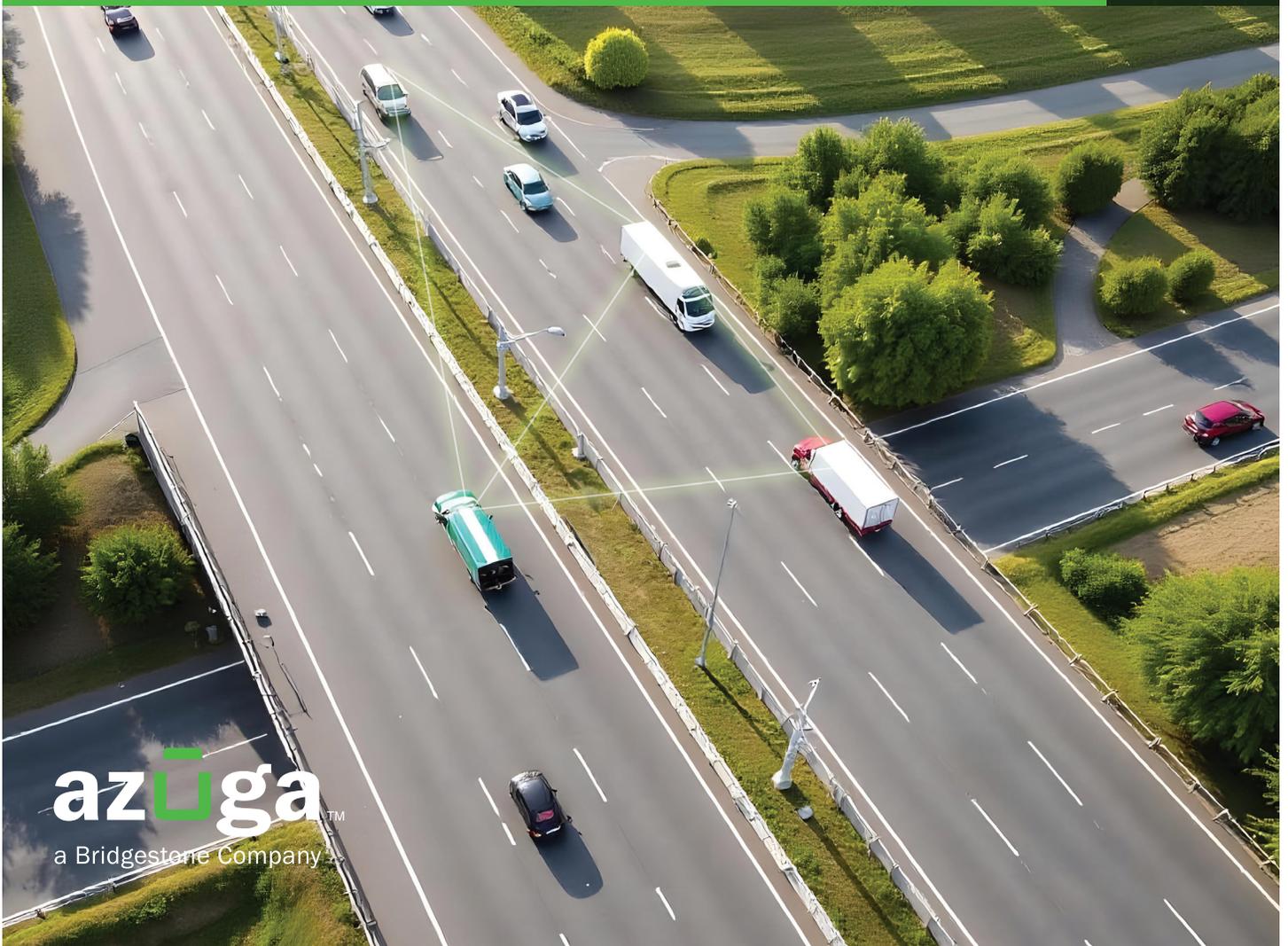


GPS Satellite Systems

A Fleet's *Max Advantage*



azugaTM
a Bridgestone Company

A Fleet's Max Advantage

Summary

GPS tracking solutions for Fleet Management have been rapidly evolving over the last decade or so. Yet there are commercial fleets across industries that have not upgraded their telematics solutions. What are they missing out on?

