

Vantage Power accelerates time-to-market by six months reducing operational costs by over 80%

Client: Vantage Power

Industry: Automotive + Travel

Project Type: A data monitoring and IoT solution with predictive maintenance and machine learning capabilities

Overview

1 Challenge:

By 2025, Transport for London will have to meet strict emission-control regulations. This means buying and operating new fleets of hybrid or fully electric, zero-emission buses. As a consequence, many Original Equipment Manufacturers (OEMs) and operators will have to develop new technologies to help them get to market fast enough to meet demand.

2 Approach:

To provide an all-embracing, real-time view of each heavy-duty vehicle and its system. To create an intuitive system capable of collecting operational data to improve products and provide proof of compliance.

3 Solution:

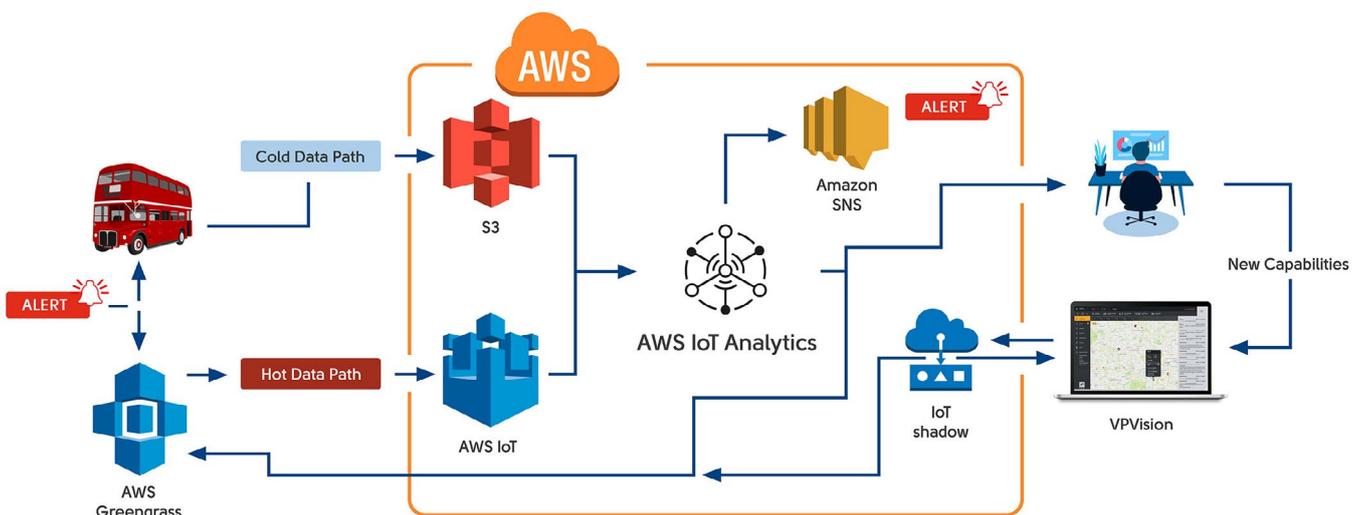
Luxoft, an AWS Partner, teamed up with Vantage Power to create VPVision, a comprehensive telemetry system that provides a deep technical understanding of how individual vehicle components perform in real time.

VPVision uses the latest AWS IoT technology, advanced analytics, edge computing and machine learning services.

4 Outcome:

Luxoft's customized solution enabled operators and OEMs to receive insight and reporting into over 6,000 data points from each vehicle. This allowed the development of a solution that monitors issues early on, resulting in \$50,000 in savings per vehicle, and an 80% reduction of operational costs.

Solution Dashboards



Overview

Meeting the demands of the low-carbon economy

Transport capacity and pollution are an ever-growing problem in cities around the world. By 2025, London and other major cities will only be allowed to buy zero-emission buses. Also, all of London's bus fleets must be upgraded to the Euro VI standard by 2020, with all ultra-low emission zone vehicles either electric or hybrid. The new legislation will require detailed data reports to prove these conditions have been met.

Vantage Power designs technologies that connect and electrify the powertrains for heavy-duty vehicles, incorporating their own lithium-ion battery pack. The company needed a solution that would allow manufacturers of heavy-duty vehicles and vehicle systems to go to market faster. Additionally, OEMs and operators needed a way of tracking the vehicle control software, post-deployment, to monitor the lithium-ion battery systems.

Solution

Accelerating time-to-market and compliance controls

Vantage Power worked with Luxoft (an AWS Partner Network Advanced Consulting partner) to create VPVision – an innovative telemetry platform. VPVision brings the AWS cloud platform to each connected vehicle, providing Vantage Power customers with an overview of each vehicle's powertrain components, including batteries, control systems, engines, motors, and electric generators.

VPVision is built around an IoT architecture (AWS IoT Core, AWS Greengrass, and AWS IoT Analytics), then combined with Amazon Simple Storage Services (Amazon S3) and AWS Lambda. This optimizes the processing of hundreds of thousands of data points per minute. In turn, it provides OEMs and operators with valuable insights, allowing them to create predictive maintenance models and implement real-time preventative action. Here are just six of VPVision's benefits:

- ◆ The system monitors everything from vehicle speed to engine health and battery-pack-level diagnostics. It enables operators and OEMs to receive insight and reporting for over 6,000 data points from each vehicle.
- ◆ VPVision collects, processes, stores, and presents real-time vehicle data, automatically, via the cloud.
- ◆ It enables real-time geolocation visualization and two-way communication between fleet managers and drivers.
- ◆ When routine maintenance is required, real-time alerts keep downtime to a minimum.
- ◆ It leverages IoT components from AWS, such as IoT Analytics, Greengrass ML, Sagemaker, and many more.
- ◆ The team developed a machine learning model that used AWS IoT Sagemaker Notebooks to analyze "idle time" and "vehicle location" data, automatically.



“With an increasing number of in-service vehicles, Luxoft anticipated the need to get ahead of operational costs, scalability challenges and automate analytics to identify potential failures before they impact the customer.”

Alex Tilcock, Director, Digital Foundations

Result

Real-time insight, and connecting vehicles to the cloud

Luxoft provided Vantage Power with the technical expertise, domain experience, and scale to build a unique solution that:

- ◆ Limits the time vehicles are in maintenance shops, reducing operational costs by over 80%.
- ◆ Quickens time-to-market for OEMs by six months.
- ◆ Lowers overall costs by streamlining aftermarket support with centralized, real-time data.
- ◆ Identifies the ideal time and location for lithium-ion battery balancing, extending the operational life of a battery by around 10%.
- ◆ Reduces costs and admin through the application of edge computing and remote diagnostics, which analyze vehicle data and report back issues that need attention.
- ◆ Thanks to scenario modeling, plus early cell-level fault detection and mitigation, customers can avoid battery replacements which could cost over \$50,000 per bus.
- ◆ Complies with new emissions regulations.

Working together, AWS and Luxoft developed a fully-operational solution that has been improving the cost control and performance of a growing fleet of retrofit buses.

Questions? Ask a Luxoft expert now! LuxDEPresale@luxoft.com

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