RESOURCES

The Ventilator Dilemma: How Do You Solve a Problem You Can't See?



Key Takeaways

- IoT can help pharmaceutical supply chains improve security, agility, and responsiveness to crises like the COVID-19 pandemic.
- The combination of IoT and a digital supply network is critical to increasing supply chain visibility and flexibility.
- Additional use cases for IoT in supply chain include collecting demand signals about product consumption and ensuring proper environmental controls.

By Jamshed Dubash | May 19, 2020



A novel and highly contagious virus emerges, resulting in critical shortages of life-saving ventilation machines. State leaders scramble to procure more, while sharing the limited number made available through a national stockpile. But chaos and confusion grow as officials struggle to gain visibility into where ventilators are

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located, which ventilators are available, and which hospitals should receive ventilators next.

If this scenario sounds familiar, it is likely because cities around the world faced similar challenges in recent months as the COVID-19 pandemic began to unfold. It's also emblematic of the inventory visibility problems that plague the global end-to-end healthcare supply chain. The good news, however, is the internet of things (IoT) can help us solve the visibility puzzle while making supply chains more flexible and responsive.

Depending on the level of sophistication, IoT tags and sensors can provide real-time information about the location, status, and condition of ventilators—and virtually anything else needed to fight a deadly outbreak, including medicines and vaccines. It's not difficult to imagine a future where, in addition to helping front-line hospital staff track and manage ventilators located on premises, IoT boosts the efficiency of efforts to share pools of ventilators on an as-needed basis across state and county lines.

For example, IoT-generated information about the status and location of each ventilator can be integrated with public health data about the location of COVID-19 hotspots, then analyzed to determine where available ventilators should be delivered next. That information could also help manufacturers and their upstream suppliers plan more accurately to meet demand. The key is making sure the IoT data can easily be accessed by all supply chain partners throughout a digital supply network.

Using IoT to build a responsive supply chain

From ventilator shortages to the urgent need for new vaccine development, the COVID-19 crisis is drawing attention to some of the healthcare supply chain leader's biggest challenges. One is ensuring that the supply chain is flexible enough to respond quickly to sudden changes in demand. Another is ensuring accurate longer-term demand forecasting. Striking a balance between these two

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challenges is difficult because—as the COVID-19 crisis demonstrates—the market for medicines and medical equipment can spike rapidly and without warning, ruining the best-laid plans.

Organizations across the end-to-end healthcare supply chain that hope to become more flexible—and better prepared to respond to a crisis like COVID-19 in the future—should recognize the opportunity created by the combination of IoT and a digital supply network that enables seamless data capture and real-time information sharing between trade partners.

After more than 30 years of working with manufacturing, engineering, and networking technologies, I'm convinced that IoT, integrated with a vast digital network of healthcare trade partners, will be the key enabler of digital supply chain transformation and optimization.

Pandemics like COVID-19 illustrate the need for change

The number of new infectious diseases to emerge each decade has nearly quadrupled over the last six decades, according to data from EcoHealth Alliance, a global non-profit dedicated to protecting the public from infectious diseases. The incidence of outbreaks per year has more than tripled over the last 40 years. Researchers estimate that there are about **1.67 million undiscovered species** of viruses on the planet—and up to 827,000 of those could potentially infect humans.

And infectious diseases represent just one of many types of potential supply chain disruptions.

What does all this mean? The next significant disruption is a matter of time—and it's time to increase the security, agility, and responsiveness of the healthcare supply chain with IoT.

IoT can provide the visibility required to ensure that high-value products like vaccines, biologics, test kits, and life-saving medical devices are securely delivered

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to the right patient, in the right place, at the right time. But IoT alone isn't enough to improve flexibility, responsiveness, and ultimately, demand forecast accuracy. Companies also require a network platform for data sharing and transmitting real-time demand signals across the supply chain.

Many companies that have deployed IoT solutions without a digital supply network, continue to face legacy data-sharing challenges. These include:

- Siloed information systems and the associated inability to easily share data captured by IoT devices with trade partners.
- Inability to consolidate data from various IoT devices and partners into a single contextual view.
- Error-prone manual data capture and sharing processes that eat up time and increase supply chain costs.
- Limited real-time visibility of events that occur across upstream and downstream supply chain partners.
- Limited or no visibility into serialized product data from trade partners.

The combination of IoT with a digital supply network ensures companies can easily share data, monitor, and respond to supply chain events in real time—while avoiding the time, cost, and inefficiency associated with creating point-to-point systems integrations with trade partners.

Additional use cases for IoT in supply chain

The case of sharing ventilators is just one example of how IoT can be used to improve supply chain visibility from manufacturers and their suppliers all the way downstream to the hospitals using the equipment to provide patient care. Additional use cases of IoT in the healthcare supply chain include:

- Collecting demand signals about product consumption from dispensers and feeding it back to manufacturers and suppliers for improved agility and forecasting.

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- Ensuring proper environmental controls as products move from manufacturers to patients.
- Identifying time-consuming inefficiencies in manufacturing and packaging processes.
- Monitoring and securing high-value product shipments in real time.
- Acquiring an end-to-end view of inventory across the supply chain to guard against shortages.

There is a world of opportunity ahead for pharma manufacturers and other healthcare supply chain organizations that commit to using IoT to improve forecasting, agility, and responsiveness to disasters like the COVID-19 crisis.

Jamshed Dubash is General Manager of TraceLink's Smart Supply, Logistics & IoT business unit. Read his previous blog for more on ***how IoT and a digital supply network can help you optimize the supply chain.***

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