

# Levels of RFID Maturity, Part 2

Here are the five levels of maturity for successful RFID implementations.

Jan. 24, 2005—Companies implementing RFID will take on a significant investment: A CPG company shipping 50 million cases annually will spend up to \$23 million simply to meet Wal-Mart's requirements, according to AMR Research estimates. To recover these investments, companies will maximize return on investment by choosing technologies that meet these short-term requirements but will also scale to meet the company's future needs. Companies should develop a plan that includes using RFID data for their own purposes and specifically for process improvement, and not simply a plan that only addresses the purchaser's mandates, according to analysts at Meta Group.

Many RFID solutions vendors present RFID implementation plans to their customers that address only base requirements of the mandates at the warehouse and/or manufacturing facility, without helping their customers to realize the full potential and return on investment of RFID deployment. We suggest caution with such implementation plans. These approaches appear, on the surface, to be cost-effective. Our experience is that such solutions limit a company's ability to support additional mandates and changing standards. These shortsighted plans also neglect to provide a strategy or technology approach that will support integration of an increasing volume of RFID data into the enterprise infrastructure and improve the fundamentals of the business: cost and quality.

AMR Research predicts many companies racing to meet external deadlines will implement RFID solutions based on solution architectures that will need to be replaced in just a few years. Companies should implement an RFID solution that deals with scalability and flexibility. Proper planning considerations will include the following:

- Will the enterprise technology infrastructure support the massive amounts of new data gathered from RFID? What needs to be changed? Is there enough network bandwidth? Is there enough storage?
- How will the middleware route the data to the correct applications and business processes? Which middleware is the correct choice for the enterprise's requirements?
- How will the enterprise use the RFID data to provide workers and managers with insight to operations and logistics? The proper use of RFID data can be used to identify problems and opportunities to improve quality and reduce costs.
- Is there a technology solution that will allow the seamless integration with vendors and customers?
- Does the technology selection enhance existing business processes, preserve competitive advantage, and support reengineering so that new practices can be designed and implemented based on continuous, intelligent data analysis?
- How can other wireless technologies be blended with an RFID application to provide the lowest-cost, most-effect infrastructure?

Wan/Lan Solutions has developed the Five-level RFID Maturity Model, which addresses the technology and process management challenges faced by enterprises so that they can develop an RFID implementation and integration strategy that is viable for the long haul. The Maturity Model runs from Level 1 to Level 5, and

indicates the extent to which the company has integrated RFID technology into its processes. We feel that incorporating the RFID technology into the company infrastructure is extremely important. Most importantly, however, utilizing the data from RFID will allow and perhaps compel companies to improve their business processes. This is where the true payback of RFID implementation will start.

### **Level 1a: Goals and Objectives**

At Level 1a, companies have determined that RFID is in their future. They are actively considering their options and determining what the appropriate responses are to the mandates. At this stage the company is also actively determining the goals and objectives of their RFID initiative. Correctly determining the appropriate goals and objectives will assure that minimal amounts of rework are required during the implementation.

### **Level 1b: RFID Readiness Assessment and Pilot**

The RFID Readiness Assessment and Pilot section of determining goals and objectives provides experimental verification of the validity of the goals and objectives and reveals new areas of opportunity for improvement. Specific tasks that may be included in Level 1b are:

- a. Developing the business case for RFID
- b. Setting up an RFID strategy
- c. Determining RFID pilot objectives
- d. Defining workload requirements for EPC data synchronization
- e. Project Planning
- f. Instituting a policy for change Management and implementation
- g. Creating standards and metrics to serve as goals
- h. Developing high-level inventory management and replenishment goals
- i. Determining major systems requirements and/or enhancements that need to be incorporated into the overall environment
- j. Defining current performance measures and metrics to serve as guidelines in designing systems requirements
- k. Establishing benchmarks for key performance criteria like dollar inventory investment, stock-turn by various categories, sales and gross margin comparisons, average days in inventory, markdowns, average sell-through, etc., in comparison to leading competitors by retail segment
- l. Developing the measurement criteria for managing and monitoring the inventory (inventory investment, stock-turn ratio, gross margin percentage, GMROI, average days in inventory, markdown percentage, etc.)

### **Level 2: Tagging and Tracking, i.e. “Slap and Ship”**

At the second level of RFID implementation, called “slap and ship” by some, producers and manufacturers try only to meet the requirements of whatever mandates have been established by their key distributors and customers. These mandates are satisfied by slapping a label on the case and pallet with an embedded RFID tag. Additionally, reading the tag as the case/pallet goes on the truck, transmitting the data to the customer, and shipping the pallet and/or case may be required. These producers may realize some improvements in inventory, order fulfillment, packing and shipping, but RFID is primarily an increase in product cost at this level.

Companies evaluating RFID solutions at this level should consider the following:

- Scalability. The solution should be scalable enough to support the gathering, storing and routing of RFID data. Companies are cautioned that the amount of data generated by RFID systems can be quite voluminous, and may strain their infrastructure.
- Scanning and data integrity. RFID tag readers, data collection utilities and middleware should offer reliable data management and smoothing capabilities to read, route and manage the large amounts of data.
- Long-term architecture. Companies should invest in a solution that is flexible enough to accommodate future changes and enhancements and emerging standards.