We traced the developments that have taken place over the years and evaluated the impact of the latest advancements on fleet safety, performance, maintenance, and business reputation.

This report will help bring today's fleet managers up to date with:

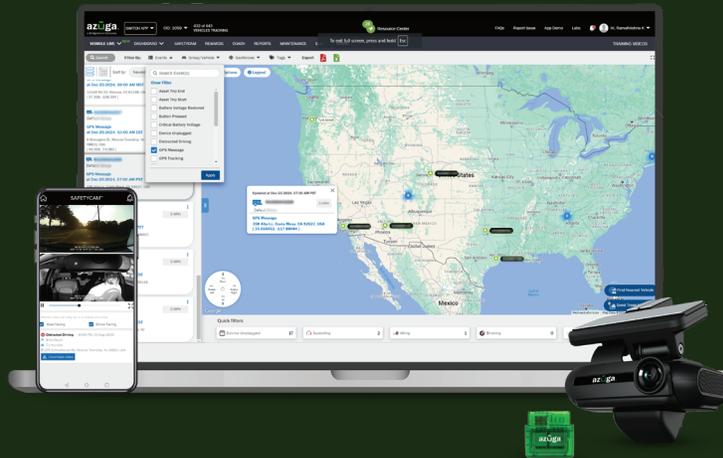
- ▣ New devices and connectivity**
- ▣ Predictive maintenance and scheduling**
- ▣ Vehicle and driver safety**
- ▣ Protecting your fleet reputation**

There is a lot of ROI to be had from a GPS-based integrated fleet management suite. Companies are reporting specific results (such as fleet safety score improvements) and achievements within a few months of deployment. Our discussion is of particular interest to fleet managers with similar aspirations for their fleet.



The GPS satellite system became fully functional, with more than two dozen orbiting GPS satellites in early 1994. A quarter of a century later, this system still provides the basis for fleet tracking. At the turn of the century, web-based fleet management systems became a reality. And over the last 15 years, there has been a tremendous leap in the GPS fleet tracking technology.

Some of the businesses who were among the early adopters of GPS Fleet Tracking have not upgraded their commercial fleet's technology. Meanwhile, leading solution providers have innovated through advanced technology and services.



GPS Tracking Solution for Commercial Fleets Means a Lot More Than it Used To

Consider the changes in hardware. Trackers have evolved from clunky black boxes with a hard install to a simple neat plug-and-play engine reading OBDII device.

Today's on-board devices monitor many data points. Among them are:

- Engine RPM
- Speed
- Engine load
- Engine coolant temperature
- Fuel pressure
- Throttle position
- Oxygen sensor voltage (STFT)
- Barometric pressure
- Catalyst temperature
- Engine oil temperature
- Engine fuel rate

There is a wave of change every 3 to 5 years in the industry, and it becomes important to keep pace and not get left behind. Earlier there was 2G for connectivity, but the locational data was nowhere near as accurate as it is today.

Azuga upgraded its fleet customers to 3G without any additional fee and advises its customers on how they can obtain **greater ROI** from their tracking investment. Some fleets



have achieved an ROI of well over \$7 for every dollar invested for installation and subscription. And now Azuga is incorporating video with 4G cellular support through a tamper-resistant dual camera enabled for real-time notifications.

Per the NHTSA estimates, modern vehicle technologies can alert drivers in advance and avert over 50% of automotive crashes. Their study of safety benefits reveals that Left Turn Assist (LTA) and Intersection Movement Assist (IMA) **could prevent nearly 600,000 crashes and save over a thousand lives annually.**

A New Era in Vehicle Connectivity and GPS Tracking

Today's connected vehicles can process over 20 GB of data in an hour and use wireless connectivity to carry out tasks. A connected vehicle enables real-time intervention by a fleet manager to ensure better safety and higher productivity.

