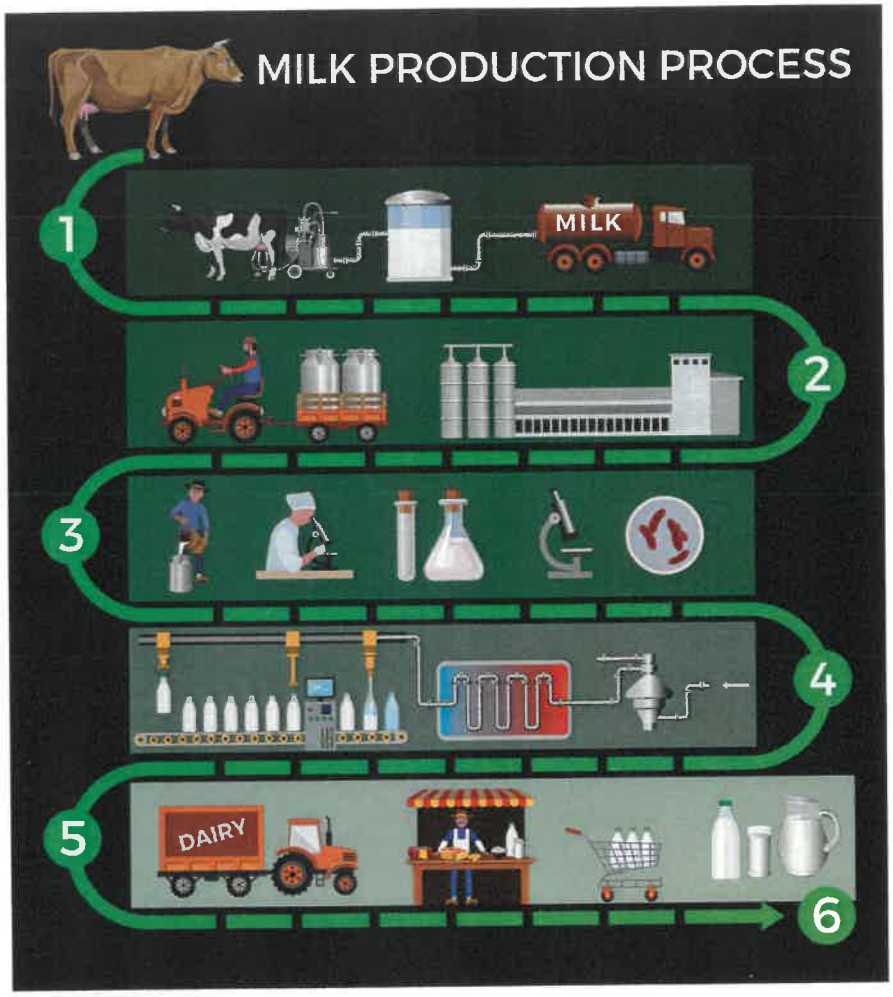
BLOCKCHAIN TECHNOLOGY
THE NEW FOOD SHIPPER DISRUPTER

By Don Durm, PLM

While attending the 64th Annual Food Shippers of America Conference in Palm Desert, CA, I sat in rapt attention as 90-year-young American hero Captain James Lovell spoke of the ill-fated Apollo 13 mission and his infamous words, "Houston, we have a problem." As I scanned the audience, I thought about how many of the food shippers in the room deal with their own mission challenges, from the new U.S. Food and Drug Administration FSMA regulatory requirements governing transport operations to the more familiar challenges of detention time and the cost to their business.

PHIVE/SHUTTERSTOCK.COM



HENNADIL H/SHUTTERSTOCK.COM

The technology used to solve these mission challenges can sometime be a disrupter. Canadian Prime Minister Justin Trudeau's opening address to the 2018 World Economic Forum was quoted, "The pace of change has never been this fast, yet it will never be this slow again." Understanding the new technology and how its application to the food supply chain will impact your role as a food shipper.

For now, let's focus on one of those disrupter technologies impacting the food supply chain – blockchain.

To adopt a technology for the sake of adoption is not practical unless it solves an existing problem. This article will explore some of the challenges in the food supply chain and how blockchain technology is uniquely positioned to find solutions to those challenges.

Blockchain Defined

You may have been exposed to the concept of blockchain through the crazy ride of bitcoin, but let us separate the speculation of bitcoin crypto-currency from its technology-based foundation of blockchain. My thoughts after attending a conference on blockchain – confusion! As in most industries, blockchain practitioners have developed their own language. Terms like nodes, distributed ledger, miners and many more peppered the presentation. But I have come to realize that we don't have to understand the science behind technology to embrace its benefits. Much like we don't necessarily have to understand electricity to enjoy the convenience of power flowing to our wall outlets, or how the internet connects us to the Web.

