SupplyChainDigest™

10 Things Necessary for RFID/EPC to Thrive

By
Dan Gilmore, Editor-in-Chief
Mark Fralick, Technology Editor
SupplyChainDigest

RFID-based technology generally, and the Electronic Product Code (EPC) subset of that technology more specifically, has generated an virtual tsunami of interest by companies across the globe as a potential mechanism to improve supply chain processes. It has also led to a substantial amount of hype, as hundreds of consultants and technology vendors clamor for a piece of the looming gold rush.

This hype, combined with the aggressive plans and to a lesser extent roll-out of EPC technology by Wal-Mart (based on supplier mandates for EPC tagging), has also led to much confusion and concern in the market, as the current reality of RFID across many fronts is well behind the rhetoric. This is exemplified by the "just go out and do it" call from many consultants and industry pundits, as if beyond some prudent experimentation with a promising technology a company should pursue RFID systems simply because they are there.

RFID, in many if not most supply chain applications, is fundamentally better than bar codes, the predominant "auto ID technology" in use today. By reducing (not eliminating) line-of-site scanning requirements, and the need for manual scans, RFID ultimately can drive efficiencies into many supply chain processes. But this is dependent on the performance and total system cost of RFID-based systems providing enough incremental advantage over alternatives that this investment is financially sound. We aren't there yet, at least in the EPC/consumer goods-to-retail supply chain. RFID is well-justified and delivering value in many other application areas today (manufacturing, asset tracking, etc.), and has in fact been doing so for many years.

Wal-Mart efforts, in fact, can be fairly seen as an effort to use its size and power and the collective investment of itself and especially its suppliers to drive the performance and cost down the maturity curve far faster than normal market forces would have achieved.

This is usually discussed in the context of when a company can reach a level of volume at which it becomes economically feasible for a company to move EPC tagging from being a function of distribution processes (very expensive) to manufacturing. But the reality is that for RFID to bring real value and reach critical mass, there are a variety of interesting "tipping points" that must be crossed at both the industry and individual company level. These include:

- **Volume Tipping Point:** As mentioned above, when is there enough volume for an individual SKU or complete product line to justify more economical EPC tagging further upstream in the supply chain (manufacturing, suppliers)?
- **Cost Tipping Point:** When will fixed and incremental EPC costs reach a point where a true ROI is possible?
- **Performance Tipping Point:** When will read rates reach a level of consistent virtually 100% performance that systems and process can be designed with confidence and automation, rather than as part science projects with lots of exception processing required and incomplete data flows?
- **ROI Understanding Tipping Point:** When will the real ability of RFID to generate substantial ROI be understood at the level of understanding that we have traditionally required of technology?
- **Ecosystem Tipping Point:** When will there be enough support throughout the supply chain, including the incredibly challenging effort of having suppliers do source-level tagging, to enable RFID to be used throughout the chain, and tagged and read where it optimizes cost and benefits?
- **Software Tipping Point:** When will there be scalable software that can take advantage of RFID data, and when will those be deployed and start delivering value?

Below are listed 10 key developments that must occur for EPC-based RFID systems to pass these multiple tipping points and deliver real ROI to users on all sides of the value chain.

1. Clear identification must emerge of the incremental benefits of RFID over other auto ID technologies and/or the general benefits of new supply chain software applications

Far too often, the potential benefits of RFID-based systems are described in ways that make it appear as if the key to realizing the benefit is use of RFID, when in fact these same systems and benefits could be achieved using traditional bar codes. For example, use of RFID to support location of inventory in a warehouse, while most distribution centers using bar code-based WMS already have extremely high levels of inventory-location accuracy today. Similarly, the potential benefits of applications such as supply chain visibility and product recall are not being missed because RFID has not been available, but rather because companies generally have not chosen to invest in them as yet.

The confusion over the incremental benefits of RFID versus other auto ID technologies and deployment of new applications generally needs to be eliminated to understand the true cost/benefit equation.

As Gartner analyst Jeff Woods has written: "You should always compare the incremental benefits of RFID tagging to the incremental costs of RFID tagging. That is, RFID must be intrinsic to the benefits of the project or it isn't a sensible business decision to use RFID. Absent the intrinsic benefits that flow directly from RFID in a project, you should not invest in it, because you'll still get the same benefits with reduced cost."

While RFID can deliver incremental benefits, and companies forced to apply tags should obviously look how to best recoup at least some savings from this investment, incremental analysis is key. This needs to be more than a comparison between having RFID and having no system at all.

2. Total supply chain costs must be lowered

It doesn't matter who pays the initial "freight" – the retailer or (as is occurring in retail-driven initiatives) the manufacturer – EPC-based programs must clearly demonstrate how their deployment will lower total supply chain costs.

Regardless of how the initial cost is absorbed – nominally by the suppliers, as in the case of Wal-Mart, or as an add-on to product cost, as with the U.S. Department of Defense, at minimum the variable cost associated with tagging will be included in the cost basis manufacturers use to determine their pricing. For EPC to work, these extra costs must be clearly surpassed by the total savings to the specific supply chain – and manufacturers and retailers must share in that savings.

The business case for this total supply chain savings (and sharing) has yet to be clearly established.

3. Reference to the "five-cent tag" should stop

The Auto ID Center at MIT performed a great service to the RFID and broader supply chain industry in creating a vision for a low cost tag that forced technology providers and end users to focus on tag and system designs that dramatically lowered the inherent cost structure of existing RFID tags. One unfortunate result of that good work, however, was the notion of the "five-cent tag" that might be possible from such a design, which has subsequently been adopted by wide segments of the industry as the magical level at which RFID suddenly becomes financially practical.

