

Okay, here is a "fully equipped requirement documentation file" (System Requirements Specification - SRS) for your Smart HR & Driver Management System, designed as an internal SaaS. This document is comprehensive and aims to provide clarity for development, testing, and internal stakeholder alignment.

System Requirements Specification (SRS)

Document Title: Smart HR & Driver Management System - System Requirements Specification

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Date: June 7, 2025

Prepared By: [Your Name/Department - e.g., IT Solutions Team]

Company: [Your Company Name]

1. Introduction

1.1. Purpose of the Document

This System Requirements Specification (SRS) details the functional and non-functional requirements for the Smart HR & Driver Management System. This internal Software as a Service (SaaS) application aims to streamline and digitize the entire lifecycle of field staff (primarily drivers) within [Your Company Name], from onboarding and document verification to real-time attendance, location tracking, and integrated HR operations. This document serves as a foundational blueprint for development, testing, and deployment, ensuring all internal stakeholders (HR, Operations, IT, Drivers, Management) have a shared, clear understanding of the system's capabilities, constraints, and objectives.

1.2. Scope of the System

The Smart HR & Driver Management System will be an internal web and mobile platform. It will replace current manual processes or disparate systems for field staff management. The system's core functions include:

- **Digital Staff Onboarding:** Comprehensive capture and verification of driver documents.

- **Automated Document Expiry Notifications:** Proactive alerts for expiring documents.
- **Detailed Staff Profile Management:** Centralized and exhaustive profile data.
- **Smart Attendance System:** Geo-tagged, selfie-verified attendance with automated penalty calculations.
- **Real-time Location Tracking:** GPS-based monitoring of field staff.
- **Formal Warning Letter System:** Digital issuance and tracking of disciplinary actions.
- **Integrated Payroll Deductions:** Automated calculation of attendance-based deductions.
- **Comprehensive Reporting & HR Analytics:** Role-based dashboards and detailed insights.
- **Automated Duty Reminders:** Proactive alerts for drivers before their shifts.

The system will *not* cover:

- Full-fledged enterprise resource planning (ERP) or complex accounting functionalities.
- Advanced shift scheduling beyond standard duty time configurations.
- Direct external payment processing (payroll integration is for deduction calculation, not disbursement).
- Public-facing recruitment or job application functionalities.

1.3. Definitions, Acronyms, and Abbreviations

- **SRS:** System Requirements Specification
- **SaaS:** Software as a Service
- **HR:** Human Resources
- **GPS:** Global Positioning System
- **UI:** User Interface
- **UX:** User Experience
- **API:** Application Programming Interface
- **JWT:** JSON Web Token (JSON Web Tokens)
- **MVP:** Minimum Viable Product
- **QA:** Quality Assurance
- **UAT:** User Acceptance Testing
- **PoLP:** Principle of Least Privilege
- **RBAC:** Role-Based Access Control
- **KYC:** Know Your Customer (often used metaphorically for staff verification)
- **Biometrics:** Biological measurements (in this context, face recognition for selfie verification).
- **Geo-fencing:** Virtual geographic boundary defined by GPS technology.

- **KPI:** Key Performance Indicator

1.4. References

- [Your Company Name] Internal HR Policy Manual - [Version Date]
- [Your Company Name] IT Security Policy - [Version Date]
- [Your Company Name] Data Privacy & Protection Guidelines - [Version Date]
- Existing Driver Management Workflow Document - [Version Date, if applicable]
- Legal & Compliance Guidelines for Employee Data Management in India (e.g., IT Act 2000, relevant labor laws).
- [Any existing payroll system documentation for integration points]
- [Your Company Name] Brand Guidelines / UI Style Guide (if applicable)

1.5. Overview of the Remainder of the Document

Section 2 provides a general description of the system, including its product perspective, overall features, user classes, operating environment, and design constraints. Section 3 details the specific functional and non-functional requirements, external interface requirements, and performance expectations. Section 4 outlines the acceptance criteria, and Section 5 suggests a high-level project timeline.

