

The Promises and Pitfalls of Implementing the Internet of Things Devices in Trucking

Internet | Litigation | Litigation & Dispute Resolution | Transportation and Logistics | Trucking

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Introduction

The Internet of Things (“IoT”) technologies in the context of trucking refers to the integration of physical assets – such as trucks, trailers, and even cargoes – to the internet in the form of various sensors and devices. Once connected, these IoT devices can enable the collection and transmission of data in real time, which can be used to analyze and monitor various shipment metrics, including a shipment’s location, condition, and expected delivery time.

Indeed, the implementation of IoT technologies is transforming the trucking and logistics sector by enhancing connectivity, streamlining automation processes, and facilitating improved data collection and analyses.

The market has made clear that IoT devices are the way of the future and are here to stay. In 2024, the IoT logistics sector is valued at a whopping USD \$53.25 billion and is expected to eclipse nearly USD \$200 billion by 2030.

The Promise of IoT Technologies

IoT technologies are playing an increasingly important role in the trucking sector, particularly with respect to improving operational efficiency. By establishing what is known as digital infrastructure, IoT technologies promote a variety of benefits across the trucking and logistics sector, which include the following:

- 1. Real-Time Monitoring:** IoT technologies provide carriers with “real time” access to supply chain data and status updates, which grants logistics companies the ability to monitor the location, condition, and status of their assets across the supply chain. This real-time monitoring provides the added benefit of enabling businesses to intervene and rectify situations in a timely manner.
- 2. Improved Inventory and Fleet Management:** IoT technologies provide data that can be used to optimize delivery routes, avoid traffic congestion, and reduce overall travel distances. This optimization fosters reduced fuel consumption and improves delivery times. Further, in monitoring the health of motor carrier assets, IoT technologies also facilitate predictive maintenance, which involves addressing maintenance issues before they arise, and in doing so, reduces significant asset downtime and helps avoid costly repairs.
- 3. Enhanced Supply Chain Visibility:** In enhancing visibility across the supply chain, IoT devices provide stakeholders and customers with up-to-the-minute information on the status and location of goods. This transparency fosters improved decision-making, increased coordination between those along the supply chain, and fosters the ability to address disruptions in a timely manner. Trucking companies can leverage these benefits to build trust and loyalty with their customers by surpassing customer expectations as it relates to transparency, timeliness, and reliability. A happy customer is a long-term customer.

Trucking-Specific Risks Associated with the Implementation of IoT Technologies

Despite their upside, trucking companies should be mindful of the risks associated with the uninformed implementation of IoT technologies.

In fact, the Verizon Security Mobile Index reported a near 600% increase in IoT-related security breaches in 2020 alone. As it relates to trucking specifically, compromised IoT devices can lead to manipulated traffic signals, vehicle hijacking, and unauthorized access to operational systems, to only name a few.

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First and foremost, IoT devices have proven at times to be difficult to monitor. With trucks, trailer, and cargoes generally constantly being on the move, particularly in remote areas or across international borders, with inconsistent or unreliable internet connectivity, monitoring IoT devices can prove challenging. Interruptions in data transmission can lead to gaps in tracking and monitoring.

Moreover, IoT devices have historically been shown to be unsecure at times. Passwords are often generic and can be modified and subsequently overridden by bad actors. The stock firmware embedded within IoT devices are also often rudimentary. This, coupled with the fact that IoT device manufacturers have no protocols or best practices to adhere to in respect of security standards, creates an environment where countless potentially unsecure IoT devices are put into circulation across the trucking sector.

Lastly, no honest discussion about IoT technologies can be had without acknowledging the adoption and implementation costs. IoT technologies can be expensive, particularly to small and medium-sized businesses. The cost lies not only in the devices themselves, but in the infrastructure upgrades, maintenance, and employee training. While the cost of IoT technologies may be deterring to some, equal caution should be given to the costs of foregoing their use altogether.

Preventative Measures and Best Practices

In light of the above, the following is a non-exhaustive list of some of the initiatives that trucking companies should consider adopting so as to safeguard themselves from the risks associated with the implementation of IoT devices in their operations.

1. **Perform Regular Risk Assessments:** Performing routine risk assessments can assist in identifying potential vulnerabilities and threats both within and across your IoT and digital infrastructures and can help inform strategies to mitigate risk and enhance security protocols.
2. **Routine Software Improvements and Data Encryption:** It is not uncommon for IoT devices to come with mediocre “stock” firmware, which is problematic as cyber assailants often exploit known vulnerabilities in outdated firmware. Accordingly, organizations would be wise to routinely update the IoT’s firmware and their operating systems generally, with a view of mitigating this risk. Moreover, ensuring that the data stored on or generated from IoT devices is encrypted will help ensure that any information that is compromised will remain “unreadable” even if it falls into the wrong hands.
3. **Training for Employees:** Despite the increasing prevalence of IoT devices across the trucking sector and the transportation sector more broadly, they keystone of any operation at the present time continues to require a human element, and by extension, must account for the risk of human error. Routine training on IoT and best practices in cybersecurity generally provides employees with the technical knowledge of both recognizing pending attacks as well as how to respond to them.

The Future of IoT in Trucking

The implementation of IoT technologies has revolutionized the trucking and logistics sector and will certainly play a more central role as the industry continues to evolve. As IoT technologies evolve, they will undoubtedly integrate with artificial intelligence, machine learning, prescriptive analytics, and other emerging technologies, and in doing so, will only further optimize the carriage of goods along the supply chain.

The promise is clear: IoT, when properly implemented, can serve to increase resource management, flow along the supply chain, reduce cost, and improve safety. Whether we like it or not, IoT devices are the way of the future and are here to stay. A PDF version is available for download [here](#).

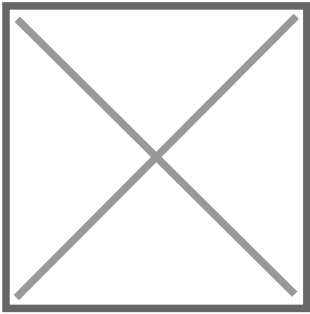
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