

Evolving Fleet IoT

Market Report 2025

How to overcome cost and
complexity challenges

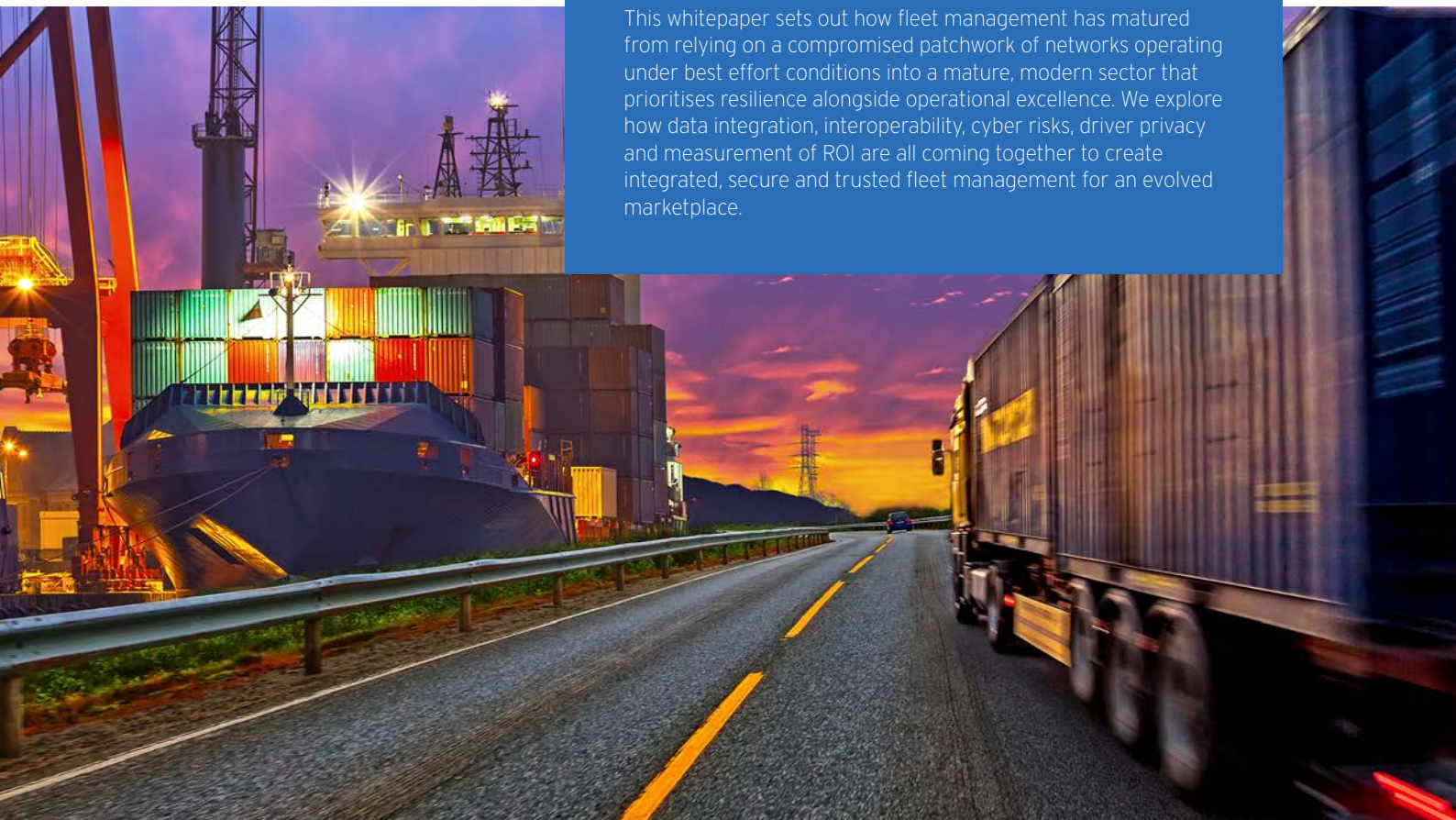


Executive summary

Modern fleet management now comprises optimised cellular roaming, super-precise location accuracy enabled by GNSS and growing levels of automation, enabling efficient management of large fleets and cargos. Importantly, fleet organisations can now ensure vehicles stay tracked and data keeps flowing even when coverage from one network is weak. The clunky efforts of the first on-board computers in the early 1980s are now ancient history and we're in a new era of seamlessly connected, flexible, robust fleet management that enables fleet managers to utilise highly granular information at a controlled and sustainable cost.

