# Project Title: IoT-Powered Smart Logistics Dashboard

**Employer:** FleetTrack Solutions  
**Primary Contact:** [Mock client for Tech Residency]  
**Team Composition:** [List team roles if provided]

## VISION & PURPOSE

**Business Problem:**  
Fleet managers currently lack real-time visibility into vehicle locations, status, and predictive maintenance. This leads to breakdowns, delays, and higher operational costs due to reactive maintenance and inefficient manual tracking through spreadsheets.

**Target Users:**

* **Primary:** Fleet managers responsible for operations and vehicle uptime
* **Secondary:** Dispatchers/operations teams monitoring day-to-day activity
* **Tertiary:** Company leadership reviewing fleet performance dashboards

**Core Value Proposition:**  
A centralized dashboard that provides real-time simulated data on fleet vehicles, predictive maintenance alerts, and KPIs for performance, helping managers reduce downtime, cut costs, and improve operational reliability.

**Success Criteria Definition:**

* Real-time simulated vehicle data available in the dashboard
* Predictive maintenance alerts visible to managers
* KPIs (uptime, fuel efficiency, reliability) accessible and understandable

## OBJECTIVES & SUCCESS METRICS (MVP)

| **Objective** | **Metric of Success** |
| --- | --- |
| Provide real-time fleet visibility | Vehicles displayed with simulated location and status updates |
| Enable predictive maintenance | Alerts generated for vehicles approaching maintenance thresholds |
| Track fleet performance KPIs | Uptime %, alerts per vehicle, efficiency trends visible in dashboards |

## CORE FEATURES (SCOPE)

### 1. Real-Time Vehicle Dashboard

**Description:**  
Dashboard to display all vehicles with simulated live data (location, fuel, health).

**Role Responsibilities:**

* **Frontend:** Build interactive dashboard UI with maps and vehicle cards
* **Backend:** Create simulation service generating vehicle data streams
* **Data:** Structure vehicle data and store simulated logs
* **Testing:** Validate that vehicle data updates correctly in real time
* **Security:** Secure login/authentication for managers

### 2. Predictive Maintenance Alerts

**Description:**  
Generate alerts when vehicles reach thresholds (mileage, engine health).

**Role Responsibilities:**

* **Frontend:** Display alerts in dashboard with severity indicators
* **Backend:** Define rules for generating predictive alerts from data
* **Data:** Track simulated mileage/health for predictions
* **Testing:** Ensure alerts trigger correctly based on rules
* **Security:** Protect alert data from unauthorized changes

### 3. KPI Dashboard

**Description:**  
Display key performance metrics such as uptime %, alerts, fuel efficiency.

**Role Responsibilities:**

* **Frontend:** Visualize KPIs using charts/graphs
* **Backend:** Aggregate simulated data for reporting
* **Data:** Compute and log KPI metrics over time
* **Testing:** Validate KPI calculations and chart rendering
* **Security:** Ensure KPI data integrity

### 4. Nice-to-Haves (If Time Permits)

* Driver profiles with performance metrics
* Export reports (CSV/PDF)
* Mobile responsiveness

## SPRINT TIMELINE

### Sprint 0 (Weeks 1–2): Foundation

* Team onboarding, setup, project planning
* Repository + environment setup
* Draft dashboard wireframes and data simulation plan
* **Educational Focus:** Intro to IoT simulation, dashboards, basic security

### Sprint 1 (Weeks 3–4): Core Infrastructure

* Implement simulated IoT data generator
* Set up secure login and backend API endpoints
* Basic frontend layout with mock data
* **Educational Focus:** API design, authentication, frontend-backend integration

### Sprint 2 (Weeks 5–6): Expansion

* Real-time dashboard with map + vehicle list
* Predictive maintenance alerts integration
* KPI calculations and data storage
* **Educational Focus:** Real-time systems, data aggregation, visualization

### Sprint 3 (Weeks 7–8): Polish & Delivery

* Finalize KPI dashboard with charts
* Add nice-to-have features (reports, profiles, mobile view)
* QA testing + bug fixes
* Final presentation to stakeholders
* **Educational Focus:** Deployment readiness, stakeholder communication, end-to-end project delivery