To set up our discussion on blockchain, let's consider the vulnerabilities within the current centralized data systems of our food supply chain. Today's centralized data systems are vulnerable to a single point of attack. If a bad actor can change the data in a centralized system, it changes the data for all who are viewing it. Added cost is needed for security to validate data entering and leaving the system.

Another challenge to the current generation of software systems is that data is limited to each individual company's software ecosystem. As food moves through the supply chain from processor, to distribution to transport, any data generated regarding that food movement lives only within the walls of each individual company's system. This presents a greater challenge during a food safety event when trying to trace back food origin.

Traceability focuses on knowing where and when food was sent across the supply chain. Our current requirements are one-up, one-down: where did you get the food product from, where did you send the product to? This methodology could take as much as two weeks and add cost to everyone along the supply chain when tracing down the origins of a food event that triggers a recall.

Let's begin with a working definition of the concept of the technology: *Blockchain is simply a secured, shared, distributed ledger that facilitates the process of recording transactions and tracking assets in a trusted business network.* It might be easier to think of blockchain as a giant Excel spreadsheet that does not reside in a central data base, but is distributed across a network of computers which records transactions for all to see. The technology gets its name from the blocks of recorded information that are produced approximately every 10 minutes and then linked in a chain. Previous blocks cannot be changed, but changes can occur with the new blocks being added, providing a complete historical record. These transactions happen in

near real time among members within the blockchain.

Think of blockchain as connecting permissioned data bases between trusted member partners in a non-connected world along the food supply chain.

Digital Convergence

Much of the buzz around blockchain has been in the financial world looking at the upside of time and cost savings within financial transactions. The ability to provide a higher level of security is paramount to the trust between financial trading partners. Many industries and governments are evaluating the virtues of blockchain to provide cost savings, security and transparency between trading partners. But the most interesting work on the benefits of blockchain technology is being done with food, and the environment is right for rapid adoption into the food supply chain space.

The Internet of Things (IoT) is an ecosystem comprised of web-enabled smart devices that use embedded processors, sensors and communication hardware to collect and send data such as ELDs. The number of IoT devices increased nearly 14 percent YoY 2017-2018 to more than 23 billion devices worldwide at the end of 2018, according to Statista. Analysts there believe the number of IoT devices worldwide will top 30 billion by 2020. This digital convergence of IoT devices collecting, analying and reporting data is making the blockchain technology ripe for implementation.

Walmart is one of the most recognized brands in the United States, with a pledge to its consumers to bring safe, healthy and nutritious foods to them at a low cost. Walmart's requirement to keep this promise drives them to evaluate ways to improve the food supply chain and reduce costs. Blockchain gives Walmart the tool to deliver on that promise.

In 2017, Walmart's Vice President of Food Safety, Frank Yiannas, asked his team to trace a package of sliced mangoes back to their source. The results of that request took the largest retailer in the U.S. 6 days, 18 hours, and 26 minutes to accomplish. The same exercise was conducted utilizing blockchain technology and took a mere 2.2 seconds to trace the same mangoes back to a farm in Mexico. Walmart was convinced. Due to the massive recalls on romaine lettuce in 2018, Yiannis mandated in the first commodity-driven blockchain by a major retailer in the U.S., that all its lettuce suppliers must participate in the blockchain by the end of 2019.

Cost of Detention Time

Industry standards state trucks are to be loaded in two hours. After that, shippers are expected to pay an hourly rate for the truck being detained. Detention pay can range from $25 to $100 an hour. In a survey of 257 carriers, 63 percent reported that the average loading or unloading time was more than 3 hours, of which only 3 percent said that they

©ISTOCK.COM/SHIRONOSOV

received at least 90 percent of the owed detention fees.

Detention time is listed as one of the top five challenges between shippers and carriers. In 2018, the Federal Motor Carrier Safety Administration (FMCSA) completed a first-of-its-kind report on the impact of detention time, estimating that detention was associated with a reduction in annual earnings of more than $1.1 billion for For-Hire commercial drivers in the truckload sector. For motor carriers, this translated to net income reductions of more than $302 million annually. Additionally, the report found that driver safety is also impacted, in that each 15-minute block of dwell time translated to an increased crash rate of 6.2 percent.

The combination of the ELDs and blockchain technology can capture the data and automate the reporting mechanism of the arrival and departure of transportation vehicles without human intervention. The use of blockchain technology to solve for this challenge by recording the events between the trading partners will bring trust and transparency to the shipper/carrier relationship.