Unfortunately, none of this comes without risk. Fleet management deployments still suffer from coverage interruptions and solutions can be both complex and costly. What's needed is a modern approach that embraces innovations such as automation and AI alongside management platforms that deliver cost savings, mitigate risk, increase efficiency and support compliance.

This whitepaper sets out how fleet management has matured from relying on a compromised patchwork of networks operating under best effort conditions into a mature, modern sector that prioritises resilience alongside operational excellence. We explore how data integration, interoperability, cyber risks, driver privacy and measurement of ROI are all coming together to create integrated, secure and trusted fleet management for an evolved marketplace.

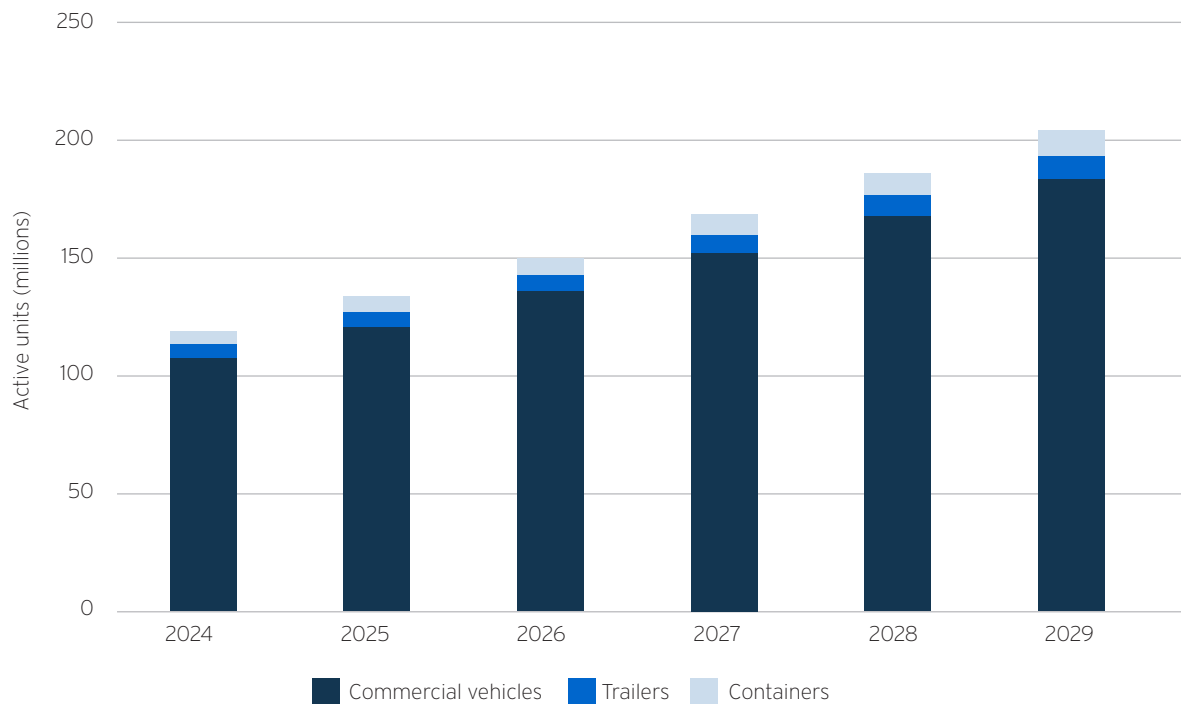


The road ahead to 200 million systems

Growing at an overall expected compound annual growth rate (CAGR) of 11%, the fleet and asset management market is forecast to increase from close to 120 million active fleet and asset management systems in 2024 to more than 200 million systems in 2029. Berg Insight reports that fleet management for commercial vehicles is clearly the largest segment, estimated to account for more than 90% of the total installed base of active systems.

