HOW AI IS AN ASSET TO FLEET TRACKING & LOGISTICS

Whitepaper

KEY VERTICAL MARKETS

JUNIPER RESEARCH

1.1 Introduction

Fleet vehicles are the driving force behind commerce and public mobility. Fleet managers have the important role of organising and overseeing vehicles for performance, maintenance, and tracking purposes. Telematics solutions collect, store, and analyse data that can be sent to fleet managers. This data helps fleet owners and managers evaluate vehicle maintenance, driver operation, and cargo management. IoT is transforming fleet management with the ability to connect vehicles and capture a wide range of data about vehicle performance, route, passengers, and cargo.

Juniper Research defines fleet tracking as:

'Fleet tracking is encompassed of organising and overseeing vehicles for performance, maintenance, and tracking purposes. Telematics solutions collect, store, and analyse data that can be sent to fleet managers.'

1.1.1 Fleet Tracking & Artificial Intelligence

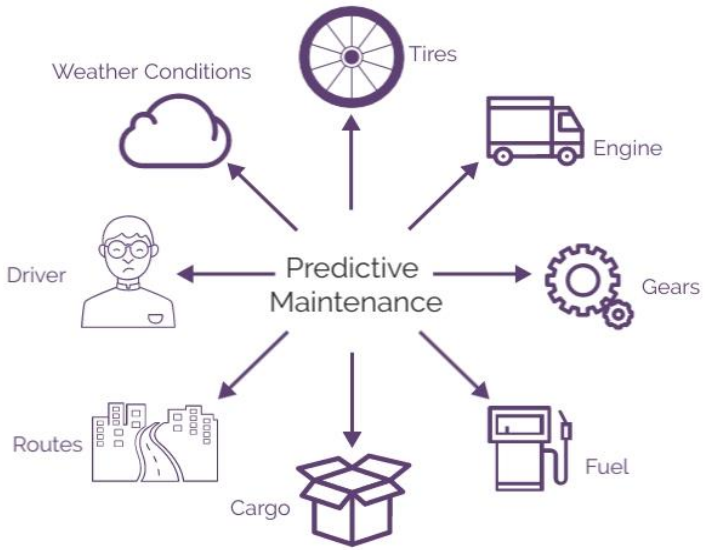
One of the fastest-emerging AI technologies is computer vision, and this is being integrated into AI-enabled dash cams. Computer vision allows computers to see and analyse objects in the same way humans do; being able to detect if an object is moving towards or away, if it is in a vehicle's direct path, and whether it will cause a collision to occur.

AI relies on data to learn about operations and provide insights and predictions. Fleet management systems capture a large volume of data from a wide range of data points which can be pulled into an AI processor. This data can include runtime data, maintenance data, fuel usage data and idle times and location data. AI has the ability to automatically transform Big Data into digestible reports, visual dashboards and actionable insights that help businesses make decisions.

1.1.2 Artificial Intelligence & Predictive Maintenance

Predictive maintenance is a key aspect of AI and is done by analysing data collected from sensors on vehicles and weather and traffic data. AI is able to use this data to identify patterns which may help indicate a problem with a vehicle before it becomes a significant issue. AI is able to learn from millions of datapoints about parts, such as the age of components, and how many hours it runs a day, whilst also taking into consideration weather and road surfaces which could have an impact on wear and tear.

Figure 1: Visualisation of Predictive Maintenance



Source: Juniper Research

i. Driver Behaviour

AI is able to detect a variety of risky road behaviours that can lead to distracted or drowsy driving, which in turn can potentially lead to accidents. Some of these behaviours include yawning, constant blinking, missing turns and exits, drivers drifting out of their lane, slower reaction time and picking up a mobile phone.

AI is able to detect these actions and report them to the managers in real-time; allowing them to take corrective measures.

ii. Fleet Integration

An AI system is able to simplify processes by integrating every department onto a single platform and feeding the information simultaneously. Managers will be able to save time and costs on planning, maintenance and monitoring operations due to all the data on those operations being fully accessible. Ensuring that all personnel across different departments have access to the data needed for them to make informed decisions leads to a more cohesive fleet, with every department automatically working in sync with others.

iii. Recruitment Process

AI also has the ability to use data generated from monitoring drivers to recommend the most qualified drivers that suit the needs of the company, from a pool of applications, which can reduce the strain on recruiters.

iv. Intelligent Freight Matching

Artificial intelligence can optimise the freight loads that are picked and delivered, reducing fleet expenses and increasing fuel efficiency. AI is able to provide managers with a better understanding of what current capacity looks like and how it changes over time; allowing fleets to make smarter decisions about which jobs should be assigned to specific vehicles to minimise empty miles and maximise vehicle utilisation. AI technology in transportation management systems uses machine learning models to predict customer demand to match available transport capacity and join some of the deliveries.