The reality is that tags at the item level for basic goods will have to be well below five cents – approach "free", as are current UPC codes printed as part of the packaging – before they make sense. This is also likely true even at the case level, where current distribution costs per case will not support a five-cent tag.

The discussion needs to be around determining at what level of tag pricing do EPC applications deliver ROI and total supply chain savings. This target will vary by the unit of measure, value of the goods, and use of RFID in business processes. "Waiting for the five-cent tag" (and we can only await the mega-announcements for the first tag manufacturers to get there) is of little value, and muddles the dialog.

4. Tag and tag application costs must come down

While talk about the five-cent tag isn't productive, it is clear that the current costs of tags, the even-higher costs of tags embedded in labels, and high extra costs of (often manual) application are well above the level that can deliver total supply chain savings.

There is strong debate about the level to which tag prices themselves can ultimately fall, including opinions from some analysts who believe they are unlikely to get below about ten cents for several years.

However, several manufacturers dispute that opinion, and other developments, such as "printable" antennas and new manufacturing techniques, hold the promise of much lower tag prices.

The variable cost of tags and application must come down substantially even at the case label for ROI to be achieved.

5. Real global standards must emerge

While the EPC Gen 2 standards offer a solid, global standards platform, recent intellectual property battles, and some continued confusion amongst what groups will sanction what standards (e.g. EPC Global, ISO). Additionally, lagging standard at the reader/data acquisition level hinders acceptance by the IT/Network community. These factors simply mean that the push for widespread deployment remains ahead of the standards processes critical for achieving system lower costs, reducing user risk, stabilizing technology platforms. There is too much still in flux.

6. Technical performance must improve

Currently, EPC deployment is a quasi-science project, with substantial investigation and issues around read rates, tag placement, SKU-tag type-physical placement decisions, and other issues.

While some in the industry have touted the benefits that can be achieved from even partial read rates, the reality is that currently read rates are often poor even through portals, and basic necessities like robust fork truck readers do not yet exist.

7. Roll-outs pushed at a measured, ROI-driven pace

EPC will ultimately achieve quicker adoption if expensive tagging requirements are not forced upon manufacturers at their expense far ahead of ROI, but rather at a measured pace that seeks to achieve true win-win scenarios. As the Grocery Manufacturres Association noted in its recent report A Balanced Perspective: EPC/RFID in the CPG Industry, "Trading partners should seek to create a reality-based plan that yields a positive ROI and seeks economies of scale in a limited geography before a broader rollout."

8. Thought leaders need to share more specifics about ROI

There are some in the industry who believe that the ROI from RFID is clear, at least at a given level of tag costs. Others are more skeptical. The "business cases" developed by many consultants often lack enough granularity to be meaningful for real decision-making and investment.

With the increasingly realization today that results are primarily a function of execution, and less so the result of "insight," EPC thought leaders (especially on the manufacturing side) should more widely and openly detail how they expect to get real ROI – and let this analysis be subject to the scrutiny and review of other supply chain professionals.

9. RFID-centric business applications must emerge

The reality is that software application support for RFID-based processes is very immature - really just evolving. Most of the work at this point has been to simply enable tag encoding and reading (RFID middleware) and support for basic EPC compliance processes.

RFID is just a data collection technology – it cannot deliver widespread value until a broad range of applications emerge (some new, some re-tooled version of existing applications) in software categories such as WMS, ERP, analytics (there are some early offerings here), visibility, demand planning, replenishment, etc.) While many vendors are building solutions, it will be some time before they are really available and then implemented by EPC users.

10. Ecosystems to enable upstream tagging must develop

Everyone agrees that costs of distribution-center-based "slap and ship" process are not scalable, and involve far too high of costs to deliver total supply chain savings.

However, the focus on getting to the "tipping point" of manufacturing-level tagging generally seems to assume that the "manufacturer" is doing the production itself domestically, as is typical with most large consumer packaged goods manufacturers such as Procter & Gamble and Clorox.

The tremendous growth in offshore manufacturing in other sectors, however, means that for many retail suppliers, the only economical point of tagging will be for outsourced manufacturers to apply and encode tags. Considering how difficult it is for many of these same companies to work through even basic labeling issues with their suppliers (international and domestic), it is clear that the processes and integration involves for this to scale will be a slow and difficult process.

RFID offers enormous potential for supply chain process improvements and top and bottom line financial improvements. Despite the hype, substantial barriers exist to crossing a variety of "tipping points," and the more users and vendors focus on addressing these realities, the faster the promise of EPC will be realized.

About the Authors

Mark Fralick *is president of ROI Solutions and a SuppyChainDigest Contributing Editor. Having operational, implementation and software development experience, along with detailed understanding the workings of software and services companies, puts ROI Solutions in a unique position to stand strongly on the customer's side in the battle for ROI in system selection and implementation. Learn more at www.GetUsROI.com, or email Mark Fralick at Mark.Fralick@GetUsROI.com.*

Dan Gilmore *is president and chief editor of SupplyChainDigest™, the industry's premier interactive knowledge source, providing timely, relevant, in-context information. Reaching tens of thousands of supply chain and logistics decision-makers each week, our flagship publications - SupplyChainDigest and SupplyChainDigest – Logistics Edition, and web site deliver news, opinions and information to help end users improve supply chain processes and find technology solutions. Learn more at www.scdigest.com, or email Dan Gilmore at dgilmore@scdigest.com.*