SAMSUNG

White Paper:

# Beyond ELD: The Future of Fleet Management


## For logistics companies, complying with the electronic logging device (ELD) mandate presents an opportunity to leverage in-cab technology into a broader fleet management initiative.

Many fleets are opting for smartphones and tablets as part of their compliance strategy but are finding that they can do so much more with powerful devices in the cab. Mobile devices connect drivers, managers, customers and vehicles in a way that leverages their capabilities to deliver efficiency improvements in the short term while positioning fleets to adapt to disruptive technology on the horizon.

The Federal Motor Carrier Safety Administration (FMCSA) estimates that some 500,000 U.S. trucking firms will have to comply with the mandate,[1] which affects more than 3 million truck drivers in the U.S.[2] For trucking fleets large and small, meeting the ELD mandate is simply table stakes. For those fleets and operators that desire to do the bare minimum for compliance, there are basic options available. But opting for minimal compliance means operators will miss out on the long-term benefits of preparing their fleet for the future.

**This white paper will discuss the ELD mandate and what it means for truck fleets. It will also detail opportunities that fleets have in looking beyond mere compliance to embrace the benefits that technology can deliver, and provide a roadmap for adapting to the future of fleet management.**

# Electronic Logging Device Basics

## The ELD mandate is the starting point for a new world of fleet telematics functions that will revolutionize the trucking industry.

Under the FMCSA's final ELD rule, commercial trucks in long-haul service must electronically record a driver's Record of Duty Status (RODS) on a device connected to the vehicle's engine. Fleets have until December 2017 to implement certified ELDs to record Hours of Service. However, fleets already equipped with previously approved electronic logging technology have until December 2019 to comply with the specifications. Many operators and fleets have already adopted an earlier technology, the automatic on-board recording device to reduce drivers' paperwork burdens. These devices will still meet the standard covered in the FMCSA's rule because they automatically record a driver's duty status and any changes in status, as well as the amount of time they operate the vehicle.

### To be compliant under the new mandate, devices must meet basic requirements:

1. Track a driver's HOS electronically
2. Be integrally synchronized with a truck's engine to capture driving segments
3. Transmit data to a system for monitoring e-logs on a near real-time basis

In addition to basic RODS compliance, a robust ELD solution can perform many other functions, including Driver Vehicle Inspection Reports (DVIR) and International Fuel Tax Agreement (IFTA) administration, as well as driver and vehicle performance monitoring.

For DVIR and IFTA, a mobile device can automate what had been paper processes and reduce the risk of non-compliance. Electronic versions stored in the cloud guarantee that paper records won't be lost. Also, many solutions integrate map and routing capabilities for efficient navigation through traffic and detours.

In recognition of the financial investment required, the FMCSA regulations permit smartphones and tablets to be used as ELDs, as long as they meet the specifications. By using certified consumer-grade mobile devices, fleets can offer drivers an easy-to-use platform that supports a wide range of functionality and will support ongoing technological developments that will reshape the industry in the near future.

In the longer term, trucking companies will be able to take advantage of data analytics from mobile devices within the vehicle as a competitive differentiator. Fleets can offer more information to customers and use data internally to drive improvements in driver safety and operations. Improving fleet utilization could also address the driver shortage that has plagued the industry by improving the productivity of each driver. With a broader fleet management strategy, fleets will have the opportunity to not only implement ELD but also use the technology to adopt fleet management practices, produce efficiency gains, improve driver relations and prepare the company for the future of the industry. The telematics and fleet management systems of today will lay the foundation for the next evolution of the industry.

# Mastering Fleet Telematics

## Forward-thinking fleet managers recognize that the ELD is only an entry point into a new world of fleet telematics.

By going beyond the ELD mandate, fleet managers have the opportunity to turn trucks into computers on wheels, wirelessly connected to networks to send data to and from the vehicle. As wireless service improves, technology prices continue to fall, and fleet operators see the value in data. More vehicles and equipment, down to the pallet and SKU level, will be connected devices on the Industrial Internet of Things.

In fact, a Princeton Consultants survey, "Digital Disruption in Freight Transportation,"[3] named analytics as a top disrupter that will bring unprecedented change to the industry. In the survey, 84 percent of respondents agreed that IoT will have a moderate or large impact, and 85 percent said the same for big data, or the collection and analysis of external information.