1.1.3 Machine Learning

Machine learning is a branch of AI which focuses on the use of data and algorithms to imitate the way humans learn, gradually being able to improve its accuracy. Machine learning technology allows fleets to learn from the data that is being collected over time and make adjustments based on that historical data. Resulting in smart systems in which AI can learn decision-making capabilities that enable more efficient and effective handling of situations. Machine learning can be used in all aspects of fleet management, streamlining processes and making them simpler.

i. Analytics

Machine learning is able to consider historical traffic data, job information and GPS location to create the most cost-effective route to complete the necessary actions for the day. Analytics also provide the ability to track vehicle status, maintenance history, and other details that help maintain vehicles' working order.

ii. Efficiency

Machine learning has the ability to bring in data to analyse technician skills and proficiencies and assign automatically jobs that are best suited for specific individuals and vehicles.

Juniper Research recommends that vendors explore the use of machine learning and the benefits it provides to its users as it continues to evolve. These benefits will be key factors which users will focus on in order to have the most effective fleet.

1.2 Key Drivers for AI in Tracking

1.2.1 Government Regulations

Governments over the globe are introducing regulations and legislations which have an impact on fleets, ranging from regulations regarding the environment and sustainability, to driver safety. It is important for fleet service vendors to stay up to date on these regulations and implement technology which simplifies it for fleet managers.

i. ELD Mandate

The ELD (Electronic Logging Device) mandate was introduced by the Federal Motor Carrier Safety Administration in 2017 in America, that requires commercial vehicles operators to record their hours of service electronically, this was with the aim of replacing paper logging and to reduce instances of dangerous driving caused by fatigue in drivers.

ii. EU Mandatory Tachograph

It is now mandatory for newly registered HGVs in the EU to be fitted with smart tachographs. These devices record a driver's working hours, as well as any breaks or rest periods taken. Tachographs also measure vehicle speed and distance travelled; giving managers an indication on the drivers' performance.

iii. Minimisations of CO_2 Emissions

Steps have been taken by the EPA (Environmental Protection Agency) and the NHTSA (National Highway Traffic Safety Administration) in the US to issue greenhouse gas emissions and fuel economy standards for heavy good vehicles. Therefore, Juniper Research recommends that it is important for fleet managers to be able to track statistics surrounding emissions, for example fuel consumption, to be able to limit their emissions as much as possible, in order to achieve reduction targets set out by these agencies.

1.2.2 Safety

Safety is a major aspect of fleet tracking & logistic: not only do enterprises want to keep their assets safe in order to minimise theft and profit loss, but also it is vital to keep drivers safe. Fleet tracking & logistics systems are increasingly being able to achieve this safety by implementing AI into their cameras.

i. Driver Safety

A major challenge for fleet companies or any fleet manager is keeping drivers safe. Ensuring safe driver behaviour is challenging when fleet managers are miles away from the moving vehicle. Fleet managers can use helpful tools, for example dash cams and vehicle tracking systems, to bring real-time visibility and provide evidence or materials to implement driver training.

Driver shortages are a growing issue within the industry, with retention rates being low. Fleet managers need to focus on stabilising and increasing driver retention in order to increase the productivity of their fleets and reduce costs. This can be achieved through fleet management programmes. Advancing technologies within fleet management programmes give fleet managers the ability to track driver performance. For example, they can monitor speeding, harsh acceleration, over-revving and engine idling by using GPS data, fuel consumption and AI dashcams. AI dashcams also give the user the ability to be proactive in driving training and one-on-one coaching.

Juniper Research recommends focusing on the driver safety aspect of fleet management services, especially the uses of AI dashcams, as this will be important for vendors. Drivers are a highly important aspect of a fleet. The AI can detect drivers using their phones, yawning, or losing focus: behaviours which can be dangerous and lead to accidents; have a negative impact on the driver but also damaging a fleet's productivity and reputation.

ii. Asset Safety

Assets can range from large pieces of machinery to small medical equipment. All of these need to be stored in optimum conditions, whether that be in large containers or at an ideal temperature, in order for the asset to be delivered in its best possible condition without being lost, broken or stolen, and therefore minimise profit loss.

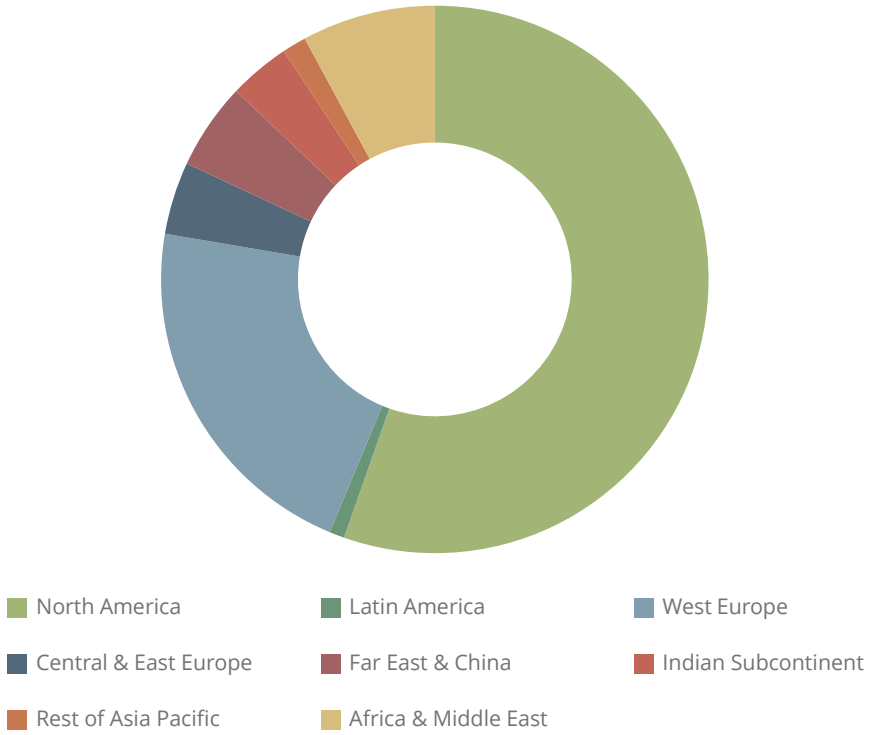
Asset and cargo theft is highly common across all freight transportation methods. There are often considerable costs, as the shipping company pays insurance fees and deal with any issues that may arise with customers. Asset-tracking devices send location updates at regular intervals, and the sensors on board the device are able to detect tampering or any changes in the condition of the cargo.

