SOFTWARE REQUIREMENT SPECIFICATION

for

Fleet Management System iOS Application

1. INTRODUCTION

1.1. APP VISION

This document specifies the software requirements for a Fleet Management System (FMS) that facilitates the management and tracking of a fleet of vehicles. The FMS will cater to the needs of fleet managers, drivers, and maintenance personnel, enabling efficient vehicle utilization, maintenance scheduling, and cost control.

1.2. PURPOSE OF THE APP

This project is not being developed for specific client, however it will be extensible enough to be adapted and customisable for deployment and integration into any logistics network. The objectives of the apps are:

- Provide a centralized platform for managing vehicle information and maintenance schedules.
- Facilitate real-time tracking of vehicle locations and usage.
- Optimize vehicle routing and dispatching.
- Track fuel consumption and other operational costs.
- Enhance communication and collaboration among fleet managers, drivers, and maintenance personnel.

The target audience includes transportation companies, logistics providers, delivery services, and any organization managing a fleet of vehicles.

2. SCOPE OF THE PROJECT

Definitions:

Vehicle: Any vehicle managed by the FMS (cars, trucks, vans, etc.).

Driver: An individual authorized to operate a vehicle in the fleet.

Maintenance: Scheduled or unscheduled maintenance activities performed on vehicles.

Route: A planned path for a vehicle to travel.

Trip: A single journey made by a vehicle, often as part of a route.

2.1. HIGH LEVEL FEATURES

2.1.1.Admin Management:

2.1.1.1.User Management: System administration, driver and maintenance personnel account management with differentiated access controls.

2.1.1.2.Vehicle Management: Adding, editing, and deleting vehicle information (make, model, VIN, etc.).

2.1.1.3.Maintenance Management: Setting up maintenance schedules, tracking maintenance history, and generating maintenance reports.

2.1.1.4.Reporting and Analytics: Generating reports on vehicle usage, fuel consumption, maintenance costs, and other key metrics.

2.1.1.5.Geofencing: Defining virtual boundaries for vehicle tracking and alerts.

2.1.2.Driver Management:

2.1.2.1.Trip Management: Recording trip details, including start/end times, locations, and mileage.

2.1.2.2.Vehicle Inspection: Reporting vehicle defects or maintenance needs.

2.1.2.3.Communication: Communicating with fleet managers.

2.1.2.4.Route Navigation: Accessing assigned routes and navigation tools.

2.1.2.5.Logbook Management: Maintaining working hours.

2.1.3.Maintenance Personnel Management:

2.1.3.1.Maintenance Scheduling: Viewing and managing scheduled maintenance tasks.

2.1.3.2.Maintenance Tracking: Recording completed maintenance activities, including parts used and labor costs.

2.1.3.3.Inventory Management: Managing inventory of spare parts and supplies.

2.1.3.4.Work Order Management: Managing work orders for vehicle repairs and maintenance.

2.2. TYPES OF USERS

1. Fleet Manager: Manages user accounts, system settings, vehicle information, and generates reports. Requires strong technical skills and fleet management knowledge.

2. Driver: Operates vehicles, records trip details, reports vehicle issues, and communicates with fleet managers. Requires basic computer literacy and driving skills.

3. Maintenance Personnel: Performs vehicle maintenance, tracks parts usage, and communicates with fleet managers. Requires technical skills related to vehicle maintenance.

2.3. TECHNICAL SPECIFICATIONS

2.3.1. Supported device forms

(Apple devices supported and orientations supported) Run iPhone and AutoLayout supported

2.3.2. OS versions

(Operating version supported - Target OS and supported OS versions) Last two main version of iOS

2.3.3. Dependencies

(Technical dependencies on Apple native technologies as well as third party API's) Minimum two native framework integration - MapKit, CoreLocation, PDFKit, SwiftChats and Design Pattern.

