

SmartFleet – Intelligent Industrial Vehicle Monitoring & Service Automation

Phase 1: Problem Understanding & Industry Analysis

1. Requirement Gathering

The logistics and manufacturing industries face challenges in managing industrial vehicles such as forklifts, AGVs (Automated Guided Vehicles), and trucks. Current systems often rely on manual logs or disconnected fleet software, leading to:

- Unexpected vehicle breakdowns and unplanned downtime.
- Lack of automated service reminders and scheduling.
- Poor visibility into fuel/battery usage and vehicle availability.
- Inefficient spare parts management delaying repairs.

Key requirements identified:

- Centralized system to manage Vehicles, Sensor Data, Service Tickets, and Spare Parts.
- IoT integration for monitoring fuel level, battery health, and engine usage.
- Automated service ticket creation when thresholds are exceeded (e.g., low battery, high mileage).
- Automatic task assignment to service engineers.
- Spare parts inventory with automated restocking alerts.
- Dashboards and reports for fleet utilization, downtime, and cost efficiency.

2. Stakeholder Analysis

Primary stakeholders:

- **Fleet Manager** – oversees vehicle health, utilization, and performance reports.
- **Service Engineers** – receive and resolve service tickets, update status.
- **Vendors/Suppliers** – supply spare parts and receive automated orders when stock is low.
- **System Administrator** – manages Salesforce configurations, profiles, and security.

Secondary stakeholders:

- **Operations/Logistics Management** – reviews fleet performance and costs for decision-making.
- **IT Team** – manages IoT data integration, API security, and system maintenance.

3. Business Process Mapping

Current (manual) process:

- Vehicle usage and issues are recorded manually in logs or spreadsheets.
- Service reminders are missed, leading to breakdowns.
- Engineers are assigned informally without tracking workload.
- Spare parts are ordered reactively after failures.

Proposed (Salesforce CRM) process:

- IoT sensor data flows into Salesforce (Sensor Data object for Vehicles).
- If usage thresholds are exceeded, a Service Ticket is auto-created.
- Tickets are automatically assigned to available service engineers.
- Spare part stock updates automatically with low-stock alerts.
- Fleet Managers access real-time dashboards for utilization, downtime, and cost tracking.

4. Industry-Specific Use Case Analysis

- **Manufacturing Warehouses:** Monitor forklifts and AGVs.
- **Logistics Companies:** Manage delivery trucks and transport vehicles.
- **Airports & Ports:** Track ground-handling vehicles and cargo movers.
- **Smart Warehousing Solutions:** Integrate automation and fleet performance for efficiency.

This project improves vehicle uptime, resource efficiency, and predictive maintenance, aligning with modern logistics and Industry 4.0 needs.

5. AppExchange Exploration

Explored similar apps on Salesforce AppExchange for benchmarking:

- **Fleet Management Apps:** Focus mainly on scheduling and tracking, but lack predictive maintenance automation.
- **Field Service Lightning:** Strong service features but over-engineered for focused fleet maintenance use cases.
- **Custom App Approach:** Chosen for flexibility, simplicity, and cost-effectiveness, tailored to industrial fleet management.