# webfleet

# The technologies changing construction

How digitisation and automation are changing the industry and how your business can benefit

# Introduction

The construction industry has not always been the fastest moving sector when it comes to embracing technological change. For example, while the manufacturing industry has seen a 3.6% year-on-year growth in automation over the last decade, construction has shown a mere 1% growth.[1]

Yet it is also clear that an increasing number of companies want to add more automation and digitisation to their processes.

In fact, 74% of construction companies say they plan to adopt a new technology in the coming year, with security, safety and productivity cited as their main reasons for doing so. And 40% of construction companies say they believe they should be more technologically sophisticated than they currently are.

At the same time, common concerns are regularly cited about adopting new technology. In particular, cost, training, liability, site security and data security are all major factors that make many construction companies slow to adopt to new technology that could bring value to their businesses.

So what should you do? Do you adopt quickly to new innovations, investing time and money and taking on the potential risks? Or do you wait for other companies to adopt first so you can see how it works for them, which could mean being left behind by the competition?
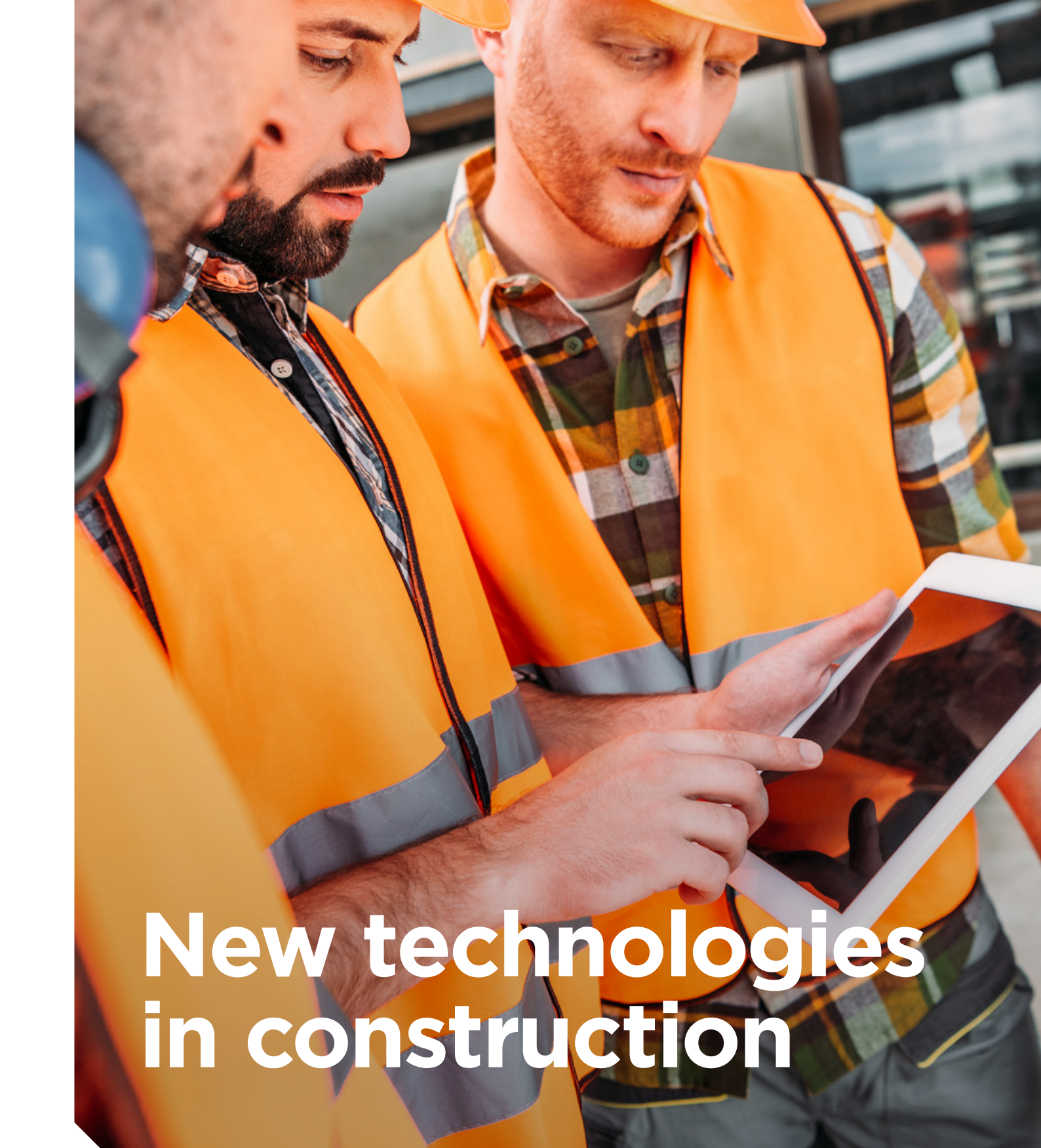
What's needed is intelligent adoption.