With a smartphone or tablet serving as the driver interface, fleets will generate a flood of data that companies can use to drive strategic and tactical decision-making. Strategic analytics guides companies in making investments and policy changes for mid- and long-term improvements in efficiency, risk reduction and profitable growth, while tactical analytics gives a company insight to optimize daily decisions across the supply chain.

# Benefits of Fleet Optimization

## With drivers, trucks and trailers linked by sensors feeding data to fleet managers and drivers, mobile devices are the smart hub for the smart truck.

Information to manage the fleet better — down to the individual truck level — is at everyone's fingertips. Managers can make decisions based on availability of assets that include a driver's working hours as well as truck and load locations.

In addition to a full set of fleet management and telematics solutions, drivers can use sensors that can track truck movements, inventories, temperatures and performance, all in real time, integrated with cloud capabilities and an IoT management platform. These solutions are designed to provide real-time information to the driver as well as the fleet owner. For example, sensors in trailers can help alert both the driver and the fleet owner to temperature changes, avoiding damage to perishable items.

Private truck fleets, such as merchandising trucks for food and beverage manufacturers, construction vehicles, municipal service vehicles, retail fulfillment and many others can also benefit from connected trucks. Fleet telematics and IoT connectivity can boost asset utilization and customer satisfaction through improved service, as fleet management and other workflows can converge in a single device.

### Wearables for Task Management:

Wearables, such as smartwatches, are another fleet technology play that's ripe for wide adoption. Paired with an in-vehicle tablet or smartphone, wearables can deliver prioritized work tasks through a simple interface for any employee whose primary job responsibilities require hands-free access to data. Hipaax, a Samsung Enterprise Alliance partner, offers TaskWatch, a platform for smartwatches that delivers hands-free access to data for logistics and transportation use. Receiving notifications via wearables accelerates employee response time and improves communication among employees and managers. Delivery drivers who make frequent stops can send and receive messages while they're out of the truck, managers can receive and deliver real-time insight into the location of loads, and drivers can also provide information on load delivery, load pick-up and any in-transit problems.


## Samsung's ARTIK Cloud

ARTIK Cloud is an open data exchange platform for the Internet of Things (IoT). Enabling solution providers and enterprises to quickly connect devices to the cloud, and collect, store and aggregate data, ARTIK provides a fast, easy and secure platform for effective IoT deployments. Learn more at artik.io.

## Improving Driver Wellness:

Wearables can also play a role in driver health and performance, with the ability to monitor driver sleep habits, improve safety and provide tools for workouts.

Skimble created Active Trucker workouts for its Workout Trainer App available for phones and tablets. Paired with a Samsung Gear S3 or Gear Fit wearables, the workouts sync with the phone or tablet. The display on the Samsung wearable shows useful prompts during workouts, like the current exercise name, timing and repetition cues at-a-glance, as well as handy exercise tips.

The exercises are designed to reflect the daily reality of life on the road to help promote truck driver wellness. The workouts are even demonstrated by a truck driver at a trucking facility or at a truck stop.

According to Skimble, one group of drivers lost an average of 8 pounds using the workouts.

The tablets and phones can be used in the cab to record driver hours of service, navigation, fleet communication and many other tasks. During the drivers' off-duty time, the same tablet they use for their workouts can also be employed for personal use.

In addition, here are some other benefits mobile technology and the IoT can offer fleet managers, drivers and customers:

## Reduced Operational Costs:

Given the per-mile operating costs of a Class 8 truck, simply missing an exit can cost $100 or more due to traffic congestion and fuel costs. Or, private fleet drivers may drive to a favorite lunch spot that's only a few miles off the route, but on a consistent fleet-wide basis, those miles can add up quickly over the course of a year. With fuel representing about 30 percent of fleet operation costs, every gallon counts.[4]

With trucks and trailers plugged into the IoT, managers and drivers will have greater visibility into shipment locations for optimized load planning and capacity utilization, and dispatchers will have better capability to reroute and manage shipments for greater flexibility and cost savings across the entire supply chain. Additionally, instant communications with drivers reduces delays and can direct them to low-cost services such as preferred fuel vendors and service locations.

