**Product Requirements Document (PRD)**

**Project Title**:

Vehicle Health Management System Improvement

**Description**

This document outlines the proposed features for the Vehicle Health Management System, their benefits, and a prioritized list of these features. Moreover, it identifies potential personas that could use the system.

**The main purpose**

* Reduce fleet operational expense by 5%
* Reduce fleet downtime by 15%
* Ensure safety events reduce by 20%

**The following features are proposed:**

1. Detecting maintenance is needed (Vehicles that need repair ranked by urgency) : comparing the model data with the real data. A mismatch between them may indicate potential issues.

The calculation will be based by this method:  
If the difference between y\_treu and y\_pred is greater than 5%, it will be counted as a malfunction detected by the system

1.1

1.2 \*

\*The calculation based on required timeframe

1. Detecting malfunctioning vehicles: A feature that notifies the fleet manager about malfunctioning vehicles based on statistical paired T-test that compare between the two groups
2. Radical change in sensor pattern- A feature that notifies the fleet manager about Anomaly on the sensors
3. Driver behavior analysis: A feature that identifies driving patterns to find patterns that might indicate mechanical problems or a reduction in performance.

**Description of the benefits for the operational fleet manager:**

1. Improved vehicle uptime and reduced maintenance costs due to timely interventions.
2. Enhanced fleet efficiency through proactive problem-solving before it gets out of hand.
3. A more informed decision-making process with the help of data-driven insights.
4. Increased safety for drivers and passengers.

**Prioritized List of Features:**

1. Detecting malfunctioning vehicles- Having a malfunctioning car on the road is dangerous, which is why this is the most important
2. Predictive maintenance- It can prevent vehicle problems and reduce costs associated with repairing problems before they occur
3. Driver behavior analysis- It is important to detect aggressive driving as soon as possible because it can destroy the vehicle
4. Radical change in sensor pattern- It is ranked last because it does not necessarily indicate a vehicle malfunction, and can be caused by a variety of factors

**Potential Personas:**

1. Fleet managers: To optimize fleet management, reduce costs, and improve vehicle performance.
2. Vehicle maintenance manager: To schedule preventive maintenance based on the system's predictions.
3. Drivers: To receive real-time alerts and improve their driving behavior.
4. Vehicle producers: To receive informed feedback on the functionality of their goods and prospective design improvements.