SOWING THE SEEDS OF SUCCESS:
Leveraging traceability for a competitive advantage in the industry

Overview

Traceability requirements up and down the industry supply chain are substantial and here to stay, but there are significant benefits to be gained beyond greater tracking, visibility and compliance with regulatory, industry and vendor mandates.

The implications and ramifications of traceability requirements exist for producers and manufacturers throughout the food and beverage industry—from produce and grains, to meats, seafood and dairy. While many aspects of traceability overlap among these subvertical industries, this white paper focuses on the produce industry, using it as the lens through which we examine both the potential costs and competitive benefits these requirements bring with them.

Over the last five years, leaders in the produce industry have leveraged elements of traceability requirements to increase their competitive advantage; however, more recent innovations in today’s technology, including those related to mobility, are making opportunities from these gains even more significant as they enable a greater, stronger and more cohesive connection among growers, distributors, processors, retailers and consumers.

Along with increasingly flexible and extensible enterprise resource planning (ERP) solutions, the convergence of mobile technologies and the rapid adoption of smartphones and tablets by both business and consumer communities is enabling produce companies to leverage information in new...
and profitable ways. This paper provides the basic context within which these changes are taking place for the produce industry, followed by a discussion of the innovations themselves, how they are emerging in today’s marketplace and future applications of this disruptive technology that will create new opportunities for produce executives to differentiate themselves from their competitors.

Introduction

In a landscape characterized by fierce competition, razor thin margins and stringent food safety and traceability requirements, leaders in the produce industry are increasingly seeking means to improve efficiency, reduce costs, maximize profit and improve brand loyalty. Addressing challenges that range from near-immediate inventory turn times for highly perishable products to increasing expectations of safer and healthier products from customers and consumers, virtually every stakeholder in the produce supply chain is faced with critical decisions around inventory management, customer demands, traceability and how to improve the bottom line along the way.

While some organizations view rising traceability requirements merely as burdensome overhead, others are successfully leveraging the improved efficiencies and transparency that come with improved traceability to gain and maintain a distinct competitive advantage. Against this dynamic backdrop, this white paper provides produce industry executives insight into the role enterprise-wide visibility, automation and mobile communications play in addressing produce-specific traceability requirements, industry standards and changing consumer demands.

The discussion begins with a brief introduction of the players in the produce supply chain, followed by a high-level snapshot of the produce marketplace today, including recent market trends that may provide further opportunities for gains from savvy competitors who are able to effectively maximize use of available technology solutions.

This examination is followed by an outline of the drivers behind and specifics around increased traceability requirements, both voluntary and regulatory, and the areas in which produce industry organizations may be able to gain a competitive advantage as they meet and exceed these standards. The paper then focuses on specific opportunities for produce companies to outperform the competition, based on the benefits rapidly emerging mobile technologies bring to the game. Finally, the paper closes with a look at opportunities on the horizon as new mobile technologies emerge and mature.

Stakeholders in the produce supply chain

While not an exhaustive list, the following players comprise the bulk of stakeholders in the produce supply chain:

- **Growers and shippers.** Grower and shippers typically include small, medium and large farmers that pick, sort and pack product that then goes to processors and packers. Growers deal with pressures around managing field and labor resources, while also ensuring that the traceability data created at the start of the chain is accurate and compliant.
- **Processors and packers.** Processors and packers generally include larger regional or national companies that procure product from a variety of growers who then sort, wash and pack product for retail consumption. Many of these companies have moved to a strategy of building brand recognition among consumers, especially in the health and organic space. These companies are concerned with product quality, production efficiency, supply chain efficiency, compliance with food safety laws and brand protection.
- **Wholesalers, distributors and distribution centers.** Wholesalers, distributors and distribution centers are the middlemen of the produce industry and typically not brand owners. Positioned between processors and packers and retailers, they play a critical role in the flow of product and information. Key concerns for these companies include warehousing efficiency, supply chain optimization and value chain visibility.
Food services processors, brokerages and distributors. Food services organizations process and distribute food products to entities such as restaurants, cafeterias, industrial caterers and hospitals, often serving as the sales and distribution arm for smaller food manufacturers. Like wholesalers, distributors and distribution centers, food services organizations also play a critical role in the produce supply chain. Keys to success for these companies include warehousing efficiency, supply chain optimization and supply chain visibility.

