

C3 Solutions

Article

# The New Kid on the Block

The Growing Need for Blockchain in the  
Grocery Supply Chain



**FROM  
HERE**

**GETTING IT  
RIGHT**

**TO  
HERE**

## Article

**Blockchain is the flavor of the month in the food business these days. It's getting a lot of attention thanks to new mandates by Walmart and others - including big players like Unilever, Nestle, Tyson and Dole - to require blockchain tracking of food from source to store.**

The topic is also getting a boost from recent news stories about romaine lettuce recalls in North America. Produce contaminated with E. coli bacteria is believed to have sickened many, and at least one person died in both Canada and the U.S. late in 2017.<sup>[1]</sup> A new outbreak in the late fall of 2018 has just prompted grocers across both countries to remove all romaine from store coolers,<sup>[2]</sup> and health agencies in both countries have warned against eating it.

**According to Health Canada, the most recent outbreak has seen 18 cases, with six hospitalizations in Ontario and Quebec. In the U.S. there have been 32 cases reported and 13 hospitalizations across 11 states.<sup>[3]</sup>**

After a thorough investigation by health agencies in both countries the source of the infections was narrowed down to leafy greens (in the 2017 outbreak) and Romaine lettuce in the current one. Investigators also know that the same strain of E. coli as was seen in 2017 is causing illness in Canada and the U.S. This suggests there may be a reoccurring source of contamination. Investigators are using evidence collected in both outbreaks to help identify the possible cause of the contamination in these events.<sup>[4]</sup>



## Article

However, they have been unable to pinpoint the source of the contamination. Lettuce can become contaminated by E. coli at numerous points in the supply chain.

From contacting manure in the field, to unsanitary handling and transport, to cross-contamination at the grocery store or by coming into contact with bacteria from raw meat or poultry and seafood on countertops and cutting boards.<sup>[5]</sup> With so many potential sources of trouble, having a means to track lettuce would certainly help investigators.



# Walmart to the rescue

**At the moment very little is being done to track the provenance and handling of greens like romaine. Which is where the Walmart initiative comes in.**

**On September 24, 2018 the retailer sent a letter to its suppliers of leafy greens announcing its blockchain-enabled Walmart Food Traceability Initiative.**

The letter said the initiative is intended to "increase transparency in the food system and create shared value for the entire leafy green farm to table continuum." It's a direct reaction to the lettuce contamination scare.<sup>[6]</sup>

**Walmart's direct suppliers will be required to implement IBM's Food Trust blockchain network by January 31, 2019.**

Beyond that they will have until the end of September 2019 to get all of their own suppliers on board to provide complete end-to-end traceability. The benchmark, according to Walmart's open letter, is for leafy greens suppliers "to be able to trace their products back to farm(s) (by production lot) in seconds – not days."<sup>[7]</sup>

This is an important initiative. Food contamination, no matter what the source, has many negative consequences. Not only do people get sick and die, their illnesses cost the health care system, insurers and the ill individuals themselves in terms of lost time and unforeseen costs.



## Article

As well, many parties in the supply chain also suffer, from the farmers whose livelihood is compromised by the loss of reputation for their product, through the distributors who can't sell it, to the transportation partners who will lose the contract to move the produce and the retailers themselves who have to **throw out vast quantities of recalled food**.

Walmart is asking its suppliers to work with blockchain technology to address food traceability; noting that current methods are slow and clunky.

**In a comparison test the company used traditional methods, and it took about a week to track a package of mangos back to its source. Using blockchain, the process took 2.2 seconds.<sup>[8]</sup>**

If this could be implemented across food supply chains the potential losses associated with an outbreak could be quickly mitigated.



# How it works

**Blockchain was conceived in 2008 as a method of securely tracking crypto-currency transactions. Now it is finding increasing use in supply chain applications. It allows near-instant verification of details relating to transactions and hand-offs between supply chain partners.**

Blockchain is what's known as distributed ledger technology. It's a digital ledger that's attached to each and every item being tracked. As the item moves through various points in the supply chain the ledger is updated with details such as date, time, parties to the transaction and so on. As it gets updated, identical copies of the ledger are available to all parties in the supply chain for sign off, and nobody can alter the data once it's entered without approval across the board.<sup>[9]</sup>