IoT (Internet of Things) technology significantly improves customer service and fuel efficiency in your fleet. For example, our customers' fleets are **guided to the nearest** and cheapest gas stations to help maximize fuel cost savings. The new generation of connected vehicles is

equipped with even more safety features developed from telematics **technologies**. The new **Azuga Dashcam**, for instance, improves your fleet safety record, shows driver performance, and reduces insurance premiums.

The available data can deliver many kinds of value to fleets.

- Road alerts
- Up to the minute traffic information
- Vehicle maintenance statistics
- Monitoring fatigue levels of the driver and even other occupants

Predictive Fleet Maintenance Saves Money

Today's business owners and fleet directors get information at their fingertips through fleet analytics:

- Engine performance
- Driver behavior in terms of braking, speeding and idling
- Which drivers get how many **miles per gallon** on a given vehicle model

This level of data availability is far greater than the prior decade when only a vehicle's location data was processed. This data contributes to a reported 53% reduction in maintenance costs by Azuga customers.

When we talk to Fleet Operations Managers, they typically cite their main challenges as:

- Maintenance
- Upkeep costs
- Driver and crew safety.

A telematics suite for commercial fleet management can answer their need for better fleet performance, effective cost management, **efficient vehicle maintenance**, and improved workforce safety.

Telematics can be highly empowering for fleet managers. More and more self-serve tools are available, and managers are able to make more decisions and manage more processes by themselves. Fleet management costs come down considerably because fleet managers are able to do far more with access to information.

For instance, commercial fleet managers can:

1. Readily view the entire maintenance record of a vehicle and the incurred costs.
2. Make smart decisions about repairs or replacement
3. Negotiate with repair centers, parts vendors, etc. based on a pre-drawn schedule and get better prices.



Data Science Simplified for the Fleet Operations Manager

Azuga understands that access to enormous amounts of telematics data can feel overwhelming to a fleet manager. That's why we make our expertise available, including familiarity with your fleet's main line of business. We're here to help your company with actionable insights from the maze of diverse data.

Fleet Managers can

- Get help in planning fleet size, model selection, and preventative maintenance.
- Use our **proprietary algorithm** to rank drivers, use a leaderboard to incentivize performance with the help of Azuga Rewards.
- Improve fleet safety scores; consistently safer driver behavior can get insurance rebates for your fleet.

Take timely steps to achieve a lower total cost per mile in your commercial fleet.

Azuga's data science team has developed the Vehicle Health Report. This innovative service measures and reports the status of key parameters of each vehicle so that maintenance issues can be identified and corrected before they become major disruptions to the business.



Fleet Technology Investments That Safeguard Your Business's Reputation

Even as advanced tools are helping companies to get more done with their fleets, technology is playing a protective role by helping commercial fleet drivers avoid fault for accidents. Let's look at the actual statistics.

Azuga customers have reported a 57% reduction in speed citations along with a 38% reduction in accidents as a result of deploying a GPS solution to help with safety risks.

FMCSA (Federal Motor Carrier Safety Administration) [analysis of large truck-and-car crashes](#) over three years reveals that driver-related factors (such as speeding or not keeping in the proper lane) were attributed to the car far more often to the truck. Here are the percentages of vehicles with cited driver-related factors in over 6,000 car-truck fatal crashes:

<p>Year - 2007:</p> <p>85% of cars </p> <p>26% of trucks </p>	<p>Year - 2008:</p> <p>85% of cars </p> <p>26% of trucks </p>	<p>Year - 2009:</p> <p>81% of cars </p> <p>22% of trucks </p>
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The large truck fatal-crash rate per vehicle miles traveled (VMT) has fallen 77%, while that for cars has fallen 64% between 1975 and 2009 (FMCSA, 2011 study). In 2009, the overall police-reported crash involvement rate for large trucks was 33% of the crash involvement rate for cars (ATA report of 2013).

