

RFID in Modern Supply Chains

An InSync Software, Inc.

Whitepaper



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The widespread adoption of RFID and sensor networks will be determined by how well organizations can leverage this technology to improve business processes and efficiency. In the myriad of RFID solutions and technology that have been put forth to date, few deployments outside of mandate compliance and pilots have become recognized best practices of how to achieve ROI. To some, RFID has become a technology in search of a problem to solve. While early adopters were predominantly retailers deploying RFID for tag and ship compliance, the market has continued to mature. Beyond mandates, the real value of RFID and sensor applications now revolves around process efficiency and extension across business ecosystems.

Currently, there is a surge of process-centric RFID adoption with supply chain-dependent companies at the forefront of the trend. As with the early days of barcodes, the technology's auto-identification capability was initially interesting to the techno-innovators. Until standards were adopted across industries and processes with clear ROI were defined, companies were not able to justify the adoption of the technology. Many industry analysts assert that a similar chasm is being crossed for RFID-based solutions.

Early RFID deployments related to process automation centered on being able to recognize a specific item without line-of-sight. Some examples of first generation deployments, going back more than 20 years, include Real Time Location Systems for locating an item in a facility or painting automotive parts in a manufacturing line based on a specific build recipe. For high value assets, where a \$40 active tag is justifiable, the application has proven its worth. However, the business climate has changed substantially. Given that modern manufacturing is becoming highly outsourced and geographically dispersed, the question becomes - What happens when items go beyond enterprise boundaries?

In such a scenario, RFID becomes an enabler to extend item-based processes across multiple partners in the business ecosystem. RFID and sensor networks enable the business process to work based on physical reality. Imagine a supply chain where all associated parties know exactly the state and context of each item in the supply chain because sensors are able to provide that intelligence. More importantly, the sensors are reliable enough to complete the business transaction between partners, independent of human involvement. A successful implementation requires: automating transactions and managing the item's expected routes and material

conditions. Simplifying the process for operations poses some technical hurdles. Tagging items across a partner ecosystem is only part of the equation. The larger implication is that all participants in the process need to understand events as they relate to the item's physical context and the ecosystem needs to agree to standards for process interoperability. These are important considerations when adopting a process-centric RFID approach to implementation.

Misplaced Emphasis

Why focus on events versus the data? Early deployments of data-centric processes flooded the business data pipes with bits and bytes that did not make much business sense. Data in itself is neither intelligent nor actionable; it must be translated and put into context. Intelligence is needed at the edge to filter and transform this raw data into human-understandable events that are relevant to the business process. Instead of relying on centralized applications, organizations should embed logic at the edge in order to manage execution of the local process. Pushing contextual data to the edge also allows for fast reconciliation and resolution of process exceptions. This reduces the burden of the IT backbones and creates a scalable solution.

A Process Example

A simple example of this mode of deployment is the single node process of shipping an item. The RFID tags associated to the item moving off the dock are validated with bills of lading and sales order information. The item-tag information is combined with context from these system documents to create an information-rich event relevant to the business. Once the event is generated and put into a business context, a number of applications may use it to trigger additional process steps. As a result, shipping notices and invoices are sent to partners, inventory is decremented, sales orders are updated, and materials are tracked. This set of processes is set in motion by the physically moving the item off the dock without additional human effort. The process-centric RFID model allows organizations to capture and share generated events that systems can thereby use to manage complex processes. As this occurs thousands of times in a normal business cycle, the efficiency gained is substantial.

Connecting the Business Network

Once the internal implementation of a node process is complete, a company can further realize the full value of the effort as the business ecosystem is connected. Extending the shipping process, for example, to an automated receiving or tracking process closes the loop with a trading partner. The process steps can be orchestrated across the partners within a network by

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exposing events in an SOA or via B2B messaging. Exposing events to partners in a collaborative way provides the next generation of process extension. Partners can query services to see activity, such as shipments, via the framework and gain additional levels of efficiency by automating business transactions through eBusiness messaging, including EDI, RosettaNet, and CIDX.

As the opportunity to implement RFID and sensory networks presents itself, organizations should focus on process first and technology second. It is important to note that process determines the ROI, while technology is the enabler. Within the supply chain, the use of standards plays a significant role in connecting the business network nodes as organizations look to further the application of RFID solutions beyond compliance. Competitive advantage is sustained by being process-centric when considering RFID and sensory networks rather than rushing to short-term technical solutions.