2. Overall Description

2.1. Product Perspective

The Smart HR & Driver Management System is a new, standalone internal application designed to consolidate and improve HR and operational processes for managing field staff. It will replace current manual document handling, disparate attendance systems, and informal tracking methods. While it will be a distinct system, it is intended to integrate seamlessly with existing core internal systems, primarily for payroll data exchange. It will be accessible via a dedicated internal web portal and a mobile application.

2.2. Product Features

The system's main features include:

- **Centralized Staff Database:** A single source of truth for all field staff data.
- **Digital Onboarding Workflow:** Guided process for new staff registration and document submission.
- **Admin-Driven Document Verification:** Secure portal for HR/Admin to review and approve documents.
- **Self-Service Driver Profile:** Empowering drivers to manage their own information and documents.
- **Automated Expiry Alerts:** Proactive notifications for expiring documents to prevent compliance lapses.

- **Real-time GPS Location Tracking:** Live monitoring of staff positions and travel history.
- **Smart Attendance System:** Geo-tagged and selfie-verified check-ins/check-outs with automated delay calculations.
- **Automated Payroll Deduction Integration:** Connect attendance data to payroll for accurate deductions.
- **Formal Warning Letter Generation:** Standardized digital process for disciplinary actions.
- **Advanced Reporting & Analytics:** Dashboards and reports for various HR and operational KPIs.
- **Automated Duty Reminders:** Notifications to staff before their shifts.
- **Detailed Staff & Company Reports:** Comprehensive data views across different organizational structures.

2.3. User Classes and Characteristics

The system will cater to four distinct internal user classes, each with specific access privileges and responsibilities:

- **2.3.1. Admin User (Super Admin)**
 - **Characteristics:** High-level HR or IT personnel responsible for system configuration, user management, and overall oversight.
 - **Access:** Full control over all system modules, user accounts, roles, and settings.
 - **Responsibilities:** System setup, user creation/deactivation, global settings, verifying documents, managing HR staff accounts, full access to reports and analytics, payroll rule configuration.
- **2.3.2. HR Staff User**
 - **Characteristics:** HR personnel directly involved in staff management, onboarding, and daily operations.
 - **Access:** Limited to managing assigned staff, document verification, issuing warnings, viewing attendance, and basic reports for their scope.
 - **Responsibilities:** Initiating driver profiles, uploading/managing documents, verifying documents (with Admin oversight), issuing warning letters, viewing attendance records, communicating with drivers.
- **2.3.3. Driver User (Field Staff)**
 - **Characteristics:** The primary mobile users of the system, performing their daily duties in the field.
 - **Access:** Limited to their own profile, attendance module, document upload/view, and notifications.

- **Responsibilities:** Securely logging in, uploading required documents, marking attendance (with selfie & geo-location), updating expired documents, viewing their profile and warning letters, receiving notifications.
- **2.3.4. Management User**
 - **Characteristics:** Senior operational or HR leaders requiring high-level oversight and strategic insights.
 - **Access:** Read-only access to dashboards, reports, and analytics. No transactional capabilities (e.g., cannot onboard, verify, or issue warnings).
 - **Responsibilities:** Monitoring key performance indicators (KPIs), reviewing operational efficiency reports, analyzing HR trends, assessing compliance status.

