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Levels of RFID Maturity, Part 1

Radio frequency identification (RFID) promises to create and make available data so that supply chain stakeholders such as manufacturers, growers, processors, distributors, and retailers using interconnected systems:

- Can automatically locate any of the items that were shipped in a given case or pallet.
- Will manage shipping facilities that automatically know whether a particular case and or pallet should be on a particular vehicle.
- Have receiving facilities that know automatically whether a shipment's contents match the advance shipping notice, and the correct personnel are immediately notified of any discrepancies.
- Can use software to adjust forecasts and orders based on sales velocity during promotions.
- Will immediately know if theft or tampering has taken place, without requiring product inspection.



RFID technology will transform these possibilities into reality by supplementing, and then replacing, printed bar codes with unique tags that store individual item information and transmit the data to RFID readers and on to the systems that will implement the vision.

RFID tags can store large amounts of unique information,

currently up to 256 characters, which is considerably more than the capacity of bar codes, which hold about 15 characters of information. This means that RFID tags can be used to uniquely identify individual pallets, cases and items. RFID tags (with proper engineering) can transmit identification data through almost any kind of packaging and out of line-of-sight, so the contents of a case and/or pallet can be read and confirmed almost instantaneously. Bar codes, on the other hand, require line-of-sight and correct orientation to a scanner.

RFID data and supporting systems can and will provide real-time visibility into the perishable product lifecycle and supports strategic demand-driven supply network initiatives, by “tracking and tracing” the RFID-generated data across the supply network and putting it in the framework of detailed business process information such as growing and shipping history, sales velocity and shipping conditions.

By helping companies observe and understand the movement of inventory in real-time, RFID can reduce instances of out-of-stocks and un-saleable product, shrinkage, and the cost and manpower affiliated with moving and monitoring inventory.

Some companies have experienced project-specific success with internal RFID-based asset tracking and small-scale pilot programs. Today, much larger scale RFID adoption is now being driven by mandates from very large retailers, such as Wal-Mart, Target and Albertsons, and government agencies and departments, such as the United States Department of Defense. These entities are requiring suppliers to implement RFID tags on all cases and pallets and RFID tag readers in their own and their customers' warehouses and distribution centers within the next few months and years. Many other companies, not announced in the press, are in the pilot and investigative levels of RFID implementation.

To satisfy these requirements, technology providers are

rapidly designing, testing, and implementing RFID technology specifically to satisfy the conditions of the mandates as they are currently defined. Many analysts caution that companies that implement “slap and ship” RFID programs specifically to satisfy these mandates may use technologies that will need to be replaced in just one or two years. More importantly, purely mandate-driven RFID initiatives fail to leverage the many ways that RFID can enable internal improvements in areas such as quality and cost reduction.

The Evolution of RFID Adoption

RFID will transform industry by enabling manufacturers, growers, distributors and retailers to gather detailed information at the pallet and case level at every point in the distribution process. Item-level tagging is at least several years away; there are a number of technical and privacy issues to be worked out.

A number global companies using RFID have already realized exceptional results. British brewery Scottish and Newcastle saves \$25 million annually by placing RFID tags on its high-value beer kegs. Through improved business processes and recordkeeping the company has reduced the number of kegs lost or not returned by customers. After a three-month pilot program, The GAP reported that RFID tagging improved in-store inventory accuracy from 85 percent to 99.9 percent. British retailer Marks & Spencer estimates that it reduced the amount of time required to read stacked trays of food by more than 80 percent. The bar codes on trays, dollies, and roll cages were replaced with RFID tags that include the supplier's name, product information and sell-by date.

Many analysts believe that the widespread adoption of RFID technology will, in general, be driven not by the suppliers' internal initiatives, but by mandates being established by some very large retailers and other customers of suppliers.

Wal-Mart, Albertson, Tesco, and other large retailers will gain the benefits of RFID technology by requiring that cases and pallets delivered by their suppliers use RFID tags, with deadlines as soon as January 2005. These firms plan to use RFID to streamline their own business processes by speeding the identification, processing, and reduction of their inventories, and by substantially reducing the amount of manual product handling. Wal-Mart, alone, is expected to save in excess of \$1 billion annually. Michael McCartney, of QLM Consulting, agrees with these numbers and is a part of Wal-Mart's efforts to implement RFID solutions for perishable commodities.

