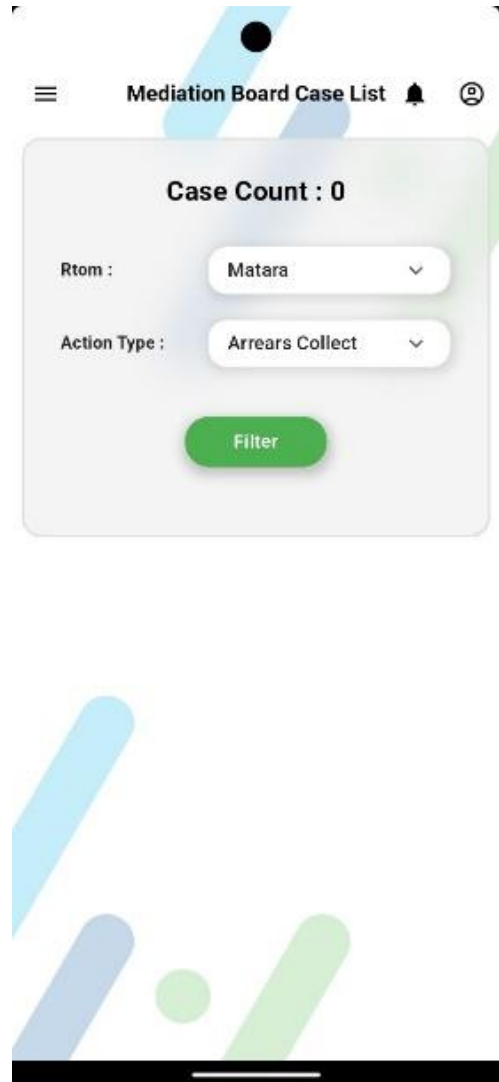
NIC/PP/Driving License

NIC : Enter the NIC number

Email

Email : Enter the email

Edit Case Detail Page



Mediation Board Case List

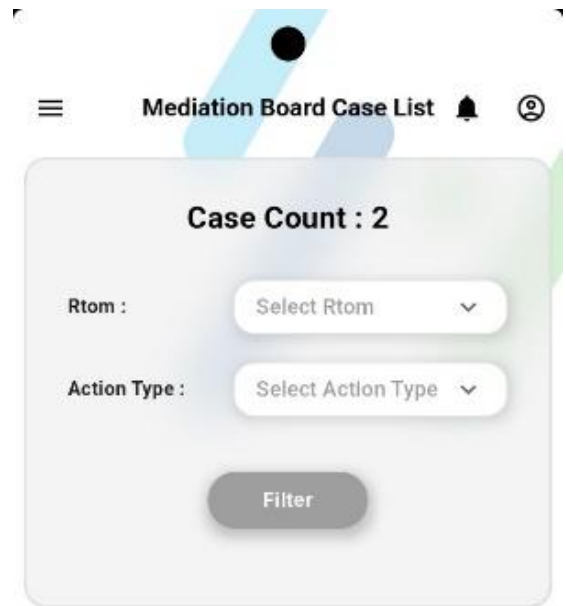
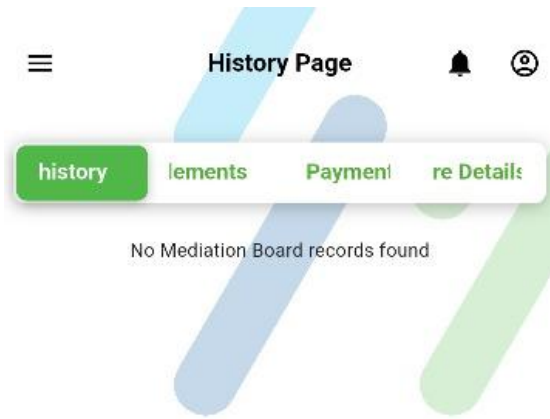
Case Count : 0

Rtom : Matara

Action Type : Arrears Collect

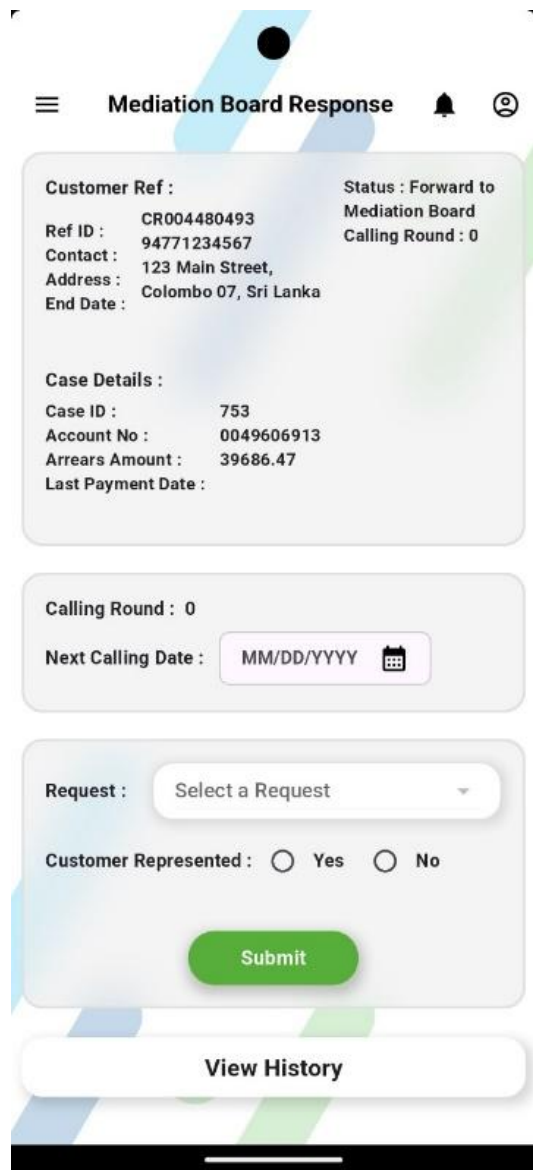
Filter

Mediation Board Filter Page





Mediation Board Case List Page



Mediation Board Response
Page

Contact : 123 Main Street
Address : Colombo 07, Sri Lanka
End Date :

Mediation Board Response

Case Details :
Case ID : 753
Account No : 0049606913
Arrears Amount : 39686.47
Last Payment Date :

Calling Round : 0
Next Calling Date : MM/DD/YYYY

Request : Select a Request
Customer Represented : ☒ Yes ☐ No
Agree to Settle : ☐ Yes ☒ No
Fail Reason : Select a Mediation Response
Fail Comment :

Submit

View History

Mediation Board Response
Page