2.4. Operating Environment

- **Web Application (Admin, HR Staff, Management):**
 - **Browsers:** Latest stable versions of Google Chrome, Mozilla Firefox, Microsoft Edge.
 - **Minimum Resolution:** 1280x800 pixels.
 - **Network:** Requires stable internet connectivity within the company's network or via secure VPN for remote access.
- **Mobile Application (Driver):**
 - **Operating Systems:** Android (v10 and above), iOS (v14 and above).
 - **Device Requirements:** GPS capability, front-facing camera, stable internet connectivity (Wi-Fi or Mobile Data).
 - **App Store:** Internal enterprise app distribution (e.g., internal MDM, private app store, direct APK distribution).
- **Backend Infrastructure:**
 - **Deployment Environment:** Company's internal cloud infrastructure (e.g., private OpenStack, internal Kubernetes cluster) or designated on-premise servers.
 - **Database Servers:** Dedicated, high-availability PostgreSQL or MySQL clusters.
 - **Real-time Services:** Firebase (if cloud access permitted for internal tools) or self-hosted WebSockets.
 - **Notification Services:** Internal SMTP server for email, SMS gateway for SMS (if required), Firebase Cloud Messaging (FCM) for push notifications.
 - **Map Services:** Google Maps API (requires API key management and usage monitoring).

2.5. Design and Implementation Constraints

- **Technology Stack:** Adherence to specified technologies (Django, React, Flutter/React Native, PostgreSQL/MySQL).

- **Internal IT Policies:** Strict adherence to company IT security policies, data privacy guidelines, and network configurations.
- **Scalability:** Must be designed to scale to accommodate 500+ drivers initially, with potential for growth to 2000+ drivers within 3 years.
- **Integration:** Must provide secure API endpoints for potential future integration with the company's core HRIS or ERP system.
- **Data Residency:** All data must reside within [Specify Company Data Center Location/Country - e.g., India].
- **Internal Authentication:** Integration with company's existing Active Directory or internal SSO solution for user authentication (where feasible).
- **Deployment:** Must be deployable within the company's existing IT infrastructure environment, managed by internal IT operations.
- **Localization:** Initially English language support only, with potential for future expansion to other local languages.

2.6. User Documentation and Training

- Comprehensive online help documentation embedded within the web portal and mobile app (accessible via a dedicated internal portal).
- Step-by-step guides, FAQs, and video tutorials for each user role.
- Admin and HR staff will receive in-person or virtual training sessions.
- Quick-start guides for drivers.

2.7. Assumptions and Dependencies

- **Internet Connectivity:** Drivers will have reliable internet connectivity on their mobile devices during duty hours for attendance marking and live tracking.
- **GPS & Camera Functionality:** Driver mobile devices will have fully functional GPS and front-facing camera capabilities.
- **IT Infrastructure:** Sufficient internal IT infrastructure (servers, network bandwidth) will be available and properly configured for hosting the application.
- **API Key Management:** Proper management and security of third-party API keys (e.g., Google Maps, SMS gateway) will be in place.
- **HR Policy Stability:** HR policies regarding attendance, penalties, and document requirements will remain largely stable during the development phase.
- **Internal Support:** Availability of internal IT support team for system maintenance and troubleshooting.
- **Stakeholder Availability:** Key stakeholders (HR, Operations Management) will be available for requirements clarification and UAT.

3. Specific Requirements

3.1. Functional Requirements

3.1.1. User Management (Admin Module)

- **FR-UM-001:** Admin shall be able to create new user accounts for HR Staff and other Admin users.
- **FR-UM-002:** Admin shall be able to assign and modify roles (Admin, HR Staff, Management) for any user.
- **FR-UM-003:** Admin shall be able to activate or deactivate any user account.
- **FR-UM-004:** Admin shall be able to reset user passwords and generate temporary login credentials.
- **FR-UM-005:** Admin shall be able to view a list of all active and inactive users with their assigned roles.
- **FR-UM-006:** Admin shall be able to edit core profile details for HR Staff and Management users.

3.1.2. HR-Driven Staff Enrollment (HR Staff Module)

- **FR-HSE-001:** HR Staff shall be able to initiate a new driver/field staff profile by entering essential biodata (Name, Contact, Address, DOJ, etc.).
- **FR-HSE-002:** HR Staff shall be able to upload required documents on behalf of the driver (e.g., if received physically).
- **FR-HSE-003:** The system shall enforce a list of mandatory documents for driver activation (e.g., Health Checkup, Driving License, Passport, Visa, Citizenship/ID Proof).
- **FR-HSE-004:** Each document uploaded shall have a dynamic status: "Pending Verification," "Verified," or "Rejected."
- **FR-HSE-005:** The system shall store document expiry dates for relevant documents (e.g., Driving License, Visa, Passport).
- **FR-HSE-006:** HR Staff shall be able to view the verification status of all documents for a specific staff member.

