



IoT / Predictive Analytics

SITUATION

Sterling's client needed the ability to track and monitor real-time performance for thousands of locomotives worldwide so they could adjust/improve operations and accurately predict timing for Maintenance, Repair and Overhaul (MRO).

- Hundreds of sensors are connected to various components within the diesel engine and other moving parts of the locomotive.
- These sensors feed data continuously to a centralized database.

STERLING SOLUTION

The Sterling team was tasked with extracting and transforming the critical data needed for predictive analytics and triggering alerts for a variety of Locomotive events.

We coordinated with various internal teams to determine what data was valuable and led discussions on how to best represent this data in a way that would provide a clear picture to the end user.

Our software engineering team leveraged Visual Studio and SQL Server as the development tools.

RESULT

The reported events provide the customer with real-time monitoring and improved operating efficiencies within the locomotive engine while operating in peak conditions.

The solution also enables the client to proactively manage a preventative maintenance program, minimizing the amount of break-downs outside of the depot.

Most importantly, it provides the client with the analytics needed to prevent malfunctions and potentially life threatening situations.

Trackable events include:

- GPS location, direction, and speed
- Engine Status
- Air Brake Status
- Fuel System Information
- Engine Protection
- Hot Engine Alerts
- Locked Axle Alerts

PROJECT SNAPSHOT

- ❖ *Fortune 50 manufacturer of large industrial locomotives required a system to proactively collect data to better monitor performance and maintenance requirements*
- ❖ *The client required us to design and build a system to provide them real-time access to performance data, enabling them to avoid emergency situations*
- ❖ *Sterling's Software Engineering team participated in the design, development, and implementation of the system, including the extraction, transformation and loading (ETL) of real-time sensor data for predictive analytics reporting and event monitoring*