This eBook looks at the increased prevalence of digitisation and automation in construction.

It takes a look at some of the main technologies that are changing how construction companies work and how those who have adopted them are benefiting.

It also offers actionable advice on the key barriers to adoption and what you should expect from a new technology provider to ensure you're reaping the rewards while avoiding the risks.

[1] The benefits of AI in construction – Constructible (2019)

**webfleet**

# New technologies in construction

**webfleet**

# 1

# Machine learning and artificial intelligence

## What is it?

Broadly speaking, when a machine imitates human behaviour or performs tasks that normally require human intelligence, that's artificial intelligence (AI). When a machine modifies its behaviour based on exposure to more data and experiences, that's machine learning.

webfleet

# How is it being used in construction?

Machine learning and AI can take over repetitive duties making construction sites more productive.  They can also process some information faster than humans can, which can improve safety and make project planning more efficient.

## EFFICIENCY AND COST

Project planning solutions can use AI to quickly take various factors, including budget, environmental concerns, mechanical systems and more, into consideration. This reduces the time needed to plan effectively, without decreasing quality and accuracy.

It can also track and evaluate job progress more efficiently, instantly re-assigning workers and equipment from one job-site to another as the schedule and progress demands. This can be a powerful aid for project managers looking to ensure their projects come in on budget and on time.

## NEW WORKING PROCESSES

Many construction companies are now using AI and robotics to build parts of a building off-site before bringing them to the site where the human workforce completes the more detailed work and pieces together the components.

**Let's drive business. Further.**

webfleet

## SAFETY

AI is a powerful tool in increasing workplace safety. For example, the VINNIE (Very Intelligent Neural Network for Insight and Evaluation) AI engine acts as a virtual safety manager. Using predictive analytics, it scans through massive amounts of historical data and incident reports to identify hazards based on that. VINNIE sorted through 1,080 images detecting 446 with hazards in less than 10 minutes while the human team found 414 in 4.5 hours.[2]