3.1.3. Admin Document Verification (Admin Module)

- **FR-ADV-001:** Admin shall have a dedicated dashboard/queue to view all documents awaiting verification.
- **FR-ADV-002:** Admin shall be able to view the uploaded document (e.g., image, PDF) directly within the system.
- **FR-ADV-003:** Admin shall be able to mark a document as "Verified."
- **FR-ADV-004:** Admin shall be able to mark a document as "Rejected" and provide mandatory remarks/reasons for rejection.
- **FR-ADV-005:** Admin shall be able to request a resubmission for a rejected document, with clear instructions.

- **FR-ADV-006:** The system shall automatically trigger the creation of driver login credentials *only* when all mandatory documents for a driver's profile are marked "Verified" by an Admin.
- **FR-ADV-007:** The system shall notify the driver via email/SMS when their profile is activated and credentials are ready.

3.1.4. Driver Profile Management (Driver Module)

- **FR-DPM-001:** Verified drivers shall be able to log in securely to their mobile application.
- **FR-DPM-002:** Drivers shall have a personalized dashboard displaying:
 - Their current profile status.
 - A list of all uploaded documents with their verification status.
 - Upcoming document expiry alerts.
 - Links to mark attendance.
 - Access to their warning letter history.
- **FR-DPM-003:** Drivers shall be able to upload new documents or re-upload rejected/expired documents directly from their mobile app.
- **FR-DPM-004:** Drivers shall be able to view and update certain non-critical personal information (e.g., emergency contact, address) within their profile. Changes to critical fields (e.g., Name, Date of Birth) shall require HR/Admin approval.
- **FR-DPM-005:** Drivers shall receive in-app notifications and push notifications for status updates (e.g., document verified/rejected, profile activated, warning issued).

3.1.5. Document Expiry Notification (System-Wide)

- **FR-DEN-001:** The system shall store and track expiry dates for all relevant documents (e.g., Driving License, Visa, Passport).
- **FR-DEN-002:** The system shall automatically send notifications for expiring documents to:
 - **Drivers:** X days (configurable, default 30 days) before expiry, and again on the day of expiry.
 - **HR Staff:** X days (configurable, default 30 days) before expiry via dashboard alerts and email.
 - **Admin:** X days (configurable, default 30 days) before expiry via dashboard alerts.
- **FR-DEN-003:** The system shall mark a driver's profile as "Document Expired" or "Compliance Risk" if a mandatory document expires and is not updated.

3.1.6. Live Location Tracking (Admin/HR/Management Module)

- **FR-LLT-001:** The mobile application shall enable GPS tracking functionality that can be activated/deactivated by the system based on duty status.

- **FR-LLT-002:** HR Staff and Admin shall have a map interface displaying the real-time location of all active drivers.
- **FR-LLT-003:** Management users shall have a read-only map interface displaying real-time location of active drivers.
- **FR-LLT-004:** The map interface shall allow viewing of a driver's historical location data for a specified period (e.g., past 24 hours, last 7 days).
- **FR-LLT-005:** The system shall identify and display drivers who are currently offline or whose GPS signal is lost.
- **FR-LLT-006:** The system shall allow selection of individual drivers or groups of drivers for focused tracking.
- **FR-LLT-007:** The system shall display basic driver information (e.g., Name, current status) on map hover/click.

