

01. CORE FLEET ASSET MANAGEMENT

ID: CORE-01

FLEET MASTER REPOSITORY

- **Classification:** Categorize as Own Car, Rented, or Sub-contracted.
- **Identity:** Reg No, Engine/Chassis, VIN, Model, Year, Color.
- **Tech Specs:** Fuel Type (Multi-fuel support), CC, Weight, Payload.
- **Lifecycle:** Purchase date, initial cost, current book value.
- **QR Mapping:** Auto-generated QR codes for physical asset tracking.

PRE-PURCHASE & SUPPLIER HUB

- **Supplier Profile:** KYC, Tax ID, Performance Rating, Lead Time.
- **Procurement:** Requisition, Quotation Compare, PO Generation.
- **Due List:** Track outstanding payments to vehicle suppliers.
- **Usage Module:** Pre-deployment health check and setup log.
- **Asset Vault:** Digital storage for purchase invoices & manuals.

LEGAL & COMPLIANCE VAULT

- **Document Monitor:** Fitness, Tax Token, Route Permit, Insurance.
- **Expiry Engine:** 30/15/7 day automated renewal countdown.
- **Compliance Lock:** System blocks trip sheet if docs are expired.
- **Bluebook Log:** Digital scan with OCR text identification.
- **Legal History:** Log of transfers, ownership changes, and NOCs.

RENTAL & VENDOR MANAGEMENT

- **Vendor Master:** Commission Agent & Third-party owner DB.
- **Contract Logic:** Per-trip, Per-km, or Monthly rental agreements.
- **Agreement Vault:** Signed MOU/Legal contract attachments.
- **Payment Sync:** Auto-calculate vendor dues after trip completion.
- **Rating:** Reliability score based on delay and vehicle condition.

02. TRIP & LOGISTICS GOVERNANCE

ID: LOG-02

BACK-TRIP MANAGEMENT

- **Optimization:** Reduce "Empty Miles" by finding return loads.
- **Profit Center:** Calculate revenue specifically for return legs.
- **Dynamic Routing:** Divert vehicles to nearest load pickup point.
- **Consolidated Loads:** Combine multiple small pickups into one trip.
- **Back-trip Log:** History of utilization efficiency per vehicle.

GATE PASS & YARD CONTROL

- **Workflow:** Entry Log > Inspection > Load > Gate Pass > Exit.
- **Security:** Capture driver photo & Odometer at every gate event.
- **Seal Tracking:** Log security seal numbers for cargo safety.
- **Visitor Log:** Manage non-fleet entries and warehouse visitors.
- **Queue MGMT:** Track turn-around time (TAT) inside the yard.

03. LIVE GPS & TELEMATICS HUB

ID: IOT-03

LIVE TRACKING ARCHITECTURE

- **Real-time Map:** High-frequency refresh (5-10 sec) on Google Maps.
- **Status Icons:** Differentiate Moving, Idle, Stopped, and Offline.
- **Historical Playback:** Trail view for any past 90-day period.
- **Multi-Vendor Support:** Agnostic API to connect various GPS brands.
- **Engine Status:** Live Ignition On/Off status via digital input.

GEOFENCING & SAFETY

- **Polygon Fencing:** Set boundaries for Yards, Client sites, Cities.
- **Deviation Alerts:** Instant notification if route is changed.
- **Speed Governance:** Alerts for exceeding predefined speed limits.
- **Night Driving:** Restriction alerts for specific time windows.
- **Emergency SOS:** Mobile App panic button for driver assistance.

GOOGLE API INTEGRATION

- **Distance Matrix:** Automated calculation of Route vs Actual KM.
- **Traffic Intelligence:** ETA adjustment based on live traffic data.
- **Reverse Geocoding:** Converting Lat/Long to human-readable addresses.
- **Street View:** Visual inspection of pickup/drop-off points.
- **Cost Optimization:** Suggest shortest/fuel-efficient paths.