3. NON-FUNCTIONAL REQUIREMENTS

3.1. PERFORMANCE

- Load Time: The application will be responsive and load quickly, even on slow network connections
- The application will be able to handle high volumes of data (xxx MB) and support large numbers of users (1000s).
- Zero memory leaks
- Zero constraint issues (warnings and conflict errors)

3.2. SECURITY

- The application will use secure login protocols, such as password protection and two-factor authentication, to ensure the privacy and security of user information. Should have role based authentication for accessing functional modules,
- The application will use secure data storage and encryption to protect sensitive information from unauthorised access.
- The application will comply with relevant data privacy regulations

3.3. USABILITY

- The application will have a user-friendly interface that is easy to navigate and understand.

3.4. SCALABILITY

- The application should be scalable to accommodate growth and changes in user needs.
- The application should be able to support new features and functionalities as needed.

3.5. RELIABILITY

- The application should be reliable and available at all times, with minimal downtime.
- The application should be able to recover from failures and maintain data consistency in case of errors.
- Zero leaks, zero constraint warnings, zero warnings

3.6. ACCESSBILITY

- How easily people with the widest range of capabilities can use the system.

Accessibility Feature Implemented:

Colourblind-compatible, accessible design.

4. DETAILED FUNCTIONAL REQUIREMENTS

4.1 Fleet Manager (Admin)

4.1.1 User Management

- 4.1.1.1 Add new users (Drivers, Maintenance Personnel) with role-based access.
- 4.1.1.2 Edit user information (name, phone, role, assigned vehicle).
- 4.1.1.3 Delete user accounts.
- 4.1.1.4 View list of all users filtered by role.

4.1.2 Vehicle Management

- 4.1.2.1 Add a new vehicle with fields: make, model, year, VIN, license plate, vehicle type.
- 4.1.2.2 Edit or update vehicle details.
- 4.1.2.3 Delete or deactivate a vehicle.
- 4.1.2.4 Assign vehicle to a driver.
- 4.1.2.5 View complete list of vehicles with status indicators (active, in maintenance, etc.).

4.1.3 Maintenance Management

- 4.1.3.1 Create scheduled maintenance tasks for specific vehicles.
- 4.1.3.2 View all upcoming and completed maintenance entries.
- 4.1.3.3 Track maintenance history for each vehicle.
- 4.1.3.4 Track maintenance inventory

4.1.4 Reporting & Analytics

- 4.1.4.1 Generate reports for:
  - Overall Trips.
  - Maintenance.
  - Driver attendance
  - Vehicle Report
  - Expenses Report
- 4.1.4.2 Export reports as PDF.

4.1.5 Geofencing

- 4.1.5.1 Define geofence zones via map interface.
- 4.1.5.3 Receive alerts if vehicles leave geofence (can be simulated).

4.2 Driver

4.2.1 Trip Management

- 4.2.1.1 Start a trip by selecting assigned vehicle and confirming location.
- 4.2.1.2 End trip, recording mileage.
- 4.2.1.3 View list of past trips with summary data.
- 4.2.1.4 Report any issues during/after the trip.
- 4.2.1.5 Record fuel logs, miscellaneous and toll charges.
- 4.2.1.6 Single-tap button to call roadside assistance.

4.2.2 Vehicle Inspection

- 4.2.2.1 Perform pre and post-trip vehicle checks and report.
- 4.2.2.2 Mark any defects found and raise tickets for the same.

4.2.3 Route Navigation

- 4.2.3.1 View assigned route from the Fleet Manager.
- 4.2.3.2 In app navigation from current location to destination.
- 4.2.3.3 Mark route as completed once trip ends.
- 4.2.3.4 GPS-based identification of nearby hospitals, petrol pumps, and mechanics.

4.2.4 Communication

- 4.2.4.1 Raise ticket regarding trip issue.
- 4.2.4.2 Receive notifications for trip assignments.

4.3 Maintenance Personnel

4.3.1 Maintenance Scheduling & Tasks

- 4.3.1.1 View all assigned maintenance tasks.
- 4.3.1.2 Mark tasks as Pending, In Progress, Completed.
- 4.3.2.1 Log completed maintenance with fields: date, issue fixed, parts used.

4.3.3 Inventory Management

- 4.3.3.1 View list of spare parts and supplies.
- 4.3.3.2 Log parts used during maintenance.

4.3.4 Communication

- 4.3.5.1 Receive tickets regarding maintenance tasks raised by the fleet manager and the driver.