3.1.7. Warning Letter System (HR Staff/Admin Module)

- **FR-WLS-001:** HR Staff and Admin shall be able to issue formal warning letters to drivers.
- **FR-WLS-002:** The system shall provide predefined reasons for issuing a warning letter (e.g., Late Attendance, Misconduct, Document Failure, Policy Violation), with an option for custom remarks.
- **FR-WLS-003:** Each warning letter shall be timestamped and logged securely within the system.
- **FR-WLS-004:** Warning letters shall be visible in the driver's profile (read-only for driver).
- **FR-WLS-005:** HR Staff/Admin shall be able to download warning letters as a PDF document, formatted to company standards with relevant details.
- **FR-WLS-006:** The system shall notify the driver upon issuance of a new warning letter via in-app/push notification.

3.1.8. Smart Attendance System (Driver, HR, Admin Modules)

- **FR-SAS-001 (Driver):** Drivers shall check in/out using their mobile app.
- **FR-SAS-002 (Driver):** The system shall capture a live selfie photo of the driver at the time of check-in/out.
- **FR-SAS-003 (Driver):** The system shall capture precise geo-tagged location (GPS coordinates) at the time of check-in/out.
- **FR-SAS-004:** The system shall log the timestamp, captured photo, and geo-location for each attendance event.
- **FR-SAS-005 (Admin):** Admin shall be able to configure daily duty start/end times and a grace period for late arrivals.
- **FR-SAS-006:** The system shall automatically detect and flag attendance as "Late" if a driver checks in after the defined start time plus grace period.

- **FR-SAS-007 (Optional Geo-fencing):** The system shall allow Admin to define specific geo-fenced areas (e.g., office, depot). If enabled, attendance check-ins outside the geo-fence shall be flagged or prevented based on configuration.
- **FR-SAS-008 (HR/Admin):** HR Staff and Admin shall be able to view daily, weekly, and monthly attendance logs for all drivers.
- **FR-SAS-009 (HR/Admin):** Attendance logs shall display check-in/out times, duration, location, associated selfie, and late/absent status.
- **FR-SAS-010 (HR/Admin):** HR Staff and Admin shall be able to manually adjust attendance records with documented reasons (requires audit trail).

3.1.9. Salary Deduction & Payroll Integration (HR/Admin Module)

- **FR-SDP-001 (Admin):** Admin shall be able to configure specific salary rules, including:
 - Base salary components.
 - Automated late penalties (e.g., fixed amount per late occurrence, pro-rated deduction based on delay duration, progressive penalties).
 - Other types of automated deductions (e.g., unauthorized absence).
- **FR-SDP-002:** The system shall automatically calculate monthly deductions based on late attendance records and configured penalty rules.
- **FR-SDP-003 (HR/Admin):** HR Staff and Admin shall be able to view a detailed log of all deductions applied to each driver.
- **FR-SDP-004 (HR/Admin):** The system shall generate a monthly payslip summary for each driver, detailing base pay, allowances, and all deductions.
- **FR-SDP-005:** The system shall provide an exportable summary of monthly payroll data (including gross, deductions, and net calculated by the system) in a format suitable for integration with the company's existing payroll software (e.g., CSV, Excel).

3.1.10. Reports & Analytics (Admin/HR/Management Module)

- **FR-RA-001 (Admin/HR/Management):** The system shall provide dashboards with key performance indicators (KPIs) relevant to each role.
- **FR-RA-002 (Admin/HR/Management):** Users shall be able to view reports on:
 - **Staff Status:** Active, Pending Verification, Rejected, On Leave, Inactive (with filtering options).
 - **Document Verification Status:** Summary of pending, verified, rejected documents across all staff.
 - **Attendance Logs:** Daily, weekly, monthly attendance data with filtering by staff, date range, and status (e.g., Present, Late, Absent).
 - **Deduction Summary:** Aggregate and individual reports on applied penalties and other deductions.
 - **Warning Letter History:** Comprehensive log of all warning letters issued.