Trailer tracking is the second largest category ahead of containers, which are a highly promising emerging segment anticipated to outpace both commercial vehicles and trailers in terms of growth in the coming years. Ultimately, containers will surpass the trailer segment when it comes to the number of active systems by the end of the forecast period.

Figure 1:
Fleet and asset management systems by major segment
 (World 2024-2029)



Source: Berg Insight

The modern fleet management value proposition

Key requirements include:

- **Coverage without gaps** - Achieved by systems that keep GPS and data flowing even in weak-signal areas.
- **Security and compliance at scale** - There are now proven ways to defend remote devices from cyber threats and ensure regulation and legislation is complied with, across multiple jurisdictions.
- **Cost control that works** - Strategies to tame roaming and unpredictable data usage can be adopted.
- **Flexibility that pays** - Systems that avoid vendor lock-in and keep your options open are now available.

The continuous evolution of connectivity technologies has played an important role in the development of the fleet telematics sector. Improved uplink speeds and reduced latency have had positive impacts by enabling more stable connections and opening up opportunities for applications with greater bandwidth demands.

State-of-the-art connectivity offerings that automatically switch between multiple mobile network operators across the globe can ensure that vehicles stay tracked and data keeps flowing, even when coverage from one network is weak. When vehicle fleets operate across borders, high-end platforms can optimise roaming and automatically manage variable needs, enabling fleets to stay in control of usage and costs - no matter where the vehicles operate.



These requirements must be met across the four segments of fleet management which include the vehicle segment, GNSS segment, back office segment and the network segment. Each comprises complex and potentially complex components, devices, software and carrier relationships.

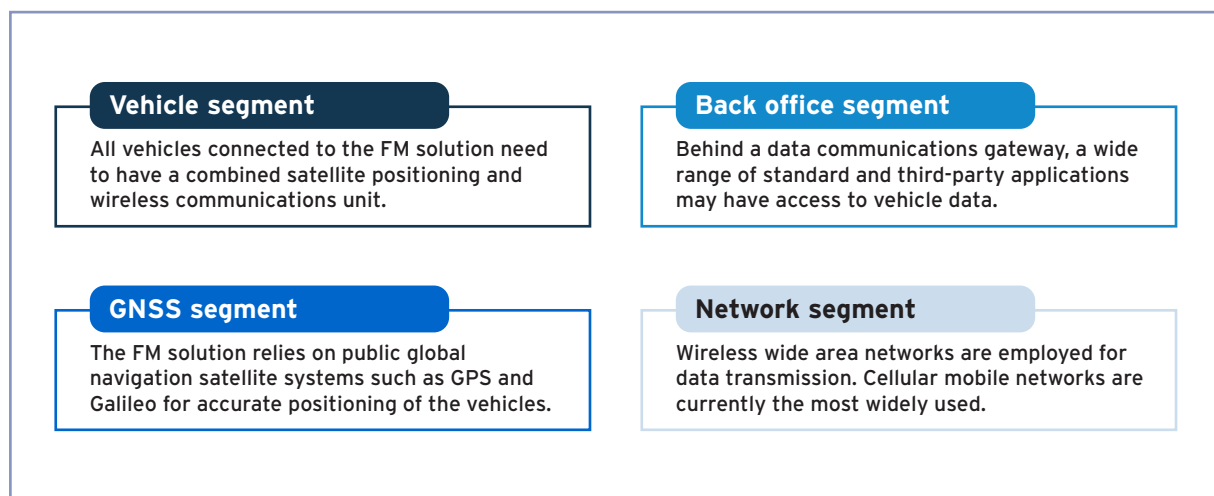


Figure 2:
Berg Insight divides the fleet management infrastructure into four segments



At the application level, fleet management solutions also include numerous feature sets for various types of commercial vehicles. Typical high-level categories include vehicle management, driver management, operations management, and regulatory compliance and reporting. Each category includes different subsets of fleet management functionality, some of which are generally applicable for all types of fleet segments while others are specific for certain operations.