[2] Machine learning and construction safety – Smartvid (2018)
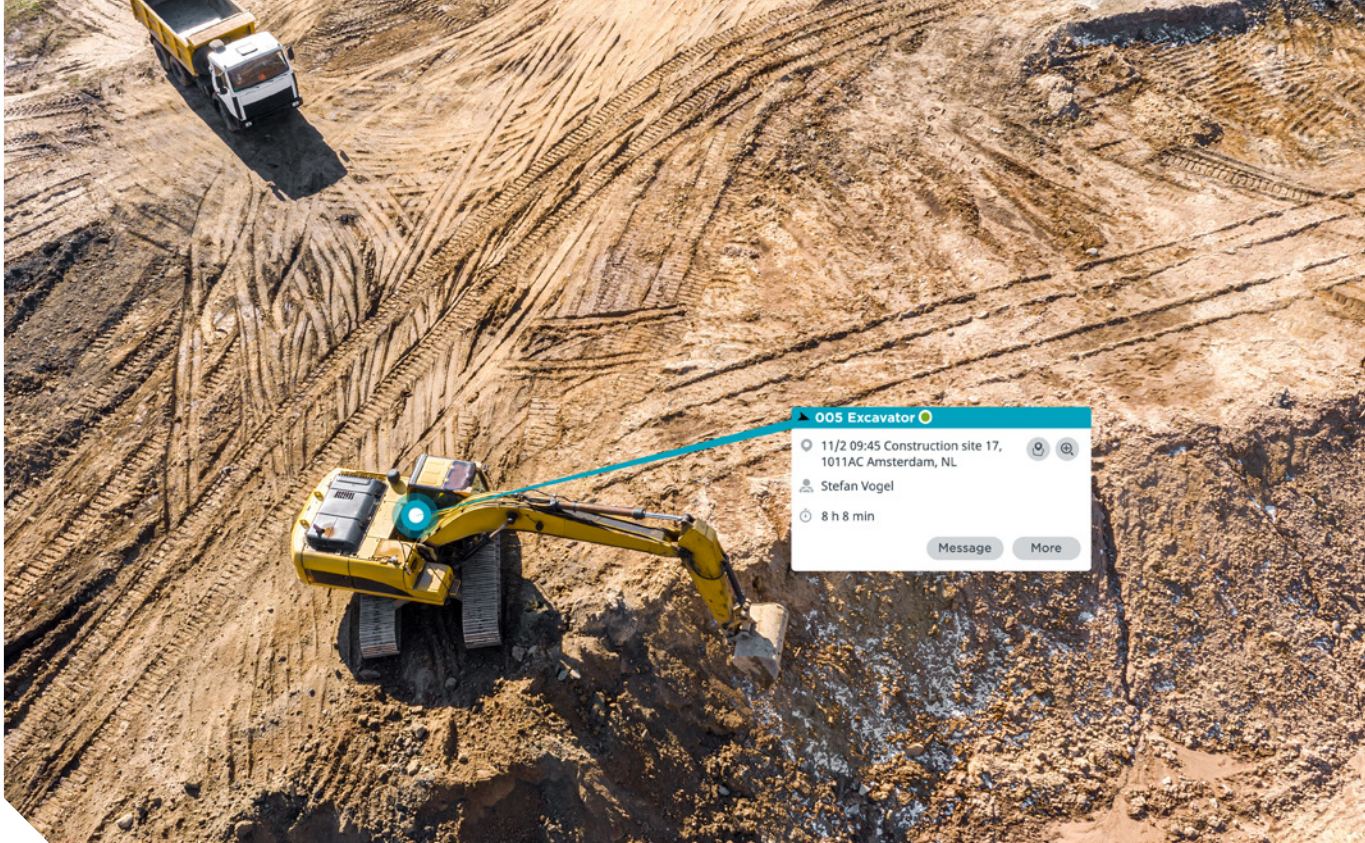
## PRODUCTIVITY

By automating more site work, the human workers on a site can concentrate on other duties, increasing productivity. For example, the San Francisco start-up Built Robotics uses AI technology to enable machines such as dozers and excavators to operate totally autonomously.

**Built Robotics uses AI technology to enable machines such as dozers and excavators to operate totally autonomously**

**ꟿ webfleet**

005 Excavator
11/2 09:45 Construction site 17,
1011AC Amsterdam, NL
Stefan Vogel
8 h 8 min
Message    More

# 2

# Telematics, vehicle data and connected vehicle technology

## What is it?

Vehicle telematics uses a combination of GPS and on-board diagnostics to track, record and map the movement of vehicles like bulldozers, dump trucks and caterpillars and powered assets like generators. It also collects key data on their usage, performance and health.

**webfleet**

005 Excavator
11/2 09:45 Construction site 17, 1011AC Amsterdam, NL
Stefan Vogel
8 h 8 min
Message   More

# How is it being used in construction?

More and more construction companies now understand the benefits that can be gained by taking control of their data. And vehicles, powered assets and machinery are all valuable data sources.

Construction companies are using telematics solutions like Webfleet to make their data meaningful, putting it to use in the planning, management and assessing of construction projects to increase efficiency, tighten security and reduce the time they spend on administration. With access to real-time data from their machinery, vehicles and equipment they can then plan operations and maintenance more effectively and better understand how these assets are being used.

## LOCATION TRACKING

Knowing the location of vehicles, assets and staff, construction companies can manage resources and plan their work better.

### HOW WE DO IT

Webfleet offers real-time tracking of your assets' and fleet's position and usage. You know precisely when, where and how your fleet is being utilised and how much time is being spent behind the wheel by different members of your workforce. This translates to more accurate ETAs and more efficient use of your valuable assets. By tracking assets like generators and compressors, you always know which machine is being used and where, making scheduling their next job easier.

webfleet

## REDUCED REPAIR COSTS AND LESS DOWNTIME

Many construction companies are using data to monitor the health of their connected vehicles and assets. They can see early when an issue might be developing that could lead to repairs and downtime and act fast to stop it becoming a costlier problem.

## PRODUCTIVITY

Data on how vehicles are being driven and powered assets are being operated gives site and project managers clear visibility of one of the most important elements of their operation. This allows them to identify inefficiencies and react quickly to make changes that will drive up productivity.

