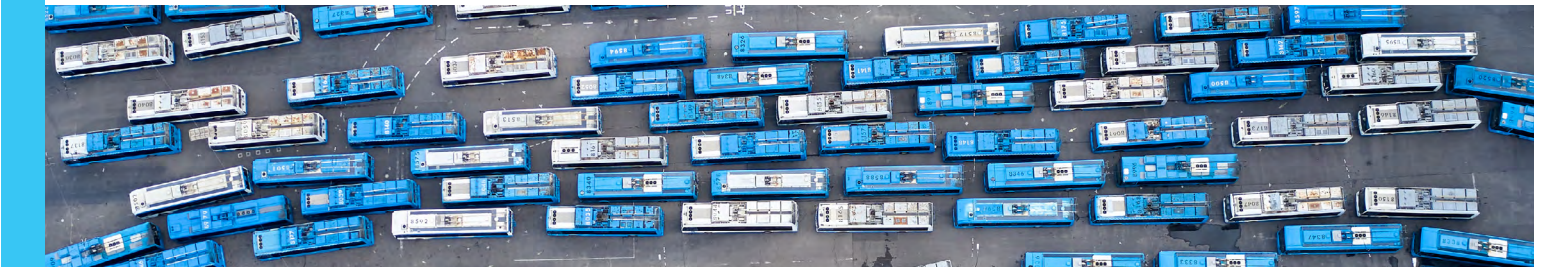


Edge computing helps improve public sector fleet management



The enormous task of managing large fleets of fire, police, military, maintenance, garbage, public transportation, and other general service vehicles falls to federal, state, and local governments.

Part of any effective Asset Management program is ensuring these vehicles remain available for duty. Minimizing downtime, reducing fuel costs, and ensuring vehicle safety are key concerns of fleet managers in the public sector. Evolving technology has played a key role in fleet management, from software tools that help with scheduling and tracking vehicles and their service history, to onboard computers and GPS for directing routes. Today, smart sensors play a pivotal role in how fleet managers in the public sector handle the complexities of managing, tracking and maintaining large fleets of vehicles.

Challenges: Rising costs of fleet management

Operating fleets of vehicles is costly. Yet, these assets in motion are vital parts of meeting citizen needs for security and safety as well as a wide range of services such as utilities maintenance, public transit, waste disposal and many others.

The proliferation of smart sensors potentially transforms fleet management, helping to reduce costs of maintaining and operating large fleets of vehicles. Smart sensors embedded in public service vehicles are used to monitor driver behavior, track vehicle movements and perform diagnostics and preventive maintenance. These sensors provide valuable data on fuel usage, vehicle health, idle times, accidents, route delays and other issues contributing to costs of managing a fleet. Asset Management leaders use this information to obtain a holistic view of the current state of the fleet, allowing them to make better decisions to help reduce costs and improve efficiency of their operation.

To achieve sensor-enabled cost reductions, certain challenges must be addressed. The sensors are useless without the larger system that collects and makes use of their data. Architecting that system is no trivial task. With thousands of vehicles on the road, the volume of data generated by embedded sensors is massive. Fleet managers must find new ways of acquiring, analyzing, and acting on the data from these sensors.

Sensors can gather data on key data such as:

- Rising fuel prices contribute to the increasing costs of keeping vehicles on the road. Utilizing the most efficient routes and reducing the amount of time vehicles spend idling can lower gas usage and reduce overall fuel costs. Sensor data can actively monitor fuel usage and provide real-time updates on route changes, traffic delays, weather conditions and other factors impacting vehicles on the road.
- Any vehicle downtime is also costly. The longer a vehicle is out of commission, the more it costs in lost productivity and delayed services. Bottlenecks in the supply chain make it harder to source replacement parts for repairs, meaning that vehicles may spend more time in the maintenance yard than on the road. Using vehicle sensor data, fleet managers can make more efficient maintenance plans based on actual use and identify problems earlier. This allows them to bring a vehicle in for repairs before it actually breaks down and identify and order specific parts that need replacing.

Solution: Edge compute puts intelligence close to vehicles and their data

Edge computing can relieve much of the burden of collecting and analyzing smart sensor data in fleet vehicles. Algorithms that live out on the edge can quickly analyze sensor data and provide insights into how vehicles are operating, fuel usage and other factors that drive costs.

Edge computing moves monitoring applications closer to where endpoints reside, reducing latency and policing access before significant resources can be compromised. Because transportation literally has many moving parts, Lumen's edge compute infrastructure provides facilities where partners focusing on specific aspects of fleet management (e.g., route mapping) can deploy their technologies closer to customers, providing a tailored solution for public sector needs. Lumen chooses these best-in-class partners and supports the entire solution.

Lumen operates over 40 edge computing sites across the nation. By moving key applications to the edge, latency can be reduced to improve the response times to any changes in traffic conditions. Because Lumen works with the major cloud providers, these edge facilities can stay in synch with cloud resources while improving application performance. Artificial intelligence (AI) engines in the cloud can design algorithms that can be moved out to the edge where they can quickly act on data streams from the embedded sensors.

Results: Lower costs and improved services

Utilizing edge computing with smart sensors embedded in public sector fleet vehicles allows data to be analyzed close to the source, improving response times and reducing the amount that must be transmitted across the network. Measurable benefits include:

- Enhancing predictive maintenance plans to further minimize costly downtime and extend the life of vehicles
- Faster access to data can deliver insights to help improve automated routing planning which can reduce fuel consumption and idle times
- Citizens receive improved service through enhanced efficiencies, governments can improve operational expenses

Edge-based computing is a key part of the foundational infrastructure for federal, state and local fleet management.

Visit lumen.com/edgecomputing for more information.