Over the years, there's clear evidence that commercial fleet drivers have improved and have safer practices than car drivers. Dashcams help to prove when they are not to blame in the event of a crash.

Detailed and [reliable information](#) on Vehicle Dynamics – speed, location, time, date, distance and often, the engine RPM – is highly useful during an accident investigation.

Available, relevant data includes:

- The amount of travel prior to the accident (distance and map replay).
- Driver behavior before the accident.
- Second by second speed detail prior to and after the accident.
- Any significant braking or lack thereof, during the incident.

The latest front-facing [dashcam](#) technology generates video footage that clears commercial fleet drivers when they are not at fault. It is no wonder that drivers appreciate their company's support when there is a lawsuit. Fleet Managers can properly decide the right course of action from the video [footage](#) collected by dashcams.

Telematics Works for Auto Dealers, OEMs, and Commercial Fleets

Vehicle manufacturers and dealers are able to manage their supplier costs with real-time data coming in from vehicle sensors. For the fleet owners, this means better scheduling of maintenance and parts replacement to extend a commercial fleet vehicle's life and performance.

On the other hand, fleets are using vehicle information to:

- Deliver better service to their business's customers.
- Responding to customers faster.
- Sharing accurate information about vehicle departure and arrival.

A recent survey of Azuga customers found that door-to-door transit time improved by 28% after installing a GPS solution to help drivers better serve their customers more efficiently.



Azuga is a frontrunner in transforming GPS-based Fleet Management Solutions. It provides vehicle telematics solutions to fleet managers to help them overcome many kinds of operational challenges, to control costs, and to extract more lifetime value from every fleet.

About Bridgestone

Nashville, Tennessee based Bridgestone Americas Tire Operations is the U.S. subsidiary of Bridgestone Corporation, the world's largest tire and rubber company offering a wide range of Bridgestone, Firestone and associate brand tires, BATO maintains wholesale and original equipment sales operations across a broad line of products, including passenger, light truck, commercial truck and bus, agricultural, motorcycle, kart and off-the-road tires.

Additional US subsidiaries include Bridgestone Retail Operations which operates the largest network of company-owned automotive service providers in the world – nearly 2,200 tire and vehicle service centers across the United States – including Firestone Complete Auto Care, Tires Plus, Wheelworks and Hibdon store locations. Bridgestone authorized dealers consist of independent tire retailers that are authorized to sell and service Bridgestone or Firestone products. BATO's Commercial Solutions Group also has an extensive dealer network that also includes Truck, Bus, Radial Division. In summary the Bridgestone network consists of approximately 5,400 service locations for tire, automotive and fleet solutions.

Below is a complete list of links to our products for Commercial, Retreads and Consumer tires.

Bridgestone Brand

Alenza, Blizzak, DriveGuard, Dueler, Ecopia, Potenza, Turanza
Bridgestone Consumer product
website: <https://www.bridgestonetire.com/>
Bridgestone Commercial product
website: <https://commercial.bridgestone.com/en-us/index>

Firestone Brand

All season, Champion, Destination, Firehawk, Transforce, WeatherGrip, Winterforce
Firestone Consumer product
website: <https://www.firestonetire.com/>
Firestone Commercial product
website: <https://commercial.firestone.com/en-us/index>

Bandag Retread

website: <https://www.bandag.com/en-us/index>

About Azuga

Azuga, a Bridgestone company, is a leading global connected vehicle platform, helping our customers turn data about vehicles and their use into intelligence that improves operations and safety while reducing costs and risk. Azuga provides reliable end-to-end solutions for commercial fleets, government agencies, insurance companies and automotive industry suppliers, encompassing hardware, the Azuga One platform, award-winning fleet applications and data analytics. Azuga is headquartered in Fremont, California.

Our award-winning Azuga Fleet solution is used by thousands of customers—from the small fleet of one or a few vehicles up to several thousand—and is lauded by our customers for its ease-of-use, robust features and affordable pricing.

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