Juniper Research recommends vendors put emphasis onto asset-tracking software in order to offer logistics managers a better way to gather, analyse and apply equipment information in order to enhance efficiency and productivity.

1.3 Market Summary: Global Spend on Asset Tracking

Global spend on asset tracking by enterprises will increase from $16 billion in 2022 to $45 billion in 2027 – a substantial growth of 184%. The management and security of high-value assets is becoming of increasingly significant importance for many stakeholders and demand for technologies that provide real-time monitoring within the supply chain are ever more demanded.

Figure 2: Global Annual Spend on Asset Tracking in 2027: $34.9 Billion



Source: Juniper Research

- Asset tracking in this context refers to systems that leverage wireless connectivity to remotely monitor assets' locations, based on real-time data with the aim of better managing asset condition.
- The growing availability and affordability of asset tracking solutions will drive adoption of managed services amongst the largest enterprises that operate their own supply chains for high-value assets. The most sought-after solutions will be those which can demonstrate a return on investment by minimising theft and loss of assets during transit.
- The number of assets tracked will reach 24 billion by 2027; increasing from only 8 billion in 2022. Asset tracking providers must include real-time monitoring solutions that can leverage multiple technologies, including 4G, 5G and GPS. Whilst widely used today, GPS is a cost-effective technology, however the comprehensive network capabilities of 4G and 5G must be implemented to monitor assets with the highest values.
- This increasing reliance on 5G will present significant opportunities for hardware vendors over the next five years. The growing demand for 'always connected' supply chain solutions will drive the interest in 5G-enabled asset tracking hardware. In turn, supply chain hardware vendors must focus development on sensors that leverage the data-intensive nature of 5G to provide features, such as real-time anti-tampering notifications.

Order the Full Research

In this invaluable new report, discover extensive forecasts covering different segments and thorough evaluation of the fleet tracking & logistics market. Featuring the adoption of tracking systems within both developing and established markets, the research reveals the role of 23 leading fleet and asset tracking vendors across this developing sector, in addition to detailed coverage of market dynamics, challenges and the future outlook.

Key Features

- **Market Dynamics:** Strategic analysis of the major drivers, challenges, and innovations shaping the adoption and development of fleet tracking & logistics technologies, including the following:
    - Technological innovations that are enhancing the value of fleet tracking & logistics.
    - Future strategic direction and market outlook for fleet tracking & logistics.
    - Key issues fleet tracking & logistics vendors must be aware of surrounding data-heavy fleet tracking software and security.
- **Juniper Research Competitor Leaderboard:** Key player capability and capacity assessment for 23 fleet and asset tracking vendors including:
    - AT&T Business
    - Intel
    - Lytx
    - Nextraq
    - Telefónica
    - Vodafone
- **Benchmark Industry Forecasts:** Forecasts for fleet tracking & logistics, including total number of commercial vehicles using fleet tracking, total annual spend on fleet tracking hardware and software, total number of assets tracked, total annual spend on asset tracking hardware and software, split by small, medium and large businesses. This includes sizing for markets up to 2027; split by our 8 key regions and by 60 countries.

What's in this Research?

1. **Market Trends & Opportunities:** Detailed analysis and strategic recommendations for both the fleet tracking and asset tracking market, looking into trends for various freight transportation methods and opportunities that will arise from emerging technologies.
2. **Strategic Analysis:** Assessment of future prospects and developments of fleet tracking & logistics; focusing on key trends and market challenges. The report also includes an evaluation of 23 fleet and asset-tracking vendors via a Juniper Research Competitor Leaderboard.
3. **Interactive Forecast Excel:** Highly granular dataset comprising over 47,880 datapoints; allied to regional and sector analysis tools. Includes regional and key country-level analysis, together with five-year forecasts for fleet tracking & logistics, including the following segments:
    a. Fleet tracking
    b. Asset tracking
4. **harvest Digital Markets Intelligence Centre:** Visualises all the data in easy to use and exportable graphs, tables and charts, and features continuous data updates for 12 months.

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