Retailers. Retailers sell packaged and finished goods directly to consumers and are on the front lines of customer interaction. Key concerns for retailers include brand protection, customer loyalty programs and optimization of shelf space and inventory turn. Flowing customer information back and through the supply chain is also an important function of retailers.

Produce industry market snapshot

According to data from the United Fresh Foundation, produce department sales accounted for 32 percent of total fresh sales in the first quarter (Q1) of 2015, second only to the meat department. The produce department generated $49,369 per store, per week, a 3.2 percent increase from Q1 2014, with weekly per-store volume sales reaching $31,455, up 1.2 percent from the same time in the previous year.

To break these figures down further, fruits experienced a 2.5 percent increase in weekly dollar sales per store, accompanied by a 2.9 percent increase in weekly per-store volume sales and an average retail price decrease of 0.4 percent. For their part, vegetables experienced a slightly different growth pattern, as weekly dollar sales per store soared 4.1 percent higher in Q1 2015 than in Q1 2014, with weekly sales volume per store down 0.4 percent and average retail price up by 4.5 percent.

In value-added produce, though prices were up, so were sales, which reached $3.6 billion in Q1 2015, up an impressive 11.5 percent. Value-added fruits, sold as fresh cut, in jars and cups, or with overwrap, experienced a 6.2 percent increase in weekly dollar sales per store and a 0.5 percent increase in weekly sales volume, despite an average retail price that was 5.6 percent higher than in Q1 2014. Similarly, value-added vegetables, sold as side dishes, in trays (or party platters), for snacking, or for use in meal preparation, saw increases of 11.5 percent in weekly dollar sales per store, 8.2 percent in weekly volume per store and 3.0 percent in average retail price.

While growth in these categories is impressive, so too was the organic sales sector, which accounted for 8.2 percent of all produce sales in Q1 2015, an increase from 7.3 percent in the same period of 2014. In all, there were $957 million in organic produce sales in Q1 2015 alone, up a staggering 16.5 percent. While there was a 7 percent increase in the number of organic produce items carried by grocery stores, fruits and vegetables continue to be a consumer mainstay, increasing sales by 17.5 percent. Interestingly, as shoppers increasingly seek healthier options, food products that include produce components are rapidly growing in popularity. For example, produce sales in the deli department—led by the salad bar, which experienced a 5.3 percent weekly dollar sales increase and a 4.3 percent weekly volume sale increase—rose to $405 million in Q1 2015 alone, up 9.8 percent from Q1 2014.

This microvertical industry snapshot is useful when examining consumer purchasing behavior, and the ways in which industry trends may be married with existing and future technologies to yield optimal results for members of the produce community seeking success in the marketplace with means other than a “price-to-price” comparison with the competition. For example, as consumers
increasingly seek out organics and locally grown produce, adoption of technologies that provide them with easy access to thorough and accurate details around how and where their produce was grown, handled and transported could mean the ability to move from a commodity pricing model to one that commands both higher margins and greater brand loyalty. The ability of some of today’s technology to provide the produce industry not only with traceability, but also with true revenue-generating opportunities will be discussed throughout this paper.

**Produce and public health safety: An ongoing need for traceability**

At the most basic level, the produce industry is subject to traceability standards and requirements that originated with concern over potential harm to humans and animals arising from tainted, contaminated or mislabeled food. While many domestic production methods have increased in sophistication over the decades, the need for such protections has not been eliminated. Consider the following recent adverse events in the produce supply chain:

- In September 2015, after the California Department of Public Health found high levels of the heavy metal cadmium in bags of baby spinach (more than 10 times the average amount), its Salinas, California–based producer voluntarily recalled the item in question.\(^5\)
- In April 2015, at least six food companies issued voluntary recalls of products made using spinach from an Oxnard, California–based vegetable processor, citing risk of listeria contamination.\(^6\)
- In January 2015, after tests performed by the FDA found a connection between a California apple processing plant and a strain of listeria bacteria that killed seven people and sickened more than 30, the plant voluntarily recalled an undetermined number of Gala and Granny Smith apples from retailers.\(^7\)

