IOT LOGISTICS TECHNOLOGY GAINING SPEED IN FREIGHT INDUSTRY

Initially slow to take off, the internet of things is enabling sophisticated sensors that give logistics providers more visibility into inventory and freight vehicles.

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Mention the internet of things, and most people immediately think of consumer electronics, wearables, smart homes and connected cars. The fact is that IoT logistics technology is also helping businesses optimize their logistics operations.

But despite the proliferation of the internet of things (IoT) in many industries – Gartner predicts there will be 20.4 billion connected things by 2020 – growth has been slower in the freight and logistics area, said John Maley, global leader for freight logistics at IBM, based in Armonk, N.Y.

"In my specific area, we're just starting to see IoT technology really take hold because this industry is ... a bit medieval in terms of adopting leading-edge technology," Maley said. "[Logistics companies] tend to be slow followers, in most cases,

except perhaps for the UPSes and the FedExes of the world."

However, the freight and logistics industry is starting to adopt and adapt to IoT technologies, such as sensors (specifically for tracking equipment and freight), to solve a big problem in the sector: the visibility of freight, which is traditionally a manual and error-prone process.

"We certainly see the introduction of devices which could actually track the freight itself," Maley said. "Let's say you put a device on a marine container, and it can report its GPS location at regular intervals ... to whoever is authorized to know that information. Now you've definitely changed the game in terms of tracking and visibility in the industry."

Stan Aronow, a vice president in the supply research group

at Gartner, based in Stamford, Conn., agreed with Maley about the importance of IoT logistics technology when it comes to knowing where goods are in real time.

From a visibility perspective, using sensors on pallets allows companies to track and trace products once they're on trucks heading to their destinations, he said. These sensors collect and send location information to dispatchers via cloud-based fleet management systems that can be distributed to the companies shipping the goods, as well as their customers.

"You could know exactly where things are," Aronow said. "Certainly, having visibility into where groups of products are at the pallet level and the truckload level is helpful to a store for their planning. Ultimately, they can

wring more inventory out of the system because, when they didn't have that visibility, there was more uncertainty as to when something was going to be delivered, and they may [have had to place additional orders]."

Sensors allow for finer control of inventory, environmental conditions

Tracking in-transit visibility and inventory is how a number of companies have initially deployed IoT logistics technologies, agreed Kirstin Simonson, second vice president and cyber lead at Travelers Global Technology, part of New York-based The Travelers Companies.

Companies have been using radio frequency identification (RFID) and GPS to track assets as they move from point A to point B for several years. But now, not only are they putting RFID chips in pallets, they're using various integrated IoT logistics devices to enable them to share a lot of data about environmental factors, such as weather, that might impact whether items get where they need to be.

"If you think about heat-sensitive items, you can have sensors that are telling you [the weather] is too warm where this is, or it's too cold where this is," Simonson said.

"You now have the ability to predict to that a little bit better, or react to it more quickly."

For instance, if there's a big storm on the East Coast, the dispatcher or central command would then be able to reroute the truckers a different way, she said.

"Or, if the sensors alert the dispatcher that something is going on in the back of the truck, or in the cargo hold, the dispatcher has the opportunity to make adjustments and take corrective action," Simonson said.

Firms can also use sensor technology to keep track of temperatures inside their vehicles to ensure perishable products are safe, according to Kevin Beasley, CIO of VAI, an ERP software provider based in Ronkonkoma, N.Y.

In food distribution, IoT tags on items can provide companies with certain information, such as when an item became product to be shipped, the temperatures in transit, as well as how long it took the product to get to the retailer, he said.

"The tags can show how fresh the product is, and if it ever was exposed to an environment

that's not conducive to that food product," Beasley added.

IoT logistics visibility hampered by integration barriers

IoT capabilities also allow a logistics team to have a view into what's happening with the company's vehicles. A connected vehicle can alert a dispatcher if it has been idling in one place for too long, which could mean it has broken down or that someone is tampering with it or its contents.

However, despite the positive aspects of implementing IoT technology, there can also be security issues. Some IoT devices aren't as secure as they should be, meaning somebody could get into them and alter the data, such as the expiration date of a food product, Beasley said.

"And depending on what that product is, that could be a trivial thing, or something much worse," he added.

In fact, security and networking in general have been placed under various degrees of strain as a result of mobile applications in devices connecting across the internet and IoT, said Kenneth Ammon, chief strategy and technology officer at OPAQ Networks Inc., a cybersecurity

startup based in Herndon, Va. The more widespread use of a mix of cloud, mobile and IoT logistics technologies has obscured organizations' abilities to see what's happening across their networks. Yet, companies still want to apply the same level of security assurance and accountability they employed before they implemented these technologies, according to Ammon.

To help organizations achieve that goal, OPAQ has integrated networking with security, so companies can take advantage of the new technologies, manage security policies and have centralized visibility across all distributed assets.

Looking at logistics more broadly, there's a lot going on with IoT in warehouses, as well as in transportation of goods, Gartner's Aronow said.

The goal of warehouse managers, for example, is to get goods to customers as quickly as possible. To do that, they have to know what goods are on hand and where they're located. That means they need real-time visibility into their inventories so they can take the necessary actions to move the right products to the right customers fast.

For instance, companies can use RFID-type sensors to connect assets in the warehouse to an IoT platform, retrieve the data from the sensors and transform it into valuable business insights.

For stock management in the warehouse, companies are using sensors as the underpinning of their frameworks, letting them know where everything is to improve the picking process.

"If I'm a container canister, I say, 'here's a description of what's in

me, and here's my relationship with other pieces that go together with me that are going to get kitted together in a delivery,'" Aronow said. "The ability to find things quickly, and get them kitted together for shipment improves productivity."

Companies could also use the information gleaned from these sensors in time and motion studies to redesign the next versions of their warehouses for increased efficiency and lower environmental impact by, for example, grouping commonly picked items, he added.

The interconnectivity of the various sensors and devices, as well as their ability to collect so much data, can be tremendously useful in helping companies operate their logistics operations more efficiently, save money and reduce redundancies, Travelers' Simonson said. "It's a real business benefit."