To achieve compliance with commercial driver Hours of Service (HOS) in the US, an electronic logging device (ELD) is attached to a commercial motor vehicle engine to automatically record driving time and HOS records. An ELD can also capture data on the vehicle's engine, movement and miles driven and can communicate this to drivers and dispatchers to ensure real-time driver status information is maintained. This can be used to support planning, regulatory compliance and maintenance.

ELDs typically include vehicle tracking device connected to the truck, a mobile or tablet applications and fleet management software. In Europe there are similar working hours regulations for drivers and fleets utilise a variety of data collection tools to ensure compliance.

This innovative sector sees new sets of features continuously emerge from incumbent solution providers and start-ups alike, which puts increasingly mounting demands on connectivity solutions and associated configurability and customisation capabilities to be able to support the ever-growing range of telematics applications for transport fleets.

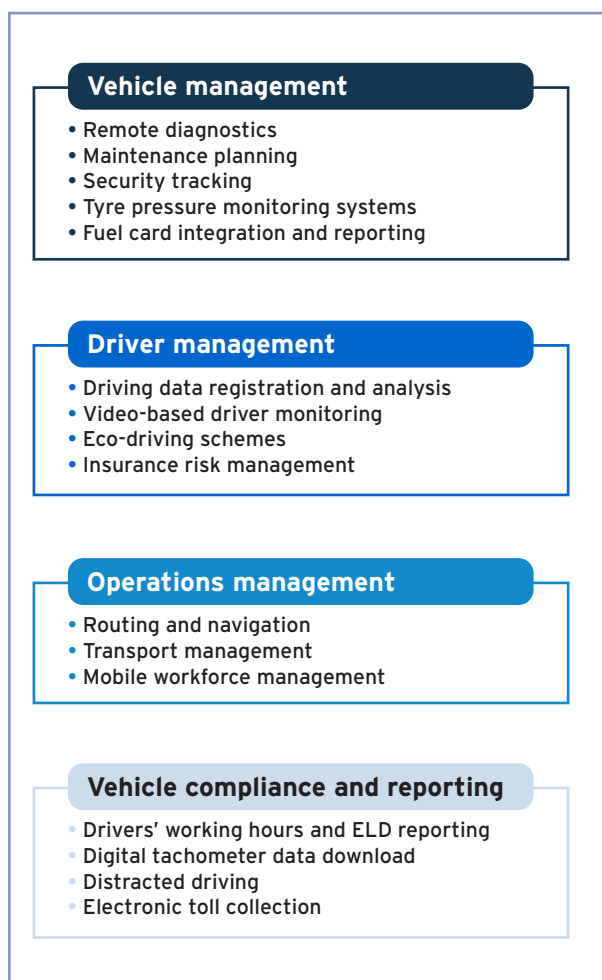


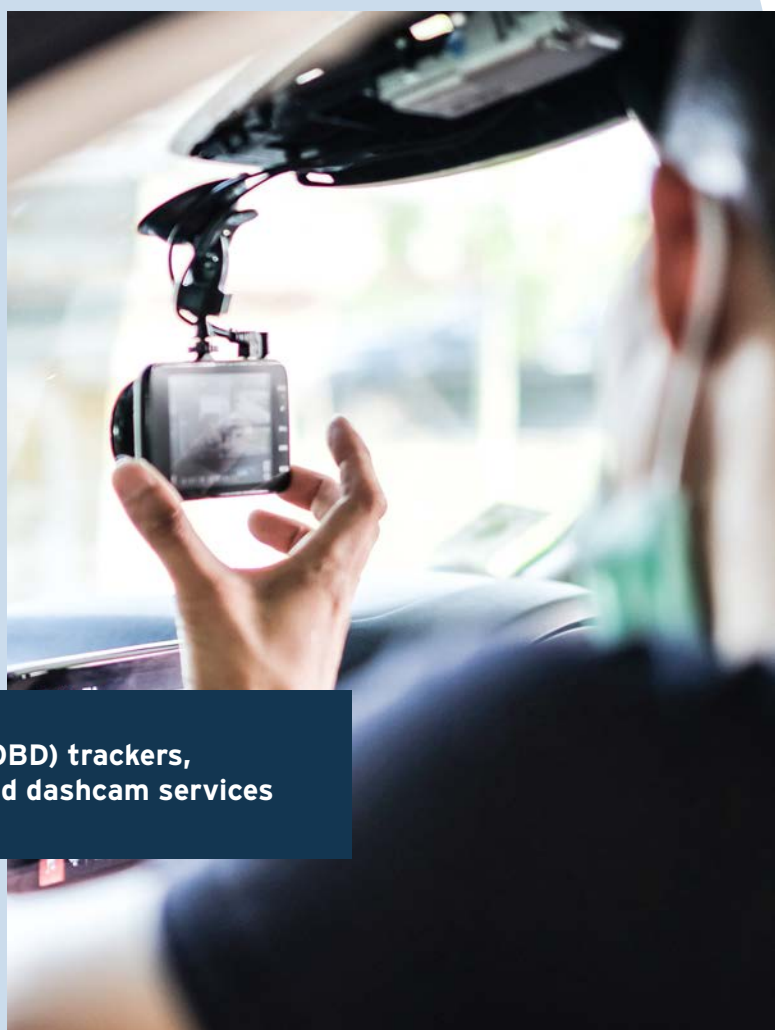
Figure 3:
Fleet management applications can be organised into various subcategories