In addition, outbreaks linked to imported produce are also on the rise, as illustrated by the following two examples:

- In September 2015, a salmonella outbreak linked to imported Mexican cucumbers sold by a San Diego–based produce distributor resulted in two deaths, 91 hospitalizations, and 418 confirmed cases of foodborne illness reported across 31 states, including California and Texas.\(^8,9\)
- As of August 2015, 495 people in 30 states were infected with cyclospora, a single–cell intestinal parasite, with clusters of illnesses identified in Texas, Wisconsin and Georgia, believed by the U.S. Centers for Disease Control (CDC) to be attributed to imported cilantro.\(^10\)

With health and safety drivers of traceability front and center, the produce community is all too aware of the profound long–term damage that can beset an entire industry or its segments when elements of contamination cannot be accurately traced and addressed. Overall loss to the produce industry attributed to lack of adequate traceability has at times been estimated at up to 50 percent.

Perhaps the most graphic illustration of this point can be seen in a 2008 salmonella outbreak attributed to contaminated tomatoes that sickened 1,300 people, required hospitalization of 250 and cost the tomato industry $250 million in lost revenue over a one–year period. Subsequent research determined the contamination actually originated from serrano peppers coming out of Mexico that had been mixed with the tomatoes in salsa—but lack of adequate traceability prompted broad warnings around tomatoes that erred on the side of safety. By the time the truth was discovered, the collateral damage to the tomato industry was irreversible.\(^11\) Trust was lost, and at that point in time, few if any technology tools existed that were capable of quickly restoring consumer confidence.

Within this unforgiving landscape, produce industry leaders are looking to mobile–enabled technology solutions that provide not only traceability of their products throughout the supply chain, but also provision of critical data all the way to the consumer, enabling greater consumer confidence, establishing stronger brand loyalty and significantly impacting revenue potential. Some of the market opportunities these new technologies are affording the produce industry will be discussed later in the paper.
Traceability drivers

Over the last decade, scores of highly publicized recalls have forced the produce industry and regulators alike to rethink traceability requirements. On one hand, the industry has sought to regulate itself in an effort to stave off additional compliance pressures. On the other hand, regulators have had to respond to public outcry from consumers and lawmakers. The result has been the creation of produce-specific industry standards that, while voluntary, have been necessary to operate in such a highly complex and restrictive industry. In addition to the industry standards, produce companies have also had to contend with the unique demands of many of their customers, including big box retailers that have imposed increasingly stringent traceability and quality standards.

Voluntary initiatives

Within the realm of “voluntary” traceability, the produce industry is affected by both industry pressure and by requirements put in place by retailers and “further processors” of produce. Interestingly, voluntary measures in this scenario are often stricter than regulatory measures, perhaps indicating a preference among members of the produce supply chain to be self-regulating rather than ruled by external government entities they feel may be less familiar with the intricacies of their businesses.

Industry—Produce Traceability Initiative

The produce industry is notable in that it has led the way among its food counterparts in both consumer demand for “farm-to-fork” traceability and in industry adoption of this vision, driven by the recognition that the risks faced by consumers, individual companies and the industry as a whole have been profound and costly. To address these concerns and make the farm-to-fork vision a reality, the produce industry began its own traceability charge with the creation of the Produce Traceability Initiative (PTI) in 2007. PTI is an industry consortium comprised of growers, food processors, retailers, industry trade groups and technology partners with a vision and plan for supply chain-wide adoption of electronic traceability. PTI has also been used as a model for traceability initiatives in other industries, including dairy, meat, seafood and packaged foods.