**IBM's Nigel Gopie likens blockchain to writing records in pen:**



**If you make an error with pen, you simply cross out the error and write the change next to it — the error and change is visible. Blockchain is like using a pen; if it was like a pencil, you could erase or change data without anyone knowing...In a blockchain, nothing is ever changed; it is updated, and every update is tracked. Everyone is shown what that update was. For that reason, you can trust all records on blockchain.**<sup>[10]</sup>





Blockchain is poised to deliver great advances in supply chain management. It is the ultimate means of inventory control. At its core, it guarantees that every piece of inventory is completely unique and cannot be in the same place twice. "Move a product from finished goods to in-transit, and that transaction status will be updated for everyone, everywhere, within minutes, with full traceability back to the point of origin," asserts Paul Brody, a blockchain consultant with EY.<sup>[1]</sup>

**Blockchain will thus improve the following aspects:**

- 1 Reduction in documentation errors
- 2 Tracking of products and distribution assets
- 3 Allow for real-time sharing of process improvement information
- 4 Create a permanent audit trail to reduce fraud.<sup>[12]</sup>



# Food Fight

**The food business faces numerous challenges related to waste, illegal production, fraud, and as we've detailed here, foodborne illnesses.**

As we explain in our paper on the [sustainable food supply chain](#), about one third of all food produced every year is wasted. It's estimated that between 10 and 22 per cent of fish harvested around the world is not regulated, making illegal production another huge area of concern.<sup>[13]</sup>

Likewise, food fraud – the mislabeling, misrepresentation, tampering and substitution of one food for another – has become a serious worry. In Europe, for example, horse meat was found to have been standing in for beef in a widespread fraud.<sup>[14]</sup> A recent study found that half of the seafood sold in Canada is improperly labeled.<sup>[15]</sup>

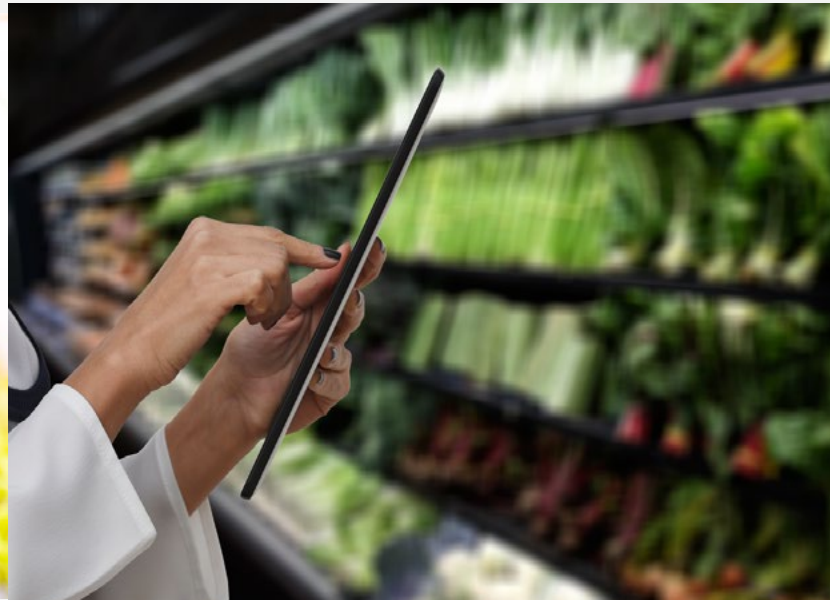
**Finally, foodborne illness has been found to affect one in six in the U.S. every year with a total cost of US\$93 billion.<sup>[16]</sup>**



# Blockchain For the win

**Blockchain can help resolve these problems. It can add transparency, increase efficiency and improve food safety. Together, those three benefits will also help to reduce the tragic waste of food around the globe.**

By beginning the ledger the moment vegetables leave the ground, data from one end of the food chain to the other can be immutably captured. It can track lettuce from the farm it came from, along with growing conditions, through to any processing facility. It can include batch numbers, expiry dates, storage temperatures and conditions, and finally shipping data including atmospheric conditions in transit and during warehousing and final mile distribution.



**Article**

The potential business benefits of using the technology are clear. **Increased efficiency cuts costs, while improved food safety reduces risk to both reputation and the bottom line.**

The blockchain ledger pens a direct line to bottom line-profitability on your own ledgers.