## Improved Driver and Vehicle Performance:

Sensors on trucks can measure vehicle operations and driver behaviors in real time. On an individual and aggregate basis, managers will be able to monitor how drivers operate their vehicles: Are they harder than average on brakes or do they waste diesel with too-fast starts? Based on fleet data, the management system can recommend best practices for routing and driving habits.

## Predictive Maintenance:

Managers will be equipped to plan for maintenance based on actual performance by monitoring vehicle diagnostics. With this functionality, fleet operators can plan for maintenance rather than being caught off guard with a failure that delays a load. The DVIR can help manage a fleet's CSA score with an inspection record confirming compliance over the long term.

Vehicle sensors monitor and deliver alerts about engine problems and other diagnostic issues while informing dispatch when the vehicle is out of service. Aggregating vehicle data can help inform fleet overhaul and replacement planning.

# The Future of Fleet Management: Sensors and Platooning

Fleets that embrace the capabilities that an ELD and telematics solution provides will profoundly change the way they do business. Load planning and over-the-road driving are among the traditional activities set for disruption in the near-term horizon.

Finding the next load quickly has been a goal of truck operators for decades. Each year trucks in the U.S. travel empty 28 percent of the time for a staggering 50 billion miles of hauling air.[5] But today's drivers no longer have to settle for phone calls and faxes to secure the next trip. Sophisticated load matching services give nimble operators new ways to run their business. With greater insights into load utilization, vehicle location, driver availability and customer communication, technology eases the friction that has been inherent in tendering loads and confirming transportation rates. Users of one app report expanding their weekly loaded trips from four to five per week, adding 25 percent to their earnings, in the case of one shipper.[6] Easily matching capacity with demand creates a compelling business case for shippers and carriers to seek more direct communication, cutting out brokers, 3PLs and other intermediaries.

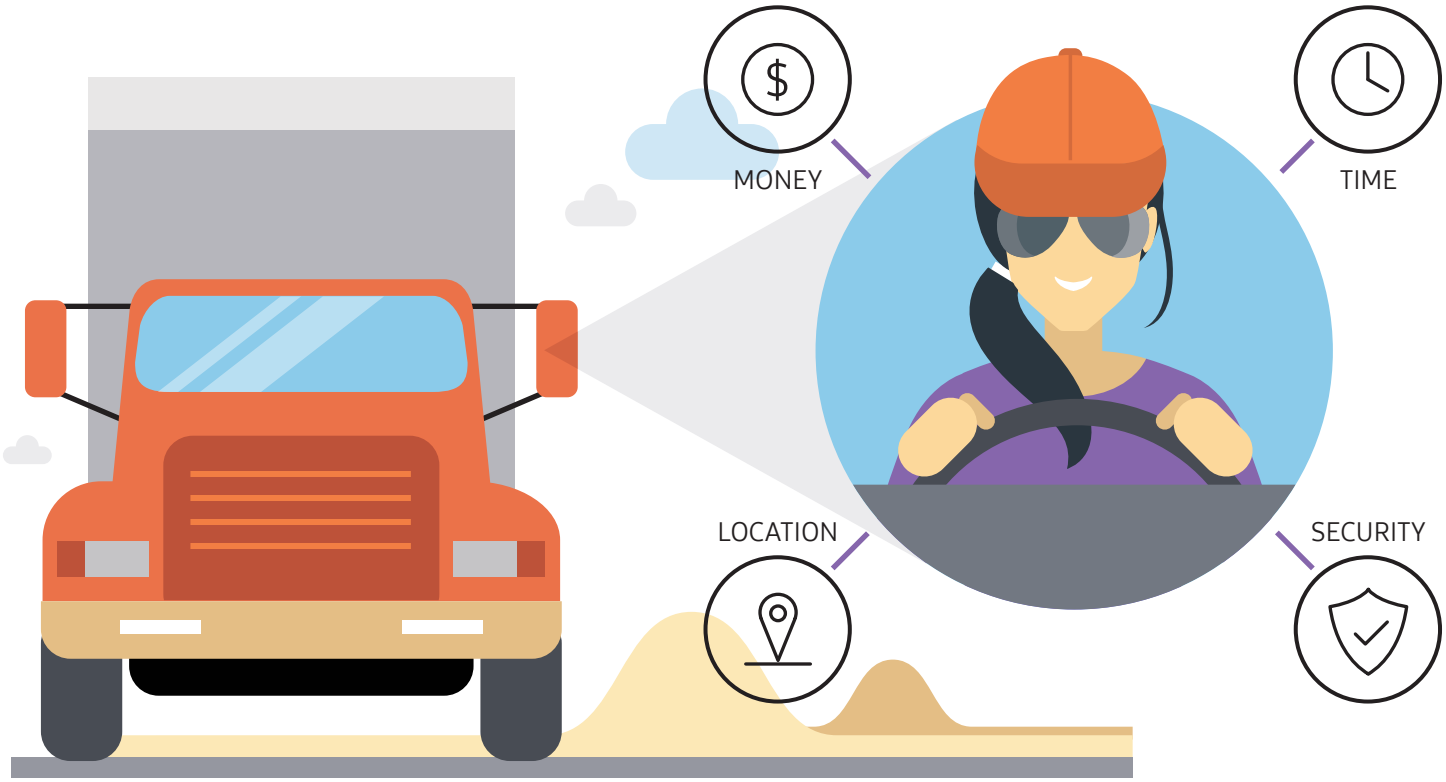
The next generation of load matching comes when trailers equipped with load sensors boost utilization rates by communicating a trailer's available load capacity. The capacity weight data could feed into a management dashboard to identify spare capacity on particular routes or destination pairs, and provide suggestions to consolidate loads and optimize the route. Real-time visibility into trailer utilization creates fleet efficiencies, improves fuel economy and reduces deadhead miles.