Vendor initiatives

Soon after its creation, prominent produce retailers, including Wal-Mart®, Safeway®, Kroger®, and Food Lion®, quickly went on record endorsing the goals of PTI. While PTI sought to establish a broader standard and platform for traceability in the produce industry, retailers and further processors of produce intently focused on risk mitigation, reputation management and brand protection, continuing to push for even more rigid guidelines regarding quality, safety and freshness—particularly when produce is used in private label and store brand products. These nonregulatory “vendor” requirements are generally considered to have as much if not more impact on produce processors than many current government requirements, as failure to meet vendor traceability standards in even a single mock recall can mean immediate termination by the vendor without additional warning or notice. With their extreme focus on brand protection, retailers often make periodic mock recalls part of their relationship with suppliers, sometimes even moving outside the organization to an auditing agency to ensure the results of food-safety audits are independently verified.

The power of “voluntary” vendor requirements in promoting adherence to traceability standards and goals cannot be overstated. Says a bar-coding industry executive specializing in mega-retailers, “The real mandate for them [produce suppliers] isn’t the government guidelines so much as mandates from retailers. When retailers set the expectation that traceability is a condition of doing business, then growers will fully adopt the standard.”

Regulatory—Food Safety Modernization Act

While PTI is technically a voluntary initiative within the produce industry, it also helped to develop much of the seminal work that was later incorporated into the U.S. Food and Drug Administration (FDA) Food Safety Modernization Act (FSMA) of 2010, signed into law on Jan. 4, 2011, as the most sweeping reform of U.S. food safety laws in more than 70 years. The act is focused on ensuring the
U.S. food supply is safe by shifting the focus from responding to contamination to preventing it.\footnote{14} Primary aspects of the law include:

- **Preventive controls:** To take a more proactive approach to food safety, the FDA established mandates that require food facilities to evaluate hazards in their environment and operations, then implement and monitor safety measures to prevent contamination. In the event that any issue occurs, companies must also have in place a plan of action to ensure swift corrective action.

- **Inspection and compliance:** The FDA is committed to innovating its inspection processes to maximize efficiency, with a focus on applying resources in a risk-based manner.

- **Imported food safety:** Millions of food products enter the United States every year. In fact, the FDA estimates that 15 percent of the U.S. food supply is imported, including 60 percent of fresh fruits and vegetables and 80 percent of seafood. Because of this, FSMA legislation includes initiatives to ensure imported food safety (including supplier verification activities), and gives the agency the power to refuse a food product if a supplier refuses inspection as well as require certification that imported products are in compliance with food safety standards.

- **Response:** The FSMA gives the FDA mandatory recall authority for all food products, a valuable advancement in the agency’s ability to protect public health.

- **Partnerships:** The legislation encourages collaboration across food safety agencies, including federal, state, local, territorial, tribal and foreign sectors, and supports activities that encourage and facilitate this teamwork.\footnote{15}

The FSMA also includes provisions directing the FDA to “establish a system that will enhance its ability to track and trace both domestic and imported foods. In addition, FDA was directed to establish pilot projects to explore and evaluate methods to rapidly and effectively identify recipients of food to prevent or control a foodborne illness outbreak.”\footnote{16}

Two pilot projects were required, with the intent to determine what data are most needed to trace a widely distributed product back to a common source. One project was reserved for the processed food sector, and another was focused on processors and distributors of raw fruits and vegetables.

Announced in September 2011, the Product Tracing Pilots were carried out through the FDA’s existing contract with the Institute of Food Technologists (IFT). According to the FDA, “The pilot projects were designed to explore and demonstrate methods for rapid and effective tracking and tracing of food, including types of data that are useful for tracing, ways to connect the various points in the supply chain and how quickly data can be made available to FDA. In addition to providing the findings of the pilot projects, the report contains IFT’s recommendations to FDA for improving the tracking and tracing of food.” The FDA released the final report on the pilot projects in March 2013,\footnote{17} with key recommendations from the IFT that include:

- The establishment of a uniform set of record keeping requirements for all FDA-regulated foods
- The identification and recordkeeping of Critical Tracking Events and Key Data Elements by food manufacturers, processors, packers, transporters, distributors, receivers, holders or importers
- The requirement to submit more than one level of tracing data, if available
- The adoption of a technology platform that allows efficient aggregation and analysis of data submitted in response to a request from regulatory officials\footnote{18}