- **GPS Tracking Summaries:** Reports on distance traveled, common routes, and time spent offline (if tracking enabled).
- **FR-RA-03 (New Feature: Staff & Company Reports):** Admin and Management shall be able to generate comprehensive reports showing:
 - **Staff-Company Assignment Report:** List of all staff members and the company/project they are currently assigned to (if applicable).
 - **Company-wise Staff Report:** For each internal company/department, a list of all assigned staff, their status, and key metrics.
 - **Individual Staff Performance Report:** A consolidated report for a single staff member covering attendance history, warning letters, document status, and calculated deductions over a specified period.
- **FR-RA-04 (New Feature: Detailed Staff Profile Report):** Admin and HR Staff shall be able to generate a highly detailed printable/exportable profile report for any staff member, including:
 - All biodata.
 - Contact information.
 - Emergency contacts.
 - Document copies with verification status and expiry dates.
 - Full attendance history (configurable period).
 - Complete warning letter history.
 - Payroll deduction history specific to the system.
 - Assigned company/project history.
- **FR-RA-05:** All reports shall be exportable to common formats (PDF, Excel/CSV).
- **FR-RA-06:** Dashboards shall include interactive charts (e.g., pie charts for staff status, bar charts for attendance trends, line graphs for late arrivals over time).

3.1.11. Automated Duty Reminder (Driver Module)

- **FR-ADR-001 (Admin):** Admin shall be able to set a default duty start time for drivers.
- **FR-ADR-002 (Admin):** Admin shall be able to configure the reminder interval (e.g., 1 hour, 30 minutes) before the duty start time.
- **FR-ADR-003:** The system shall automatically send a push notification (and optionally SMS/in-app alert) to the driver's mobile device 'X' minutes/hours before their scheduled duty start time.
- **FR-ADR-004:** The reminder notification content shall be configurable by Admin (e.g., "Reminder: Your duty starts in 1 hour. Please prepare for check-in.").

3.2. External Interface Requirements

3.2.1. User Interfaces (UI)

- **3.2.1.1. Web Application (Admin/HR/Management):**

- **UI-WEB-001:** Shall be responsive and adapt to various screen sizes (desktop, tablet).
- **UI-WEB-002:** Shall adhere to [Your Company Name]'s internal UI/UX style guide and branding.
- **UI-WEB-003:** Navigation shall be intuitive, with clear menus and breadcrumbs.
- **UI-WEB-004:** Data entry forms shall include clear labels, validation, and error messages.
- **UI-WEB-005:** Dashboards shall be customizable (e.g., drag-and-drop widgets - advanced).
- **UI-WEB-006:** All reports shall have print-friendly versions.
- **3.2.1.2. Mobile Application (Driver):**
 - **UI-MOB-001:** Shall be optimized for both Android and iOS native user experience.
 - **UI-MOB-002:** Shall have a simple, intuitive interface for critical actions (attendance, document upload).
 - **UI-MOB-003:** Shall provide clear feedback on actions (e.g., "Attendance Marked Successfully").
 - **UI-MOB-004:** Camera and GPS access permissions shall be requested clearly.

3.2.2. Software Interfaces

- **3.2.2.1. Internal Identity Provider (IDP):**
 - **SI-IDP-001:** The system shall integrate with [Your Company Name]'s existing Active Directory / LDAP / SSO solution for internal HR and Admin user authentication.
 - **SI-IDP-002:** Driver authentication will be managed internally by the system (username/password generated upon activation).
- **3.2.2.2. Payroll System Integration:**
 - **SI-PAY-001:** The system shall provide an API or export functionality to transfer aggregated monthly deduction data to [Your Company Name]'s payroll software (e.g., Tally, SAP HR).
 - **SI-PAY-002:** The export format (e.g., CSV, XML, specific API JSON) shall be agreed upon with the payroll department.
- **3.2.2.3. Google Maps API:**
 - **SI-MAP-001:** The system shall integrate with Google Maps for displaying real-time and historical location data.
 - **SI-MAP-002:** Requires secure API key management and monitoring of usage.
- **3.2.2.4. SMS Gateway (Optional):**
 - **SI-SMS-001:** If SMS notifications are required, the system shall integrate with a company-approved SMS gateway provider.

