Blockchain could transform supply chains, aid in COVID-19 fight

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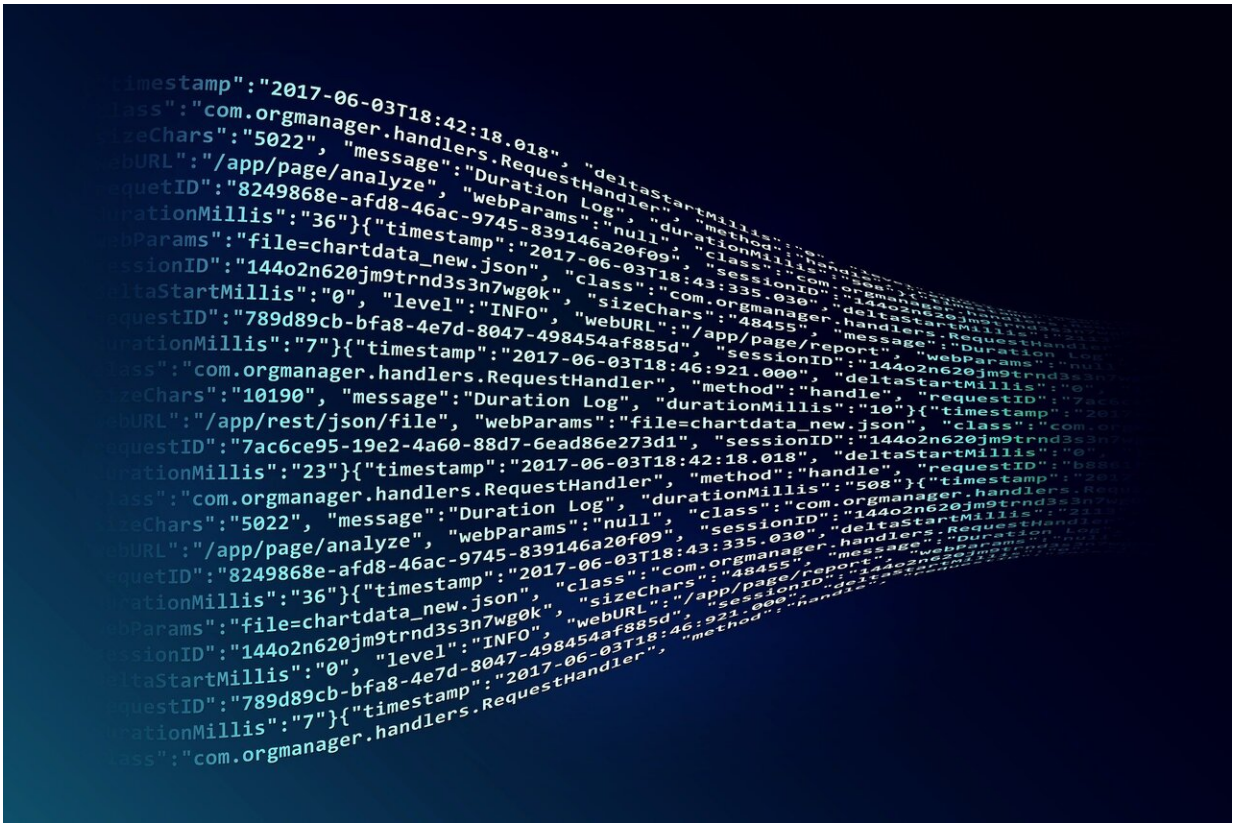

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Companies that specialize in moving goods from one place to another are starting to use the technology that powers cryptocurrency to streamline their work, and they say it could help hospitals stay stocked

and staffed during pandemics like the one caused by COVID-19.

Blockchain technology, as it's called, is already being adopted in the movement of goods from producers to suppliers, to stores, and to consumers. The technology is a form of distributed ledger, which stores encrypted information accessible to users. It can be public, as with cryptocurrencies, or permissioned, where information is visible only to network members that want to see it. Data kept on a blockchain, which is stored and verified by users across the network, can't be changed or destroyed.

Those working with the technology see it's potential to quickly locate vital supplies, the importance of which is being shown by shortages in protective equipment facing hospitals across the world.

While the technology is best known for its role powering cryptocurrencies such as bitcoin, its characteristics make it an apt tool in supply chain management, said Mary Lacity, a professor who runs the University of Arkansas Blockchain Center of Excellence.

In addition to moving goods and services, supply chains move information about those goods, which is where blockchain comes in, Lacity told CQ Roll Call in an interview. In traditional logistics systems, every link in the chain records and stores its own information on a separate system—meaning everyone has his or her own version of the truth, she said.

Each time a good moves along that chain, information needs to be reconciled. Sometimes data gets left behind or corrupted along the way. Blockchain gives users one system, creating "a receipt that everybody agrees to," she said.

