



SML

Revolutionizing the Food Supply Chain

Unlocking Efficiency and Compliance with RFID Solutions



clarity
Food

According to the [Centers for Food Control and Prevention](#) (CDC), approximately 1 in 6 Americans get sick, 128,000 are hospitalized, and 3,000 die of foodborne diseases each year. A crucial issue - the ramifications of which are felt across the nation - the Food and Drug Administration (FDA) has taken steps to transform the US food safety system, shifting its focus from responding to foodborne illness to preventing it. With a number of regulatory bodies following the US' steps worldwide, food safety has rightfully come under the spotlight for many businesses.

The Food Safety Modernization Act (FSMA) sets stringent regulations that ensure the safety of food supply is a shared responsibility across several of touchpoints within the global supply chain. They are designed to create specific actions that must be taken at each touchpoint in order to prevent contamination.

In an environment where the intricacies of the global food supply chain demand precision, efficiency, and transparency, the application of Radio Frequency Identification (RFID) technology enables grocers and quick service restaurant (QSR) businesses to take complete control of their supply chain operations.

From labor reduction and increased visibility of stock to data transparency and regulatory compliance, RFID technology redefines the dynamics of the industry, offering a range of solutions to current challenges. As the food industry faces increasing scrutiny amid heavy regulation, adopting RFID technology not only addresses these concerns but also introduces additional tangible benefits from labor and food waste reduction, to efficient recall management and enhanced sales lift.



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The Challenge of Food Safety

The FSMA places significant importance on traceability throughout the food supply chain, enforcing precise monitoring of Key Data Elements (KDEs) and Critical Tracking Events (CTEs) for products listed on the FDA Food Traceability List.

However, aside from stringent regulatory compliance, grocers and QSR businesses face a number of wider operational challenges that impact efficiency and profitability.

Inventory Management	Recalling Unsafe Food	Consumer Interest	Environmental, Social, and Governance (ESG) Demands
Inventory management for food retailers is a challenging task. The inaccuracy in tracking often leads to customer dissatisfaction and significant food waste, particularly perishable goods. GreenMatch ¹ states that more than 30% of food, or approximately 1.3 billion tons, is lost or wasted annually.	Food companies are responsible for keeping their supply chains safe and must recall entire batches of food if there is a risk of contamination of the food chain. A study undertaken by Sedgwick ² found that 416.9 million food recalls took place in the US in 2022, a 10-year high.	Today's consumer pays close attention to the food they buy, wanting to know where it is produced, its ingredients, and its origin.	With the rise of the conscious consumer, food retailers are coming under increasing pressure to improve their sustainability credentials. According to WWF ³ , approximately 6-8% of human-generated greenhouse gas emissions come from food waste.

In addition to the FSMA, these challenges only further drive the need for greater food supply chain transparency.

¹<https://www.greenmatch.co.uk/food-waste>
²<https://www.sedgwick.com/news/2023/new-report-2022-was-record-breaking-year-for-u-s-product-recalls>
³<https://www.worldwildlife.org/stories/fight-climate-change-by-preventing-food-waste>

Addressing Regulatory & Operational Challenges

SML's Clarity® Food platform, leveraging its leading retail RFID enterprise solution, will play an instrumental role in ensuring grocers and QSR businesses not only adhere to regulatory requirements, but also address these operational challenges.

It enables companies across the grocery and Quick Service Restaurant sectors to track products by their date and location of origin, enabling automated First Expire - First Out (FEFO) inventory management. With SML's traceability solutions deployed, users can also minimize the need to throw away entire batches of food. The technology traces products at the pallet, case and tray levels, reducing both risk and waste in the case of food recalls.

Clarity® Food also seamlessly tracks KDEs - such as product identifiers and production information - and CTEs, including receiving, shipping, and transformation events, throughout the entire supply chain.

With RFID technology deployed throughout a brand's supply chain, Clarity® Food facilitates real-time data capture and processing, ensuring that each product's journey is meticulously recorded. This data, structured in compliance with FSMA guidelines, can be efficiently exported to FDA systems, providing regulatory authorities with a transparent and auditable trail of product movements. Aligning with FSMA requirements not only enhances regulatory compliance but also fortifies consumer confidence by ensuring the safety and traceability of food products within the intricacies of the supply chain.



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The deployment of Clarity® Food within the supply chain creates a comprehensive and interconnected traceability framework. From supplier, to distribution center, and to store, the technology captures necessary data elements and critical events, ensuring compliance with FSMA regulations. The structured export to FDA systems fortifies compliance, allowing grocers and QSR businesses navigate the complex landscape of food safety regulation seamlessly.