The FDA has proposed seven foundational rules to implement FSMA, set to be finalized in 2015 and 2016. The first two, Preventative Controls for Human Food and Preventative Controls for Animal Food, were finalized and issued on Sept. 10, 2015. The next three rules, including Produce Safety, Foreign Supplier Verification Program and Third Party Certification, are set to be finalized and issued on Oct. 31, 2015. The remaining two, Sanitary Transportation and Intentional Adulteration, will be finalized on March 31, 2016, and May 31, 2016, respectively.\footnote{19}
New regulatory requirements brought to segments of the produce supply chain by the FSMA include:

- **Growers and shippers**: Development of mandatory produce safety standards
- **Fresh-cut processors, wholesalers and distributors**: Registration of facilities every two years, requirement for food facilities to develop and implement preventive control standards, creation of risk-based inspection frequency programs for food facilities, ensuring FDA has access to records associated with a food that may be part of an outbreak investigation or any other article of food that is likely to be affected in a similar manner, FDA authority to suspend registration of any facility where there is reasonable probability that food from the facility could cause serious adverse health consequences to humans or animals
- **Importers**: Requirements to perform risk-based foreign supplier verification to confirm that imported food is produced in compliance with applicable U.S. laws and not adulterated or misbranded; requirements for FDA to establish a voluntary qualified importer program, authorization for FDA to mandate that imported food have a certification of compliance with applicable requirements
- **Retailers and food service**: Requirements for additional information to be submitted to the reportable food registry that impacts retailers
- **Food transporters**: Requirements for FDA to develop new regulations for the safe transport of food
- **General**: Authorization for FDA to require a mandatory recall of any product for which there is a reasonable probability that the product is adulterated or misbranded and will cause a serious adverse health consequence or death; mandates for FDA to pilot tracing systems, consider establishing a product tracing program, and expand record keeping requirements for high-risk foods; requirements for FDA to develop guidance and regulation to protect against intentional contamination

The new law also requires produce shipments to have bar code or QR code labels to the case level that identify producer, production location, and “unique lot number and content description.” Key revisions to the rule are being considered and include adjustments to water quality standards and clarifications on wild animal provisions, among other updates, with finalization set for Oct. 31, 2015.

**Traceability and technology**

Against this backdrop, the proverbial writing has been on the wall for some time for stakeholders in the produce supply chain: industry and regulatory standards for traceability cannot effectively be met with cumbersome and time-consuming manual and paper-based records, or even with rudimentary technology tools.

To address these challenges, produce companies often look to technologies like ERP systems as their operational system of record for traceability. While many ERP systems offer some level of transparency and access to information on merchandise source, production and line operations, inventory and customer shipments, most ERP systems are not ideally suited to provide the full functionality required to effectively support mock or actual recall scenarios.

Historically, this capability gap has forced many produce companies to either heavily invest in disruptive ERP customizations or to rely on manual spreadsheets and workflows to augment missing functionality. This reality underscores the need for leading produce companies to select a vertical-specific ERP solution able to both accommodate complex track and trace reporting for compliance as well as support bidirectional customer and consumer safety communications to ensure brand loyalty and trust.

**Traceability as a competitive advantage**

For growers and shippers, pickers and packers of produce, back-office technology platforms have traditionally been viewed as disconnected, inflexible information systems used simply to warehouse basic data in categories like contract versus yield price, trade promotions efficacy, inventory availability, sales orders and delivery status—or information necessary to comply with industry and governmental mandates.
Although point of origin information, including country, planting region, farm name, date and time of harvest, field team and other elements is considered a “must have” to meet regulatory requirements, this treasure of uniquely relevant, available data has rarely been leveraged to its potential as a toolset to achieve myriad tangible business benefits, including:

- Greater consumer confidence and brand loyalty
- Faster response times in recall scenarios
- Automated, on-demand push notifications to consumers
- Real-time access to product information
- Accommodation of Field-Pack, Shed-Pack, or Line-Pack with automatic tracking of lot commingling
- Ease of use and high degree of configurability
- Additional real-time product information for B2B processors
- Real-time traceability within a highly complex supply chain

At the most basic level, traceability tools integrated into an ERP system of record enable produce stakeholders to deliver the right product faster, in the right quantities, to the right place, at the right time. At a higher level, some solutions now allow consumers to access a comprehensive dashboard of product information, not only to view recall inquiries, but also to receive value-added product information and promotions.