3.2.3. Communications Interfaces

- **CI-COM-001:** Email notifications via internal SMTP server.
- **CI-COM-002:** Push notifications via Firebase Cloud Messaging (FCM) for mobile apps.
- **CI-COM-003:** Real-time data updates via WebSockets for live tracking on dashboards.

3.3. Non-Functional Requirements (NFRs)

3.3.1. Performance

- **NFR-PERF-001:** Web application page load times shall not exceed 3 seconds under normal load conditions.
- **NFR-PERF-002:** Mobile application attendance check-in/out process (including photo capture and geo-tagging) shall complete within 5 seconds.
- **NFR-PERF-003:** Real-time GPS location updates shall be displayed on the map within 10 seconds of being received from the device.
- **NFR-PERF-004:** Reports (e.g., Staff Status, Attendance Summary) shall generate within 15 seconds for up to 500 records.
- **NFR-PERF-005:** The system shall support a minimum of 200 concurrent active users without degradation of performance.

3.3.2. Security

- **NFR-SEC-001:** All user authentication shall utilize JWT-based API authentication for secure session management.
- **NFR-SEC-002:** Passwords shall be stored using strong, one-way hashing algorithms (e.g., Argon2, bcrypt) with appropriate salting.
- **NFR-SEC-003:** Role-Based Access Control (RBAC) shall be strictly enforced, ensuring users can only access features and data permitted by their assigned role (Principle of Least Privilege - PoLP).
- **NFR-SEC-004:** All data transmission between client and server shall be encrypted using TLS 1.2 or higher.
- **NFR-SEC-005:** File uploads (documents, selfies) shall undergo rigorous validation (file type, size, malware scan - if supported by infrastructure) and be stored securely, encrypted at rest.
- **NFR-SEC-006:** The system shall be protected against common web vulnerabilities (OWASP Top 10) including SQL injection, XSS, CSRF, etc.
- **NFR-SEC-007:** Audit trails shall be maintained for all critical actions (e.g., document verification, attendance adjustments, user creation, warning issuance).
- **NFR-SEC-008:** Session timeouts shall be implemented (e.g., 30 minutes of inactivity for web, configurable for mobile).

- **NFR-SEC-009:** The system shall integrate with the company's internal logging and security monitoring solutions.

3.3.3. Usability

- **NFR-USAB-001:** The UI/UX shall be intuitive and require minimal training for common tasks for all user roles.
- **NFR-USAB-002:** Error messages shall be clear, concise, and actionable.
- **NFR-USAB-003:** The system shall provide immediate visual feedback for user actions (e.g., loading indicators).
- **NFR-USAB-004:** The mobile app shall be easy to navigate for drivers, even in low-network conditions (basic offline capability for attendance queuing - advanced).

3.3.4. Scalability

- **NFR-SCAL-001:** The system architecture shall support horizontal scaling of application servers and database read replicas.
- **NFR-SCAL-002:** The database design shall accommodate anticipated data growth (e.g., 5 years of attendance and location history for 2000+ drivers).
- **NFR-SCAL-003:** The system should be able to handle an increase in concurrent users by 50% without significant performance degradation, with appropriate infrastructure scaling.

3.3.5. Reliability

- **NFR-REL-001:** The system shall have an uptime target of 99.5% (excluding planned maintenance windows).
- **NFR-REL-002:** All data shall be backed up daily, with a clear recovery point objective (RPO) and recovery time objective (RTO) defined by IT Operations.
- **NFR-REL-003:** In case of a mobile app crash, pending attendance data (if any) shall be queued and submitted upon app restart (advanced).

3.3.6. Maintainability

- **NFR-MAINT-001:** The codebase shall be well-documented, adhering to company coding standards.
- **NFR-MAINT-002:** The system shall be modular, allowing for independent development and deployment of features.
- **NFR-MAINT-003:** Logging and monitoring tools shall be integrated to facilitate troubleshooting and performance analysis.
- **NFR-MAINT-004:** Automated test suites shall be developed to support continuous integration and rapid regression testing.