The emergence of new load matching services will allow drivers to locate new loads with ease, and provide fleet owners with real-time access to the precise location of trailers at any given time. A large fleet could even use these services to boost the efficiency of its captive fleet. While fully autonomous vehicles are still many years off, the interim stage of platooning could give fleets operating efficiencies in the near future.

Major industry players such as Daimler, Volvo and Peloton have tested vehicle-to-vehicle radar-based collision avoidance systems that synchronize braking and acceleration between pairs of trucks by using platooning technology, which enables the trucks to travel as one at aerodynamically efficient distances.[7] Each driver still controls the steering wheel as the platoon system takes over the task of maintaining speed and distance between the trucks. When the lead truck brakes, the system in the following truck is able to respond within 0.1 seconds of braking, faster than even the most fleet-footed race car driver.

Trucks involved in a platoon communicate with a Network Operations Center connected through cellular and Wi-Fi communications. The system limits platoon operation to selected routes under approved driving conditions. The trucks will be matched in platoons by apps on the in-cab mobile devices. Peloton's system will include a camera on the front truck to provide a video feed to the driver of the rear truck, which is another use for the in-cab mobile device. In testing, the Peloton system delivered 4.5 percent fuel savings for the lead truck and 10 percent for the trailing truck in a two-truck platoon.[8]

Experts predict that platooning will initially be conducted with trucks belonging to the same fleet to ensure compatibility and reduce legal concerns. Eventually, trucks operating in platoons could supplant team drivers, as the driver in the front truck remains on duty and the following drivers rest. Employing platooning on 10 percent of long-haul routes could double the miles driven per driver by eliminating the 10.5 hours of rest they must take every 11 hours, resulting in the industry being able to add the equivalent of 180,000 drivers.[9]




# Improving the Driver Experience

Driver retention and recruitment continues to be a problem for the industry. In fact, the American Trucking Association projects a shortfall of 175,000 drivers by 2024, and this is driving a bidding war between fleets to hire and retain good drivers.[10]

Some fleets face driver turnover of 80 percent or more each year, so a strategy of using mobile devices to help tackle recruiting, training and retention can pay off quickly.[11] In addition to compensation, drivers are attracted by sign-on bonuses, promises of home time and better quality of life of the road, which can be improved with fleet telematics. Here are some key ways this new technology can boost the driver experience:

## Increased Job Satisfaction:

With telematics, fleets can address one of the top problems that drivers face: wasted time.