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The Benefits of RFID Within the Food Supply Chain

Creating a connected and transparent food supply chain demands a strategic integration of RFID technology. The key to successful deployment lies in the relationship between hardware and software. Implementing RFID tags at both case and pallet levels, coupled with mobile RFID handheld devices and printers, lays the foundation for a comprehensive traceability framework. A plug-in solution, Clarity® Food seamlessly integrates into a business' systems, serving as the keystone to full-scale supply chain visibility.

RFID at Supplier Level

Suppliers play an instrumental role in implementing RFID technology. Creating the digital twin for each product is where RFID tags are embedded onto cases and pallets, providing essential stock data such as expiration dates and lot codes. The digital twin—comprising crucial product information—becomes the key to traceability, providing real-time insights into stock levels, enhancing operational efficiency and laying the foundation for accurate tracking throughout the supply chain.

As products leave the supplier's facility, suppliers can generate traceability events as products are shipped outbound, marking milestones in the product's journey. This visibility ensures stakeholders can track and monitor products, fostering transparency and compliance with regulatory requirements.



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RFID at the Distribution Center

Within the distribution center, the deployment of RFID allows grocers and QSR businesses to optimize both inbound and outbound operations for improved efficiency. With products automatically scanned upon arrival, RFID facilitates streamlined inventory management, providing continuous, real-time updates on stock levels and location.

This level of visibility empowers distribution centers to implement effective FEFO and First-In-First-Out (FIFO) strategies. It also reduces the opportunity for out-of-stocks and overstocking.

With traceability events generated as products are prepared for outbound shipments, grocers and QSR businesses ensure compliance with regulation while driving supply chain transparency and minimizing dwell time. With accurate and up-to-date information on product status and expiration dates, the distribution center can swiftly move products through the supply chain, reducing the risk of obsolescence and enhancing overall operational efficiency.

RFID at the Store

As products reach their final destination in stores, rolling out RFID technology becomes a key factor in driving efficiency for both inbound operations and inventory management.

RFID's real-time inventory management capabilities significantly enhance stock accuracy, which plays a fundamental role in reducing food waste and optimizing the store's replenishment strategies.

The precise tracking of product movement enables store managers to conduct more accurate demand forecasting, minimizing the risk of overstocking or out-of-stock situations. This level of data accuracy is paramount in curbing food waste, aligning with sustainability goals, and ensuring that products are available to consumers when needed.

On the shop floor itself, RFID empowers staff to make better-informed decisions, reducing inefficiencies associated with stock discrepancies and manual errors. Automating data capture through RFID not only streamlines operations but also creates a more agile and responsive store environment. At this point, the benefits of traceability and efficiency, initiated earlier in the supply chain, cascade down to the consumer-facing end, ensuring that the store operates with precision and responsiveness.

The detailed implementation of RFID technology in stores goes beyond mere inventory management; it becomes a catalyst for reducing food waste, increasing data accuracy, and optimizing demand planning. The technology transforms a store's operational landscape, ensuring that products are efficiently managed, and consumers are met with a seamless and reliable shopping experience.



With more efficient processes in place, and real-time visibility of all stock, retailers can minimize waste, optimize inventory and ultimately increase sales.

A Reliable, Compliant Solution

RFID technology can transform the food supply chain, revolutionizing traceability and operational efficiency. By taking a holistic approach to supply chain management, grocers and QSR businesses can ensure a smooth integration process, with the wide benefits of RFID being fully realized throughout the entire supply chain.

Importantly, RFID plays a crucial role in ensuring regulatory compliance with the food safety regulation. The ability to trace and monitor products at every stage of the supply chain enables users to adhere to stringent regulatory requirements. This not only helps companies avoid penalties, but also builds trust with consumers, who are increasingly conscious of the safety of the origins of their food.

Ultimately, the additional benefits of RFID deployment only drive further return on investment for grocers and QSR businesses. With more efficient processes in place and real-time visibility of all stock, retailers can minimize waste, optimize inventory and ultimately increase sales. By improving operational efficiency, ensuring product availability, and enhancing overall customer satisfaction through accurate and transparent information, companies can capitalize on increased consumer trust and loyalty, positively impacting sales and revenue.



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Powering Brands of Tomorrow



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About SML

With a presence in over 20 countries, SML Group is the global end-to-end RFID and brand identification solutions provider in the new era of retailing. We produce tech-driven solutions that promote brand transformation and prosperity by offering innovative labeling and packaging goods, high-performance RFID tags, and encoding services across industries.



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