AI SOLUTION

• Overall Objective: Reduce unplanned vehicle downtime by 20% in the first year of deployment. This is accomplished through anticipation of impending component failure before its occurrence.

• Objectives:

• Increase Fleet Operating Effectiveness and Vehicle Life Cycle: With future defects eliminated ahead of time, the solution allows vehicles to remain on the road for a longer period, lengthening their life cycle and streamlining operations.

• Cost Savings: Only repair when the parts need it and not on a predetermined, often wasteful schedule. Money that would otherwise have gone to the element of surprise break-downs and emergency repairs is saved.

• Safety Improved: Pre-scheduling failure of such essential elements as brakes or motors avoids accidents and the whole place is safer.

• Greater Utilization of Resources: With predictive maintenance scheduling, organizations can have labor and parts in readiness, maximizing more efficiency.

BUSINESS OBJECTIVES

1. Production and Manufacturing

Manufacturing solutions based on artificial intelligence are designed to enhance efficiency, reduce cost, and improve product quality.

• Generative Design: AI creates and models hundreds of thousands of design configurations for components of cars within seconds to engineering specifications, accelerating the process from months to minutes.

• Quality Control: AI computer vision has the ability to check in real-time for flaws on the factory floor, identifying microscopic flaws that the human eye cannot perceive. That means improved product quality and reduced warranty claims and recalls.

• Smart Robotics: Modular, AI-based robots enable assembly, bringing more precision and productivity, in addition to mass customization.

• Supply Chain Optimization: Machine learning algorithms scan data to forecast demand, track inventory, and find the best routes. This improves just-in-time manufacturing, reduces shortages or excess, and decreases logistics cost.

2. Vehicle Design and Development

Artificial intelligence is revolutionizing the design process to develop safer, more efficient, and more innovative vehicles.

• Simulation and Optimization: AI offers computer simulation of vehicle performance, including aerodynamics, crashworthiness, and battery management.

• Battery Management: In electric vehicles, AI systems can optimize battery life and performance by tracking real-time temperature and voltage and smoothing the recharging load on battery packs to reduce stress. This enhances vehicle reliability and safety.

• Vehicle Safety: AI powers next-generation driver assist technologies such as automatic emergency braking, lane departure warning, and adaptive cruise control. They sense obstacles with the aid of sensors and prevent accidents, and they greatly improve safety and reduce accidents due to human mistakes.

3. Car Experience and Customer Service

AI technology in the car and as customer-facing staff is improving user experience and individualizing the driving experience.

• Personalization: AI is able to learn a driver's preferences to automatically set up things like climate control, seat position, and music playlists.

• Driver Monitoring: AI systems are able to monitor driving styles to keep drivers alert and focused on the road, and provide feedback to eliminate unsafe driving practices.

• Car Assistants: Voice assistants powered by AI allow drivers to use natural speech to control vehicle function, driving directions, and entertainment, reducing driver distraction.

• Sales and After-Sales Services: AI makes it easier to analyze customer data to personalize ads and forecast demand for goods. AI-based chatbots also make customer support available in real-time, thereby making the purchasing and servicing easier.