IOT FUEL INTELLIGENCE

- **Sensor Sync:** Direct integration with digital fuel rod sensors.
- **Refill Alerts:** Log qty added vs station receipt volume.
- **Siphonage Alarm:** Detect sudden fuel theft during night stops.
- **Consumption:** Liter-per-hour and Liter-per-KM live analysis.
- **Calibration:** Software-based tank calibration table mapping.

04. MULTI-CHANNEL NOTIFICATION ENGINE

ID: COMM-04

SMS & EMAIL GATEWAY

- **Transactional SMS:** Trip start, OTP, Gate Pass, Payment alerts.
- **Marketing/Broadcasting:** New policy updates to all drivers.
- **Branded Email:** Automated PDF invoices and reports to clients.
- **Trigger Logic:** Define custom rules for automated messaging.

TELEGRAM BOT INTEGRATION

- **Executive Updates:** Daily summary report sent to Telegram group.
- **Alert Channel:** Critical breakdowns and accidents sent to managers.
- **Interactive Bot:** Query status by typing vehicle number in Telegram.
- **Media Hosting:** Photos of incidents sent directly to group chats.

05. FULL HR LIFECYCLE (DRIVER & STAFF)

ID: HRM-05

RECRUITMENT & JOB PORTAL

- **Applicant Tracking:** Online application form for new drivers.
- **Skill Matrix:** Test results for driving, safety, and mechanical.
- **Vetting:** Police clearance, NID verification, Reference checks.
- **Onboarding:** Auto-generate ID cards and joining letters.

EMPLOYEE PROFILE (VAULT)

- **360 Degree View:** Bio-data, Family info, Education, Training.
- **File Manager Vault:** Encrypted storage for all physical documents.
- **Promotion/Transfer:** Track rank change and branch movements.
- **Separation:** Clearance workflow for fired/resigned employees.

ATTENDANCE & LEAVE

- **Geo-Attendance:** Punch-in via Mobile with GPS location check.
- **Roster MGMT:** 24/7 shift scheduling for large fleets.
- **Leave Policy:** CL, SL, EL, and Earned leave calculations.
- **Duty Log:** Automatic sync between Trip Sheet and Attendance.

SALARY & LOAN MODULE

- **Payroll Engine:** Basic, HRA, Medical + Trip Incentives.
- **Loan/Advance:** EMI tracking for personal loans or salary advances.
- **Deductions:** Fine, Late entry, and PF/Tax calculations.
- **Bank Transfer:** Auto-generate bulk bank payment files (BEFTN).

06. ACCOUNTING & PAYMENT GATEWAY

ID: ACC-06

ACCOUNTS PAYABLE/RECEIVABLE

- **Vendor Bills:** Automated billing for rental vehicles.
- **Client Invoicing:** Bill generation based on weight/km/trip.
- **Due Management:** Aging report for outstanding payments.
- **Expense Log:** Toll, Parking, Police expense, and Driver tea.

DIGITAL PAYMENT INTEGRATION

- **Payment Links:** Send SMS links for client freight payments.
- **MFS Integration:** bKash/Nagad/Rocket disbursement for drivers.
- **Voucher Logic:** Auto-posting to General Ledger (GL).

07. STORE & PARTS INVENTORY

ID: INV-07

INVENTORY CONTROL

- **Categorization:** Tyres, Batteries, Lubes, Filters, Body parts.
- **Batch Tracking:** Track expiry for paints, oils, and chemicals.
- **Min/Max Levels:** Intelligent re-order alerts to prevent stockouts.
- **Serial Tracking:** Mandatory for high-value items (Tyres/Engines).
- **Stock Adjustment:** Damage, scrap, and physical count audit.

REQUISITION & PURCHASE

- **Digital Requisition:** Workshop request for specific parts.
- **Approval Flow:** Store Keeper > Manager > Accounts.
- **Supplier PO:** Direct PO generation from requisition.
- **GRN (Good Receive):** Quality check at time of stock entry.