**BLOCK  
CHAIN**



# The way forward

**As promising as it is, it is important to remember that blockchain is still in its infancy for supply chain management.**

For it to be successful there will need to be more research, more pilot programs and standards will need to be created and implemented. To that end, many significant supply chain organizations are joining the [Blockchain in Transport Alliance](#) (BiTA).

It is a standards and advocacy organization to help educate, advocate, and establish standards for blockchain applications in the transportation industry. It and other organizations like it will have to work diligently to create a trust network that will allow for widespread use of blockchain in supply chains.

Likewise, for blockchain to work it will need a common or interoperable operating platform, and early adopters are cautioned to ensure they are dealing with reputable suppliers and not to place too much stock in inflated promises about deliverables. As with the dotcom boom in the 1990s, there will likely be much hype and little in the way of substance in many offerings that come to market.<sup>[17]</sup>



# A digital connection

**Let's assume for a moment that blockchain really does reach its potential and becomes a widely accepted supply chain tracking and inventory management tool.**

From the farm to a consumer's fork, every bit of produce, meat and fish can be followed, and everyone along the way assured of its provenance, location and proper handling.

But if you are going to have all this security built in to your operations, you need to ensure you've deployed complementary digital tools to make it worthwhile. Blockchain secures the chain of custody and verifies what has happened to a product as it moves from point to point through the supply chain. To make sure that these benefits are preserved you need to be sure that delays or mishandling are not happening on your watch. For more on this, we invite you to read our white paper focusing on [supply chain visibility](#).

Can you ensure that product arriving at your facility will be received in a timely fashion? Can you guarantee that trucks arriving to pick up loads will be processed quickly enough to ensure continued viability of perishable products? If a trailer is dropped, will your staff be able to locate it in your yard when it's needed? Are you managing the comings and goings at your dock doors using old-fashioned methods? Will a spreadsheet and telephone system be able to keep up in a blockchain world?



## Article



1

If your operation is not managing this link between carriers and the distribution centre effectively, a couple bad things will happen in a blockchain-enabled supply chain. First, product will be delayed, and delay in an omnichannel or even a simple e-commerce operation cannot be tolerated. Product will spoil, shelves will be empty, and customers will be lost.

**You'll be contributing to food waste and your business will suffer.**



2

Second – and this is the new part – your deficiencies will be known to all parties along the chain. It will be forever recorded in the blockchain ledger that, for example, it was a holdup at your docks that delayed the shipment so long that the milk spoiled. Errors will not be blamed on some unspecified 'transport delay'.

**Your operation will have to take responsibility.**



## Article

Why not avoid this scenario altogether and employ tools that are designed for the digital age? Using cloud-based [yard management](#) and [dock appointment scheduling](#) systems like C3 Solutions' will enable accuracy, efficiency and productivity in your dock and yard operations that will let you keep up in the blockchain world.

Trucks need never be kept waiting for a time slot at the docks, drivers can make their own appointments and change them if needed. Trailers in the yard are located with pinpoint accuracy so you know which one arrived when and whether it's next in line for unloading. Likewise, your staff, indoors and out, will be kept productively busy with a well-scheduled dock operation. With warehouse staff being few and far between these days, maximizing the productivity of the ones you have means a more profitable enterprise.

## Blockchain means supply chain operations will be held to a higher level of accountability.

With every move being recorded in perpetuity, you need to be able to ensure your part of the chain is as transparent and well documented as it can be. By implementing a cloud-based yard and dock management system, you'll eliminate the paper trail and the errors that come with paper documentation. Every move that takes place between carriers and your facility will be recorded in real time and in a consistent and reliable fashion. And because it's cloud-based it's secure, and available on demand.

These are powerful, effective solutions to a fast-paced, complex operational challenge. **And they are designed to be compatible with the next generation of 21st century digital technologies, like blockchain.**

So when those blockchain-enabled leafy greens start pouring into your warehouse, it's just going to get faster and more complicated. Be prepared – take advantage of the digital tools that will help your operation keep up and you'll be ahead of the competition. **They'll be in the weeds, and you'll be enjoying your salad days.**

