Nippon Express is using IoT and blockchain to take quality control and distribution of pharmaceuticals to new heights.
Counterfeits can be life-threatening

Counterfeit medications are a boon for scammers and a bane to patients, who face potentially life-threatening consequences when they unknowingly take a fake medicine. In recent years, governments have become more proactive in encouraging safeguards for the pharmaceutical industry. In Europe, pharmaceutical companies are required to follow what are known as Good Distribution Practices (GDP), which task companies with ensuring the quality of pharmaceutical products as they move through supply chains. In 2018, the Government of Japan directed all Japanese companies to follow suit.

GDP standards help protect against supply chain infiltration by counterfeit medications and require that pharmaceutical companies, transporters, and distributors monitor conditions, such as temperatures, that are key to the integrity of pharmaceuticals. Though the emphasis on GDP predates the COVID-19 pandemic, the standards are more important than ever as pharmaceutical companies prepare to distribute COVID-19 vaccines around the world.

But implementing GDP is expensive for individual companies. For the Japanese pharmaceutical industry, the initiative came at a particularly difficult time, when companies were facing budget pressures due to a change in the country’s drug pricing system.
Fortunately, relief was on its way, and it came from outside the industry. With networks across 48 countries and 73,000 employees, Nippon Express—one of world’s largest shipping companies—was determined to use its extensive infrastructure as a foundation for an industry-wide solution for pharmaceutical companies. This solution would include a physical logistics network specializing in pharmaceuticals paired with an Internet-of-Things (IoT) and blockchain system.

Nippon Express teamed with Accenture in its efforts to provide the Japanese pharmaceutical industry the tools and the traceability it needed to comply with the government’s request. As a leader in IoT and blockchain systems, Accenture had the expertise necessary to create a platform that would best serve the company’s pharmaceutical customers by featuring both a standardized customer interface and flexible architecture.

The team also collaborated with semiconductor giant Intel for its cloud-based tracking system. The combined capabilities of Accenture and Intel resulted in a system in which Intel’s electronic tags will be attached to each pharmaceutical shipment. The tags are used to log temperatures and locations as the shipments move through the supply chain. When shipments pass through reader gateways—at places such as warehouses and airports—the information is uploaded to the cloud and stored to the blockchain ledger built by Accenture. The system will empower Nippon Express and its customers to track shipments in real-time and respond to problems should they arise.

On the physical logistics side, they are investing JPY 100 billion (USD 890 million) to build new pharma facilities and acquire customized trucks, both featuring temperature control to help ensure the integrity of pharmaceutical products.

1 A&A’s Top 25 Global Freight Forwarders
Platformer as the changemaker

After extensive testing, the team plans to introduce the pharmaceutical logistics solution to the customers of Nippon Express in Japan, with a goal of supporting the distribution of COVID-19 vaccines. In addition to ensuring the integrity of vaccines and other pharmaceutical products, the blockchain-based system reduces burdensome paperwork requirements and lowers customer costs.

The system will also allow Nippon Express to collect shipping data that it can analyze in an effort to determine new ways to serve customer needs, helping the shipping company evolve into a "platformer"—an enterprise that uses AI and other technologies to mine and analyze data to further grow its business.

“The logistics solution will lead, we believe, to changes in our traditional business model, the development of entirely new business segments and new types of relationships with our customers.”—COO of Nippon Express, Takaaki Ishii.

The company is already looking to expand the platform to markets in Europe, India and North America. And Nippon Express isn’t limiting its sights to the pharmaceutical industry. Just as the new platform will build new confidence and transparency into the shipment of pharmaceutical products, it has the potential to do the same for other industries. Its transformative impact will extend beyond freight and logistics to the entire global supply chain, helping businesses of every stripe deliver on their promises intelligently, efficiently and safely.
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