From a business process perspective, today’s technology allows quality assurance staff to automate any number of daily functions, and in the event of a significant food safety event, easily place relevant holds on production and fulfillment processing, depending on the additional ERP-centric functionality currently in play.

Technology also offers produce companies quick access to recall; freshness; country of origin and grower, lot and processing facility information; nutrition and allergen information; and recipe options. These same consumers can sign up for active push notifications so that they are proactively made aware if a recall is executed, helping to avoid potentially dangerous food and, in so doing, dramatically affecting consumer confidence.

Particularly with growing consumer demand for organic, locally grown, regionally grown and sustainable produce, extending available information all the way back to the consumer builds brand loyalty. Technology enables stakeholders to communicate critical information that may include where a particular item was grown, chain of custody and recall information, as well as to differentiate their products for consumers—for example, organic products or “locally grown” or “identity preserved” produce targeted to specific markets.

From a cost reduction and inventory control perspective, producers who lack accurate data on what they have in the warehouse tend to produce too much, resulting in loss due to spoilage. Today’s technology enables real-time visibility into accurate inventory of products in the warehouse and information on what is being loaded during shipping. With better inventory information, shipping can take place immediately and production scheduling can be optimized to better meet demand. Some vendors also offer technology designed to work for both branded and private label products, regardless of the complexity of the distribution channel.

Technology solutions also exist that can operate in a variety of delivery models, depending on the user’s needs. Solutions that can be delivered either on-premise (with software installed on a produce company’s own servers) or on-demand (accessible via the Internet) ensure processors and retailers are able to maximize the technology’s functionality in the way that best suits their individual business requirements.

Some of the most advanced technology in this space enables produce companies to truly distinguish themselves from competitors, allowing them to push highly targeted coupons, buy one, get one (BOGO) and other trade promotions to consumers while also maximizing feedback capture capabilities to encourage repeat purchases and drive revenue. These highly configurable solutions allow produce companies to respond rapidly to changes in consumer behavior, enabling
them to quickly change messaging and campaign branding by company, product line, label and retail trademark. These capabilities are a game changer with real potential to build brand recognition, loyalty and consumer preference.

**Traceability goes mobile**

Advancements in mobile technology, the rapid adoption of smartphones and tablets by businesses and consumers, and increasingly flexible and extensible business applications have converged, enabling produce companies to harness information like never before. Forward-thinking produce companies are leveraging this convergence to extend highly detailed product information all the way to the consumer’s fingertips, providing further safeguards from recalls while simultaneously improving customer and brand loyalty.

A study from Cornell University revealed that consumers were willing to pay up to 50 percent more for local produce that had a label or marketing materials containing harvest information and “farm identity.”

This comprehensive consumer connection is allowing grower and shippers, processors, distributors and retailers to use mobile technology tools to markedly strengthen customer preference and drive repeat purchases and greater revenue opportunities, while also providing consumers with greater peace of mind.

For these companies, coding, tracking and tracing produce items start at the field level, processing facility or packing plant where unique coded labels are applied to cases or individual items, with product information linked to a specific grower, manufacturer or processing facility. This valuable information is passed down the supply chain:

- Produce processors are able to determine the quality and viability of items being delivered by suppliers before pallets or containers are even taken off the delivery truck.
- Retailers are able to verify the alert and recall status of merchandise before they stock store shelves or make it available online.
- Consumers are able to determine with certainty that the produce they select is safe and access a host of other relevant information designed to drive confidence and trust, including nutrition details, allergen notices, product information, organic certification, grower profiles, recipes and produce active push alerts.
- Growers and shippers, packers, processors and retailers can engage promotions and offer coupons at the shopping cart level to encourage additional purchases and help build brand loyalty.