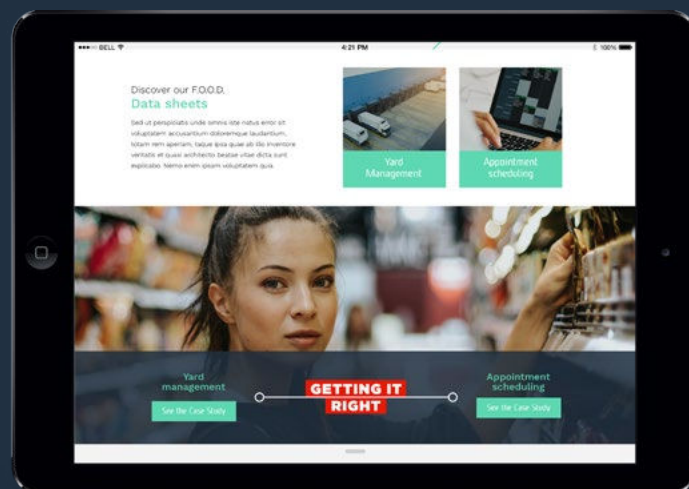


Looking to learn more about  
how others are


# GETTING IT RIGHT ?

To see how others have successfully leveraged yard and dock  
management technology to smooth out the grocery  
supply chain, discover C3's F.O.O.D. Program.

Empowering the Grocery Industry with  
**Automated Yard Management and Appointment Scheduling**



Visit the F.O.O.D. Program



C3 Solutions is an information technology company specialized in yard management (YMS) and dock scheduling (DSS) systems.

Since its founding in 2000, C3 has gained the confidence of clients around the world and across many industries including retail, grocery, distribution, manufacturing and parcel post.

Headquartered in Montreal (QC), Canada and privately owned, C3 is dedicated to developing, implementing and supporting the most complete yard management and dock scheduling products on the market today.

For more information,  
visit [www.c3solutions.com](http://www.c3solutions.com)

### Get in touch

1751 Richardson  
Suite 4408  
Montreal, QC H3K 1G6

514.315.3139  
[sales@c3solutions.com](mailto:sales@c3solutions.com)



**C3 Solutions**

# References

- [1] "[Multistate outbreak of Shiga toxin-producing Escherichia coli O157:H7 infections linked to leafy greens \(Final update\)](#)", Centers for Disease Control and Prevention, January 25, 2018; & "[Public Health Notice – Outbreak of E. coli infections linked to romaine lettuce](#)", Public Health Agency of Canada, February 9, 2018.
  
- [2] "[Sobeys removes romaine lettuce products from shelves](#)", Sobeys Inc., November 21, 2018.
  
- [3] "[Food Safety Alert – Outbreak of E. coli infections linked to Romaine lettuce](#)", Centers for Disease Control and Prevention, November 20, 2018.
  
- [4] "[Public Health Notice - Outbreak of E. coli infections linked to romaine lettuce](#)", Public Health Agency of Canada, November 20, 2018.
  
- [5] "[Public Health Notice - Outbreak of E. coli infections linked to romaine lettuce](#)", Public Health Agency of Canada, November 20, 2018.
  
- [6] "[Food Traceability Initiative, Fresh Leafy Greens](#)", Letter to Leafy Greens Suppliers, Walmart, September 24, 2018.
  
- [7] "[Food Traceability Initiative, Fresh Leafy Greens](#)", Letter to Leafy Greens Suppliers, Walmart, September 24, 2018.
  
- [8] "[Walmart mandates blockchain use for leafy greens suppliers](#)", Jeff Wells, FoodDive, September 25, 2018.
  
- [9] "[Blockchain 101: Is it going to help you?](#)", Treena Hein, Inside Logistics, June 21, 2018.
  
- [10] "[Two truths and a lie: The newest party game to explain blockchain](#)", Nigel Gopie, IBM Blockchain Blog, October 8, 2018.
  
- [11] "[How blockchain revolutionizes supply chain management](#)", Paul Brody, Digitalist Magazine, August 23, 2017.
  
- [12] "[Blockchain 101: Is it going to help you?](#)", Treena Hein, Inside Logistics, June 21, 2018.

[13] "[Blockchains and food security in the supply chain](#)", Lance Koone, Future Food-Tech New York, June 7-8, 2017.

[14] "[Horsemeat scandal: the essential guide](#)", Felicity Lawrence, The Guardian, February 15, 2013.

[15] "[Nearly half of Canadian seafood improperly labeled: study](#)", Aleksandra Sagan, The Globe and Mail, August 28, 2018.

[16] "[Blockchains and food security in the supply chain](#)", Lance Koone, Future Food-Tech New York, June 7-8, 2017.

[17] "[The potential of blockchain technology in the food system](#)", IFT.org, 2018.