### HOW WE DO IT

Webfleet lets you schedule and manage maintenance tasks to keep your fleet and powered assets in good condition and repair costs under control. You can setup notifications based on engine hours, helping you reduce downtime for your powered assets. You can also setup notifications based on  odometer, operating time or time since the last maintenance. If there's signs of a malfunction or an accident has occurred, you get an automatic notification right away. This allows you to take action quickly.

### HOW WE DO IT

Webfleet offers professional navigation. Via a complex network of live traffic data and advanced algorithms it helps your workers avoid congestion as they drive between sites and locations, cutting down on travel times. Also, data on driving behaviour helps you identify if costs are being unnecessarily inflated by inefficient driving. The more visibility and insight you have over your equipment and vehicle inventory, the better you can run and scope your projects, streamlining your project delivery.

**Let's drive business. Further.**

webfleet

▲ 005 Excavator ◉
◎ 11/2 09:45 Construction site 17,
1011AC Amsterdam, NL
👤 Stefan Vogel
🕐 8 h 8 min
[Message] [More]

## SECURITY

Construction sites remain targets for criminals and vandals. Telematics and connectivity are being used by construction companies as another layer of security, as they offer visibility of where your valuable vehicles and assets are at all times.

### HOW WE DO IT

Webfleet alerts you right away if and when a vehicle or asset leaves a defined area of your choosing. So, it's easy to locate them and to react fast if they are not where they should be.

## WORKFORCE MANAGEMENT

Many site managers use telematics systems to automate the recording of who is driving which vehicle, trip registration and working time.

### HOW WE DO IT

With Webfleet, your workers scan an RFID card on the PRO Driver Terminal and their working time data is recorded digitally in the system. It is then archived, so you can easily access and analyse it. This allows you to identify which employee is driving which vehicle and how much time they are spending on the road, on the site and with customers.

"
## Webfleet alerts you right away if and when a vehicle or asset leaves a defined area of your choosing

**Let's drive business. Further.**

⚡ webfleet

# 3

# Virtual reality and augmented reality

## What is it?

Augmented Reality adds digital elements to a live view of the real world on a camera. Virtual Reality uses a device to completely immerse the user in a virtual world experience that does not include elements of the real world around them.

webfleet

# How is it being used in construction?

VR and AR are both being used by construction companies to visualise building stages before construction begins. They are also increasingly part of the training process at many companies, as they give a 'hands-on' experience of operating heavy machinery without risk.

## MORE EFFECTIVE SHOWCASING

VR and AR are both being used in the early stages of construction projects, as a way to give clients and potential clients a full tour of the eventual building in a way that will be more immersive and tangible than any drawing or presentation.

## BETTER PLANNING AND CO-ORDINATION

Microsoft's HoloLens AR headset gives users hands-free blueprints, overlaying 3D models to real world sites. Similarly, AEC firm IRIS VR have developed VR software and hardware that streamlines the co-ordination process with pre-built spaces and multiple scenarios for evaluation.

## SAFETY

Both of the firms mentioned above also allow virtual training environments to be created, increasing safety.

**Let's drive business. Further.**

webfleet

4

# Drone technology

## What is it?

Also known as unmanned aerial vehicles (UAVs), drones are robots that can be flown either by remote control or following flight plans

webfleet

# How is it being used in construction?

While once they were mainly used for overhead photography and mapping, drones are now a key part of the working process for many construction companies, with a host of uses and benefits.



## TIME EFFICIENCY

Airworks, an American startup, uses drones and AI software to automate the process of surveying, saving weeks of time. Site managers can also use a drone to surveill sites in real-time without actually being present at the location, saving travel time and cost.



## SITE SECURITY

Some construction companies now use drones as a key part of their site security. Backed up with software that can tag suspicious activity, they fly through the construction site and alert the site manager when they detect a potential issue.



## SAFETY

Drones are now regularly used to handle tasks in dangerous areas and inspect areas of the site that would be difficult to reach otherwise.

**Let's drive business. Further.**

webfleet

## WINNING CLIENTS

Drone photography and surveying can be helpful in presenting potential clients with more impressive proposals.

## EVIDENCE AGAINST CLAIMS

If a construction company finds itself involved in litigation regarding a job, having regularly updated drone footage from the site can be vital in proving how work was carried out.