Why the Environment Is Right for Blockchain

Blockchain technology in the food space is moving more quickly than other sectors because food safety gets a lot of play in the media. Consumers want information about their food, and food manufactures and processors have a responsibility to provide that information. The farm-to-table social movement embraced the idea of knowing where and how our food was produced, but that intention now needs to be real information and not just a marketing campaign. Blockchain technology can provide that information from birth to burger.

The fact is, 1 in 6 Americans get sick, more than 128,000 are hospitalized and 3,000 die each year from eating tainted food. To protect the nation's food supply, the government enacted the most sweeping changes to our laws on food safety since the creation of the FDA with the Food Safety Modernization Act (FSMA). This changed the FDA from a reactionary

Continental EXPRESS, INC.

Continental Express, Inc. is your logistic solution!
We have been building relationships since 1984
and understand that it's more than freight...
It's Your Business!

LOCATIONS:
Sidney, OH - Corporate Office | 10450 State Route 47 W | Sidney, OH 45365 | 937-497-2100
Gaffney, SC | Fort Worth, Texas | Louisville, KY | Danville, VA
Salem, OR | Indianapolis, IN | Columbus, OH

Russ Goi emoeller
President
Russ@ceioh.com
800-497-2100

regulatory agency to a law enforcement authority that looks at risk-based safety standards to prevent incidents in the food supply. Since the FSMA rules were rolled out, the incidents of recalls have increased 92.7 percent during the past 5 years, according to the FDA. Blockchain technology has the attributes to check all the boxes and bring supply chain transparency and trust to the nation's food supply.

Doing the same thing over and over again, expecting a different result is the definition of insanity. Get ready food shippers, the FDA will be taking a more proactive approach to enforcement in response to these food safety incidents. Not to over-dramatize the matter, but Frank Yiannas, who mandated the first blockchain for food suppliers to Walmart, has recently taken the top job at FDA as Deputy Commissioner for Food Policy and Response. Yiannas understands the virtues of blockchain and has proven that with the technology we can significantly cut the time it takes to trace food, in a complex and messy supply chain, to its source in as little as 2.2 seconds.

Food Shippers Should Engage in Blockchain Technology Today

As noted earlier, a disruptive technology is only going to be adopted if it solves for a problem in the food supply chain. The blockchain technology will bring trust and transparency to the food supply chain while driving out significant cost between trading partners. We have the consumer looking for real information, not slogans. Blockchain provides the FDA and its series of FSMA rules a foundation for food supply transparency and safety with a seamless connection between the ecosystems of individual companies along the food supply chain.

As a food manufacture, processor, distributor or transport company, it will be important to learn about blockchain and your role in the technology. Education on the subject is necessary and available. Organizations like BiTA (Blockchain in Transportation Association) are actively working on creating universal blockchain standards in logistics. Seek out one of these organizations, or join a blockchain to get practical experience and live the technology revolution.

This article only touches the surface of the challenges blockchain can solve for food shippers. There are many more. Participation will connect the supply chain partners and provide food safety and transparency while driving out significant costs within your business. The value proposition becomes more apparent with every meal you and your family eat. ■

Don Durm, is vice president, Customer Solutions at PLM. He is an industry expert and speaker in cold chain transport application and regulatory compliance and an early identifier of blockchain technology as the next industry disrupter. Don was recognized in 2019 as Food Logistics Champion: Rock Stars of the Supply Chain as an innovator in food supply chain for his work in food safety and blockchain.

NAVIGATING THE ROAD AROUND LEASE VS. OWNERSHIP IN THE COLD SUPPLY CHAIN

PLM's refrigerated fleet management solutions deliver a proven, consistent track record of identifying a cost savings to your bottom line.

SAVE TIME & MONEY

OPERATIONAL SAVINGS
of up to $3,500 in fleet costs*

TAX BENEFITS
for entire lease term

LIFETIME SAVINGS
of up to $7,000 vs. ownership*

INDUSTRY EXPERIENCE

Provides **TRANSPARENT FINANCIAL REPORTING**

SUPERIOR CUSTOMER SERVICE

* Based on a 7 year lease term

PLM
PERSONALIZED LIFECYCLE MANAGEMENT

CALL YOUR PLM SALES CONSULTANT TODAY TO RECEIVE A COMPLIMENTARY LEASE VS. OWNERSHIP MODEL FOR YOUR REFRIGERATED FLEET.

1-877-736-8756 www.plmtrailer.com