3.3.7. Compliance

- **NFR-COMP-001:** The system shall comply with all relevant internal HR policies and procedures for staff management.

- **NFR-COMP-002:** The system shall comply with all applicable data privacy regulations (e.g., IT Act 2000 in India, if applicable).
- **NFR-COMP-003:** All document storage and access shall adhere to company data retention policies.

4. Acceptance Criteria

Acceptance criteria define the conditions that must be met for a feature or the entire system to be considered acceptable by stakeholders.

- **AC-SYS-001 (Overall System):** The system shall be fully deployed and accessible to all user roles from approved devices within the company's network.
- **AC-REG-001 (Staff Registration):** A driver's profile and login credentials shall only be activated after all mandatory documents are successfully verified by an Admin, and no manual override is permitted for this rule.
- **AC-ATT-001 (Attendance):** Every attendance check-in/out event must successfully capture both a live selfie photo and accurate GPS coordinates (<20m deviation) and store them in the database.
- **AC-ATT-002 (Attendance Deduction):** Automated payroll deductions for late arrivals shall be calculated correctly based on configured rules, and reflected in the driver's payslip summary.
- **AC-NOT-001 (Notifications):** All document expiry notifications (configurable X days before and on expiry day) and duty reminder notifications (configurable Y minutes/hours before duty) shall be sent successfully to the correct recipients via the designated channels.
- **AC-WARN-001 (Warning Letters):** An HR Staff or Admin user shall be able to issue a warning letter, it must be logged in the system, be visible (read-only) in the driver's profile, and be downloadable as a PDF.
- **AC-LOC-001 (Location Tracking):** The real-time location of an active driver shall be displayed on the Admin/HR/Management map interface with a refresh rate of at least every 10 seconds, and accuracy within 20 meters.
- **AC-REP-001 (Reports):** All specified reports (Staff-Company Assignment, Company-wise Staff, Individual Staff Performance, Detailed Staff Profile) shall generate successfully, contain accurate data, and be exportable to PDF/Excel.
- **AC-SEC-001 (Security):** All role-based access control rules shall be demonstrably enforced; users shall be unable to access features or data outside their assigned privileges.
- **AC-PERF-001 (Performance):** Key performance metrics (page load, check-in time, report generation) shall consistently meet their defined NFRs under UAT load conditions.

5. Timeline (Suggested)

This timeline provides a high-level estimation for project phases. Detailed sprint planning will occur within each phase.

- **Phase 1: Project Initiation & Detailed Requirements Analysis:** 2-3 Weeks
 - (Includes all activities from SRS Section 1 & 2, and deep dive into Section 3 requirements)
- **Phase 2: System Architecture & UI/UX Design:** 3-4 Weeks
 - (Includes all activities from SRS Section 3.1, 3.2, and prototyping)
- **Phase 3: Backend API Development:** 8-10 Weeks
 - (Core business logic, database, security, initial integrations)
- **Phase 4: Frontend (Web) & Mobile App Development:** 8-10 Weeks (Can overlap with Backend)
 - (Building UIs, integrating with APIs, mobile app specific features)
- **Phase 5: Integration, Testing & Quality Assurance (QA):** 4-6 Weeks
 - (Unit, Integration, Functional, Performance, Security Testing, UAT)
- **Phase 6: Deployment & Initial Rollout (Pilot):** 1-2 Weeks
 - (Infrastructure setup, data migration, pilot group deployment)
- **Phase 7: Training & Full Internal Rollout:** 2-3 Weeks
 - (Developing training materials, conducting sessions, full user onboarding)
- **Phase 8: Post-Launch Support & Iteration Planning:** Ongoing

Total Estimated Duration (Initial MVP to Full Rollout): 28 - 38 Weeks (approx. 7-9.5 months)

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