08. GARAGE & WORKSHOP MANAGEMENT

ID: WRK-08

INSPECTION & AUDIT

- **Digital Checklist:** 50-point mobile inspection with photos.
- **Attachment Support:** Upload video/photo of broken parts.
- **Standard Inspection:** Morning check, Pre-trip check, Weekly check.
- **Defect Logging:** Link identified defects to future Job Cards.

JOB CARD & REPAIR

- **Job Card Creation:** Log fault, mechanic, and expected time.
- **Parts Issuance:** One-click parts request from the store.
- **External Repair:** Track vehicles sent to third-party workshops.
- **Labor Tracking:** Mechanic efficiency and time-on-job reports.
- **Completion:** QC sign-off and vehicle ready notification.

TYRE & BATTERY MANAGEMENT

- **Position Log:** FL, FR, RL, RR, Stepney tracking.
- **CPK Analysis:** Cost-per-KM for different tyre brands.
- **Battery Life:** Track charging cycles and warranty status.
- **Scrap MGMT:** Manage disposal of old tyres and batteries.

PREVENTIVE MAINTENANCE

- **Service Roster:** Auto-schedule based on KM or Days.
- **Mobil Log:** Track oil quality and change intervals.
- **History:** 360-degree maintenance timeline for every vehicle.

09. DASHBOARD & UI/UX

ID: UI-09

COMMAND CENTER DASHBOARD

- **Fleet Summary:** Total vehicles vs On-Road vs Workshop.
- **Operational KPI:** Today's Trips, Late Deliveries, Empty KM.
- **Financial KPI:** Fuel Cost, Maintenance Cost, Revenue.
- **Compliance Map:** Vehicles with expiring documents in 7 days.
- **Alert Wall:** Real-time feed of GPS alerts and SOS.

LOCALIZATION (MULTILINGUAL)

- **English:** Standard international interface.
- **Bengali:** Localized labels, reports, and driver app menus.
- **Toggle:** Instant switch between languages for any user.
- **Custom Labels:** Ability to rename fields per company terminology.

10. USER ROLES & PERMISSIONS (RBAC)

ID: SEC-10

USER HIERARCHY MANAGEMENT

- **Super Admin:** Full control over system config and logs.
- **Fleet Manager:** Manage vehicles, drivers, and trips.
- **Store Keeper:** Inventory and requisition control.
- **HR/Payroll:** Salary, attendance, and employee files.
- **Accounts:** Invoicing, bills, and payment verification.

PERMISSION GRANULARITY

- **View/Edit/Delete:** Set permissions for every specific page.
- **Data Isolation:** Branch-wise or Project-wise data viewing.
- **Approval Levels:** Single, Double, or Triple level sign-offs.
- **Password Policy:** MFA, complex passwords, and expiry rules.

11. ENTERPRISE REPORTING (LIST 1-20)

ID: RPT-11

FLEET & COMPLIANCE REPORTS

- 1. **Fleet Master List:** Complete vehicle specs.
- 2. **Document Expiry Report:** Near-term renewals.
- 3. **Renewal Expense Report:** Cost of fitness/tax payments.
- 4. **Vehicle Idle Report:** List of under-utilized assets.
- 5. **Asset Depreciation:** Monthly/Yearly value loss.
- 6. **Vehicle Assignment:** History of drivers vs vehicles.

OPERATIONAL & TRIP REPORTS

- 7. **Daily Trip Summary:** All trips with KM & Load.
- 8. **Route Profitability:** Revenue vs Expense per route.
- 9. **Empty Mile Report:** Analysis of non-revenue KM.
- 10. **TAT Analysis:** Yard turnaround time statistics.
- 11. **Delivery Performance:** On-time vs Late arrivals.
- 12. **Back-trip Efficiency:** Usage of return leg capacity.

FUEL & ENERGY REPORTS

- 13. **Daily Fuel Log:** Consumption per vehicle/driver.
- 14. **KMPL Deviation:** Actual vs Standard efficiency.
- 15. **Fuel Theft Alert Log:** History of siphonage events.
- 16. **AC/Refer Usage:** Fuel used in special equipment.
- 17. **Fuel Card Reconciliation:** System vs Card statement.