Over time, most large purchasers, retailers and government agencies will see the value of RFID technology and associated improvements in business practices and implement similar mandates. As an example, the U.S. Food and Drug Administration has suggested the wide adoption of RFID tags and systems to increase pharmaceutical security and integrity by 2007. It will certainly convert this suggestion to mandates and regulations at some point. Recent studies indicate that the savings to pharmacies, pharmaceutical manufacturers and consumers will be enormous.

Benefits

Compliance with mandates, while important, obscures the possible improvements to business processes, and subsequent increases in customer service and profits that will be attributable to RFID adoption. Enterprises can utilize data gathered from RFID systems to create real-time supply chain visibility. Producers and distributors of goods can identify and respond to challenges as well as opportunities for improvements. Companies can also use the technology and systems to improve their processes, reducing costs and improving quality. Benefits of RFID include:

Stock-out reductions.

Case-level RFID tagging and reading will enable retailers to keep better inventory records. Coupled with sales information, this data can identify potential stock-outs, and place immediate replenishment orders with the distribution center or manufacturer, improving customer satisfaction and increasing sales. While this is possible with bar codes, the RFID chips and associated systems offer much more cost-effective methods of accomplishing these tasks, automatically.

Reduced shrinkage.

Since each case of goods or produce will have a RFID chip with a unique ID or serial number, tracking individual cases of product as they move through the supply chain can be achieved. This will provide the opportunity to reduce theft and tampering, and decrease the costs associated with loss prevention.

Delivery receipt and reconciliation process improvement.

RFID technology reduces the order-to-delivery cycle time by providing automatically gathered, accurate information about the contents of a shipment. This makes it possible to ensure correct delivery and improved shipment receipt reconciliation and more accurately identify the discrepancies. Analysis of discrepancies will identify their root cause. In fact, monitoring of goods as they are loaded on the truck is possible, reducing misleads and ensuring loading accuracy.

Time-sensitive goods monitoring.

Goods with a limited shelf life can be automatically monitored

so older product can be rotated to the shelf front before expiration. In addition, through the use of sophisticated tags, environmental conditions during shipment can be monitored and tracked, increasing the probability that out-of-compliance conditions can be identified and reduced.

Inventory and warehouse management improvements.

RFID can improve inventory accuracy by automatically reading the RFID tag, regardless of case or pallet orientation at conveyor speed, allowing identification of the contents of cases and pallets without the manual reorientation required to locate and scan each individual bar code. Warehouse efficiency is improved by reducing the number of times workers must touch a case or pallet to determine its content. These process improvements reduce warehouse cycle times and labor costs substantially.

Defect tracking and recall management.

Defective products discovered after delivery to the consumer or to the retail establishment have, in the past, caused extensive and expensive recall efforts. When the systems are put into place, RFID-generated data will be used to trace a product's origin and production lot, and more importantly, the retailers to whom it was delivered. This information can be used to discover where the defect was introduced and determine what products need be recalled from whom, improving quality and customer service and reducing liability.

Increased product velocity and inventory turns.

Real-time analysis of track and trace information will permit

companies to use the highly detailed RFID data to intelligently accelerate product velocity by reducing and removing distribution bottlenecks and improving inefficient business processes.

Part 2 of this article will explain the levels of maturity.

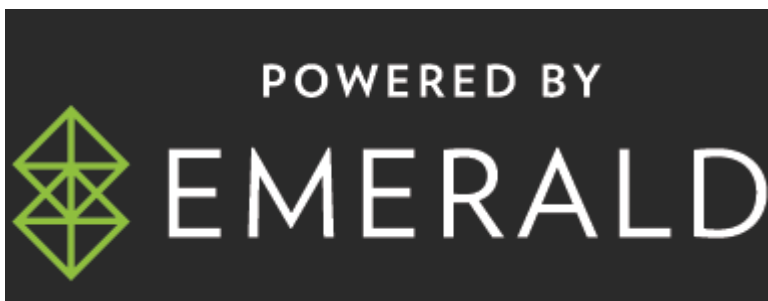
Paul Blossom is a principal consultant with Kyvia, Inc. Previously, as COO of Stryon, he focused on building the corporate infrastructure needed to maintain Stryon's rapid growth as a company and on ensuring that quality remains high while product development cycle times are kept to a minimum. To comment on this article, click on the link below.



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