**"**

**Having regularly updated drone footage from the site can be vital in proving how work was carried out**

**ɯ webfleet**

# Adopting new digital and automated technologies

webfleet

As mentioned at the beginning of this eBook, cost, training, liability and data security are all clear concerns when it comes to new technology and construction.

This section looks at these concerns and how technology providers can support construction companies to adopt new technology safely.

# Safety and liability

For obvious reasons, construction companies put safety first. As well as the risk to people's well-being if new technology is used incorrectly, there may also be new liability risks. One error in a work order could cost thousands.

Any new technology that is being introduced must, therefore, be done only after all the members of your workforce who will be using it have been comprehensively trained to do so.

## HOW TECHNOLOGY PROVIDERS SHOULD SUPPORT YOU

Your technology provider should offer comprehensive training in not only how to use their product or solution safely but also how to use it effectively.

At Webfleet, our comprehensive on-boarding process ensures all the relevant members of your team understand how to operate the software and hardware we provide. Also, on-going customer training supports you to get the full benefit from all of your solution's functionality and features.

webfleet
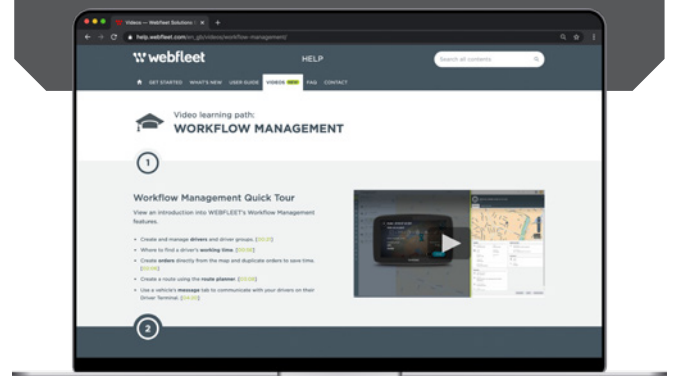
# Data security

The protection of company, employee and customer data is critical to any operation. Data loss can result in fines, damage your reputation and see you lose contracts or jobs.

Therefore, the data security of any application you adopt is of critical importance and it's wise for construction companies to be very careful regarding the data security of any new technology they add to their workflow.

## HOW TECHNOLOGY PROVIDERS SHOULD SUPPORT YOU

Any new provider you approach should be able to tell you precisely how they will protect your data and what legal standards they meet for data protection.

At Webfleet, we're committed to the security and privacy of your information. Our solutions are ISO/IEC 27001:2013 Certified. That means we meet the highest possible standards for data security in Europe.

ISO/IEC 27001 comes with built-in risk management that keeps up to date with the evolving risks of cybercrime. So, while the ways criminals may target your data can change, this standard changes too to keep preventing new threats as well as protecting you against the existing ones.

webfleet

# Budget

Between R&D, equipment, vehicles, labour and the various other costs that companies need to manage, construction is an expensive business. Adding the costs of adopting new technology to the mix - whether it be the investment required in new hardware, the price of a service subscription or the cost of training – therefore is something companies naturally hesitate before doing.

## HOW TECHNOLOGY PROVIDERS SHOULD SUPPORT YOU

Your technology provider should clearly outline how your solution is going to deliver return on investment and when.

Webfleet customers, on average, get a return on investment within 6 to 9 months of adopting our Webfleet solution.

**On average, Webfleet customers get a return on investment within 6 to 9 months**

**webfleet**

# Compatibility with legacy systems

Another key concern when it comes to adding a new technology to your construction company is the question of whether it will work alongside existing, trusted systems.

Regardless of how powerful a new digital solution or piece of hardware might be, if it disrupts the functionality of the technology you already use and benefit from, then it might be more trouble than it's worth.

## HOW TECHNOLOGY PROVIDERS SHOULD SUPPORT YOU

With multiple APIs, you can connect Webfleet with hundreds of third-party solutions as well as integrate it with your existing back-end systems. The information captured in the field can also be used in your productivity applications under one integrated platform, enabling you to make better decisions, faster.

webfleet

Though some construction companies may have been slow to adapt to new technologies in the past, the benefits are clear.

At Webfleet, we help construction companies to digitise and automate more of their working processes, while giving insight and visibility into their usage of vehicles and assets. Our fleet management software supports you to increase efficiency, tighten security and reduce time spent on administration.

## Want to find out more?

Book some time to chat with one of our construction experts **here**.

**ꟺ webfleet**

**BRIDGESTONE**

*Solutions for your journey*