Digital precision produces operational benefits that may not have been considered before. Using fleet telematics, dispatching drivers can be more disciplined. Both the driver and dispatcher have access to the same information about the driver's HOS, and they can both see if it makes sense to accept a load. Drivers can also avoid getting routed to a load but running out of time on the way, for instance, or running out of time before a delivery is made.

Before the ELD, logbooks were kept in increments of 15 minutes, but now status changes are recorded by the minute, which allows drivers to recapture several minutes of productive time each day.

With data readily available, drivers can also communicate with dispatchers better, and even eliminate the need for a phone call. If a customer calls about a load, the dispatcher can access the truck's location via the online portal without having to call the driver, and then inform the customer of the driver's location and status for on-time delivery.

Telematics also enables managers to become more conscious about fleet planning, as they can use the visibility to make sure drivers are being utilized effectively and efficiently, rather than reacting to unforeseen situations.

## Increased Safety:

Better information about driver performance can help create a culture of safety. Bad habits such as hard braking and speeding can become safety issues for the entire fleet. Drivers who are monitored are more likely to perform according to company and regulatory standards, leading to fewer accidents and law enforcement encounters, and lower insurance costs.

## More Flexible Training:

Mobile devices allow training to take place wherever and whenever the driver wants it. A driver might review a safety video while resting in the sleeper or get a refresh on the right way to inspect a bumper while standing right beside it.

At least one large carrier fleet has added training videos for inspections and other procedures that drivers can access anytime, as videos are more likely to be consulted than a thick instructional manual. A large fleet may train several hundred new drivers per week, so having everyone follow the same procedure for connecting the truck and trailer makes sense. Additionally, mobile devices have a familiar user experience, so there's very little learning curve when it comes to operating.

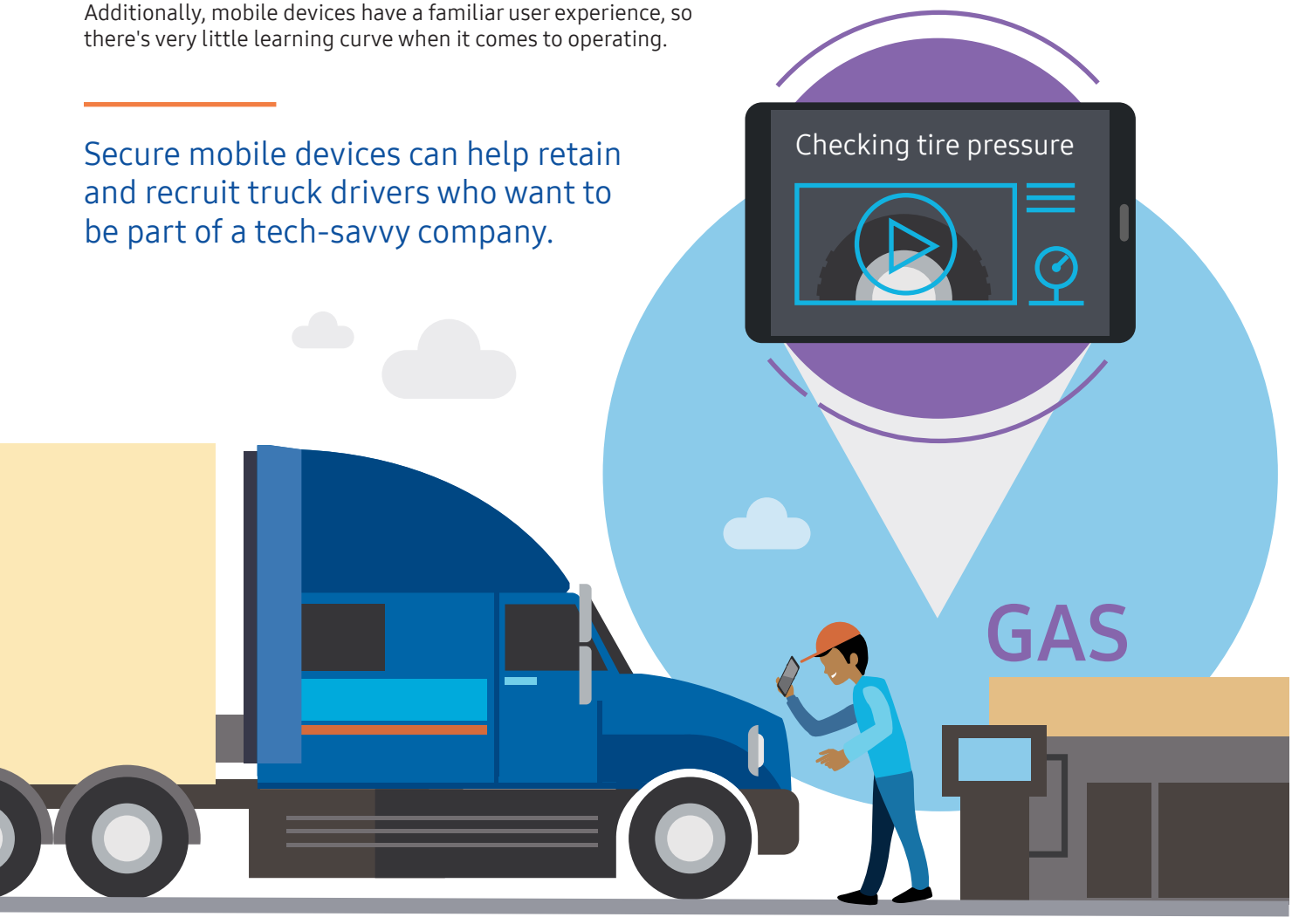
## Enhanced Driver Experiences and Entertainment:

By equipping your fleet with a tablet-based ELD, you are providing a popular employee perk and a powerful work tool for use when not on the road.

Drivers can use the devices off-duty for movies, games and communicating with family and friends. A trucking fleet may also be able to attract younger digital natives to the driver corps with the promise of a mobile device for personal use. Such a perk positions a company as a plugged-in employer that understands its employees' priorities.

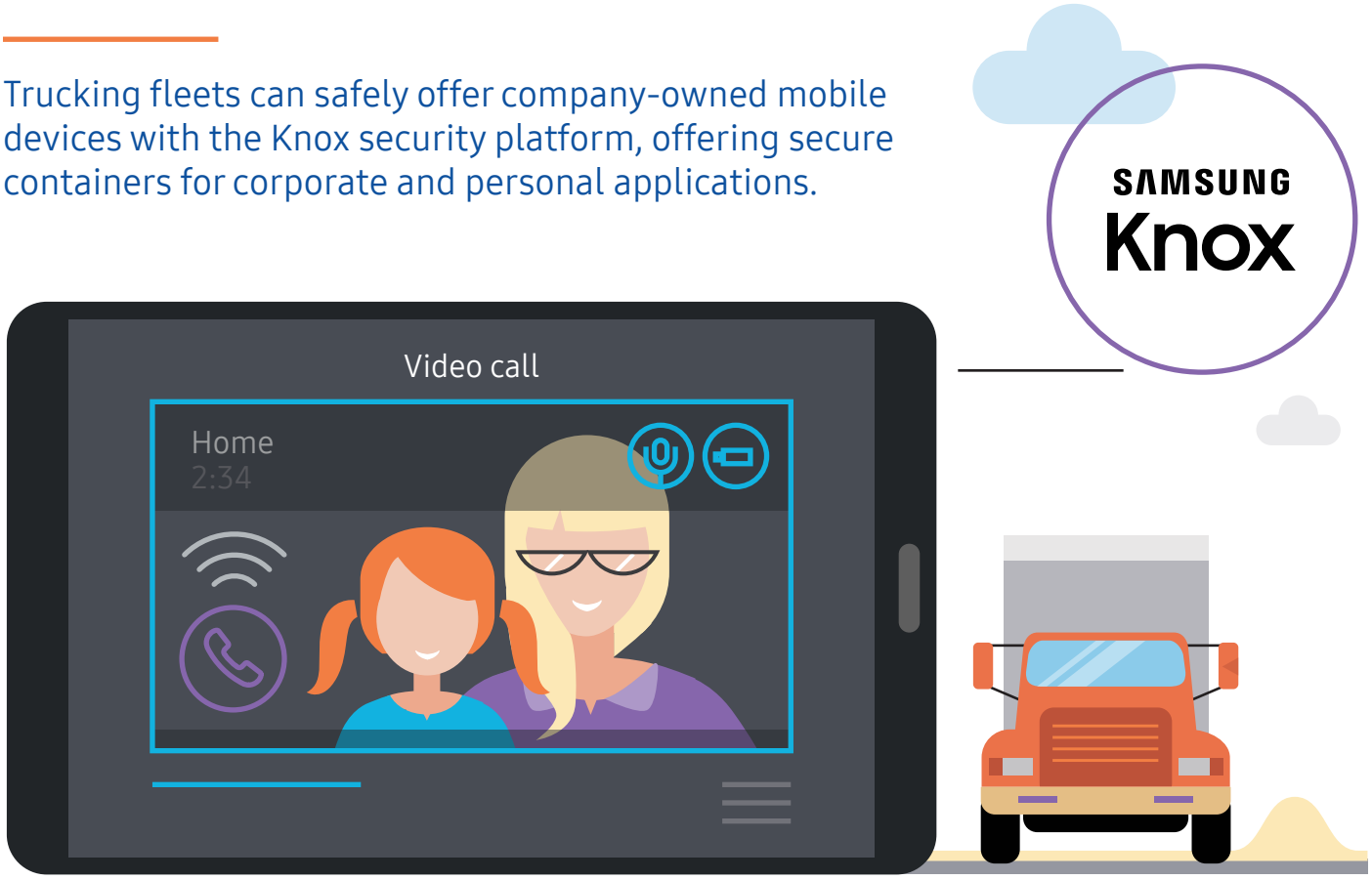
Based on telematics data, drivers can participate in company-sponsored contests to incentivize driving efficiencies that may include reward systems for drivers who exceed their goals. Training and company messages can be delivered via tablets as well. At least one fleet has rolled out a series of "how-to" videos that guide drivers through tasks such as vehicle inspections and checking tire pressures.

