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Advanced Technology's Role in the Vaccine Supply Chain

Here are some real-life examples of how technology companies are coming up with new ways to streamline the administration of COVID-19 vaccines worldwide.

Frustrations surrounding the slow COVID vaccine rollout are mounting right now, and the reports that some of the vaccine is going to waste (i.e., when left at too-high temperatures during distribution) aren't helping to assuage these concerns. While the world's pharmaceutical companies, logistics providers, carriers and health care providers align and work out these kinks, some organizations are looking to advanced technology for help.

In "From blockchain to big data and IoT, tech is speeding up vaccine supply chains," *ZDNet* highlights one company that is developing an app that will improve the management of inventory and resource allocation for the vaccines. The goal is to fix glitches in the vaccine supply chain using products like the CovidTracker app, which enables patients who want to get vaccinated to register for an appointment at the correct vaccination center, and to manage their booking digitally, from changing their slot to scheduling a time for their second injection.

"Looking over a vaccine's journey from its point of manufacture all the way to a patient's arm, there seems to be an endless number of parameters to account for," *ZDNet* adds. "With most vaccines typically required to stay at very low temperatures, this is usually called a cold chain – and it involves managing resources such as refrigerating containers and alcohol swabs, but also qualified staff."

Big Tech Steps in to Help

CovidTracker is just one of several new applications and solutions that are currently in use or under development, and that have their sights set on facilitating the COVID-19 vaccine supply chain. According to *MarketWatch*, the tech industry is allocating its "considerable resources" to helping get vaccines to millions of Americans amid an upward spiral in COVID-19 cases.

"From Microsoft Corp. in Seattle to International Business Machines Corp. in Armonk, N.Y., tech companies nationwide are offering expertise in tackling a logistical task that some compared with the moon landing," it adds, noting that U.S. Digital Response has outlined eight key areas for COVID-19 vaccine providers that include confirming eligibility of patients, reporting data to a state's immunization information system and managing vaccine inventory.

MarketWatch says IBM is offering governments and private companies supply chain management software and open blockchain technology to record and authenticate the temperature and handling of each vaccine dose. It's also expanding the availability of IBM Digital Health Pass to help organizations verify an individual's vaccine status and any other relevant health credentials.

Other large technology companies that are allocating time and effort to this important cause include Google's cloud unit, which is assisting with vaccine intelligence and distribution; it's "working alongside partners to deploy vaccine management solutions with state and local governments."

Oracle Corp. is also doing its part by donating a national electronic health record database and public health management application that the government can use to track vaccinations and side effects. "Oracle intends to bring similar systems to Africa by joining with the Tony Blair Institute for Global Change," *MarketWatch adds*.

Stepping Up to the Plate

It's not just big tech companies that are stepping in to help support the vaccine rollout. MarketWatch says rideshare operators Uber Technologies and Lyft are both offering to help get more Americans inoculated. Uber, for example, recently paired its ride-hailing service with vaccine maker Moderna to work with public-health agencies to schedule rides for those eligible for doses.

In at least one case, health care facilities themselves are adopting advanced technology to support their vaccination efforts. In the U.K., *CNBC* says two hospitals are actively using blockchain technology to help maintain the temperature of coronavirus vaccines before administering them to patients.

The National Health Service facilities in South Warwickshire, England are using sensors to monitor equipment in real-time plus a blockchain consortium backed by Google and IBM to make its vaccine rollout more secure and reliable. The sensors can monitor the temperature of refrigerators storing vaccines. They then transmit the data to its own cloud platform, where it's encrypted and passed onto a blockchain network.

"The point of this operation is to keep a tamper-proof digital record of temperature-sensitive vaccines, like the ones developed by Pfizer and BioNTech," CNBC explains. "The hospitals would, in theory, be able to pick up on any irregularities in the storage of the vaccines before administering them to patients."