CASE STUDY

Halt dashcam data leaks

LB Technology provides GPS-based fleet management solutions based in North America, serving governments and private enterprise clients in more than 30 countries worldwide. The company provides on-board diagnostic (OBD) trackers, personal area networks (PANs) in vehicles and dashcam services. Facing a commoditised market, LB Technology was looking to add differentiated solutions but recognised that addition of dashcam solutions could be a successful new area.

Even though there is significant competition in this sector, the growing concerns regarding risks of dashcams recording and transmitting sensitive information are significant. Dashcam data leaks for government clients, such as military bases, where unauthorised recording devices could potentially transmit classified information about location and terrain to hostile entities, pose significant security risks. With no way to ensure their security, dashcams must be covered or disconnected in vehicles while on a base.



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CASE STUDY

Halt dashcam data leaks

LB Technology decided to explore a technological solution to the security challenges to differentiate its offer by delivering secure fleet management solutions. It decided to deploy the new Aeris IoT Watchtower solution, which provides per-device traffic monitoring, detects anomalous traffic patterns and suspicious events, and generates risk assessment reports. Aeris IoT Watchtower integrates seamlessly into the Aeris IoT connectivity platform, is deployed quickly and scales to meet the needs of operations of any size.

"I believe data security begins with vigilance," says Jason Gafa, the president and COO of LB Technology. "That is why we chose the Aeris IoT Watchtower to employ proactive measures that can outsmart emerging and relentless cyber threats and to safeguard our customers' proprietary data."

The Aeris IoT Watchtower Awareness solution has enabled LB Technology to provide its clients with thorough reporting, ensuring that dashcam video is transmitted securely and exclusively to the client's servers.



Challenges and solutions

As detailed in the use case earlier, competing in the marketplace is only one of a far wider set of challenges that fleet management systems need to address. Important challenges to address and their solutions are detailed here:

Interoperability

Fleet management is highly fragmented with embedded vehicles systems needing to interact with aftermarket devices, container and trailer hardware and the systems of ports, factories and other industrial locations. Often, these may utilise different wireless technologies and have compute and data processing capabilities that can constrain overall system performance.

A system that can effectively bridge the gaps between these differences and extract valuable insights from the variety of devices is essential. Fleet organisations should carefully consider how, when and where the solutions they select will interact with other platforms and technologies.

Data integration

With data from disparate sources needing to be gathered and analysed to feed into the overall picture of fleet performance and enable accurate whole fleet management, it's essential that extraction, transmission, processing and action can be taken in a unified way. This involves significant data handling skills and complexity.

Fleet organisations should select a system that can support smooth integration of data across these constraints to ensure that valuable insights are enabled while continuing to protect sensitive data.

Cyber risks

The nature of fleets means that the sector faces substantial security risks. There are opportunities to hack into devices in trailers, trucks and containers and utilisation of wireless networks provides criminals with the means to compromise unsecured data and systems. Only one failure is needed for bad actors to be able to compromise an entire system.