GPS & TELEMATICS REPORTS

- 18. **Distance Variance:** GPS KM vs Odometer KM.
- 19. **Over-speeding History:** Driver safety ranking.
- 20. **Night Driving Violation:** Unauthorized movement log.

12. ENTERPRISE REPORTING (LIST 21-40)

ID: RPT-12

INVENTORY & WORKSHOP REPORTS

- 21. **Current Stock Status:** Balance per warehouse.
- 22. **Re-order Level Alert:** Low stock notification list.
- 23. **Job Card Costing:** Total parts + labor per repair.
- 24. **Tyre Lifecycle Report:** KM covered per tyre serial.
- 25. **Battery History:** Charging and replacement log.
- 26. **Service History:** 360-degree timeline per vehicle.
- 27. **Inventory Movement:** Monthly stock IN/OUT.

HR & PAYROLL REPORTS

- 28. **Monthly Salary Sheet:** Detailed payout summary.
- 29. **Attendance Report:** Leave, late, and absent summary.
- 30. **Loan/Advance Status:** Outstanding balances per staff.
- 31. **Incentive Report:** Trip-based bonus calculations.
- 32. **Safety Scorecard:** Driver ranking based on fines/speed.
- 33. **Employee Aging:** Service tenure per employee.

FINANCIAL & MANAGEMENT REPORTS

- 34. **Freight Revenue:** Bill wise collection report.
- 35. **Expense Summary:** Toll, Police, Maintenance cost.
- 36. **Profit & Loss (P&L):** Net profit per vehicle.
- 37. **Vendor Payment Status:** Outstanding bill summary.
- 38. **Audit Trail Report:** Complete system activity log.
- 39. **Due Freight Report:** List of unpaid client invoices.
- 40. **VMS ROI Report:** Savings from fuel & uptime.

13. FUTURE CUSTOMIZATION CAPABILITIES

ID: DEV-13

SCALABILITY ARCHITECTURE

- **Modular Design:** Ability to add specialized modules like "Electric Vehicle Charging Station MGMT".
- **API First:** Ready for integration with future IoT devices, dashcams, and weight-scales.
- **Custom Report Builder:** Drag-and-drop tool for managers to create their own tables and charts.
- **Mobile Extension:** Native iOS/Android app support for dedicated driver training & e-learning.
- **AI Integration:** Future route prediction and maintenance scheduling using machine learning models.

14. IMPLEMENTATION BENEFITS

ROI

VMS Pro is designed to be the backbone of any transportation or logistics business. By consolidating Fleet, HR, GPS, and Workshop into one seamless platform, it eliminates manual errors and data silos. Organizations implementing VMS Pro can expect:

- **Zero Compliance Failures:** Automated alerts ensure 100% legal document uptime.
- **Fuel Transparency:** Reduce theft and wastage through live IoT monitoring.
- **Workforce Discipline:** Biometric attendance and safety scorecards drive driver accountability.
- **Asset Longevity:** Proper preventive maintenance schedules increase vehicle life by 25%.
- **Scalability:** Handle from 5 to 5000+ vehicles with the same precision and control.

15. TECHNICAL STACK (RECOMMENDED)

STACK

BACKEND & FRONTEND

- **Language:** PHP (Laravel) or Node.js.
- **Frontend:** React.js or Vue.js for SPA.
- **Database:** PostgreSQL or MySQL (Highly Optimized).
- **Mobile:** Flutter or React Native for Cross-platform.

INFRASTRUCTURE

- **Hosting:** AWS, Google Cloud, or Azure.
- **Caching:** Redis for GPS live data caching.
- **Storage:** S3 for document & photo vault.
- **Real-time:** Socket.io or Pusher for live maps.

VMS Pro: Ready for Deployment

Developed & Supported by

Software Bazar Bangladesh

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