Underscoring the value this type of technology might bring to the produce industry, BBC News reports, “consumers are 12 percent more likely to buy a product that can be traced.” Interestingly, this phenomenon has the potential to hold true even if the produce in question is offered at a premium price point.

Though only anecdotal, a leading produce industry publication noted that consumers in a Salinas, California–based market study were willing to pay up to 30 percent more for Valencia oranges that contained smartphone–scannable barcodes that provided them with regional grower information before they reached the checkout register.

Similarly, for retailers paying a premium to carry “home grown or prepared” specialty produce items to better meet consumer demand, instantly being able to validate grower and harvest information can have a substantial impact at the cash register.

A study from Cornell University revealed that consumers were willing to up to 50 percent more for local produce that had a label or marketing materials containing harvest information and a “farm identity.” General food products with organic traceability yielded even higher results, with shoppers demonstrating willingness to pay up to 82 percent more for these products than for their undocumented counterparts.
Looking forward: Not your father’s traceability

Forward-thinking produce companies have been leveraging traceability requirements imposed by regulators, retailers and industry trade groups to improve aspects of their business for some time, and are now beginning to capitalize on the next wave of advances in technology to improve margins, strengthen brand and customer loyalty, and ultimately create a competitive advantage.

Existing functionality in today’s technology enables consumers to scan a bar code, QR code or metatag to determine whether a product has been recalled or to receive an alert via email; the next step will be to push instant notifications or SMS text messages to a consumer’s smartphone when a recall has occurred. Imagine looking down at a smartphone to see a text reading, “The bag of spinach you purchased on May 5 has been recalled.”

Envision further the possibilities of integrating this type of technology with shopper loyalty cards. Advances in ERP functionality are well on their way to linking merchandise detail information with smartphones and shopper loyalty programs, and storing the information in a single database. This repository would then be searchable by the manufacturer or retailer in the event of a critical merchandise update or recall scenario. Notifications could be segmented in realtime based on purchase activity, expiration date, allergen information or any set of criteria dictated at the ERP management level and directly pushed to the consumer.

Potential for significant revenue enhancement also exists from a marketing and promotions perspective. By linking ERP data with couponing programs, retailers can cost-effectively drive relevant, targeted offers based on buyer history and current preferences. Coupon delivery can be automated to push alternative offers to a shopper’s mobile device, even prior to that consumer leaving the retail store, website or e-commerce portal. This ability to dynamically update offer information has significant potential to influence buyer behavior and drive customers to higher-profit merchandise that closely matches their up-to-the-minute interests.

The bottom line is that business opportunities can now be maximized using vertical-specific ERP platforms and software synced with the latest in mobile communications, allowing produce companies to efficiently and cost effectively comply with government, industry and vendor requirements while also enhancing trust and brand loyalty. Bridging the chasms between the farm/plant/distribution site, and the point of sale—regardless of how business is transacted—enables all players in the produce supply chain to deliver a positive purchasing experience, and one for which all parties are willing to pay a premium.

While the market potential for these new technologies in the produce arena seems limitless, the scenarios described are far from wild theorizing of “Jetsons-like” capability—technologies like these are entering production with the help of vertically focused solutions providers and are beginning to be leveraged by both regional and global leaders in the produce industry.
Endnotes

1. ‘Fresh Facts on Retail,’ Q1 (Jan.-March 2015), United Fresh Produce Association.
2. Ibid.
3. Ibid.
4. Ibid.
8. ‘Custom Produce Recalls Cucumbers Connected to Salmonella Outbreak,’ September 13, 2015, News Desk, Food Safety News.
11. ‘Tracking Food in the Supply Chain,’ 2010, LXE, Inc.
12. Ibid.
13. Ibid.
15. ‘Food Safety Legislation Key Facts,’ U.S. Food and Drug Administration.
18. Ibid.
23. ‘Retail Produce Supply Management,’ University of Oregon, Sustainable Business Case Study Cache.