Fleet operators should prioritise adoption of secure fleet management systems as a priority to protect their data, their customers, their workers and their partners.



Challenges and solutions

Driver privacy

Many jurisdictions mandate that drivers' personal data is protected so utilisation of telematics and fleet management data needs to be performed in a compliant and secure way. Driver data is highly valuable, enabler safer working, more efficient operations and helping to facilitate drivers' work. These benefits are at risk if the data cannot be used compliantly.

To maximise driver-related data while complying with driver privacy regulations, fleet operators should prioritise systems that achieve compliance while also enabling data value to be extracted efficiently.

ROI measurement

No system is deployed in a bubble and the costs of roll-out and operation must be offset against results and the value delivered. Traditionally, fleet management has been constrained by the long-life of vehicles and the complexity of tracking moving objects across platforms and networks. Long term contracts have hampered flexibility and limited the potential to adopt new innovations.

Fleet managers should select systems from providers that have long experience in the marketplace and are able to bring new innovations to market securely over the air. In addition, they should avoid providers that build substantial lock-in periods into their contracts. It's vital that upgrades can be added, network connections optimised and security patches made available throughout the life of the deployment and that can involve multiple service providers.



Challenges and solutions

How to start or scale up a fleet telematics project

- 1.** Select an established provider with the technology expertise, network choice and resilience that are foundational requirements for your deployment.

- 2.** Consider adopting fleet management on a software-as-a-service (SaaS) model to boost flexibility and control costs.

- 3.** Prioritise the security capabilities of the provider you choose to ensure compliance with requirements in all the markets you operate in.

- 4.** Ensure the system you choose is compliant with data privacy and protection regulations across all of the jurisdictions you will operate in.

- 5.** If you manage cross-border fleets, look for a provider that offers automatic operator switching to ensure seamless continuation of processes.

How Aeris helps

Aeris provides a cellular connectivity package that uniquely offers advanced security functions for fleet solution providers. The combination of Aeris cellular IoT connectivity services and Aeris IoT Watchtower bring connectivity, device management and security management to reduce business risk and control the cost of communications.

BUSINESS VALUE

Improve Efficiency & Cost

- Simplicity in inventory management
- Prevent downtime
- Reduce costs

Ensure Regulatory Compliance

- Prove compliance
- Support all device types
- Respond faster to events

Reduce Business Risk

- Detect malicious activities
- Minimise downtime
- Remediate faster

AERIS CAPABILITY

Methods

- Adaptive rate plans
- Track data flow per device
- Deep diagnostics

Capabilities

- Auditable risk assessment reports
- Continuous monitoring per device
- Agentless, supports all device types

Features

- Encryption and VPN
- Security monitoring
- AI-driven anomaly and behaviour detection

Conclusion

Evolved fleet management has emerged thanks to a series of innovations in mobile roaming, automation and data processing. While these have radically simplified previously convoluted and complex steps, they have also created complications for fleet operators as advanced systems have created a need for secure, always-available connectivity and secure, uninterrupted flows of data.

Handling the scale, multinational aspects and the sheer volume of data demands flexible, robust solutions that are compliant, secure and flexible to meet fleets' needs. Improving efficiency, saving cost, ensuring compliance and controlling business risk are the fundamental requirements of evolved fleet management systems yet only a few organisations are in position to meet these needs. Therefore assess the capabilities of your partners and suppliers carefully before entering into agreements. By doing so you can ensure maximised flexibility, high network uptime, strong security and minimised risk.



For more than three decades, Aeris has been a trusted cellular IoT leader enabling the biggest IoT programmes and opportunities across automotive, utilities and energy, fleet management and logistics, medical devices and manufacturing. Our IoT technology expertise serves a global ecosystem of 7,000 enterprise customers and 30 mobile network operator partners, and 80 million IoT devices across the world. Aeris powers today's connected smart world with innovative technologies and borderless connectivity that simplify management, enhance security, optimise performance and drive growth. To learn how Aeris IoT Accelerator Platform, Aeris IoT Watchtower and Aeris Mobility Suite can secure and supercharge your critical IoT programmes, visit aeris.com and follow us on LinkedIn.