This has the added benefit of reducing costs by eliminating the need to

reconcile data along the way, while shortening settlement times, and speeding payments. It would provide cybersecurity and mean greater transparency for consumers about where their goods come from, she said.

It's already being adopted in the supply of food.

Luis Macias, founder and CEO of GrainChain Inc., uses a blockchain system to empower small farmers. The company has partnered with coffee farmers in Honduras and connected them directly to shippers, distributors, retailers and financial institutions.

That's reduced reliance on predatory middlemen known as coyotes, who provide high-interest loans and transport goods at exorbitant prices. The end result is more money for farmers and possibly lower costs for consumers, Macias said in an interview.

IBM International Group Capital LLC is also using blockchain to bring more transparency to food supply chains through its product IBM Food Chain. Ramesh Gopinath, vice president of IBM's blockchain supply chain products, says the system gives customers insight into where their food comes from, and allows a more targeted response in a crisis.

Using a recall of romaine lettuce last year as an example, Gopinath said blockchain could make it so that not all units of a recalled product need to be tossed in the trash.

A shared information system would allow grocery stores to narrow the source of tainted food to a single farmer or shipment. Even if the information exists now, it could take weeks to track using traditional means. Rather than a blanket recall, grocery stores could take a more "surgical" approach and remove only the affected food, he said in an interview.

That would avoid unnecessary waste and perhaps stave off the economic hit to farmers when customers shy away from purchasing the product after the incident, he said.

Supplying in a pandemic

Gopinath said he sees huge potential for blockchain to respond to the kinds of issues raised by the COVID-19 pandemic. If the technology were more widespread, it could aid hospitals and governments in tracking down N95 masks that health care workers need to protect themselves from the virus.

In addition to the healthcare sector, the masks are commonly used in the construction industry. A blockchain system could allow mask inventory to be shared across industries and move the protective gear to where it's most needed, he said.

"You would be able to see that much more clearly than you can today," he said. "You'd be able to do things you can't even imagine."

While Gopinath's example is still hypothetical, his colleague Jerry Cuomo, IBM vice president of blockchain technologies, is working to adapt existing blockchain supply chain products for hospitals to use during the crisis.

"Pick the biggest retailer you know, pick the biggest hospital you know, the biggest medical supplier you know—none of them or their supply chain is apparently big enough right now to help the situation," he said. "We need to connect systems. We need to share data."

Hospitals facing shortages need to expand their supply chain quickly. Blockchain allows companies to share data without fear it will fall into the wrong hands, he said in an interview.

However, vetting new suppliers takes time, usually one to two months, even if other hospitals have worked with the companies, asked the same questions, and verified the same information, he said.

An IBM product called "Trust Your Supplier" allows those suppliers to create a trusted, digital identity. The company that first works with the supplier puts them through the usual vetting process, and subsequent companies in the network are able to substantially shorten their due diligence, which saves time and money, he said.

Cuomo said IBM is currently working to repurpose the system for networks of hospitals to share information about their suppliers and get supplies where they're needed faster. The system would also allow for faster onboarding when new suppliers enter the space, as companies from other industries step in to produce medical equipment, he said.

The company is also retooling a blockchain system used to evaluate the credentials of job applicants to meet the demand for medical professionals that will be able to vet and vouch for licensed independent practitioners. I's a"kind of matchmaking service for rapid onboarding for medical personnel," Cuomo said.

Branding problem

Despite the potential, there are still barriers to widespread adoption.

Shane Bigelow, CEO of Ownum, says blockchain has a "branding problem" His company works with state governments to digitize personal documents, including birth and death certificates and car titles, on a permissioned blockchain.

Because of the technology's close association with cryptocurrency, Bigelow said lawmakers he's spoken to unfairly equate the two.

"What we really need is clarity on the crypto side so that it's abundantly clear that if you're not crypto, you're not regulated, you're just using technology to make a new product," he said. "In our case the product is digital records. How we do it is of less consequence than how it works."

Lacity says for now she doesn't see regulations as a problem. Until blockchain supply chains incorporate payments they'll actually face fewer regulations than typical financial technology products.

The biggest challenge is figuring out the human side of the system—hammering out governance models and business models is the hardest part, she said.

Every partner on the supply chain will need a different set of incentives. Walmart Inc., for example, will have a different value proposition than the farmer. Figuring out what everyone needs is necessary to ensure the full supply chain is included in the system, she said.

Companies will also need to agree on some sort of shared governance across firms. That would include deciding how software updates would work, because every single member of the network would have to upgrade at the same time. Updating software is hard enough within the boundaries of one company, she said.

"The easy thing is the technology," she said. "It's figuring out all the other stuff that's really been the bigger challenge."