Secure mobile devices can help retain and recruit truck drivers who want to be part of a tech-savvy company.



# Data Security With the Samsung Knox Platform

Trucking fleets can safely offer company-owned mobile devices with the Knox security platform, offering secure containers for corporate and personal applications.




Deploying Samsung mobile devices with the Samsung Knox security platform supports a Company-Owned, Personally-Enabled (COPE) strategy that can ensure security in an enterprise mobility environment.

Samsung Knox delivers defense-grade, multilayered security from the chip up. The platform ensures application and device security in an enterprise-ready system that defends against malicious attacks that target the device, software and data moving between the device and the internet.

Samsung Knox protection is available for small and large enterprises. The Knox Premium option offers simple device management using a cloud-based platform that creates a secure container on an enabled device.

For enterprise-level security, Knox Workspace offers full-featured containerized workspaces that create separate user identities on the same device. With that sandbox capability, a fleet can create a corporate space for all approved applications. A personal space allows a driver to access entertainment and communication apps, for example.

Knox Workspace creates a secure path to connect to the corporate network environment from their personal or corporate-owned devices. For personal use, drivers may be responsible for their own Wi-Fi access, so Knox can keep corporate data safe even if the network is not fully secure, and also can neutralize malware attacks. Also, corporate data can be wiped off a tablet remotely in the event it is lost or stolen, while leaving personal data intact.

The Knox platform enables a driver retention strategy using tablets to give drivers tools they need and the flexibility to use the devices on their own time. Fleet managers can operate with confidence that corporate and personal applications and data are separate and secure.

# Conclusion

The transportation industry leaders of the future will be the ones who embrace technological advances by going beyond the basics of regulatory compliance. No matter the type of fleet — from large carriers to private commercial fleets to small owner/operators — improving driver and vehicle efficiency will position an enterprise for long-term growth.

Certainly, some investment is required for hardware and software, and changing workflows can be challenging. Prices will continue to contract for components such as sensors and connectivity, so the time to see a positive return on investment will continue to decrease.

Any trucks not connected to the IoT will be isolated from vital data such as performance and maintenance, as well as the possibility of connecting with loads and shippers with lower overhead. If it's not already, it will be practically impossible in the next few years to succeed in the trucking business without a robust fleet management solution.

Learn more: samsung.com/transportation

# Footnotes

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