

# From Farm to Fork: Using Blockchain to Track Food Freshness

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The weekly grocery shop used to be about getting the food you need at a decent price. But today, this seemingly routine task involves many complex decisions.

Organic? Gluten free? Non-GMO? Free from additives, pesticides and hormones? Barn laid, cage free or free range?

What if we could take this to the next level and scrutinise not only what goes into it, but *where* it comes from and *how* it came to be?

This is something Golden State Foods, one of the world's largest diversified food service providers, is looking to deliver to consumers. Using blockchain, IoT and advanced analytics, they are developing a system to provide an end-to-end view of their supply chain to empower consumers to make more informed choices about the food they eat.

## Digitising the supply chain to empower consumers

Guilda Javaheri, Chief Technology Officer at Golden State Foods (GSF), paints an inspiring vision of the future of supply chain. "Imagine being able to use your phone to scan the barcode of the product you're about to buy.

"You'd have all the information about the product from farm to fork. How powerful would that be?"

GSF services over 120,000 restaurants in over 40 countries, on five continents. If you've ever enjoyed a Big Mac or made a late-night KFC run, you've most likely tasted one of their products. Their core businesses include manufacturing of liquid products, protein, dairy, produce, and full line logistics.

Their vision is to use blockchain to reshape the traditional supply chain from linear, one-up, one-down visibility, to a tightly coupled ecosystem that is information-rich, collaborative and instantaneous.

"We want every node within the supply chain to be transacted in a secured, immutable, and trusted manner." Guilda says, describing this vision as "bold but feasible".

To make this vision a reality, GSF are using technologies like blockchain, IoT and advanced analytics.

## Blockchain a "transformative" technology for procurement

Guilda shies away from describing blockchain in terms of its technology, instead focusing on the value it brings to the industry.

"You've probably heard blockchain described as a distributed ledger followed by some terms like smart contracts and hashing notes. While all these terms are really exciting and interesting, to me they really fall short of truly describing the transformative nature of this technology".

"At GSF we talk about blockchain in terms of trust, immutability, and team play."

Guida points out that applying this technology to our food supply chains to tackle problems that impact everyone, gives us a higher appreciation for its value.

### **“Think big, start small, act fast”**

GSF started their blockchain journey with a design thinking workshop to uncover what end-consumer ultimately cares about. What emerged was a growing desire from consumers to ensure the freshness of food and an effort to eliminate food waste.

According to the World Health Organisation:

- An estimated 600 million (almost 1 in 10 people) in the world fall ill after eating contaminated food.
- Children under 5 years of age carry the majority of the foodborne disease burden, with 125,000 dying every year.
- One third of all food produced is lost or wasted – around 1.3 billion tonnes– costing the global economy close to \$940 billion each year.

The GSF team hypothesized that they could reduce these numbers by using blockchain, IOT and advanced analytics technologies to track, trace, and monitor their product’s freshness as it moved through the supply chain.

To prove this hypothesis, the team needed to get insights rapidly which meant controlling the initial scope of the project. “The team adopted the mantra ‘think big, start small, act fast’. We decided to start with our beef products and focus on the area that we have the most control over in our supply chain which was manufacturing, warehousing and logistics,” Guida explained.

Watch this video for the details of GSF’s blockchain project:



- Blockchain enables participants to share this data with the network while automating business process orchestration.
- RFID provides near real-time, case-level, product movement visibility.

- IoT sensors provide temperature data as well as independently verifying receipt versus shipment without any manual intervention.

### **“Aha” moments and unexpected insights**

As the team were monitoring this movement, they were rewarded with some unexpected insights.

“We initially wanted to track, trace, and monitor the temperature, but suddenly we were able also to look at inventory and have instantaneous information about the shelf life of the product at different stages of the supply chain,” Guilda explains.

“I have been in IT for over 20 years and I don’t know of many systems that give you that kind of information.” Guilda says that was another big “aha” moment in terms of what blockchain technology could do for the supply chain.

### **Data integrity and common language are key**

Maintaining data integrity throughout this process was very important, Guilda stressed. The team developed programmes to extract data from their legacy system and IOT devices without manual intervention, as well as adopting GS1 data and transaction standards.

“We wanted to make sure that our business units speak the same language. But at the same time we didn’t want to disturb the business so we did this work in parallel to business operations.”

### **Think beyond digitising your supply chain**

Guilda finished up with some valuable takeaways:

- Think big, start small, act fast: Challenge the status quo and reimagine your supply chain. Start small by addressing a particular pain point. And don’t try to reinvent the wheel, instead partner with an industry expert that has the courage to push the boundaries with innovation.
- IOT will continue to bury us all in data: Try to leverage your existing data to connect your ecosystem.
- Balance the hype with reality: The opportunity is as broad as your imagination, but don’t try to boil the ocean. No matter how small the outcome is, just get started. You’ll find the learnings will snowball.

“It’s not about just digitising your supply chain” Guilda reminds us. “You’re going to ultimately have the right product at the right time at the right place. Can you imagine how much waste today can be prevented with that kind of information? That’s what makes this pilot unique. Manufacturing, distribution and customers are sharing the data and that is really the common goal that everyone is striving towards.”