- Integration with WMS, ERP and other systems. RFID solutions should support automatic, real-time data delivery to the supply chain, local data warehouse and/or manufacturing management system in the required formats.
- System Manageability. Good RFID solutions will incorporate remote equipment monitoring capabilities to intelligently identify causes and provide alerts for failures and noise problems, and support both troubleshooting and problem resolution.
- Training. Companies should look to vendors and consultants to provide training not only on the equipment and solutions provided, but also in process control and improvement, to ensure full ROI down the road.

### **Level 3: Application Integration of RFID Data**

Many companies will seek ways to recover their investments and generate an ROI for their RFID expenditures. Supply chain management activities can utilize RFID data to improve asset management and order reconciliation processes. Realizing cost savings from these improvements requires that RFID data from docks, warehouses and manufacturing facilities be integrated into the company's activities. This integration requires a solution that can aggregate and route the data in such a way that it can be utilized by the other enterprise applications that perform tasks such as order management, warehouse management, accounting and ERP. A solution's ability to support integration into the company infrastructure can be evaluated by considering the following:

- Application integration. The applications selected must provide preprogrammed adapters or plug-ins that can deliver the data to ERP, CRM, files, databases and other systems in the appropriate format, in real time, and with minimal configuration to save costly hours of programmer and engineer time.
- Supply chain connectivity. The solutions selected must support the transfer and synchronization of data and electronic documents among supply chain partners. This should include the incorporation of EPC data into advance shipping notices, purchase orders and other intercompany documents. Flexibility is important because the intercompany interactions will range from batch EDI push, on the one hand, to dynamic query responses in real time, on the other.
- Network connectivity. These requirements will require appropriate bandwidth to send and receive data, and will also place stringent requirements upon the internal and external network bandwidth.
- Storage on-line and off-line. The need to store and access the large amounts of RFID data may require your company to increase or redesign its storage architecture.
- Reliability. Platforms must reliably manage and route information without manual intervention and without interruption.

### **Level 4: Using RFID data and capabilities to Improve Business Processes**

Forrester Research states: "Firms won't benefit from RFID investments without analytical frameworks that generate actionable insights." An analytical framework will help aggregate raw RFID data, evaluate business impacts and convert these insights into suggested actions that result in practice and process improvements. After making the incremental supply chain improvements by incorporating RFID data into existing applications as detailed in Levels 2 and 3, producers can realize greater gains in process execution by changing their business in such a way that they can respond immediately to changing conditions and demand.

Companies that wish to utilize RFID technology for business process improvements will require management that helps them ensure that their people and processes are aligned in support of company strategy. Technologies that support business process improvements can be evaluated by looking for these characteristics:

- Rules-based, event-driven architecture. In our context, an event is an occurrence such as an order, shipment, ASN or a price change. The aggregation and processing of the escalating numbers of events created by RFID technologies will lead to the generation of increasingly complex business rules that will govern the routing and analysis of signals included in the event stream, providing opportunities for improvement.
- Visibility-based user interface. A well-designed interface provides appropriate visibility into business data and processes. Employees require data and information in the proper format and appropriate context to gain

beneficial insights from that data. The vast quantities of RFID data require aggregation, analysis, and relevant presentation in a timely manner. This information should be focused upon internal and external business activities and key performance indicators.

- Flexibility. For rapid implementation of business process improvements, these solutions must allow business users to define and change business rules and processes in an intuitive manner without requiring custom coding efforts from IT staff or consultants.

### **Level 5: Collaborative Business Intelligence**

At Maturity Level 5, companies will have built upon the four previous levels to enable them to identify the need for and ability to incorporate predictive business intelligence into their operations. Predictive business intelligence enables companies to rapidly respond to problems, and to identify and address problems before they occur. By using advanced analytic techniques and algorithms to identify and respond to circumstances before they occur, companies that embrace predictive business intelligence will create new opportunities to better meet customer needs, such as real-time personalized promotions targeted directly at customers in retail aisles.

“The promise of giving all different classes of end users access to data mining (predictive analytics) is oversold—data mining will require a cross-functional, collaborative effort and predictive modeling tools that support collaboration will have an advantage,” says Forrester Research analyst Lou Agosta. Performing the business intelligence function in a collaborative manner with members of the company’s supply chain will provide insight and advantage to those members, enabling them to gain competitive advantage through continuous improvement and innovative leaps. Among the benefits to be realized are:

- The ability for manufacturers to change their replenishment processes, better aligning production with demand, based on data from retailers.
- Reduced inventory across the supply chain
- Reduced safety stocks or buffer inventory.
- The opportunity to use transportation modalities as portable warehouses to store safety stock.

These benefits can only be realized when companies and their suppliers work collaboratively to improve reporting of relevant statistics such as sales, orders, inventory levels, and shipment times, work together to identify and eliminate bottlenecks, and most importantly, generate trust between the all parties.

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